Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Vehicle Settings

Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.35
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Version Date: Mar 3, 2022

FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
May 30, 2013	1.0	Initial Release	
October 24, 2013	1.1		
	VS-GREQ-304479-Network connection password failure (HMI)		bjohns69 - New Requirement
	VS-GREQ-304480-Network connection using WPS-push button (HMI)		bjohns69 - New Requirement
	VS-GREQ-304481-Network connection using WPS-PIN (HMI)		bjohns69 - New Requirement
	VS-GREQ-304482-Wi-Fi direct feature control (functional)		bjohns69 - New Requirement
	VS-GREQ-304483-Wi-Fi direct configuration parameters (functional)		bjohns69 - New Requirement
	VS-GREQ-304484-Wi-Fi direct connection options (HMI)		bjohns69 - New Requirement
	VS-GREQ-304485-Wi-Fi direct outgoing (HMI)		bjohns69 - New Requirement
	VS-GREQ-304486-Wi-Fi direct incoming (HMI)		bjohns69 - New Requirement
	VS-GREQ-304487-Wi-Fi network availability notification (functional)		bjohns69 - New Requirement
	VS-GREQ-304488-Wi-Fi network availability notification (HMI)		bjohns69 - New Requirement
	VS-GREQ-304489-Wi-Fi Network connectivity status (HMI)		bjohns69 - New Requirement
	VS-GREQ-304490-WEP/WPA Security Keys/Passwords		bjohns69 - New Requirement
	VS-GREQ-304491-Security keys (HMI)		bjohns69 - New Requirement
March 14, 2014	1.2		
	AS-GREQ-050371- Automatic Software Update		bjohns69 - New Requirement
	VS-GREQ025326-Wi-Fi network availability notification (HMI)		bjohns69 – Revise Requirement
	VS-GUC-291869 - Configure Automatic Software Update		bjohns69 - New Use Case
	VS-UC-REQ-025261/B-The user would like to search/rescan/refresh the list of Wi-Fi direct compatible device(TcSE ROIN-291844)		bjohns69 - Revise Use Case
	VS-FUR-REQ-052061/A-Automatic Software Update, trigger 1		bjohns69 - New Requirement
	VS-FUR-REQ-052062/A-Automatic Software Update, trigger 2		bjohns69 - New Requirement
	VS-FUR-REQ-052063/A-Automatic Software Update, trigger 3		bjohns69 - New Requirement
	VS-FUR-REQ-052064/A-Automatic Software Update, trigger 4		bjohns69 - New Requirement
	VS-FUR-REQ-052065/A-Wi-Fi Signal Strength Presentation		bjohns69 - New Requirement
	VS-FUR-REQ-025294/B-Wi-Fi chip power state requirements(TcSE ROIN-296184-1)		bjohns69 - New Requirement
	VS-FUR-REQ-052066/A-Wi-Fi Keep last Wi-Fi mode after ignition		bjohns69 - New Requirement
	VS-FUR-REQ-025326/B-Wi-Fi network availability notification (HMI)(		bjohns69 – Revise Requirement
May 9, 2014	1.3		
	MD-REQ-023414/B-CntrStk_D_RqAssoc (TcSE ROIN-284870-1)		bjohns69 – Added new literal for Cancel Keypad Code.
	VS-SD-REQ-086469/A-Cancel Keypad Code Edit		bjohns69 – Initial Release - Added new sequence diagram for Cancel Keypad Code
	VS-UC-REQ-025253/B-User would like to see a list of Wi-Fi network(s) within range of their current location (TcSE ROIN-291836)		bjohns69 – Modified Use Case
	VS-UC-REQ-025282/B-User ignores the Network availability notification (TcSE ROIN-291865)		bjohns69 – Revised scenario description and post-condition for trigger. Added “conditions that triggered it change.”
	VS-FUR-REQ-025326/B-Wi-Fi network availability notification (HMI) (TcSE ROIN-304488)		bjohns69 – Revised to focus on trigger conditions are met and icon display on screen. Two minute time out was changed.
	VS-UC-REQ-025264/B-User Wi-Fi network(s) availability notification based on analytics X (TcSE ROIN-291847)		bjohns69 - Changed the scenario description and post conditions. Revised psot condition, "The user may act on this notification by searching and selecting a network to connect to. "
	VS-UC-REQ-025283/A-User dismiss/ deletes the Network availability notification (TcSE ROIN-291866)		bjohns69 - removed Use Case
	VS-FUR-REQ-086700/A-Wi-Fi network availability notification Default Setting (functional)		bjohns69 - Added a requirement to clarify the trigger for "network availability notification" feature

	VS-FUR-REQ-086699/A-Wi-Fi Network Availability Notification trigger (Functional)	bjohns69 - Added a requirement to clarify the default setting for the "network availability notification" feature
	VS-FRD-REQ-025441/B-Vehicle Settings (CGEA) (TcSE ROIN-293313-1)	bjohns69 - New release for changes to
August 18, 2014	**1.4**	
	VS-UC-REQ-025259/B-User would like to find more information about the Wi-Fi network currently connected (TcSE ROIN-291842)	bjohns69 - Modified Use Case text
	VS-UC-REQ-025267/B-User would like to know his/her current Wi-Fi network connectivity status while away from the Wi-Fi settings HMI (TcSE ROIN-291850)	bjohns69 - Revise Use Case
	VS-FUR-REQ-052061/A-Automatic Software Update, trigger 1	bjohns69 - Added new Use Case
	VS-FUR-REQ-025325/B-Wi-Fi network availability notification (functional) (TcSE ROIN-304487)	bjohns69 - Added to requirement. "The option is only available when the Wi-Fi feature is ON."
	VS-FUN-REQ-093981/A-Charge Port Cable Unlock	bjohns69 - Added new function.
	VS-UC-REQ-093980/A-Unlock Charge Port Cord	bjohns69 - New use case to add unlock charge port cable connector.
	VS-ACT-REQ-093982/A-Unlock Charge Port Cord	bjohns69 - Added new Activity Diagram.
	VS-SD-REQ-093983/A-Unlock Charge Port Cord	bjohns69 - Added new sequence Diagram.
	VS-SD-REQ-023442/B-Set Keypad Code for current user (TcSE ROIN-129661-2)	bjohns69 - Modified diagram to clarify signal literals.
	VS-SD-REQ-023443/B-Erase Keypad Code from current user (TcSE ROIN-129691-1)	bjohns69 - Modified diagram to clarify signal literals.
November 12, 2014	**1.5**	**Updates for 12/24, added Valet Mode and Charge Port Cable Unlock**
	VS-FUN-REQ-096818/A-Set Valet Mode	bjohns69 - New Function for Valet Mode
	VS-UC-REQ-096810/A-Set Valet Mode	bjohns69 - New use case to activate valet mode.
	VS-ACT-REQ-096820/A-Set Valet Mode	bjohns69 - Added new activity diagram for Valet Mode
	VS-SD-REQ-097279/A-Set Valet Mode	bjohns69 - Sequence Diagram for Valet Mode
	VS-FUN-REQ-025228/B-Ambient Lighting- Set Intensity (TcSE ROIN-292320-1)	BJOHNS69 - Added new requirement to explain HMI interface.
	VS-HMI-REQ-097951/A-Ambient Lighting Intensity	BJOHNS69 - Added new requirement to explain HMI interface.
	VS-FUN-REQ-025239/B-Set 12/24 hour mode setting (TcSE ROIN-292339-1)	rpaquet2 - Added new requirements to clarify how to implement 12/24 hour mode setting.
	VS-SR-REQ-099559/A-12/24 Hour Status Storage	rpaquet2 - Added new requirement to cover what some modules are doing and provide direction to remaining modules on how to handle error.
	VS-SR-REQ-099560/A-12/24 Hour Default Setting	rpaquet2 - Added new requirement to cover what some modules are doing and provide direction to remaining modules on how to handle error.
	VS-SR-REQ-099558/A-12/24 Hour Mode Error Handling	rpaquet2 - Added new requirement to cover what some modules are doing and provide direction to remaining modules on how to handle error.
	VS-SD-REQ-023442/B-Set Keypad Code for current user (TcSE ROIN-129661-2)	bjohns69 - Modified diagram to clarify correct signal literals.
	VS-SD-REQ-023443/B-Erase Keypad Code from current user (TcSE ROIN-129691-1)	bjohns69 - Modified diagram to clarify correct signal literals.
	VS-FUN-REQ-093981/A-Charge Port Cable Unlock	bjohns69 - Added new function.
	VS-UC-REQ-093980/A-Unlock Charge Port Cord	bjohns69 - New use case to add unlock charge port cable connector.
	VS-ACT-REQ-093982/A-Unlock Charge Port Cord	bjohns69 - Added new Activity Diagram.
	VS-SD-REQ-093983/A-Unlock Charge Port Cord	bjohns69 - Added new sequence Diagram.
	VS-FUR-REQ-104343/A-Valet Mode Infotainment Operation	<jmyslin2 / Karensa Ruffin> New requirement for Valet Mode
December 9, 2014	**1.6**	
	VS-FUR-REQ-115767/A-Manual Disconnection	<Hanan Ahmed> New requirement for Manual Disconnecting
December 16, 2014	**1.7**	
January 16, 2015	**1.8**	**Implementation of fixes for ambient lighting**

	VS-SR-REQ-117709/A-Turning ON and OFF Ambient Lighting	<jmyslin2 / aaldalla> Updated ambient lighting requirement for how to turning ON and OFF ambient lighting
	MD-REQ-025388/B-LightAmbColor_No_Rq (TcSE ROIN-297407)	<jmyslin2> Updated so that 0x00 is Invalid / NoDataExits from OFF so this doesn't cause a reset to OFF at start-up with the init value 0x0
	MD-REQ-025389/B-LightAmbIntsty_No_Rq (TcSE ROIN-297420)	<jmyslin2> Update requirement to match what is already in production where 0x0 0% intensity also means Ambient Lighting OFF
	MD-REQ-025388/B-LightAmbColor_No_Rq (TcSE ROIN-297407)	<jmyslin2> Updated so that 0x00 is Invalid / NoDataExits from OFF so this doesn't cause a reset to OFF at start-up with the init value 0x0
	MD-REQ-025389/B-LightAmbIntsty_No_Rq (TcSE ROIN-297420)	<jmyslin2> Update requirement to match what is already in production where 0x0 0% intensity also means Ambient Lighting OFF
	VS-SR-REQ-117709/C-Turning ON and OFF Ambient Lighting	<jmyslin2> Updated strategy for Turning ON and OFF Ambient Lighting
	VS-FUR-REQ-104343/B-Valet Mode Infotainment Operation	<KRuffin / Jmyslin2> added additional clarifications to the valet mode requirement regarding maintaining its valet mode state
January 30, 2015	**1.9**	
	VS-FUR-REQ-052065/B-Wi-Fi Signal Strength Presentation	<Hanan Ahmed> Updated Requirement
March 17, 2015	**1.10**	
	VS-UC-REQ-025207/B-Set Language (TcSE ROIN-290599)	<jmyslin2> Clarified language use case
	VS-UC-REQ-025208/B-Selected Language not available on both Displays (TcSE ROIN-290600)	<jmyslin2> Updated the Language Use Case
	VS-SR-REQ-025209/B-Language Truth Table (TcSE ROIN-141542-3)	<jmyslin2> added clarifications to the requirement
	VS-FUR-REQ-052065/B-Wi-Fi Signal Strength Presentation	<Hanan Ahmed> Updated Requirement
	VSv2-FUN-REQ-131582/A-Charge Cord Unlock	<Karensa Ruffin / Jason Myslinski> Updated Charge Cord Unlock. New Function
	VS-UC-REQ-130593/A-Unlock Charge Cord from Centerstack	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130595/A-User tries to access Centerstack Charge Car Unlock HMI when Not in Run	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130596/A-Charge Cord Centerstack HMI when Ignition changes out of Run to OFF or Accessory	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130598/A-User tries to Unlock from the Centerstack but Charge Cord is Not Unlocked	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130653/A-Charging Completes	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130654/A-Charge Cord is Not Connected	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-UC-REQ-130656/A-User selects Unlock from Hard Button	<K. Ruffin / Ryan Skaff / J. Myslinski> New Charge Cord Unlock Use Case
	VS-SR-REQ-135143/A-Language following a B+ reset to Language Servers	<jmyslin2> added requirement on B+ reset to modules
	VS-FUR-REQ-136296/A-Master Reset Language	<jmyslin2> New requirement for Master Reset and Language
	VS-UC-REQ-025254/C-User would like to find out more information about a Wi-Fi network (TcSE ROIN-291837)+	<Hanan Ahmed> removed WEP and added Fair for signal strength description.
	VS-UC-REQ-025257/B-User would like to connect to a Wi-Fi Network using Wi-Fi Protected Setup (WPS) using the router's WPS Push-Button-Method (TcSE ROIN-291840)	<Hanan Ahmed> Editorial changes; wps should be wi-fi protected setup
	VS-UC-REQ-025259/C-User would like to find more information about the Wi-Fi network currently connected (TcSE ROIN-291842)+	<Hanan Ahmed> deleted WEP and added "Fair" option for signal strength description
	VS-UC-REQ-025260/B-User would like to see a list of Wi-Fi direct devices within range of their current location (TcSE ROIN-291843)+	<Hanan Ahmed> deleted use case "to list wifi direct devices"
	VS-UC-REQ-025261/C-The user would like to search/rescan/refresh the list of Wi-Fi direct compatible device (TcSE ROIN-291844)	<Hanan Ahmed> deleted refresh for wifi direct devices
	VS-UC-REQ-025262/B-The user would like to connect to a Wi-Fi direct compatible device (outgoing) (TcSE ROIN-291845)	<Hanan Ahmed> deleted wifi direct related use case
	VS-UC-REQ-025263/B-The user would like to accept/decline to connect to a Wi-Fi direct compatible device (incoming) (TcSE ROIN-291846)	<Hanan Ahmed> deleted wifi direct use case

	VS-UC-REQ-025274/B-WPS association time expires (TcSE ROIN-291857)	<Hanan Ahmed> editorial; changed wifi protected security to wifi protected setup
	VS-UC-REQ-025275/B-System's WPS Random PIN message expires (TcSE ROIN-291858)	<Hanan Ahmed> editorial; changed wifi protected security to wifi protected setup
	VS-UC-REQ-025277/B-No Wi-Fi Direct capable devices available (TcSE ROIN-291860)	<Hanan Ahmed> deleted wifi direct related use case
	VS-UC-REQ-025278/B-No New Wi-Fi Direct capable devices available after refresh (TcSE ROIN-291861)	<Hanan Ahmed> deleted wifi direct related use case
	VS-FUR-REQ-025291/B-GPS location accuracy (TcSE ROIN-296181-1)	<Hanan Ahmed> removed the requirement
	VS-FUR-REQ-025300/B-Wi-Fi client configuration parameters (TcSE ROIN-296190-1)+	<Hanan Ahmed> deleted WEP
	VS-FUR-REQ-025303/B-Wireless network(s) information APIs (TcSE ROIN-296193-1)	<Hanan Ahmed> deleted GPS coordinates from the requirement
	VS-FUR-REQ-025306/B-Wireless network Functionality (TcSE ROIN-296196-1)	<Hanan Ahmed> deleted WEP and power configuration. made the requirements specific to plant provisioning
	VS-FUR-REQ-025312/B-Security Keys/Password support (TcSE ROIN-296202-1)+	<Hanan Ahmed> removed WEP
	VS-FUR-REQ-025314/B-Wi-Fi alliance security profiles & WPS certification (TcSE ROIN-296204-1)+	<Hanan Ahmed> deleted WEP
	VS-FUR-REQ-025314/C-Wi-Fi alliance security profiles & WPS certification (TcSE ROIN-296204-1)	<Hanan Ahmed> WEP security support is limited to client mode, AP mode does not support WEP security
	VS-FUR-REQ-025321/B-Wi-Fi direct configuration parameters (functional) (TcSE ROIN-304483)	<Hanan Ahmed> deleted wifi direct requirement
	VS-FUR-REQ-025322/B-Wi-Fi direct connection options (HMI) (TcSE ROIN-304484)	<Hanan Ahmed> deleted wifi direct interface requirement
	VS-FUR-REQ-134635/A-AAAA	<Hanan Ahmed>new requirement
	VS-FUR-REQ-025327/B-Wi-Fi Network connectivity status (HMI) (TcSE ROIN-304489)	<Hanan Ahmed> deleted requirement part on icon for different wifi modes
	VS-FUR-REQ-025328/B-WEP/WPA Security Keys/Passwords (TcSE ROIN-304490)+	<Hanan Ahmed> deleted WEP security
	VS-FUR-REQ-025329/B-Security keys (HMI) (TcSE ROIN-304491)	<Hanan Ahmed> deleted HMI requirements for AP mode
December 9, 2015	**1.11**	
	VS-SR-REQ-193890/A-Enhanced Memory - Language for Active Personality Profile	<jmyslin2> New requirement to support Enhanced Memory for Languages
	ENMEM-REQ-105569/B-Driver Profiles Deleted During Master Reset+	<jmyslin2> Master Reset requirement for when there is enhanced memory.
	ENMEM-REQ-105569/C-Driver Profiles Deleted During Master Reset	cwu3: Rephrased to clarify confusion. Deleted repeated statements of other requirement to make this requirement unique.
	VSv2-FUN-REQ-192195/A-Ambient Lighting - Variant 2	<jmyslin2> Updated Ambient Lighting Variant 2 which would be used whenever Enhanced Memory is supported it would be configured ON. It could be used when enhanced memory is not on a vehicle too if supplier is configured for it (only if BCM on vehicle supports too).
April 12, 2016	**1.12**	
	MD-REQ-025377/B-Disp_LangSel.Rq (TcSE ROIN-297357)+	<jmyslin2> Updated to add Thai and Indian English
	MD-REQ-025450/B-Disp_LangSel.St (TcSE ROIN-297360)+	<jmyslin2> updated to add Indian English and Thai
	MD-REQ-025450/B-Disp_LangSel.St (TcSE ROIN-297360)+	<jmyslin2> updated to add Indian English and Thai
	MD-REQ-025377/B-Disp_LangSel.Rq (TcSE ROIN-297357)+	<jmyslin2> Updated to add Thai and Indian English
	VS-UC-REQ-025349/B-Master Reset (TcSE ROIN-296294)	<jmyslin2> No impact to SYNC Gen 3 but updating use case since AHU will now use SDARS_FactoryReset_Rq signal to also setting the audio settings to the default settings
	VS-SR-REQ-015044/C-Master Reset request to the infotainment components (TcSE ROIN-174375-1)+	<jmyslin2> There is no change to SYNC Gen 3 so update for clarification only since SYNC Gen 3 sends FactoryReset_Rq = RestoreFactoryDefaults whenever a master reset is initiated. The AHU will now also reset the Audio Settings (ex Bass, Treble, Balance etc.) when FactoryReset_Rq = RestoreFactoryDefaults in addition to resetting SDARS.
	VS-SR-REQ-213252/B-Master Reset request to the TCU (Telematic Control Unit)	<jmyslin2 / aaldalla> Updated for master reset and sending the factory reset signal to the TCU

May 6, 2016	**1.13**	
	MD-REQ-025377/D-Disp_LangSel.Rq (TcSE ROIN-297357)+	<JM> Updated so support new strategy for language request signals since the old CAN signals maxed out on size
	MD-REQ-025377/J-Disp_LangSel.Rq (TcSE ROIN-297357)	<jmyslin2> <jmyslin2> language strategy updates with two signals
	MD-REQ-025450/D-Disp_LangSel.St (TcSE ROIN-297360)+	<JM> Updated the Language Status signal strategy
	MD-REQ-025450/K-Disp_LangSel.St (TcSE ROIN-297360)	<jmyslin2> language strategy updates with two signals
	MD-REQ-025450/D-Disp_LangSel.St (TcSE ROIN-297360)+	<JM> Updated the Language Status signal strategy
	MD-REQ-025450/K-Disp_LangSel.St (TcSE ROIN-297360)	<jmyslin2> language strategy updates with two signals
	MD-REQ-025377/D-Disp_LangSel.Rq (TcSE ROIN-297357)+	<JM> Updated so support new strategy for language request signals since the old CAN signals maxed out on size
	MD-REQ-025377/J-Disp_LangSel.Rq (TcSE ROIN-297357)	<jmyslin2> <jmyslin2> language strategy updates with two signals
October 5, 2016	**1.14**	
	VS-FUN-REQ-025246/D-Charge Port Light Ring (TcSE ROIN-292385-1)	<Karensa Harkins / jmyslin2> Updated Charge Port Light Ring with Variant 2 CAN signal so SYNC can send the right signal depending on what Variant it is configured for
	VS-SR-REQ-238151/A-ChargePortLightRing_St signal	<Karensa Harkins / jmyslin2> New requirement for Charge Port Light Ring since the Client will now have two different CAN signals it can send depending on the vehicle
	ENMEM-REQ-105569/D-Driver Profiles Deleted During Master Reset	MBORREL4: Updated to include PaaK
	VS-FUR-REQ-104343/C-Valet Mode Infotainment Operation+	<Jmyslin2> Updated for Valet Mode for receivers of the Valet Mode CAN signal
February 2, 2017	**1.15**	
	VS-SR-REQ-025225/E-Ambient Lighting - Color Change Request Latency (TcSE ROIN-141572-1)	<jmyslin2> Clarification to Ambient Lighting requirement
	VS-SR-REQ-025230/D-Ambient Lighting - Intensity Change Request Latency (TcSE ROIN-141573-1)	<jmyslin2> Clarification to Ambient Lighting requirement
November 16, 2018	**1.16**	
	VS-FRD-REQ-025441/D-Vehicle Settings (CGEA) (TcSE ROIN-293313-1)	<jmyslin2> added General Requirement which would be needed for APIM 4.2 if the Cluster is integrated in the APIM
	MD-REQ-243934/B-Disp_Miles_Kilometers.St	<jmyslin2> Clarification only
	MD-REQ-025516/C-DISP_Miles_Kilometers_Rq (TcSE ROIN-273811)	sberg15: editorial changes only. No content change.
	MD-REQ-276458/A-Vehicle_Speed.St+	<jmyslin2> created MD
	MD-REQ-276458/B-Vehicle_Speed.St	<jmyslin2> MD clarification
	MD-REQ-276459/A-Vehicle_Speed_QF	<jmyslin2> created MD
	MD-REQ-213361/C-FactoryReset_Rq	<jmyslin2> Clarification only, no change to modules
	MD-REQ-222036/B-FactoryReset.St	<jmyslin2> Updated MD with clarification only - no change that would cause a module change
	MD-REQ-025377/M-Disp_LangSel.Rq (TcSE ROIN-297357)+	<jmyslin2> Clarified requirement for error condition on what to do with receiving two language requests when should not be
	MD-REQ-025377/N-Disp_LangSel.Rq (TcSE ROIN-297357)	<jmyslin2> clarification on sending the same language twice
	MD-REQ-025452/B-LanguageUpdate.Rsp (TcSE ROIN-297376)	<jmyslin2> grammar update only. No content change
	MD-REQ-025379/B-Bezel_Beeps.Rq (TcSE ROIN-297362)	<jmyslin2> added clarificatin to signal MD. No content change
	MD-REQ-025385/B-Bezel_Beeps.St (TcSE ROIN-297423)	<jmyslin2> Clarification only to signal MD. No content change to MD
	MD-REQ-025386/B-Bezel_Beeps_Supported.St (TcSE ROIN-297429)	<jmyslin2> added clarification to signal MD. No content change
	MD-REQ-025381/B-TimeAdjust.Rq (TcSE ROIN-297370)	<jmyslin2> updated grammer. No content change
	MD-REQ-025462/B-VehTimeFormat.St (TcSE ROIN-297375)	<jmyslin2> Grammar update only. No content change
	MD-REQ-097285/C-ValetMode_St	<jmyslin2> grammer update. No content change
	MD-REQ-025380/B-Disp_Temperature.Rq (TcSE ROIN-297369)	<jmyslin2> Gammar updates. No content change
	MD-REQ-025453/B-Disp_Temperature.St (TcSE ROIN-297374)	<jmyslin2> Grammar updates only. No content change

MD-REQ-025388/C-LightAmbColor_No_Rq (TcSE ROIN-297407)	<jmyslin2> Grammar change only. No content change
MD-REQ-025389/C-LightAmbIntsty_No_Rq (TcSE ROIN-297420)	<jmyslin2> Grammar updates. No content change
MD-REQ-025456/D-LightAmbColor_No_Actl (TcSE ROIN-297421)	<jmyslin2> Grammar updates. No content change
MD-REQ-025457/D-LightAmbIntsty_No_Actl (TcSE ROIN-297422)	<jmyslin2> grammar updates. No content change
MD-REQ-192193/C-LightAmbColor_No_Actl - Variant 2	<jmyslin2> Grammar updates. No content change
MD-REQ-192194/C-LightAmbIntsty_No_Actl - Variant 2	<jmyslin2> Grammar updates. No content change
MD-REQ-192189/B-LightAmbColor_No_Rq - Variant 2	<jmyslin2> Grammar updates. No content change
MD-REQ-192190/B-LightAmbIntsty_No_Rq - Variant 2	<jmyslin2> Grammar updates only. No content change
MD-REQ-023414/C-CntrStk_D_RqAssoc (TcSE ROIN-284870-1)	<jmyslin2> added clarifications. No content change
MD-REQ-023415/B-CntrStkKeycodeActl (TcSE ROIN-284871-1)	<jmyslin2> Updated with code BCM uses to decode the signal
MD-REQ-023425/B-AssocConfirm_D_Actl (TcSE ROIN-284863-1)	<jmyslin2> update text. No content change
MD-REQ-093985/B-ChargePortUnlock_Rq	<jmyslin2> grammar updates. No content change
MD-REQ-132658/B-ChrgCrdLck_D_Stat	<jmyslin2> Change signal type to MD. No content change
VS-IIR-REQ-276699/A-Logical Signal mapping to CMDB - Vehicle Settings / Settings in Centerstack+	<jmyslin2> Power Management logical signal mapping table r
VS-IIR-REQ-276699/B-Logical Signal mapping to CMDB - Vehicle Settings / Settings in Centerstack+	<jmyslin2> Work in Progress
VS-IIR-REQ-276699/C-Logical to Physical CAN signal mapping - Vehicle Settings / Settings in Centerstack+	<jmyslin2> Work in Progress
VS-IIR-REQ-276699/D-Logical to Physical CAN signal mapping - Vehicle Settings / Settings in Centerstack+	<Jmyslin2> added VDM FBMP signals
VS-IIR-REQ-276699/E-Logical to Physical CAN signal mapping - Vehicle Settings	<jmyslin2> added VDM and CCM Feature.St signals
VS-CLD-REQ-025448/D-Keypad Server / External Personalization Function (TcSE ROIN-293526-1)	<jmyslin2> updated name, no content change
VS-CLD-REQ-025447/D-Keypad Client / Personalization Client (TcSE ROIN-293524-1)	<jmyslin2> Updated name, no content change
VS-CLD-REQ-025442/B-Vehicle Settings Client (TcSE ROIN-141546-2)	<jmyslin2> Removed deleted requirement 025432. No content change
VS-CLD-REQ-025443/B-Vehicle Settings Server (TcSE ROIN-141547-2)	<jmyslin2> Moved 025434 to Distance function
STR-076407/C-Functional Definition (TcSE ROIN-293395)	<jmyslin2> No content change. Grouped Ambient Lighting to make more clear
VS-FUN-REQ-025206/C-Set Language (TcSE ROIN-292323-1)	<jmyslin2> added signal MD's to function
VS-SR-REQ-193890/B-Enhanced Memory - Language for Active Personality Profile	<jmyslin2> Added clarification for B+ resets
VS-FUN-REQ-025213/C-Set Distance Units (TcSE ROIN-292327-1)	<jmyslin2> added Distance interface MD's - no content change
VS-FUN-REQ-025218/C-Set Temperature Units (TcSE ROIN-292331-1)	<jmyslin2> added MD's in interface Requirement for Temperature
VSv2-FUN-REQ-025223/C-Ambient Lighting- Set Color (TcSE ROIN-292314-1)	<jmyslin2> added MD's, no content change
VSv2-FUN-REQ-025228/C-Ambient Lighting- Set Intensity (TcSE ROIN-292320-1)	<jmyslin2> added MD's, no content change
VS-FUN-REQ-025233/C-Touch Panel Beeps Settings (TcSE ROIN-292335-1)	<jmyslin2> added MD's, no content change
VS-FUN-REQ-025239/C-Set 12/24 hour mode setting (TcSE ROIN-292339-1)	<jmyslin2> added MD, no content change
VS-FUN-REQ-025246/E-Charge Port Light Ring (TcSE ROIN-292385-1)	<jmyslin2>moved MD, no content change
VSv2-FUN-REQ-131582/B-Charge Cord Unlock	<jmyslin2> Charge Cord Unlock
VS-SD-REQ-132666/B-Unlock Charge Port from Infotainment HMI	<jmyslin2> updated sequence diagram to use the correct name for the request signal. No content change
VS-FUN-REQ-023435/C-Edit Keypad Code (TcSE ROIN-284424-1)	<jmyslin2> Added MD, no content change
VSv2-FUN-REQ-331323/A-Edit Keypad Code - Variant 2	<jmyslin2>Updated KeyPad interface. Needed for 7 button press keypads and supports 5 digit keypad
MD-REQ-331324/A-CntrStk2_D_RqAssoc	<jmyslin2> added clarifications. No content change
MD-REQ-330676/A-KeyPadCodeDgtX_D_Stat	<jmyslin2> New requirement, supports 7 button press keypad
VS-UC-REQ-331327/A-Set Keypad Code for Current User	<jmyslin2> New use case for Keypad variant 2

	VS-UC-REQ-331328/A-Erase Keypad Code from Current User	<jmyslin2> New use case for Keypad variant 2
	VS-UC-REQ-331329/A-Invalid Keypad Code Entry	<jmyslin2> New use case for Keypad variant 2
	VS-UC-REQ-331330/A-Invalid Duplicate Keypad Code Entry	<jmyslin2> New use case for Keypad variant 2
	VS-UC-REQ-331331/A-Cancel Keypad Set Process	<jmyslin2> New use case for Keypad variant 2
	VS-SR-REQ-331337/A-Keypad Client supporting both Variant 1 and Variant 2 request signals at the same time	<jmyslin2> new keypad requirement
	VS-SR-REQ-331338/A-Number of digits in Keycode	<jmyslin2> New requirement for Keypad Variant 2
	VS-SD-REQ-331333/A-Set Keypad Code for current user	<jmyslin2> New sequence diagram for Keypad variant 2
	VS-SD-REQ-331334/A-Erase Keypad Code from current user	<jmyslin2> New sequence diagram for Keypad variant 2
	VS-SD-REQ-331335/A-Cancel Keypad Code Edit	<jmyslin2> New sequence diagram for Keypad variant 2
	VS-FUN-REQ-025341/D-Master Reset to Factory Defaults - APIM (TcSE ROIN-296290-1)	<jmyslin2> added MD's, no content change
	VS-FUN-REQ-096818/D-Set Valet Mode	<jmyslin2> added MD's, no content change
	STR-076408/B-Appendix: Reference Documents (TcSE ROIN-293422)	<jmyslin2> added reference specs. No content change
February 1, 2019	**1.17**	
	STR-180687/E-Interface Requirements	<jmyslin2> added MD's for new functions
	MD-REQ-338982/A-LongTermReset_B2_Rq	<jmyslin2> New MD for Long Term Reset setting
	MD-REQ-341180/A-BattTracLoThres_D_Stat	<jmyslin2> New MD for Low Battery Alert status signal
	MD-REQ-341183/A-BattTracLoThres_D_Rq	<jmyslin2> New MD for Low Battery Alert request signal
	MD-REQ-341190/A-SpeedoMajorUnit_D_Confg	<jmyslin2> New MD for Low Battery Alert status signal
	MD-REQ-339666/A-PrplSnd_D_Rq	<jmyslin2> New MD for Propulsion Sound request setting
	MD-REQ-339747/A-PrplSnd_D_Stat	<jmyslin2> New MD for Propulsion Sound status signal
	MD-REQ-339730/A-LghtAmbDrvMde_D_Rq	<jmyslin2> New MD for Ambient Lighting Auto/Manual Drive Mode request
	MD-REQ-340538/A-LghtAmbDrvMde_B_Stat	<jmyslin2> New MD for Ambient Lighting Auto/Manual Drive Mode status
	VS-IIR-REQ-276699/F-Logical to Physical CAN signal mapping - Vehicle Settings	<jmyslin2> added new signals
	VS-FUN-REQ-334503/A-Drive History Reset	<jmyslin2> New Function for Drive History setting
	VS-CLD-REQ-339750/A-Drive History Client	<jmyslin2> New Class Description for Drive History Client
	VS-CLD-REQ-342947/A-Drive History Server	<jmyslin2> New class description for Drive History Server
	VS-SR-REQ-334504/A-Drive History Reset	<jmyslin2> New requirement for Drive History
	VS-CLD-REQ-341184/A-Low Battery Alert Client	<jmyslin2> New class description for Low Battery Alert Client
	VS-CLD-REQ-341185/A-Low Battery Alert Server	<jmyslin2> new class description for low battery alert server
	VS-REQ-341338/A-Low Battery Alert Server functional requirement	<jmyslin2> New Low Battery Alert Server requirement
	VS-REQ-341290/A-Low Battery Alert Client functional requirement	<jmyslin2> New Low Battery Alert Client functional requirement
	VS-HMI-REQ-342159/A-HMI display options for Low Battery Alert - Low Battery Alert Client	<jmyslin2> HMI requirement for display options
	VS-SR-REQ-341887/A-Selecting a Low Battery Alert Setting via the HMI	<jmyslin2> New requirement for setting Low Battery Alert via the HMI
	VS-SR-REQ-341178/A-Mapping Table - Speedometer Major Units	<jmyslin2> Added requirement for Cluster speedometer major units
	VS-SD-REQ-341844/A-Low Battery Alert Setting Selection	<jmyslin2> new sequence diagram for selecting a Low Battery Alert setting
	VS-FUN-REQ-339665/A-Propulsion Sound	<jmyslin2> New Function for propulsion sound setting
	VS-CLD-REQ-339751/A-Propulsion Sound Client	<jmyslin2> New class description for propulsion sound client
	VS-CLD-REQ-339752/A-Propulsion Mode Server	<jmyslin2> new class description for the propulsion mode server
	VS-UC-REQ-340217/A-User Enables Propulsion Sound Setting	<jmyslin2> new use case for enabling propulsion sound
	VS-UC-REQ-340218/A-User Disables Propulsion Sound Setting	<jmyslin2> use case for disabling propulsion sound
	VS-SR-REQ-339667/A-Propulsion Sound Client requesting change to propulsion sound	<jmyslin2> New requirement for Propulsion Sound
	VS-TMR-REQ-339748/A-T_PrplSnd_Rsp	<jmyslin2> added timing for propulsion sound setting request and response
	VS-SD-REQ-340180/A-Propulsion Sound set to Enabled via the HMI	<jmyslin2> Propulsion Sound Enabled sequence diagram
	VS-SD-REQ-340184/A-Propulsion Sound set to Disabled via the HMI	jmyslin2: New Propulsion Sound Disabled sequence diagram
	VS-FUN-REQ-339729/A-Drive Mode Auto/Manual Ambient Lighting setting	<jmyslin2> New Function for Drive Mode Auto/Manual Ambient Lighting setting

	VS-CLD-REQ-340540/A-Ambient Lighting Drive Mode Client	<jmyslin2> New class description for Ambient Lighting Drive Mode Client
	VS-CLD-REQ-340542/A-Ambient Lighting Drive Mode Server	<jmyslin2> New Ambient Lighting Drive Mode Server class description
	VS-UC-REQ-340546/A-User Enables Auto Ambient Lighting via HMI Setting	<jmyslin2> New use case for the user enabling Auto Ambient Lighting via the HMI setting
	VS-UC-REQ-340547/A-User Disables Auto Ambient Lighting via HMI Setting	<jmyslin2> New use case for user disabling Auto Ambient Lighting via the HMI setting
	VS-UC-REQ-340548/A-User changes color while in Auto Ambient Lighting	<jmyslin2> New use case for the user changing color while in Auto Ambient Lighting
	VS-UC-REQ-340551/A-User changes color while in Manual Ambient Lighting	<jmyslins2> New use case for when the user changes color while in manual ambient lighting
	VS-UC-REQ-340569/A-Drive Mode change while in Auto Ambient Lighting mode	New use case for Drive Mode change while in Auto Ambient Lighting mode
	VS-SR-REQ-341024/A-Ambient Lighting Strategy required to be used when supporting Automatic/Manual Ambient Lighting Drive Mode	<jmyslin2> New requirement for supporting Ambient Lighting strategy variant 2 when supporting the Auto/Manual Ambient Lighting setting
	VS-REQ-341020/A-Ambient Lighting Drive Mode Server functional requirement	<jmyslin2> New requirement for Ambient Lighting Drive Mode Servers supporting Auto/Manual mode
	VS-REQ-341017/A-Ambient Lighting Drive Mode Client functional requirement	<jmyslin2> new requirement for Ambient Lighting Drive Mode Client
	VS-SR-REQ-341018/A-Enabling/Disabling Ambient Lighting Auto/Manual setting via the HMI	<jmyslin2> New requirement for Enable / Disabling Ambient Lightings Auto/Manual setting
	VS-TMR-REQ-340545/A-T_LghtAmbDrvMde_Rsp	<jmyslin2> added timing for ambient lighting drive mode setting request and response
	VS-SD-REQ-341028/A-Ambient Lighting Drive Mode set to Automatic via the HMI	<jmyslin2> New sequence diagram for Ambient Lighting Drive Mode set to Manual via the HMI
	VS-SD-REQ-341027/A-Ambient Lighting Drive Mode set to Manual via the HMI	<jmyslin2> New sequence diagram for setting Ambient Lighting Drive Mode to Manual
	VS-SD-REQ-341050/A-User changes ambient lighting color while in auto mode	<jmyslin2> New sequence diagram for user changing color in auto mode
May 20, 2019	**1.18**	
	VS-IIR-REQ-276699/G-Logical to Physical CAN signal mapping - Vehicle Settings	<jmyslin2> added LongTermReset_B_RqMnu
	MD-REQ-025450/M-Disp_LangSel.St (TcSE ROIN-297360)	asimukhi: revised to update the Logical-Physical Mapping Attachement I
	MD-REQ-338982/B-LongTermReset_B_RqMnu	<jmyslin2> updated name. No content change
	MD-REQ-341180/B-BattTracLoThres_D_Stat	<jmyslin2> Clarification only. KPH to Km/h
	MD-REQ-341183/B-BattTracLoThres_D_Rq	<jmyslin2> Clarification only. KPH to Km/h
	MD-REQ-347056/A-EcoIdl_D_Rq	<jmyslin2> New MD for Eco-Idle signal request
	MD-REQ-347057/A-EcoIdl_D_Stat	<jmyslin2> New MD for Eco-Idle status signal
	VS-CLD-REQ-347054/A-Eco-Idle Client	<jmyslin2> New Class Description for Eco-Idle Client
	VS-CLD-REQ-347055/A-Eco-Idle Server	<jmyslin2> New Class description for Eco-Idle Server
	ENMEM-REQ-105569/E-Driver Profiles Deleted During Master Reset	MBORREL4: Updated for DSM Decouple
	VS-SR-REQ-334504/B-Drive History Reset	<jmyslin2> updated signal name only. No content change
	VS-SR-REQ-341178/B-Mapping Table - Speedometer Major Units	<jmyslin2> Clarification only. Changed KPH to Km/h
	VS-FUN-REQ-347046/A-Eco-Idle	<jmyslin2> New function for Eco-Idle
	VS-UC-REQ-347814/A-User Enables Eco-Idle Setting	<jmyslin2> new Eco-Idle use case
	VS-UC-REQ-347815/A-User Disables Eco-Idle Setting	<jmyslin2> New Eco-Idle use case
	VS-SR-REQ-347812/A-Eco-Idle Setting change	<jmyslin2> new requirement for Eco-Idle setting
	VS-TMR-REQ-347813/A-T_EcoIdle_Rsp	<jmyslin2> New Eco-Idle timing requirement
	VS-SD-REQ-347816/A-Eco-Idle set to Enabled via the HMI	<jmyslin2> New Eco-Idle sequence diagram
	VS-SD-REQ-347817/A-Eco-Idle set to Disabled via the HMI	<jmyslin2> New Eco-Idle sequence diagram
October 30, 2019	**1.19**	
	VS-IIR-REQ-276699/H-Logical to Physical CAN signal mapping - Vehicle Settings	<jmyslin2> added Eco-Idle signal mapping
	MD-REQ-365621/A-EngExhMdeHrEnbl_D_Rq	<jmyslin2> New quiet time MD
	MD-REQ-365620/A-EngExhMdeHrEnbl_D_Stat	<jmyslin2> New quiet time MD
	MD-REQ-365623/A-EngExhMdeHrStrt_D_Rq	<jmyslin2> New quiet time MD
	MD-REQ-365626/A-EngExhMdeHrStrt_D_Stat	<jmyslin2> New Quiet Time MD
	MD-REQ-365627/A-EngExhMdeHrEnd_D_Rq	<jmyslin2> New Quiet Time End MD request signal
	MD-REQ-365628/A-EngExhMdeHrEnd_D_Stat	<jmyslin2> New Quiet Time End MD status signal

	VS-CLD-REQ-339752/B-Propulsion Sound Server	<jmyslin2> corrected typo in title name. Changed name from Propulsion Mode Server to Propulsion Sound Server. No content change, clarification only.
	VS-CLD-REQ-362990/A-Quiet Time Client	<jmyslin2> New class description for Quiet Time Client
	VS-CLD-REQ-362991/A-Quiet Time Server	<jmyslin2> New Class Description for the Quiet Time Server
	STR-076407/F-Functional Definition (TcSE ROIN-293395)	<jmyslin2> added new Quiet Time for exhaust mode function
	VS-FUN-REQ-362897/A-Quiet Time for Exhaust Mode	<jmyslin2> New Quiet Time function
	VS-UC-REQ-365616/A-User Enabled Quiet Time Setting	<jmyslin2> New Quiet Time use case
	VS-UC-REQ-365617/A-User Disabled Quiet Time Setting	<jmyslin2> New use case for disabling quiet time
	VS-UC-REQ-365618/A-User changes Quiet Time start and end times	<jmyslin2> New use case Quiet Time start and end times
	VS-SR-REQ-365809/A-Quiet Time Enable/Disable Setting change	<jmyslin2> New Quiet Time setting requirement
	VS-SR-REQ-365811/A-Quiet Time Start and End time Setting change	<jmyslin2> New Quiet Time start and end time setting change requirement
	VS-TMR-REQ-365810/A-T_QuietTime_Rsp	<jmyslin2> New Quiet Time timing requirement
	VS-SR-REQ-365642/A-HMI Speed Limited	<jmyslin2> New Quiet Time speed limited requirement
	VS-SD-REQ-365814/A-Quiet Time set to Enabled via the HMI	<jmyslin2> New sequence diagram for setting Quiet Time to Enabled
	VS-SD-REQ-365815/A-Quiet Time set to Disabled via the HMI	<jmyslin2> New sequence diagram for setting Quiet Time to Disabled
	VS-SD-REQ-365816/A-Quiet Start Time set via the HMI	<jmyslin2> New sequence diagram to set the Quiet Time Start Time via the HMI
	VS-SD-REQ-365820/A-Quiet End Time set via the HMI	<jmyslin2> New sequence diagram to set the End Time via the HMI
January 10, 2020	**1.20**	
	MD-REQ-339747/B-PrplSnd_D_Stat	jmyslin2: updated MD to include Faulty state
	VS-FUN-REQ-025341/E-Master Reset to Factory Defaults - APIM (TcSE ROIN-296290-1)	<jmyslin2> added a requirement for Master Reset when a MyKey is used
	VS-SR-REQ-362537/A-Master Reset Setting when MyKey is active	<jmyslin2> New master reset requirement when MyKey is active
	VS-SR-REQ-372580/A-Propulsion Sound Faulty state	jmyslin2 - New requirement for Faulty state
February 14, 2020	**1.21**	
	VS-IIR-REQ-276699/I-Logical to Physical CAN signal mapping - Vehicle Settings	jmyslin2: added Trail Turn Assist signals
	MD-REQ-132658/C-ChrgCrdLck_D_Stat	jmyslin2: added clarification to the requirement
	MD-REQ-375908/A-TurnAsstSwtch_D_Stat	jmyslin2: New MD for the Trail Turn Assist feature
	MD-REQ-375918/A-OrtaSwtchLamp_B_Rq	jmyslin2: New MD for the Trail Turn Assist feature
	VS-CLD-REQ-375893/A-Trail Turn Assist Client	jmyslin2: added new Trail Turn Assist class description
	VS-CLD-REQ-375896/A-Trail Turn Assist Server	jmyslin2: New Trail Turn Server class description
	STR-076407/G-Functional Definition (TcSE ROIN-293395)	jmyslin2: added Trail Turn Assist function
	VS-FUN-REQ-375892/A-Trail Turn Assist	jmyslin2: New Trail Turn Assist function
	STR-718722/A-Overview	jmyslin2: provide an overview of the Trail Turn Assist feature
	STR-718724/A-Physical Mapping of Classes	jmyslin2: mapping of physical classes
	VS-UC-REQ-375924/A-User Enables Trail Turn Assist	jmyslin2: new Trail Turn Assist Use Case
	VS-UC-REQ-375925/A-User Disables Trail Turn Assist	jmyslin2: new Use Case for Trail Turn Assist
	VS-SR-REQ-375934/A-Trail Turn Assist Setting Soft Button Pressed / Not Pressed Handling	jmyslin2: new Trailer Turn Assist requirement
	VS-SR-REQ-375946/A-Trail Turn Assist Settings Change	jmyslin2: new Trail Turn Assist requrement
	VS-TMR-REQ-375949/A-T_TrailTurnAssist_Rsp	jmyslin2: new Trail Turn Assist timing requirement
	VS-SR-REQ-375947/A-Conditions for setting TurnAsstSwtch_D_Stat signal to Faulty	jmyslin2: New Trail Turn Assist requirement
	VS-SD-REQ-375951/A-Trail Turn Assist set to Enabled via the HMI	jmyslin2: new sequence diagram for the Trail Turn Assist feature
	VS-SD-REQ-375952/A-Trail Turn Assist set to Disabled via the HMI	jmyslin2: new Trail Turn Assist sequence diagram
February 25, 2020	**1.22**	
	VS-IIR-REQ-276699/J-Logical to Physical CAN signal mapping - Vehicle Settings	jmyslin2: added clear exit assist signals
	MD-REQ-354255/A-ClrExitAsstEnbl_D_RqMnu	<jmyslin2> New MD for Clear Exit Assist

	MD-REQ-354256/A-ClrExitAsst_D_Stat	<jmyslin2> New MD for Clear Exit Assist
	MD-REQ-359587/A-ClrExitAsstMsgTxt2_D_Rq	jmyslin2: New MD for Clear Exit Assist
	MD-REQ-359588/A-ClrExitAsstActv_B_Rq	jmyslin2: New MD for Clear Exit Assist
	VS-CLD-REQ-359585/A-Clear Exit Assist Warning Client	<jmyslin2> New class description for Clear Exit Assist
	VS-CLD-REQ-359586/A-Clear Exit Assist Warning Server	<jmyslin2> New Class Description for Clear Exit Assist
	STR-076407/H-Functional Definition (TcSE ROIN-293395)	jmyslin2: added clear exit assist functions
	STR-731065/A-Clear Exit Assist	jmyslin2: added Clear Exit Assist functions
	VS-FUN-REQ-354248/A-Clear Exit Assist Setting	<jmyslin2> New function for clear exit assist
	VS-SR-REQ-354328/A-Clear Exit Assist Setting change	<jmyslin2> New requirement for Clear Exit Assist
	VS-FUN-REQ-359558/A-Clear Exit Assist Warning	<jmyslin2> New Clear Exit Assist Warning function created
	PWRMAN-CLD-REQ-359656/A-Infotainment System Master	<jmyslin2> New Class Description
	VS-SR-REQ-359973/A-Clear Exit Assist warning HMI	<jmyslin2> New Clear Exit Assist requirement
	PWRMAN-SR-REQ-359648/A-Clear Exit Assist Power Moding	<jmyslin2> New clear exit assist power mode requirement
	PWRMAN-SR-REQ-359676/A-MMInactive Sleep_Standby Clear Exit Assist Power Mode Diagram	<jmyslin2> New Clear Exit Assist power mode requirement
March 19, 2020	**1.23**	
	VS-CLD-REQ-354250/A-Clear Exit Assist Settings Client	<jmyslin2> New class description
	VS-CLD-REQ-354251/A-Clear Exit Assist Settings Server	<jmyslin2> New class description
	VS-UC-REQ-354326/A-User Enables Clear Exit Assist Setting	<jmyslin2> New use case Clear Exist Assist setting
	VS-UC-REQ-354327/A-User Disables Clear Exit Assist Setting	<jmyslin2> New Clear Exit Assist use case
	VS-TMR-REQ-354329/A-T_ClrExitAsst_Rsp	<Jmyslin2> New clear exit assist timing requirement
	VS-SR-REQ-354254/A-MyKey settings	<jmyslin2> New MyKey requirement for Clear Exit Assist
	VS-SD-REQ-354580/A-Clear Exit Assist set to Enabled via the HMI	<jmyslin2> New Sequence Diagram for Clear Exit Assist
	VS-SD-REQ-354581/A-Clear Exit Assist set to Disabled via the HMI	<jmyslin2> New Sequence Diagram for Clear Exit Assist
	VS-UC-REQ-362233/A-Activate Clear Exit Assist HMI Warning while the ignition is in Run/Acc	<jmyslin2> New Clear Exit Assist warning use case
	VS-UC-REQ-362289/A-Second Clear Exit Assist HMI Warning while the ignition is in Run/Acc	<jmyslin2> New Clear Exit Assist Warning use case
	VS-UC-REQ-362287/A-Activate Clear Exit Assist HMI Warning when in Delayed Accessory	<jmyslin2> New Clear Exit Assist Warning use case
	VS-UC-REQ-362259/A-Activate Clear Exit Assist HMI Warning when exiting the vehicle causing DA to end and CEA timer has not expired	<jmyslin2> New Clear Exit Assist warning use case
	VS-UC-REQ-362293/A-No Clear Exit Assist HMI Warning when exiting the vehicle and CEA timer expired	<jmyslin2> New Clear Exit Assist Warning use case
	VS-UC-REQ-362296/A-Activate Clear Exit Assist HMI Warning when entering and exiting the vehicle when the CEA timer has not expired	<jmyslin2> New Clear Exit Assist Warning use case
	VS-UC-REQ-362295/A-No Clear Exit Assist HMI Warning when entering and exiting vehicle with CEA timer expired	<jmyslin2> New Clear Exit Assist Warning use case
	VS-SD-REQ-361333/A-Clear Exist Assist HMI Warning Event	<jmyslin2> added Clear Exit Assist HMI warning sequence diagram
	MD-REQ-383981/A-TjaLaneBiasEnbl_D_RqMnu	jmyslin2: New MD for the Lane Biasing
	MD-REQ-383982/A-TjaLaneBiasEnbl_D_Stat	jmyslin2: New MD for the Lane Biasing
	VS-CLD-REQ-383974/A-Lane Biasing Settings Client	jmyslin2: new Lane Biasing class description
	VS-CLD-REQ-383975/A-Lane Biasing Settings Server	jmyslin2: new Lane Biasing class description
	STR-076407/I-Functional Definition (TcSE ROIN-293395)	jmyslin2: added Lane Biasing setting
	VS-FUN-REQ-383899/A-Lane Biasing Setting (Highway Assist)	jmyslin2: new Lane Biasing function
	STR-742173/A-Physical Mapping of Classes	jmyslin2: mapping of physical classes
	VS-UC-REQ-383983/A-User Enables Lane Biasing Setting	jmyslin2: new Lane Biasing use case
	VS-UC-REQ-383987/A-User Disables Lane Biasing Setting	jmyslin2: New use case for Lane Biasing
	VS-SR-REQ-384253/A-Lane Biasing Setting change	jmyslin2: new Lane Biasing requirement
	VS-TMR-REQ-384254/A-T_LaneBias_Rsp	Jmyslin2: New Lane Biasing timing requirement
	VS-REQ-384257/A-Lane Biasing set to Enabled via the HMI	jmyslin2: New Lane Biasing Sequence Diagram
	VS-REQ-384276/A-Lane Biasing set to Disabled via the HMI	jmyslin2: new lane biasing sequence diagram
November 2, 2020	**1.24**	
	VS-IIR-REQ-276699/K-Logical to Physical CAN signal mapping - Vehicle Settings	jmyslin2: added Lane Biasing signals, auto-config lighting signals
	MD-REQ-025377/O-Disp_LangSel.Rq (TcSE ROIN-297357)	jmyslin2: Added Ukrainian
	MD-REQ-025450/N-Disp_LangSel.St (TcSE ROIN-297360)	jmyslin2: added Ukrainian
	MD-REQ-399907/A-IaccCrvVCtlEnbl_D_Rq	jmyslin2: New Curve Speed Control MD

	MD-REQ-399906/A-IaccCrvVCtlEnbl_D_Stat	jmyslin2: New Curve Speed Control MD
	VS-CLD-REQ-392418/A-Curve Speed Control Settings Client	jmyslin2: New Class Description
	VS-CLD-REQ-392419/A-Curve Speed Control Settings Server	jmyslin2: new Class Description
	VS-SR-REQ-331337/B-Keypad Client supporting both Variant 1 and Variant 2 request signals at the same time	jmyslin2: Updated requirement for what to do when the new keypad signal values are set (ex set back to Null)
	VS-FUN-REQ-392197/A-Curve Speed Control - Intelligent Adaptive Cruise Control	jmyslin2: new function curve speed control
	VS-UC-REQ-399909/A-User Enables Curve Speed Control Setting	jmyslin2: New Curve Speed Control Use Case
	VS-UC-REQ-399910/A-User Disables Curve Speed Control Setting	jmyslin2: new Curve Speed Control use case
	VS-SR-REQ-400065/A-Curve Speed Control Setting change	jmyslin2: new Curve Speed Control setting
	VS-TMR-REQ-400066/A-T_CurveSpeedControl_Rsp	jmyslin2: new Curve Speed Control timing requirement
	VS-SD-REQ-400195/A-Curve Speed Control set to Enabled via the HMI	jmyslin2: New Curve Speed Control sequence diagram
	VS-SD-REQ-400196/A-Curve Speed Control set to Disabled via the HMI	jmyslin2: New Curve Speed Control sequence diagram
March 4, 2021	**1.25**	
	VS-MD-REQ-406310/A-TjaLcEnbl_D_RqMnu	jmyslin2: New signal for Assisted Lane Change
	VS-MD-REQ-406311/A-TjaLcEnbl_D_Stat	jmyslin2:J New MD for Assisted Lane Change
	VS-CLD-REQ-406297/A-Assisted Lane Change Settings Client	jmyslin2: New Assisted Lane Change Settings Client requirement
	VS-CLD-REQ-406298/A-Assisted Lane Change Settings Server	jmyslin2: new Assisted Lane Change Settings Server
	STR-076407/K-Functional Definition (TcSE ROIN-293395)	jmyslin2: added Assisted Lane Change function
	VS-FUN-REQ-406293/A-Assisted Lane Change	jmyslin2: New function for Assisted Lane Change setting
	VS-UC-REQ-406331/A-User Enables Assisted Lane Change Setting	jmyslin2: New Assisted Lane Change use case
	VS-UC-REQ-406332/A-User Disables Assisted Lane Change Setting	jmyslin2: new Assisted Lane Change setting use case
	VS-SR-REQ-406333/A-Assisted Lane Change setting change	jmyslin2: new Assisted Lane Change requirement
	VS-TMR-REQ-406334/A-T_AssistLaneChange_Rsp	jmyslin2: new Assisted Lane Change timing requirement
	VS-SD-REQ-406335/A-Assisted Lane Change set to Enabled via the HMI	jmyslin2: new Assisted Lane Change sequence diagram
	VS-SD-REQ-406336/A-Assisted Lane Change set to Disabled via the HMI	jmyslin2: new Assisted Lane Change set to Disabled via the HMI
April 23, 2021	**1.26**	
	MD-REQ-414719/A-SpeedChngChime1_D_Rq	Jmyslin2: New MD
	MD-REQ-414720/A-SpeedChngChime_D_Stat	jmyslin2: new MD
	VS-CLD-REQ-414716/A-Speed Change Chime Settings Client	jmyslin2: new class description
	VS-CLD-REQ-414718/A-Speed Change Chime Settings Server	jmyslin2: new class description
	VS-FUN-REQ-414711/A-Speed Change Chime	jmyslin2: new function for Assisted Lane Change
	VS-UC-REQ-414846/A-User Enables Speed Change Chime Setting	jmyslin2: new use case
	VS-UC-REQ-414851/A-User Disables Speed Change Chime Setting	jmyslin2: New use case
	VS-SR-REQ-414852/A-Speed Change Chime setting change	jmyslin2: new requirement
	VS-TMR-REQ-414853/A-T_SpeedChangeChime_Rsp	jmyslin2: new timing requirement
	VS-SD-REQ-414855/A-Speed Change Chime set to Enabled via the HMI	jmyslin2: new sequence diagram
	VS-SD-REQ-414856/A-Speed Change Chime set to Disabled via the HMI	jmyslin2: new sequence diagram
July 15, 2021	**1.27**	
	MD-REQ-414719/B-SpeedChngChime_D_Rq	jmyslin2: clarification only. Removed the 1 from the signal name
	MD-REQ-426848/A-LghtAmbRqSrc_B_Stat	jmyslin2: new MD
	IFS-MMCAN-FUR-REQ-015114/E-Sending of Request and Response (TcSE ROIN-66252-1)	jmyslin2: added clarification on 100 msec request/response
	VS-FUN-REQ-025218/D-Set Temperature Units (TcSE ROIN-292331-1)	jmyslin2: updated requirement for a note on the Phoenix architecture

	VSv2-IIR-REQ-192188/B-Ambient Lighting Settings Client_Tx - Variant 2	jmyslin2: added LghtAmbRqSrc_B_Stat MD
	VS-SR-REQ-192238/C-Ambient Lighting Request and Response signals	jmyslin2: Updated requirement. For FNV3 when a RACM can controls ambient lighting too the part deleted should not be supported.
	VS-SR-REQ-426847/A-LghtAmbRqSrc_B_Stat signal usage	jmyslin2: new requirement for Phoenix ambient lighting for the PDC
	VS-FUN-REQ-025239/D-Set 12/24 hour mode setting (TcSE ROIN-292339-1)	jmyslin2: Updated with a note on the Phoenix architecture
	ENMEM-REQ-105569/F-Driver Profiles Deleted During Master Reset	MBORREL4: Updated for NFC
	VS-FUN-REQ-334503/B-Drive History Reset	jmyslin2: update function with a note on the Phoenix architecture
	VS-FUN-REQ-333193/B-Low Battery Alert	jmyslin2: updated with a note regarding the Phoenix architecture
	VS-SR-REQ-414852/B-Speed Change Chime setting change	jmyslin2: clarification only. Removed 1 from SpeedChngChime1_D_Rq signal name
	VS-TMR-REQ-414853/B-T_SpeedChangeChime_Rsp	jmyslin2: Clarification only. Removed 1 from signal SpeedChngChime1_D_Rq so is now SpeedChngChime_D_Rq
	VS-SD-REQ-414855/B-Speed Change Chime set to Enabled via the HMI	jmyslin2: clarification only, removed 1 from signal name
	VS-SD-REQ-414856/B-Speed Change Chime set to Disabled via the HMI	jmyslin2: clarification only, removed 1 from signal name
August 13, 2021	**1.28**	
	VS-FUR-REQ-025354/B-Master Reset Completion Time Limit (TcSE ROIN-298041-1)	jmyslin2: updated requirement per Hassan Hussein from the APIM PDC team
	VS-FUR-REQ-433164/A-Master Reset impact to VIP Cluster software (Phoenix PDC only)	jmyslin2: new requirement for Phoenix PDC
October 7, 2021	**1.29**	
	VS-IIR-REQ-276699/L-Logical to Physical CAN signal mapping - Vehicle Settings	jmyslin2: added a couple new signals on the logical to physical CAN signal mapping
	MD-REQ-222036/C-FactoryReset.St	jmyslin2: added clarfication to the signal MD
	VS-FUN-REQ-025341/F-Master Reset_Super Reset - APIM (TcSE ROIN-296290-1)	jmyslin2: updated Master Reset function name to include Super Reset
	VS-UC-REQ-025344/B-User Decides to Restore Module Back to its Original Factory State (TcSE ROIN-298055)	<jmyslin2 / Jaskaran Mann> updated post condition
	VS-UC-REQ-025347/B-User Decides to Reboot the Module (TcSE ROIN-298056)	jmyslin2: removed reboot warngin HMI per Zhaonon Liu and Hassan Hussein
	VS-UC-REQ-025348/B-User Cancels via the {Reboot Warning} HMI - DELETED (TcSE ROIN-298060)	jmyslin2: deleted requirement per Zhaonan Liu and Hassan Hussein
	VS-UC-REQ-025349/C-Master Reset (TcSE ROIN-296294)	jmyslin2 / Jaskaran Mann: Re-worded to be more clear
	VS-SR-REQ-213252/C-Master Reset request using the signal FactoryReset_Rq	jmyslin2: updated to cover sending the FactoryReset_Rq signals.
	VS-FUR-REQ-136296/C-Master Reset Language	<jmyslin2> Per Jaskaran Mann, this language requirement does not apply to the Phoenix a
	VS-FUR-REQ-025351/B-Secure Deletion (TcSE ROIN-298038-1)	jmyslin2: per Jaskaran Mann, this requirement is not applicable to APIM PDC on the Phoenix architecture
	VS-FUR-REQ-025352/B-Secure Data Storage - Copies (TcSE ROIN-298039-1)	jmyslin2: Per Jaskaran Mann, this requirement is not applicable to APIM PDC on the Phoenix architecture
	VS-FUR-REQ-025354/C-Master Reset Completion Time Limit (TcSE ROIN-298041-1)	jmyslin2: Per Jashkarn Mann, updates to clarify the requirement
	VS-FUR-REQ-025356/B-Clean Cache (TcSE ROIN-298043-1)	jmyslin2: Per Jaskaran Mann, deleted this requirement for APIM PDC
	VS-FUR-REQ-025360/B-Dynamic/Manual Registration to Master Reset Service (TcSE ROIN-298047-1)	jmyslin2: updated requirement for Phoenix per Hassan Hussein from the software team
	VS-FUR-REQ-025363/B-Baseline OTA Data (TcSE ROIN-298050-1)	jmyslin2: Per Jaskaran Mann, this requirement is not applicable to APIM PDC
	VS-FUR-REQ-025364/B-System Upgrades and/or Languages Not Removable (TcSE ROIN-298051-1)	jmyslin2: Per Jaskaran Mann, this requirement is not applicable to APIM PDC on the Phoenix architecture.
	VS-FUR-REQ-025365/B-Driver Restriction 2 (TcSE ROIN-298053)	jmyslin2: no update, ignore revision
	VS-F-REQ-443897/A-Master Reset - AOS Reset Types to Perform (Phoenix)	jmyslin2: new requirement for Phoenix architecture master reset
	VS-F-REQ-446837/A-Master Reset Security Specification	jmyslin2: referenced the Master Reset security specification as those requirements need too met

November 5, 2021	**1.30**	
	VS-SR-REQ-455577/A-Logical to Physical CAN signal Mapping - Vehicle Settings	jmyslin2: Logical to Physical made in the requirement format so APIM Phoenix team can import to JIRA
	MD-REQ-455277/A-SodChimeEnbl_D_Rq	jmyslin2: new MD for blind spot chime
	MD-REQ-455278/A-SodChimeEnbl_D_Stat	jmyslin2: new MD for blind spot chime
	MD-REQ-436702/A-BrkMaintMde_D_Rq	jmyslin2: new MD
	MD-REQ-436497/A-PrkBrkMsgTxt_D_Rq	jmyslin2: new MD
	MD-REQ-436522/A-TrnPrkSys_D_Actl	jmyslin2: new MD
	MD-REQ-436524/A-TrnNtrlTowCmd_D_Actl	jmyslin2: new signal MD
	VS-CLD-REQ-450417/A-Blind Spot Chime Settings Client	jmyslin2: new class description for Blind Spot Chime Settings Client
	VS-CLD-REQ-450418/A-Blind Spot Chime Settings Server	jmyslin2: new class description for Blind Spot Chime Settings Server
	VS-CLD-REQ-436705/A-Brake Maintenance Mode Client	jmyslin2: new class description
	VS-CLD-REQ-436706/A-Brake Maintenance Mode Server	jmyslin2: new class description
	VS-FUN-REQ-450397/A-Blind Spot Information System - Chime	jmyslin2: new function for blind spot information chimes
	VS-UC-REQ-455297/A-User Enables Blind Spot Chime Setting	jmyslin2: new use case
	VS-UC-REQ-455298/A-User Disables Blind Spot Chime Setting	jmyslin2: new use case
	VS-SR-REQ-455317/A-Blind Spot Chime setting change	jmyslin2: new requirement for Blind Spot Chime setting change
	TMR-REQ-455337/A-T_BlindSpotChime_Rsp	jmyslin2: new timing requirement for Blind Spot Chime
	VS-SD-REQ-455357/A-Blind Spot Chime set to Enabled via the HMI	jmyslin2: new sequence diagram
	VS-SD-REQ-455377/A-Blind Spot Chime set to Disabled via the HMI	jmyslin2: new sequence diagram
	VS-FUN-REQ-436523/A-Brake Maintenance Mode	New function
	VS-UC-REQ-436717/A-User Enables Brake Maintenance Mode	jmyslin2: new use case
	VS-UC-REQ-436718/A-User Disables Brake Maintenance Mode	jmyslin2: new use case
	VS-SR-REQ-437424/A-Pre-conditions for Enabling Brake Maintenance Mode	jmyslin2: New requirement for brake maintenance mode
	VS-SR-REQ-437481/A-PrkBrkMsgTxt_D_Rq - status of Brake Maintenance Mode	jmyslin2: New requirement for Brake Maintenance Mode
	VS-SR-REQ-437480/A-Brake Maintenance Mode settings change (request to enter or exit Brake Maintenance Mode)	jmyslin2: new requirement for Brake Maintenance Mode
	VS-TMR-REQ-437497/A-T_BrakeMaintenanceMode_Rsp	jmyslin2: new Brake Maintenance Mode timing requirement
	VS-SD-REQ-437498/A-Enter Brake Maintenance Mode / Enable via the HMI	jmyslin2: new Brake Maintenance Mode sequence diagram
	VS-SD-REQ-437499/A-Exit Brake Maintenance Mode / Disable via the HMI	jmyslin2: new Brake Maintenance Mode sequence diagram
February 24, 2022	**1.31**	
	VS-SR-REQ-455577/B-Logical to Physical CAN signal Mapping - Vehicle Settings	jmyslin2: added RACM ambient lighting CAN signals
	STR-970538/B-Logical to Physical CAN signal Mapping - Master Reset	jmyslin2: corrected typo
	VS-SR-REQ-362537/B-Master Reset Setting when MyKey is active	jmyslin2: added comments regarding if APIM doesn't do the pre-conditions for master reset then this doesn't apply
	VS-FUN-REQ-474181/A-Master Reset_Super Reset - APIM variant 2 (Embedded Modem Reset Server does the Pre-Conditions)	jmyslin2: updates to Master Reset if the ECG does the master reset pre-conditions instead of APIM
	VSv2-UC-REQ-474223/A-User Performs a Master Reset / Super Reset	jmyslin2: new use case for master reset variant 2
	VSv2-UC-REQ-474204/A-User decides to try to perform a Master Reset while driving (Driver Restrictions = ON)	jmyslin2: new use case for master reset variant 2
	VSv2-UC-REQ-474205/A-Master Reset Started and the User Drives Off (Driver Restriction = ON)	jmyslin2: new use case for Master Reset variant 2
	VSv2-UC-REQ-474224/A-Loss of Power While Performing Master Reset	jmyslin2: new use case for master reset variant 2
	VSv2-UC-REQ-474225/A-Failure to Remove/Disconnect Devices	jmyslin2: new use case for master reset variant 2
	VSv2-UC-REQ-474226/A-User Decides to Reboot the Module	jmyslin2: new use case for master reset variant 2
	VSv2-SD-REQ-474227/A-Master Reset - CAN interface for external modules	jmyslin2: new sequence diagram for Master Reset variant 2

	STR-677483/B-Use Cases	jmyslin2: no update, rev in error
March 11, 2022	**1.32**	
	VS-SR-REQ-455577/C-Logical to Physical CAN signal Mapping - Vehicle Settings	jmyslin2: Updated with new feature CAN signals
	MD-REQ-457737/A-ThemSel_D_Stat	jmyslin2: new MD for theme menu status
	VS-CLD-REQ-457757/A-Selectable Theme HMI Output Client	jmyslin2: new Selectable Theme Client class description
	VS-CLD-REQ-458197/A-Selectable Theme Client	jmyslin2: new class description
	VS-CLD-REQ-457777/A-Selectable Theme Server	jmyslin2: new Selectable Theme Server class description
	VS-FUN-REQ-457677/A-Selectable Theme display	jmyslin2: new function for customer selectable themes
	VS-CLD-REQ-457757/A-Selectable Theme HMI Output Client	jmyslin2: new Selectable Theme Client class description
	VS-CLD-REQ-458197/A-Selectable Theme Client	jmyslin2: new class description
	VS-CLD-REQ-457777/A-Selectable Theme Server	jmyslin2: new Selectable Theme Server class description
	MD-REQ-457737/A-ThemSel_D_Stat	jmyslin2: new MD for theme menu status
	MD-REQ-458218/A-ThemSel_D_Rq	jmyslin2: new MD
	VS-UC-REQ-458157/A-User Selects a Theme	jmyslin2: new use case user selects a theme
	VS-UC-REQ-458177/A-User selects Change with Drive Mode (if supported)	jmyslin2: new use case user selects change with drive mode
	VS-REQ-484544/A-Change with Drive Mode Not Support for Theme (if applicable)	jmyslin2: new requirement for Theme's
	VS-SR-REQ-458237/A-Selectable Theme change	jmyslin2: new requirement
	VS-SR-REQ-458277/A-HMI Output for the Theme selection	jmyslin2: new requirement
	VS-SR-REQ-458297/A-Default - Theme selection	jmyslin2: new requirement
	VS-SR-REQ-458317/A-Theme retention between power mode cycles	jmyslin2: new requirement
	VS-TMR-REQ-464217/A-T_ThemSel_Rsp	jmyslin2: new timing requirement for Theme selection
	VS-SD-REQ-464197/A-New Theme selected	jmyslin2: theme sequence diagram added
May 2, 2022	**1.33**	
	MD-REQ-025377/P-Disp_LangSel.Rq (TcSE ROIN-297357)	jmyslin2: added Romanian language
	MD-REQ-025450/O-Disp_LangSel.St (TcSE ROIN-297360)	jmyslin2: added Romanian language
	VS-UC-REQ-362233/B-Activate Clear Exit Assist HMI Warning while the ignition is in Run/Acc	jmyslin2: added note, no content change
June 17, 2022	**1.34**	
	VS-SR-REQ-507539/A-Ambient Lighting Insensity - variant 2	jmyslin2: new requirement for ambient lighting intensity per the feature owner on what the FNV2 and FNV3 BCM will support
	VS-SR-REQ-359973/B-Clear Exit Assist warning HMI	jmyslin2: updated requirement for error handling if signal missing for 5 seconds during a warning event
Mar 2, 2023	**1.35**	
	VSv2-FUN-REQ-131582/B-Charge Cord Unlock	Yzhan482: Update Charge Cord Unlock

Table of Contents

1 Architectural Design

1.1 Interface Requirements

1.1.1 VS-SR-REQ-455577/C-Logical to Physical CAN signal Mapping - Vehicle Settings

This Vehicle Settings & Settings in Centerstack deployment table maps the Settings logical signals to the physical CAN signals.

Note: This is for reference only. If there is a conflict between the name in the CAN signal name column and what is found in the actual CAN dB then the CAN dB takes precedent. Please bring to Ford's attention if there is a conflict.

Logical Signal Name	CAN signal name	Comments
ChrgCrdLck_D_Stat	ChrgCordLck_D_Stat	
ChargePortUnlock_Rq	ChrgCordUnlock_B_Rq	
AssocConfirm_D_Actl	AssocConfirm_D_Actl	
CntrStkKeycodeActl	CntrStkKeycodeActl	
Cntrstk_D_RqAssoc	Cntrstk_D_RqAssoc	
ChargePortLightRing_St	CenterStackRing_D_Actl – Variant 1 ChrgStatDsply_D_Rq – Variant 2	
LightAmbIntsty_No_Actl	LightAmbIntsty_No_Actl	
LightAmbColor_No_Actl	LightAmbColor_No_Actl	
LightAmbIntsty_No_Rq	LightAmbIntsty_No_Rq (APIM Tx)	
	LghtAmbIntns_No_Rq (RACM Tx)	
LightAmbColor_No_Rq	LightAmbColor_No_Rq (APIM Tx)	
	LghtAmbColr_No_Rq (RACM Tx)	
Disp_Temperature.St	Mc_VehUnitTempUsrSel_St	
Disp_Temperature.Rq	Disp_VehUnitTempUsrSel	
ValetMode_St	ValetMode_D_Stat	
TimeAdjust.Rq	SetTimeFormat	
VehTimeFormat.St	Mc_VehFormatUsrSel_St	
Bezel_Beeps_Supported.St	Bezel_Beeps_Supported	
Bezel_Beeps.Rq	Bezel_Beeps_Rq	
Bezel_Beeps.st	Bezel_Beep_St	
LanguageUpdate.Rsp	LangUpdate_Rsp – Cluster Disp_LangUpdate_Rsp – Infotainment System Master (ex APIM, CHR…)	
DISP_LangSel.St	Disp_LangSel_St – Infotainment (APIM, CHR, CTR..) Disp_LangSel2_St – Infotainment (APIM, CHR, CTR..) Mc_VehLangUsrSel_St - Cluster	
DISP_LangSel.Rq	Disp_LangSel_Rq – Infotainment (APIM, CHR, CTR..) Disp_LangSel2_Rq - Infotainment (APIM, CHR, CTR..) Mc_LangSel_Rq - Cluster McLangSel2_Rq - Cluster	
FactoryReset.St	FactoryReset_St – ECG Tx SDARS_Factory_Reset_St – AHU Tx	
FactoryReset_Rq	FactoryReset_Rq – TCU SDARS_FactoryReset_Rq – AHU / DSP_AMP (more than just SDARS – See SPSS)	
Vehicle_Speed.St	Veh_V_ActlEng	
Vehicle_Speed_QF	VehVActlEng_D_Qf	
DISP_Mile_Kilometers.Rq	Disp_VehUntTripCoUsrSel	
Disp_Miles_Kilometers.St	Mc_VehUntTrpCoUsrSel_St	
HMIAudioMode	HMI_HMIMode_St	
KeyPadCodeDgtX_D_Stat	KeyPadCodeDgtX_D_Stat (were X represents 1 – 7 for the 7 signals)	
CntrStk2_D_RqAssoc	CntrStk2_D_RqAssoc	

LongTermReset_B_RqMnu	LongTermReset_B_RqMnu (older SPSS specifications have the logical signal as LongTermReset_B2_Rq)	
BattTracLoThres_D_Stat	BattTracLoThres_D_Stat	
BattTracLoThres_D_Rq	BattTracLoThres_D_Rq	
SpeedoMajorUnit_D_Confg	SpeedoMajorUnit_D_Confg	
PrplSnd_D_Rq	PrplSnd_D_Rq	
PrplSnd_D_Stat	PrplSnd_D_Stat	
LghtAmbDrvMde_D_Rq	LghtAmbDrvMde_D_Rq	
LghtAmbDrvMde_B_Stat	LghtAmbDrvMde_B_Stat	
EcoIdl_D_Rq	EcoIdl_D_Rq	
EcoIdl_D_Stat	EcoIdl_D_Stat	
EngExhMdeHrEnbl_D_Rq	EngExhMdeHrEnbl_D_Rq	
EngExhMdeHrEnbl_D_Stat	EngExhMdeHrEnbl_D_Stat	
EngExhMdeHrStrt_D_Rq	EngExhMdeHrStrt_D_Rq	
EngExhMdeHrStrt_D_Stat	EngExhMdeHrStrt_D_Stat	
EngExhMdeHrEnd_D_Rq	EngExhMdeHrEnd_D_Rq	
EngExhMdeHrEnd_D_Stat	EngExhMdeHrEnd_D_Stat	
TurnAsstSwtch_D_Stat	TurnAsstSwtch_D_Stat	
OrtaSwtchLamp_B_Rq	OrtaSwtchLamp_B_Rq	
ClrExitAsstEnbl_D_RqMnu	ClrExitAsstEnbl_D_RqMnu	
ClrExitAsst_D_Stat	ClrExitAsst_D_Stat	
ClrExitAsstMsgTxt2_D_Rq	ClrExitAsstMsgTxt2_D_Rq	
ClrExitAsstActv_B_Rq	ClrExitAsstActv_B_Rq	
TjaLaneBiasEnbl_D_RqMnu	TjaLaneBiasEnbl_D_RqMnu	
TjaLaneBiasEnbl_D_Stat	TjaLaneBiasEnbl_D_Stat	
GfhbMnu_D_Rq	GfhbMnu_D_Rq	
AhbcMnu_D_Rq	AhbcMnu_D_Rq	
IaccCrvVCtlEnbl_D_Rq	N/A	At time this was updated the feature was still not supported, and might not be supported in the future
IaccCrvVCtlEnbl_D_Stat	N/A	At time this was updated the feature was still not supported, and might not be supported in the future
TjaLcEnbl_D_RqMnu	TjaLcEnbl_D_RqMnu	
TjaLcEnbl_D_Stat	TjaLcEnbl_D_Stat	
SodChimeEnbl_D_Rq	SodChimeEnbl_D_Rq	
SodChimeEnbl_D_Stat	SodChimeEnbl_D_Stat	
SpeedChngChime_D_Rq	SpeedChngChime_D_Rq	
SpeedChngChime_D_Stat BrkMaintMde_D_Rq	SpeedChngChime_D_Stat BrkMaintMde_D_Rq	
PrkBrkMsgTxt_D_Rq	PrkBrkMsgTxt_D_Rq	
TrnPrkSys_D_Actl	TrnPrkSys_D_Actl	
TrnNtrlTowCmd_D_Actl	TrnNtrlTowCmd_D_Actl	
ThemSel_D_Stat	ThemSel_D_Stat	

Note: for Phoenix APIM PDC the Cluster and SYNC are integrated. Those CAN signal between them are not applicable if no other modules receive them except the Cluster and SYNC modules in the CAN dB.

1.1.2 MD-REQ-243934/B-Disp_Miles_Kilometers.St

Message Type: Status

Signal from the Vehicle Settings Server stating what the setting is for Distance units.

Logical Signal Name	Literals	Value	Description
Disp_Miles_Kilometers.St	Metric (kilometers)	0x0	
	Imperial (miles)	0x1	

1.1.3 MD-REQ-025516/C-DISP_Miles_Kilometers_Rq (TcSE ROIN-273811)

Message Type: Request

This method is used to request a status change of Distance Unit.

Name	Literals	Value	Description
Mode	-	-	
	Metric	0x0	The parameter "Metric" is used to request the distance unit kilometers.
	Imperial	0x1	The parameter "Imperial" is used to request the distance unit miles.
	Inactive	0x3	

1.1.4 MD-REQ-276458/B-Vehicle_Speed.St

Message Type: Status

Signal with the current status of the Vehicle Speed

Logical Signal Name	Literals	Value	Description
Vehicle_Speed.St	See info-CAN database for signal details	See info-CAN database for signal details	

1.1.5 MD-REQ-276459/A-Vehicle_Speed_QF

Message Type: Status

Signal with the Vehicle Speed Quality Factor

Logical Signal Name	Literals	Value	Description
Vehicle_Speed_QF	Faulty	0x0	
	No_Data_Exists	0x1	
	Not_Within_Specifications	0x2	
	OK	0x3	

1.1.6 MD-REQ-213361/C-FactoryReset_Rq

Message Type: Request

Signal sent by the Master Reset Client to initiate a Master Reset

Logical Signal Name	Literals	Value	Description
FactoryReset_Rq	Inactive	0x0	
	ResetFactoryDefaults	0x1	

1.1.7 MD-REQ-222036/C-FactoryReset.St

Message Type: Status

Signal sent by the Master Reset components (ex AHU) indicating that the master reset default settings were restored for a master reset event

Logical Signal Name	Literals	Value	Description
FactoryReset.St	Inactive	0x0	
	FactoryDefaultsRestored	0x1	
	Reserved	0x2	
	Reserved	0x3	

1.1.8 MD-REQ-025377/P-Disp_LangSel.Rq (TcSE ROIN-297357)

Message Type: Request

This Signal requests the change of the Language displayed.

Name	Value	Description
Disp_LangSel.Rq	-	
	int *Language* 0x00 Invalid 0x01 Unknown 0x02 UK English 0x03 NA English 0x04 German 0x05 Italian 0x06 EU French 0x07 Cana French 0x08 EU Spanish 0x09 Mex Spanish 0x0A Turkish 0x0B Russian 0x0C Dutch 0x0D Flemish 0x0E Polish 0x0F Czech 0x10 Greek 0x11 Hungarian 0x12 Swedish 0x13 Danish	Request from Vehicle Settings Client to update Language displayed.

	0x14 Norwegian 0x15 Finish 0x16 EU Portuguese 0x17 Braz Portuguese 0x18 Japanese 0x19 AU_English 0x1A Korean 0x1B Mandarin Chinese 0x1C Taiwanese 0x1D Arabic 0x1E Slovak 0x1F Thai 0x20 Indian English 0x21 Ukrainian 0x22 Romanian	

Note:
For HS3 Language Request signals 0x191 Disp_LangSel.Rq (ex. APIM/CHR) and 0x193 McLangSel.Rq (ex. Cluster) they are 5 bit signals and maxed out with 0x1F Thai. The new Language Request signals created Disp_LangSel2.Rq and McLangSel2.Rq are bigger in size (7 bits) to allow for more encodings but still include all the encodings the 5 bit signals had.

If the transmitter of the Infotainment language request signal supports one common CAN dB then infotainment language request client for a language request will send both language request signals 0x191 Disp_LangSel.Rq 5 bit signal and Disp_LangSel2.Rq 7 bit signal set to the language requested.

- If a language request is needed for an encoding that is supported by Disp_LangSel2.Rq but not Disp_LangSel.Rq (ex Indian English) then only Disp_LangSel2.Rq would request the language.

If the transmitter of the infotainment language request signals has a CAN dB that only supports one Language request signal then only that language request signal would be supported (either support just the 5 bit Disp_LangSel.Rq or 7 bit Disp_LangSel2.Rq signal).

The receiver of the infotainment language request signal (ex Cluster) will have its CAN dB set-up so only one language request signal is received in its CAN dB for a particular program (will only receive the 5 bit Disp_LangSel.Rq signal or 7 bit Disp_LangSel2.Rq signal).

- Exception: If the Ford D&R for the receiver of the infotainment language request signal has explicitly asked for a CAN dB with both infotainment language request signals to support common software across multiple programs (0x191 Disp_LangSel.Rq 5 bit signal and Disp_LangSel2.Rq 7 bit signal) then the receiver of those signals will need to have a configuration bit such that only one of the signals can be used at a time (ex. program X only uses Disp_LangSel2.Rq while program Y only uses Disp_LangSel.Rq).

The Cluster transmitter of the language request signal will support only one language request signal in its CAN dB for a particular program (will only send the 5 bit McLangSel.Rq or 7 bit McLangSel2.Rq signal). The other language signal not used would be set to 0x0 Inactive/Invalid.

- Exception: If the Ford D&R for the transmitter of the Cluster language request signals (McLangSel.Rq 5 bit signal and McLangSel2.Rq 7 bit signal) has explicitly asked for a CAN dB with both cluster language request signals to support common software across multiple programs then the Cluster will need to have a configuration bit such that only one of the signals can be used at a time.

- If in an error condition the receiving module gets both language request signals from the same module at the same time then the last language request signal received set to a language would be supported. The Cluster Ford D&R or supplier needs to bring to the CAN dB teams attention if their module is receiving both language request signals if they are only supposed to be receiving one language request signal so this can be corrected in their CAN dB.

- The Cluster is only supposed to send one language request at a time and that is what receiver would expect. If the receiver of 0x193 McLangSel.Rq or McLangSel2.Rq gets both signal set to a language at the same time then bring the issue to the Cluster D&R's attention so this could be corrected.

Reference the CAN dB for the latest and in case any conflict in signal names the CAN dB takes precedent.

1.1.9 MD-REQ-025450/O-Disp_LangSel.St (TcSE ROIN-297360)

Message Type: Status

This Signal gives status of the Language displayed.

Name	Value	Description
Disp_LangSel.St	-	
	int *Language* 0x00 Invalid 0x01 Unknown 0x02 UK English 0x03 NA English 0x04 German 0x05 Italian 0x06 EU French 0x07 Cana French 0x08 EU Spanish 0x09 Mex Spanish 0x0A Turkish 0x0B Russian 0x0C Dutch 0x0D Flemish 0x0E Polish 0x0F Czech 0x10 Greek 0x11 Hungarian 0x12 Swedish 0x13 Danish 0x14 Norwegian 0x15 Finish 0x16 EU Portuguese 0x17 Braz Portuguese 0x18 Japanese 0x19 AU_English 0x1A Korean 0x1B Mandarin Chinese 0x1C Taiwanese 0x1D Arabic 0x1E Slovak 0x1F Thai 0x20 Indian English 0x21 Ukrainian 0x22 Romanian	Status update from the Vehicle Language settings server stating what the current language setting is for the Vehicle Language Server which sends out the status message.

Note:
The Infotainment Language status HS3 signal 0x229 Disp_LangSel.St (ex APIM, CHR, MFD…) is a 5 bit signal and maxed out with 0x1F Thai. The new Infotainment Language Status HS3 signal is Disp_LangSel2.St and is bigger in size (7 bits) to allow for more encodings but still include all the encodings the 5 bit signals had.

If the transmitter of the Infotainment Language status signal supports one common CAN dB then the transmitter of the infotainment language status signal will have to support sending both language status signals Disp_LangSel.St 5 bit signal and Disp_LangSel2.St 7 bit signal with both status signals set to the active language.

- If Disp_LangSel2.St is set to a language that Disp_LangSel.St does not have an encoding for then Disp_LangSel.St would be set to 0x0 Inactive (ex. if Indian English was the active language).

If the transmitter of the Infotainment Language status signal has a CAN dB that only supports one language status signal then only that language status signal would be supported (either support just the 5 bit Disp_LangSel.St or 7 bit Disp_LangSel2.St).

The receiver of the infotainment language status signals (Disp_LangSel.St 5 bit signal and Disp_LangSel2.St 7 bit signal) should only receive one of the language status signals in their CAN dB.

- If the Ford D&R or supplier of a module receiving the infotainment language status message notices that both infotainment language status signals Disp_LangSel.St 5 bit signal and Disp_LangSel2 7 bit signal in their CAN dB bring to Ford's attention as the CAN dB would need to be corrected.
    - Exception: If the Ford D&R for the receiver of the infotainment language signal has explicitly asked for a CAN dB with both infotainment language signals to support common software across multiple programs (Disp_LangSel.St 5 bit signal and Disp_LangSel2.St 7 bit signal) then the receiver of those signals will need to have a configuration bit such that only one of the signals is can be used at a time (ex. program X only uses Disp_LangSel2.st and program Y only uses Disp_LangSel.St).

The Cluster language status HS3 signal 0x2FD Mc_VehLangUsrSel.St is a 6 bit signal and is not currently maxed out so there is only one Cluster language status signal at the time this was written.

As a general practice if the receiving module just needs to receive one language status signal in a vehicle to know what language to be used then the Cluster Mc_VehLangUsrSel.St signal should be used.

Reference the CAN dB for the latest and in case any conflict in signal names the CAN dB takes precedent.

1.1.10 MD-REQ-025452/B-LanguageUpdate.Rsp (TcSE ROIN-297376)

Message Type: Response

Response signal from Vehicle settings Language server to the Vehicle settings Client in response to the Disp_LangSel.Rq method. Signal informs the Client if the Language that was requested to change is supported by that server or not. This signal allows the Client to take an action if the language is not supported by the server.

Logical Signal Name	Literals	Value	Description
LanguageUpdate.Rsp	Inactive	0x0	
	Language_Updated	0x1	
	Language_Not_Supported	0x2	

1.1.11 MD-REQ-025379/B-Bezel_Beeps.Rq (TcSE ROIN-297362)

Message Type: Request

This signal requests to change the Bezel Beeps settings.

Logical Signal Name	Literals	Value	Description
Bezel_Beeps.Rq	Inactive	0x0	

	Enabled	0x1	
	Disabled	0x2	

1.1.12 MD-REQ-025385/B-Bezel_Beeps.St (TcSE ROIN-297423)

Message Type: Status

This signal provides the status of Bezel Beeps settings (Enabled/ Disabled).

Logical Signal Name	Literals	Value	Description
Bezel_Beeps.St	Invalid	0x0	
	Enabled	0x1	
	Disabled	0x2	

1.1.13 MD-REQ-025386/B-Bezel_Beeps_Supported.St (TcSE ROIN-297429)

Message Type: Status

Signal from the Vehicle Settings Beep Server telling the Vehicle Settings Beep Client if Bezel Beeps are supported or not supported

Logical Signal Name	Literals	Value	Description
Bezel_Beeps_Supported.St	Invalid	0x0	
	Supported	0x1	
	Not Supported	0x2	

1.1.14 MD-REQ-025381/B-TimeAdjust.Rq (TcSE ROIN-297370)

Message Type: Request

This signal requests to change the setting for 12/24 hour mode.

Logical Signal Name	Literals	Value	Description
TimeAdjust.Rq	Inactive	0x0	
	12h_mode	0x1	
	24h_mode	0x2	

1.1.15 MD-REQ-025462/B-VehTimeFormat.St (TcSE ROIN-297375)

Message Type: Status

Signal by the Vehicle Settings Server to provide the status of the 12/24 hour time mode setting.

Logical Signal Name	Literals	Value	Description
VehTimeFormat.St	Invalid	0x0	
	12h_mode	0x1	
	24h_mode	0x2	

1.1.16 MD-REQ-097285/C-ValetMode_St

Message Type: Status

Signal used to indicate the Valet Mode Status.

Logical Signal Name	Literals	Value	Description
ValetMode_St	Invalid / Null	0x0	
	OFF	0x1	
	ON	0x2	
	Not Used	0x3	

1.1.17 MD-REQ-025380/B-Disp_Temperature.Rq (TcSE ROIN-297369)

Message Type: Request

This signal requests to change the temperature units displayed.

Logical Signal Name	Literals	Value	Description
DISP_Temperature.Rq	Celsius	0x0	
	Fahrenheit	0x1	
	Inactive	0x3	

1.1.18 MD-REQ-025453/B-Disp_Temperature.St (TcSE ROIN-297374)

Message Type: Status

Signal from the Vehicle Settings Server stating what the setting is for temperature units.

Logical Signal Name	Literals	Value	Description
DISP_Temperature.St	Celsius	0x0	
	Fahrenheit	0x1	

1.1.19 MD-REQ-025388/C-LightAmbColor_No_Rq (TcSE ROIN-297407)

Message Type: Request

This signal requests selection of color for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq	Invalid / No Data Exits	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	

	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	
	Reserved	0x11 to 0xFF	

1.1.20 MD-REQ-025389/C-LightAmbIntsty_No_Rq (TcSE ROIN-297420)

Message Type: Request

This signal requests selection of intensity for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Rq	0% Intensity / Ambient Lighting OFF	0x0	
	1% Intensity	0x1	
	2% Intensity	0x2	
	cont.		
	100% Intensity	0x64	
	Reserved	0xFF	

1.1.21 MD-REQ-025456/D-LightAmbColor_No_Actl (TcSE ROIN-297421)

Message Type: Status

This signal from Ext Vehicle Settings Function to the Vehicle Settings Client gives the status of the ambient lighting color.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl	OFF / Inactive / No Data Exists	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Cont	0x04 – 0xFF	separate document defines what the Color ID's are

1.1.22 MD-REQ-025457/D-LightAmbIntsty_No_Actl (TcSE ROIN-297422)

Message Type: Status

This signal from the Ext Vehicle Settings Function to the Vehicle Settings Client gives the status of Ambient Lighting Intensity

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Actl	0% Intensity / Ambient Lighting OFF	0x00	
	1% intensity	0x01	
	2% intensity	0x02	
	cont		
	100% intensity	0x64	
	Reserved	0x65 – 0xFF	

1.1.23 MD-REQ-192193/C-LightAmbColor_No_Actl - Variant 2

Message Type: Status

This signal gives status of ambient lighting color (variant 2) status.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Cont.	0x04 – 0xFF	Reference separate document with the ambient light Colors and Color ID's used

1.1.24 MD-REQ-192194/C-LightAmbIntsty_No_Actl - Variant 2

Message Type: Status

This signal gives the status of Ambient Lighting Intensity.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Actl – Variant 2	0% Intensity / Ambient Lighting OFF	0x00	
	1% Intensity / Ambient Lighting ON	0x01	
	2% Intensity / Ambient Lighting ON	0x02	
	3% Intensity / Ambient Lighting ON	0x03	
	cont.		
	100% Intensity / Ambient Lighting ON	0x64	

1.1.25 MD-REQ-192189/B-LightAmbColor_No_Rq - Variant 2

Message Type: Request

The Ambient Lighting Client uses this signal to request the color selection for ambient lighting from the Ambient Lighting Server.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	

	Color ID16	0x10	
	Reserved	0x11 to 0xFF	

1.1.26 MD-REQ-192190/B-LightAmbIntsty_No_Rq - Variant 2

Message Type: Request

This signal requests the selection of intensity for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Rq – Variant 2	Inactive / No Data Exits	0x00	
	0% Intensity / Ambient Lighting OFF	0x01	
	1% Intensity	0x02	
	2% Intensity	0x03	
	3% Intensity	0x04	
	cont.	…	
	100% Intensity	0x65	
	Ambient Lighting Turn ON	0x66	

1.1.27 MD-REQ-025392/C-ChargePortLightRing_St (TcSE ROIN-270412)

If the CharePortLightRingClient supports both variants of the Charge Port Light Ring signals below then when selecting Charge Port Light Ring HMI the signal that will get updated will depend on what variant Charge Port Light Ring is configured for.

Variant 1 of ChargePortLightRing_St:
CAN Signal Name: CenterStackRing_D_Actl

Value	Equal
0x0	Null
0x1	Off
0x2	On
0x3	LimitedOn

Variant 2of ChargePortLightRing_St:
CAN Signal Name: ChrgStatDsply_D_Rq

Value	Equal
0x0	Off
0x1	On (default)
0x2	NotUsed_1
0x3	NotUsed_2

1.1.28 MD-REQ-023414/C-CntrStk_D_RqAssoc (TcSE ROIN-284870-1)

Message Type: Request

Note: Request signal from the Keypad Client / Personality Client to the Keypad Server with the keycode operation requested to be performed.

Logical Signal Name	Literals	Value	Description
CntrStk_D_RqAssoc	CHECK_KEYCODE	0x0	
	ERASE_KEYCODE	0x1	
	KEY	0x2	
	NULL	0x3	
	RKE	0x4	
	SET_KEYCODE	0x5	
	Cancel	0x6	
	Not Used	0x7	

1.1.29 MD-REQ-023415/B-CntrStkKeycodeActl (TcSE ROIN-284871-1)

Message Type: Request

Note: Keycode signal from the Keypad Client / Personality Client to the Keypad Server / PersonalizationFunction Server to be used for verifying factory keycode or for changing current keycode.

Logical Signal Name	Literals	Value	Description
CntrStkKeycodeActl	Keycode	0x0000 – 0xFFFF	See table below for decoding

CntrStkKeycodeActl Note: The Keycode entered from the center stack to the personalization. This is a bit encoded CAN signal. 001 = 1/2 button pressed 010 = 3/4 button pressed 011 = 5/6 button pressed 100 = 7/8 button pressed 101 = 9/0 button pressed 000, 110, 111 are Invalid entries.	CntrStkKeycodeActl Note: Bit 15 is ignored Bits 14 - 12 : First button pressed Bits 11 - 9 : Second button pressed Bits 8 - 6 : Third button pressed Bits 5 - 3 : Fourth button pressed Bits 2 - 0 : Fifth button pressed Where, bit 0 is the right most bit of this CAN signal. Example of decoding the Keycode from the CAN signal: CAN Signal Value: 0x58D1 Bit 15 Bit 14 Bit 13 Bit 12 Bit 11 Bit 10 Bit 9 Bit 8 0 1 0 1 1 0 0 0 Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 1 1 0 1 0 0 0 1 Bit 15 is ignored. Bits 14 – 12: (9/0) First Button Pressed Bits 11 - 9 :(7/8) Second button pressed Bits 8 - 6 :(5/6) Third button pressed Bits 5 - 3 :(3/4) Fourth button pressed Bits 2 - 0 :(1/0) Fifth button pressed

1.1.30 MD-REQ-023425/B-AssocConfirm_D_Actl (TcSE ROIN-284863-1)

Message Type: Status

Note: Keypad Server / PersonalizationFunction Server communicates the state of the requested keycode association

Logical Signal Name	Literals	Value	Description
AssocConfirm_D_Actl	None	0x0	
	DISASSOCIATE	0x1	
	DUPLICATE	0x2	
	ERASE	0x3	
	IN_PROGRESS	0x4	
	KEYCODE_ACCEPTED	0x5	
	KEYCODE_REJECTED	0x6	
	ASSOCIATE	0x7	

1.1.31 MD-REQ-093985/B-ChargePortUnlock_Rq

Message Type: Request

This signal is requested by the Charge Port Unlock Client for the Charge Port Unlock Server to unlock the charge port connector.

Logical Signal Name	Literals	Value	Description
ChargePortUnlock_Rq	No_Request	0x0	
	Unlock Request	0x1	

1.1.32 MD-REQ-132658/C-ChrgCrdLck_D_Stat

Message Type: Response and Status

This signal reports the status of the Charge Port Unlock Server

Literals	Value	Description
Inactive / Retain	0x0	Retain treat same as Inactive. This supports requirement "IFS-MMCAN-REQ-015112-Invalid-NoDataExists", when in this state the charge port unlock client remembers the last state.
Unlocked	0x1	
Locked	0x2	
UnlockInProgress	0x3	
Unlocked / LockInProgress	0x4	This will say when the Lock is in Progress but to be treated as Unlocked by the Charge Port Unlock Client
Locked / Unlock_Fail	0x5	Unlock_Fail is treated the same as status set to Locked for the Charge Port Unlock Client
Unlocked / Lock_Fail	0x6	Lock_Fail is treated the same as status set to Unlocked for the Charge Port Unlock Client
Locked / Faulty	0x7	Faulty is treated the same as status set to Locked for the Charge Port Unlock Client

1.1.33 MD-REQ-338982/B-LongTermReset_B_RqMnu

Message Type: Request

Note: Request signal from the Drive History Client to the Drive History Server to reset the long term drive history information

Logical Signal Name	Literals	Value	Description
LongTermReset_B_RqMnu	OFF	0x0	
	ON	0x1	

Note: init value in the CAN dB for this signal should be 0x0 OFF

1.1.34 MD-REQ-341180/B-BattTracLoThres_D_Stat

Message Type: Status

Note: Status signal from the Low Battery Alert Server with the status of the Low Battery Alert function

Logical Signal Name	Literals	Value	Description

BattTracLoThres_D_Stat	Null	0x0	
	20 mi / 32 km	0x1	Cluster speedometer major speed scale units MPH
	30 mi / 48 km	0x2	
	50 mi / 80 km	0x3	
	30 km / 18 mi	0x4	Cluster speedometer major speed scale units Km/h
	50 km / 31 mi	0x5	
	80 km / 50 mi	0x6	
	Not Used	0x7	

1.1.35 MD-REQ-341183/B-BattTracLoThres_D_Rq

Message Type: Request

Note: Request signal from the Low Battery Alert Client to the Low Battery Alert Server to set the feature

Logical Signal Name	Literals	Value	Description
BattTracLoThres_D_Rq	Null	0x0	
	20 mi / 32 km	0x1	Cluster speedometer major speed scale units MPH
	30 mi / 48 km	0x2	
	50 mi / 80 km	0x3	
	30 km / 18 mi	0x4	Cluster speedometer major speed scale units Km/h
	50 km / 31 mi	0x5	
	80 km / 50 mi	0x6	
	Not Used	0x7	

1.1.36 MD-REQ-341190/A-SpeedoMajorUnit_D_Confg

Message Type: Status

Note: Status signal from the Low Battery Alert Client with the status of the speedometer speed scale units

Logical Signal Name	Literals	Value	Description
SpeedoMajorUnit_D_Confg	Null	0x0	
	MPH	0x1	
	KPH	0x2	
	Not Used	0x3	

1.1.37 MD-REQ-339666/A-PrplSnd_D_Rq

Message Type: Request

Note: Request signal from the Propulsion Sound Client to the Propulsion Sound Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
PrplSnd_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.38 MD-REQ-339747/B-PrplSnd_D_Stat

Message Type: Status

Note: Status signal from the Propulsion Sound Server with the status of Propulsion Sound feature

Logical Signal Name	Literals	Value	Description
PrplSnd_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	
	Faulty	0x3	

1.1.39 MD-REQ-339730/A-LghtAmbDrvMde_D_Rq

Message Type: Request

Note: Request signal from the Ambient Lighting Drive Mode Client to the Ambient Lighting Drive Mode Server to select if Ambient Lighting is tied to Drive Mode or not.

Logical Signal Name	Literals	Value	Description
LghtAmbDrvMde_D_Rq	Null	0x0	
	Manual	0x1	
	Automatic	0x2	

1.1.40 MD-REQ-340538/A-LghtAmbDrvMde_B_Stat

Message Type: Status

Note: Status signal from the Ambient Lighting Drive Mode Server with the status of whether Ambient Lighting is tied to Drive Mode or not.

Logical Signal Name	Literals	Value	Description
LghtAmbDrvMde_B_Stat	Manual	0x0	
	Automatic	0x1	

1.1.41 MD-REQ-347056/A-EcoIdl_D_Rq

Message Type: Request

Note: Request signal from the Eco-Idle Client to the Eco-Idle Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
EcoIdl_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.42 MD-REQ-347057/A-EcoIdl_D_Stat

Message Type: Status

Note: Status signal from the Eco-Idle Server with the status of Eco-Idle feature

Logical Signal Name	Literals	Value	Description
EcoIdl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.43 MD-REQ-365621/A-EngExhMdeHrEnbl_D_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quite Time Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnbl_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	
	Menu Not Configured	0x3	

1.1.44 MD-REQ-365620/A-EngExhMdeHrEnbl_D_Stat

Message Type: Status

Status signal from the Quiet Time Server with the status of the Quiet Time setting

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnbl_D_Stat	Null	0x0	HMI setting treated as unknown (ex HMI greyed out, setting not shown as selected…)
	Disabled	0x1	
	Enabled	0x2	

1.1.45 MD-REQ-365623/A-EngExhMdeHrStrt_D_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quite Time Server to request the Quiet Time start hour

Logical Signal Name	Literals	Value	Description
	Null	0x0	

EngExhMdeHrStrt_D_Rq	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	…	…	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

1.1.46 MD-REQ-365626/A-EngExhMdeHrStrt_D_Stat

Message Type: Status

Status signal from Quiet Time Server with the value the Quiet Time Start Hour is set to

Logical Signal Name	Literals	Value	Description
EngExhMdeHrStrt_D_Stat	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	…	…	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

1.1.47 MD-REQ-365627/A-EngExhMdeHrEnd_D_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quite Time Server to request the Quiet Time end hour

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnd_D_Rq	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	…	…	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.

Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

1.1.48 MD-REQ-365628/A-EngExhMdeHrEnd_D_Stat

Message Type: Status

Status signal from Quiet Time Server with the value the Quiet Time End Hour is set to

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnd_D_Stat	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	…	…	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

1.1.49 MD-REQ-375908/A-TurnAsstSwtch_D_Stat

Message Type: Status

This signal is used by the Trail Turn Assist Client to broadcast the HMI Trail Turn Assist setting button status.

Logical Signal Name	Literals	Value	Description
TurnAsstSwtch_D_Stat	Not Pressed	0x0	
	Pressed	0x1	
	Not Used	0x2	
	Faulty	0x3	

1.1.50 MD-REQ-375918/A-OrtaSwtchLamp_B_Rq

Message Type: Request

This signal is used by the Trail Turn Assist Server to broadcast the Trail Turn Assist setting button status it requests to be displayed on the Trail Turn Assist Client HMI.

Logical Signal Name	Literals	Value	Description
OrtaSwtchLamp_B_Rq	OFF / Disabled	0x0	Show the Trail Turn Assist setting HMI as OFF / Disabled
	ON / Enabled	0x1	Show the Trail Turn Assist setting HMI as ON / Enabled

1.1.51 MD-REQ-354255/A-ClrExitAsstEnbl_D_RqMnu

Message Type: Request

Request signal from the Clear Exit Assist Settings Client to the Clear Exit Assist Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
ClrExitAsstEnbl_D_RqMnu	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.52 MD-REQ-354256/A-ClrExitAsst_D_Stat

Message Type: Status

Status signal from the Clear Exit Assist Settings Server with the status of Clear Exit Assist feature

Logical Signal Name	Literals	Value	Description
ClrExitAsst_D_Stat	Null	0x0	HMI setting treated as unknown (ex HMI greyed out, setting not shown as selected…)
	Disabled	0x1	
	Enabled	0x2	

1.1.53 MD-REQ-359587/A-ClrExitAsstMsgTxt2_D_Rq

Message Type: Request

Request signal from the Clear Exit Assist Warning Server to the Clear Exit Assist Warning Client to display the warning HMI

Logical Signal Name	Literals	Value	Description
ClrExitAsstMsgTxt2_D_Rq	No Info / No Warning	0x0	
	Rear Left	0x1	
	Rear Right	0x2	
	Front Left	0x3	
	Front Right	0x4	
	Rear Left and Rear Right	0x5	
	Front Left and Front Right	0x6	
	Rear Left and Front Right	0x7	
	Front Left and Rear Right	0x8	
	Reserved	…	
	Reserved	0xF	

1.1.54 MD-REQ-359588/A-ClrExitAsstActv_B_Rq

Message Type: Request

Request signal from the Clear Exit Assist Warning Server to the Clear Exit Assist Warning Client / Infotainment System Master to remain powered up to display the clear exit assist warning HMI

Logical Signal Name	Literals	Value	Description
ClrExitAsstActv_B_Rq	False	0x0	
	True	0x1	

1.1.55 MD-REQ-383981/A-TjaLaneBiasEnbl_D_RqMnu

Message Type: Request

Request signal from the Lane Biasing Setting Client to the Lane Biasing Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
TjaLaneBiasEnbl_D_RqMnu	Null	0x0	
	Disable	0x1	
	Enable	0x2	

1.1.56 MD-REQ-383982/A-TjaLaneBiasEnbl_D_Stat

Message Type: Status

Status signal from the Lane Biasing Settings Server with the status of Lane Biasing feature

Logical Signal Name	Literals	Value	Description
TjaLaneBiasEnbl_D_Stat	Inactive	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.57 MD-REQ-399907/A-IaccCrvVCtlEnbl_D_Rq

Message Type: Request

Request signal from the Curve Speed Control Setting Client to the Curve Speed Control Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
IaccCrvVCtlEnbl_D_Rq	Null	0x0	
	Disable	0x1	
	Enable	0x2	

1.1.58 MD-REQ-399906/A-IaccCrvVCtlEnbl_D_Stat

Message Type: Status

Status signal from the Curve Speed Control Settings Server with the status of Curve Speed Control feature

Logical Signal Name	Literals	Value	Description

IaccCrvVCtlEnbl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.59 VS-MD-REQ-406310/A-TjaLcEnbl_D_RqMnu

Request signal from the Assisted Lane Change Setting Client to the Assisted Lane Change Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
TjaLcEnbl_D_RqMnu	Null	0x0	
	Disable	0x1	
	Enable	0x2	

1.1.60 VS-MD-REQ-406311/A-TjaLcEnbl_D_Stat

Message Type: Status

Status signal from the Assisted Lane Change Settings Server with the status of Assisted Lane Change feature

Logical Signal Name	Literals	Value	Description
TjaLcEnbl_D_Stat	Inactive	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.61 MD-REQ-414719/B-SpeedChngChime_D_Rq

Request signal from the Speed Change Chime Setting Client to the Speed Change Chime Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
SpeedChngChime_D_Rq	Null	0x0	
	Disable	0x1	
	Enable	0x2	

1.1.62 MD-REQ-414720/A-SpeedChngChime_D_Stat

Message Type: Status

Status signal from the Speed Change Chime Settings Server with the status of Speed Change Chime feature

Logical Signal Name	Literals	Value	Description
SpeedChngChime_D_Stat	Inactive	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.63 MD-REQ-426848/A-LghtAmbRqSrc_B_Stat

Message Type: Status

Signal from the Phoenix PDC Ambient Lighting Client module indicating if in manual or automatic mode

Logical Signal Name	Literals	Value	Description
LghtAmbRqSrc_B_Stat	Manual	0x0	
	Auto	0x1	

1.1.64 MD-REQ-455277/A-SodChimeEnbl_D_Rq

Message Type: Request

Request signal from the Blind Spot Chime Setting Client to the Blind Spot Chime Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
SodChimeEnbl_D_Rq	Null	0x0	
	Disable	0x1	
	Enable	0x2	

1.1.65 MD-REQ-455278/A-SodChimeEnbl_D_Stat

Message Type: Status

Status signal from the Blind Spot Chime Settings Server with the status of Blind Spot Chime feature

Logical Signal Name	Literals	Value	Description
SodChimeEnbl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

1.1.66 MD-REQ-436702/A-BrkMaintMde_D_Rq

Message Type: Request

Request signal from the Brake Maintenance Mode Client to the Brake Maintenance Mode Server to enable or disable Brake Maintenance Mode

Logical Signal Name	Literals	Value	Description
BrkMaintMde_D_Rq	No Request / Null	0x0	
	Request Enter Maintenance Mode / Enable	0x1	
	Request Exit Maintenance Mode / Disable	0x2	
	Not Used	0x3	

1.1.67 MD-REQ-436497/A-PrkBrkMsgTxt_D_Rq

Signal from the Brake Maintenance Mode Server indicating brake maintenance mode is enabled or disabled

Logical Signal Name	Literals	Value	Description
PrkBrkMsgTxt_D_Rq	No_Message	0x0	Disabled (ie Brake Maintenance Mode disabled)
	Message 1	0x1	Enabled (ie Brake Maintenance Mode enabled)
	Message 2	0x2	Disabled
	Message 3	0x3	Disabled
	Message 4	0x4	Disabled
	Message 5	0x5	Disabled
	Message 6	0x6	Disabled
	Message 7	0x7	Disabled
	Message 8	0x8	Disabled
	Message 9	0x9	Disabled
	Message 10	0xA	Enabled
	Message 11	0xB	Disabled
	Message 12	0xC	Disabled
	Message 13	0xD	Disabled
	Message 14	0xE	Disabled
	Message 15	0xF	Disabled

1.1.68 MD-REQ-436522/A-TrnPrkSys_D_Actl

Message Type: Status

Signal from the Park Brake Server module indicating with the PRNDL status

Logical Signal Name	Literals	Value	Description
TrnPrkSys_D_Actl	Not Known	0x0	
	Park	0x1	Used to tell if the vehicle is in Park
	Transition Close to Park	0x2	
	At No Spring	0x3	
	Transition Close To Out of Park	0x4	
	Out of Park	0x5	
	Override	0x6	
	Out of Range Low	0x7	
	Out of Range High	0x8	
	Frequency Error	0x9	
	Not Used	0xA	
	Not Used	0xB	
	Not Used	0xC	
	Not Used	0xD	
	Not Used	0xE	
	Faulty	0xF	

1.1.69 MD-REQ-436524/A-TrnNtrlTowCmd_D_Actl

Message Type: Status

Signal from the Neutral Tow and BEV Emergency Tow Server module indicating if they are active or not

Logical Signal Name	Literals	Value	Description
TrnNtrlTowCmd_D_Actl	Normal Mode	0x0	
	Car Wash Mode	0x1	
	Neutral Tow Entry	0x2	Used to tell if Neutral Tow or BEV Emergency Tow is active
	Not Used	0x3	

1.1.70 MD-REQ-457737/A-ThemSel_D_Stat

Message Type: Status

Status signal from the Theme Settings Server with the status of theme used

Logical Signal Name	Literals	Value	Description
ThemSel_D_Stat	Null	0x0	
	Change with Drive Mode	0x1	Treated as a Null if “change with drive mode” is not supported.
	Theme 1	0x2	
	Theme 2	0x3	
	Theme 3	0x4	
	cont.	…	
	Theme 15	0xF	

1.2 VS-CLD-REQ-133255/A-Vehicle Language Setting Client

1.3 VS-CLD-REQ-025444/A-Vehicle Language Settings Server (TcSE ROIN-150813-1)

Responsibility : The vehicle language settings server provides status of vehicle language settings status to the vehicle settings client.

1.4 VS-CLD-REQ-025445/B-Ambient Lighting / Vehicle Settings Client (TcSE ROIN-159910-1)

Responsibility : The Ambient Lighting Settings Client makes requests to the external vehicle settings function to change Ambient lighting color or intensity as requested by the user.

1.5 VS-CLD-REQ-133269/B-Ambient Lighting / Vehicle Setting Server

1.6 VS-CLD-REQ-025446/A-Charge Port Light Ring Client (TcSE ROIN-270413)

The charge port light ring client is a vehicle settings display. It shows the current light ring style and also allows a user to select a different style. The charge port light ring client transmits the current style setting to the charge port light ring server.

1.7 VS-CLD-REQ-093987/A-Charge Port Unlock Client

The charge port unlock client is a vehicle settings display. It shows the current lock status and also allows a user to select unlock the cord. The charge port unlock client transmits the unlock command to the charge port unlock server.

1.8 VS-CLD-REQ-133260/A-Charge Port Unlock Server

1.9 VS-CLD-REQ-133257/A-Vehicle Settings Temperature Units Client

1.10 VS-CLD-REQ-133258/A-Vehicle Settings Temperature Units Server

1.11 VS-CLD-REQ-133261/A-Vehicle Settings 12/24 Hour Mode Client

1.12 VS-CLD-REQ-133259/A-Vehicle Settings 12/24 Hour Mode Server

1.13 VS-CLD-REQ-133262/A-Vehicle Settings Distance Units Client

1.14 VS-CLD-REQ-133263/A-Vehicle Settings Distance Units Server

1.15 VS-CLD-REQ-025448/D-Keypad Server / External Personalization Function (TcSE ROIN-293526-1)

1.16 VS-CLD-REQ-025447/D-Keypad Client / Personalization Client (TcSE ROIN-293524-1)

1.17 VS-CLD-REQ-025497/A-Vehicle Settings Beep Server (TcSE ROIN-141569-1)

Responsibility : The vehicle settings beep server provides status of the touch panel beeps setting.

1.18 VS-CLD-REQ-133637/B-Vehicle Settings Beep Client

1.19 VS-CLD-REQ-025442/B-Vehicle Settings Client (TcSE ROIN-141546-2)

Responsibility: The Vehicle Settings Client controls all vehicle settings change requests from the user, to various servers depending upon the functionality of the setting.

1.20 VS-CLD-REQ-025443/B-Vehicle Settings Server (TcSE ROIN-141547-2)

Responsibility : The vehicle settings server provides status of vehicle settings status to the vehicle settings client.

1.21 VS-CLD-REQ-347054/A-Eco-Idle Client

The Eco-Idle Client interfaces with the user via the HMI and is responsible for sending the Eco-Idle Setting request to the Eco-Idle Server.

1.22 VS-CLD-REQ-347055/A-Eco-Idle Server

The Eco-Idle Server is responsible for the control of the Eco-Idle function and interfaces with the Eco-Idle Client.

1.23 VS-CLD-REQ-340540/A-Ambient Lighting Drive Mode Client

The Ambient Lighting Drive Mode Client interfaces with the user via HMI and is responsible for sending the Ambient Lighting Drive Mode setting request to the Ambient Lighting Drive Mode Server.

1.24 VS-CLD-REQ-340542/A-Ambient Lighting Drive Mode Server

The Ambient Lighting Drive Mode Server is responsible for the ambient lighting drive mode function and interfaces with the Ambient Lighting Drive Mode Client.

1.25 VS-CLD-REQ-339751/A-Propulsion Sound Client

The Propulsion Sound Client interfaces with the user via HMI and is responsible for sending the propulsion sound setting request to the propulsion sound server.

1.26 VS-CLD-REQ-339752/B-Propulsion Sound Server

The Propulsion Sound Server is responsible for control of the propulsion sound function and interfaces with the Propulsion Sound Client.

1.27 VS-CLD-REQ-341184/A-Low Battery Alert Client

The Low Battery Alert Client interfaces with the user via HMI and is responsible for sending the Low Battery setting request to the Low Battery Server.

1.28 VS-CLD-REQ-341185/A-Low Battery Alert Server

The Low Battery Alert Server is responsible for control of the Low Battery Alert function and interfaces with the Low Battery Alert Server

1.29 VS-CLD-REQ-339750/A-Drive History Client

The Drive History Client is responsible for requesting the Long Term Drive History Reset to the Drive History Server

1.30 VS-CLD-REQ-342947/A-Drive History Server

1.31 VS-CLD-REQ-362990/A-Quiet Time Client

The Quiet Time Client interfaces with the user via the HMI and is responsible for interfacing with the Quiet Time Server. This includes sending the quiet time requests and receiving the quiet time responses from the Quiet Time Server. See SPSS requirements for details

1.32 VS-CLD-REQ-362991/A-Quiet Time Server

The Quiet Time Server is responsible for the control of the Quiet Time function and interfaces with the Quiet Time Client.

1.33 VS-CLD-REQ-375893/A-Trail Turn Assist Client

The Trail Turn Assist Client interfaces with the user via the HMI and is responsible for interfacing with the Trail Turn Assist Server. This includes sending the HMI settings requests and receiving the responses from the Trail Turn Assist Server. See SPSS requirements for details.

1.34 VS-CLD-REQ-375896/A-Trail Turn Assist Server

The Trail Turn Assist Server is responsible for the control of the Trail Turn Assist feature and interfaces with the Trail Turn Assist Client.

1.35 VS-CLD-REQ-354250/A-Clear Exit Assist Settings Client

The Clear Exit Assist Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Clear Exit Assist Settings Server. The Clear Exit Assist Settings Client is responsible for sending the Clear Exit Assist setting request signal to the Clear Exit Assist Settings Server.

1.36 VS-CLD-REQ-354251/A-Clear Exit Assist Settings Server

The Clear Exit Assist Settings Server is responsible for the control of the Clear Exit Assist settings function and interfaces with the Clear Exit Assist Settings Client.

1.37 VS-CLD-REQ-359585/A-Clear Exit Assist Warning Client

The Clear Exit Assist Warning Client interfaces with the user via the HMI and interfaces with the Clear Exit Assist Warning Server to determine if HMI updates are needed.

1.38 VS-CLD-REQ-359586/A-Clear Exit Assist Warning Server

The Clear Exit Assist Warning Server is responsible for the control to the Clear Exit Assist function and interfaces with the Clear Exit Assist Warning Client.

1.39 VS-CLD-REQ-383974/A-Lane Biasing Settings Client

The Lane Biasing Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Lane Biasing Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Lane Biasing Settings Server.

1.40 VS-CLD-REQ-383975/A-Lane Biasing Settings Server

The Lane Biasing Assist Settings Server is responsible for the control of the Lane Biasing settings function and interfaces with the Lane Biasing Settings Client.

1.41 VS-CLD-REQ-392418/A-Curve Speed Control Settings Client

The Curve Speed Control Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Curve Speed Control Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Curve Speed Control Settings Server.

1.42 VS-CLD-REQ-392419/A-Curve Speed Control Settings Server

The Curve Speed Control Settings Server is responsible for the control of the Curve Speed Control function and interfaces with the Curve Speed Control Settings Client.

1.43 VS-CLD-REQ-406297/A-Assisted Lane Change Settings Client

The Assisted Lane Change Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Assisted Lane Change Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Assisted Lane Change Settings Server.

1.44 VS-CLD-REQ-406298/A-Assisted Lane Change Settings Server

The Assisted Lane Change Assist Settings Server is responsible for the control of the Assisted Lane Change settings function and interfaces with the Assisted Lane Change Settings Client.

1.45 VS-CLD-REQ-414716/A-Speed Change Chime Settings Client

The Speed Change Chime Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Speed Change Chime Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Speed Change Chime Settings Server.

1.46 VS-CLD-REQ-414718/A-Speed Change Chime Settings Server

The Speed Change Chime Settings Server is responsible for the control of the speed change chime settings function and interfaces with the Speed Change Chime Settings Client.

1.47 VS-CLD-REQ-450417/A-Blind Spot Chime Settings Client

The Blind Spot Chime Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Blind Spot Chime Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Blind Spot Chime Settings Server.

1.48 VS-CLD-REQ-450418/A-Blind Spot Chime Settings Server

The Blind Spot Chime Settings Server is responsible for the control of the Blind Spot Chime Settings function and interfaces with the Blind Spot Chime Settings Client.

1.49 VS-CLD-REQ-436705/A-Brake Maintenance Mode Client

The Brake Maintenance Mode Client interfaces via the HMI and is responsible for sending Brake Maintenance Mode requests to the Brake Maintenance Mode Server.

1.50 VS-CLD-REQ-436706/A-Brake Maintenance Mode Server

The Brake Maintenance Mode Server is responsible for control of the Brake Maintenance Mode function and interfaces with the Brake Maintenance Mode Client.

1.51 VS-CLD-REQ-457757/A-Selectable Theme HMI Output Client

The Selectable Theme HMI Output Client is responsible for displaying on the HMI the Theme or active Drive Mode theme (if supported) as indicated by the Selectable Theme Server.

1.52 VS-CLD-REQ-458197/A-Selectable Theme Client

The Selectable Theme Client interfaces via the HMI and is responsible for sending Selectable Theme requests to the Selectable Theme Server.

1.53 VS-CLD-REQ-457777/A-Selectable Theme Server

The Selectable Theme Server is responsible for control of the Selectable Theme function and interfaces with the Selectable Theme Client(s).

2 General Requirements

2.1 VS-SR-REQ-134608/B-Cluster Vehicle Settings when Ignition is not in Run

When HMIAudioMode (ie HMI_HMIMode_St) = ON then the Cluster shall be able to support Vehicle Settings functions (ex Language, Temp units, 12/24 hour mode, Distance units…) regardless if the Cluster HMI is active or not.

Ex. Change Language

- Pre-Condition:
  - Ignition_Status = OFF
  - HMIAudioMode = ON (ie infotainment system is ON)
  - Cluster HMI is OFF
  - Language equals English
- Event:
  - The Centerstack Vehicle Settings Client sends a request message to the Cluster Vehicle Settings Server to change the language from English to Spanish
- Post-Condition:
  - The Cluster updates its Language Status message to Spanish.
  - Next time the Cluster ignition_status goes to Run the Cluster HMI would be in Spanish and would be in harmony with the Centerstack language

2.2 IFS-MMCAN-FUR-REQ-015114/E-Sending of Request and Response (TcSE ROIN-66252-1)

As a general rule, request and response signals will be sent out at the requested value and not put back to inactive/null until 100 msec +/- 10% has elapsed since the requested value was first put on the bus.

For some event only requests (not event-periodic) it may be important to send the requested value only once before putting back to inactive / null. In this case the signals should be set back to inactive/null as soon as FNOS has reported that the signal has been transmitted.

- For event only based signals this has to be done in order to keep FNOS from accidentally sending out the signal twice when another signal in the same frame is to be transmitted, either by a change of another signal or by a periodic transmission.

Reference applicable feature SPSS specs for actual implementation.

- ~~Example of an exception: an event-periodic signal going across network gateway and encoding value may need to be held until other bus wakes up. Reference the feature specs for exceptions.~~

~~For event only based signals this has to be done in order to keep FNOS from accidentally sending out the signal twice when another signal in the same frame is to be transmitted, either by a change of another signal or by a periodic transmission.~~

~~Some signals (such as many settings) require the request to be sent out and held for 100 msec at the requested value before being put back to inactive/null again. Reference the applicable SPSS for details.~~

3 Functional Definition

3.1 VS-FUN-REQ-025206/C-Set Language (TcSE ROIN-292323-1)

3.1.1 Interface Requirement - Language

3.1.1.1 MD-REQ-025377/P-Disp_LangSel.Rq (TcSE ROIN-297357)

Message Type: Request

This Signal requests the change of the Language displayed.

Name	Value	Description
Disp_LangSel.Rq	-	
	int *Language* 0x00 Invalid 0x01 Unknown 0x02 UK English 0x03 NA English 0x04 German 0x05 Italian 0x06 EU French 0x07 Cana French 0x08 EU Spanish 0x09 Mex Spanish 0x0A Turkish 0x0B Russian 0x0C Dutch 0x0D Flemish 0x0E Polish 0x0F Czech 0x10 Greek 0x11 Hungarian 0x12 Swedish 0x13 Danish 0x14 Norwegian 0x15 Finish 0x16 EU Portuguese 0x17 Braz Portuguese 0x18 Japanese 0x19 AU_English 0x1A Korean 0x1B Mandarin Chinese 0x1C Taiwanese 0x1D Arabic 0x1E Slovak 0x1F Thai 0x20 Indian English 0x21 Ukrainian 0x22 Romanian	Request from Vehicle Settings Client to update Language displayed.

Note:
For HS3 Language Request signals 0x191 Disp_LangSel.Rq (ex. APIM/CHR) and 0x193 McLangSel.Rq (ex. Cluster) they are 5 bit signals and maxed out with 0x1F Thai. The new Language Request signals created Disp_LangSel2.Rq and McLangSel2.Rq are bigger in size (7 bits) to allow for more encodings but still include all the encodings the 5 bit signals had.

If the transmitter of the Infotainment language request signal supports one common CAN dB then infotainment language request client for a language request will send both language request signals 0x191 Disp_LangSel.Rq 5 bit signal and Disp_LangSel2.Rq 7 bit signal set to the language requested.

- If a language request is needed for an encoding that is supported by Disp_LangSel2.Rq but not Disp_LangSel.Rq (ex Indian English) then only Disp_LangSel2.Rq would request the language.

If the transmitter of the infotainment language request signals has a CAN dB that only supports one Language request signal then only that language request signal would be supported (either support just the 5 bit Disp_LangSel.Rq or 7 bit Disp_LangSel2.Rq signal).

The receiver of the infotainment language request signal (ex Cluster) will have its CAN dB set-up so only one language request signal is received in its CAN dB for a particular program (will only receive the 5 bit Disp_LangSel.Rq signal or 7 bit Disp_LangSel2.Rq signal).

- Exception: If the Ford D&R for the receiver of the infotainment language request signal has explicitly asked for a CAN dB with both infotainment language request signals to support common software across multiple programs (0x191 Disp_LangSel.Rq 5 bit signal and Disp_LangSel2.Rq 7 bit signal) then the receiver of those signals will need to have a configuration bit such that only one of the signals can be used at a time (ex. program X only uses Disp_LangSel2.Rq while program Y only uses Disp_LangSel.Rq).

The Cluster transmitter of the language request signal will support only one language request signal in its CAN dB for a particular program (will only send the 5 bit McLangSel.Rq or 7 bit McLangSel2.Rq signal). The other language signal not used would be set to 0x0 Inactive/Invalid.

- Exception: If the Ford D&R for the transmitter of the Cluster language request signals (McLangSel.Rq 5 bit signal and McLangSel2.Rq 7 bit signal) has explicitly asked for a CAN dB with both cluster language request signals to support common software across multiple programs then the Cluster will need to have a configuration bit such that only one of the signals can be used at a time.

- If in an error condition the receiving module gets both language request signals from the same module at the same time then the last language request signal received set to a language would be supported. The Cluster Ford D&R or supplier needs to bring to the CAN dB teams attention if their module is receiving both language request signals if they are only supposed to be receiving one language request signal so this can be corrected in their CAN dB.
- The Cluster is only supposed to send one language request at a time and that is what receiver would expect. If the receiver of 0x193 McLangSel.Rq or McLangSel2.Rq gets both signal set to a language at the same time then bring the issue to the Cluster D&R's attention so this could be corrected.

Reference the CAN dB for the latest and in case any conflict in signal names the CAN dB takes precedent.

3.1.1.2 MD-REQ-025452/B-LanguageUpdate.Rsp (TcSE ROIN-297376)

Message Type: Response

Response signal from Vehicle settings Language server to the Vehicle settings Client in response to the Disp_LangSel.Rq method. Signal informs the Client if the Language that was requested to change is supported by that server or not. This signal allows the Client to take an action if the language is not supported by the server.

Logical Signal Name	Literals	Value	Description
LanguageUpdate.Rsp	Inactive	0x0	
	Language_Updated	0x1	
	Language_Not_Supported	0x2	

3.1.1.3 MD-REQ-025450/O-Disp_LangSel.St (TcSE ROIN-297360)

Message Type: Status

This Signal gives status of the Language displayed.

Name	Value	Description
Disp_LangSel.St	-	
	int *Language* 0x00 Invalid 0x01 Unknown 0x02 UK English 0x03 NA English 0x04 German 0x05 Italian 0x06 EU French 0x07 Cana French 0x08 EU Spanish 0x09 Mex Spanish 0x0A Turkish 0x0B Russian 0x0C Dutch 0x0D Flemish 0x0E Polish 0x0F Czech 0x10 Greek 0x11 Hungarian 0x12 Swedish 0x13 Danish 0x14 Norwegian 0x15 Finish 0x16 EU Portuguese 0x17 Braz Portuguese 0x18 Japanese 0x19 AU_English 0x1A Korean 0x1B Mandarin Chinese 0x1C Taiwanese 0x1D Arabic 0x1E Slovak 0x1F Thai 0x20 Indian English 0x21 Ukrainian 0x22 Romanian	Status update from the Vehicle Language settings server stating what the current language setting is for the Vehicle Language Server which sends out the status message.

Note:
The Infotainment Language status HS3 signal 0x229 Disp_LangSel.St (ex APIM, CHR, MFD…) is a 5 bit signal and maxed out with 0x1F Thai. The new Infotainment Language Status HS3 signal is Disp_LangSel2.St and is bigger in size (7 bits) to allow for more encodings but still include all the encodings the 5 bit signals had.

If the transmitter of the Infotainment Language status signal supports one common CAN dB then the transmitter of the infotainment language status signal will have to support sending both language status signals Disp_LangSel.St 5 bit signal and Disp_LangSel2.St 7 bit signal with both status signals set to the active language.

- If Disp_LangSel2.St is set to a language that Disp_LangSel.St does not have an encoding for then Disp_LangSel.St would be set to 0x0 Inactive (ex. if Indian English was the active language).

If the transmitter of the Infotainment Language status signal has a CAN dB that only supports one language status signal then only that language status signal would be supported (either support just the 5 bit Disp_LangSel.St or 7 bit Disp_LangSel2.St).

The receiver of the infotainment language status signals (Disp_LangSel.St 5 bit signal and Disp_LangSel2.St 7 bit signal) should only receive one of the language status signals in their CAN dB.

- If the Ford D&R or supplier of a module receiving the infotainment language status message notices that both infotainment language status signals Disp_LangSel.St 5 bit signal and Disp_LangSel2 7 bit signal in their CAN dB bring to Ford's attention as the CAN dB would need to be corrected.
  - Exception: If the Ford D&R for the receiver of the infotainment language signal has explicitly asked for a CAN dB with both infotainment language signals to support common software across multiple programs (Disp_LangSel.St 5 bit signal and Disp_LangSel2.St 7 bit signal) then the receiver of those signals will need to have a configuration bit such that only one of the signals is can be used at a time (ex. program X only uses Disp_LangSel2.st and program Y only uses Disp_LangSel.St).

The Cluster language status HS3 signal 0x2FD Mc_VehLangUsrSel.St is a 6 bit signal and is not currently maxed out so there is only one Cluster language status signal at the time this was written.

As a general practice if the receiving module just needs to receive one language status signal in a vehicle to know what language to be used then the Cluster Mc_VehLangUsrSel.St signal should be used.

Reference the CAN dB for the latest and in case any conflict in signal names the CAN dB takes precedent.

3.1.2 Use Cases

3.1.2.1 VS-UC-REQ-025207/B-Set Language (TcSE ROIN-290599)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On. ~~Language Setting is not currently set to {Language X}.~~ Vehicle Setting Client A (ex Cluster display) can support Language Y. Vehicle Setting Client B (ex Centerstack display) can support Language Y. Language X is active on both Vehicle Setting Client A and Vehicle Setting Client B displays.
Scenario Description	~~User selects {Language X} via the HMI.~~ User selects {Language Y} via the Vehicle Setting Client A HMI • the Vehicle Settings Client A requests Language Y from the Vehicle Language Server B (ex. Centerstack display),
Post-conditions	~~HMI is updated to {Language X}.~~ Vehicle Setting Client A {updates display A HMI to Language Y} Vehicle Setting Client B {updates display B HMI to Language Y}
List of Exception Use Cases	E1- VS-GUC-290600-Selected Language not available on both Displays
Interfaces	G-HMI; SWC; CBI

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3.1.2.2 VS-UC-REQ-025208/B-Selected Language not available on both Displays (TcSE ROIN-290600)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On. ~~Language Setting is not currently set to {Language X}~~ Vehicle Setting Client A (ex Cluster display) can NOT support Language Y. Vehicle Setting Client B (ex Centerstack display) can support Language Y. Language X is active on both Vehicle Setting Client A and Vehicle Setting Client B displays.
Scenario Description	~~The selected language is not available on the other display unit.~~ ~~The selected language is not updated on the other display unit.~~ ~~The selected language is {updated on display where change was requested} via HMI.~~ ~~The HMI displays {other display not Supported Message}~~ User selects {Language Y} via the Vehicle Setting Client B HMI • the Vehicle Settings Client B requests Language Y from the Vehicle Language Server A (ex. Cluster display)
Post-conditions	~~HMI does not reflect user Selected Language not available on both displays~~ Vehicle Setting Client B {updates display B to Language Y} Vehicle Setting Client A does not update Display A to Language Y and remains at Language X.
Comments	Note: just used the Cluster and Centerstack as examples above. The pre-conditions could have been reversed for who was Vehicle Setting Client A and Vehicle Setting B. Also this is not limited to only those modules used as examples.
Interfaces	G-HMI

3.1.3 Functional Requirements

3.1.3.1 VS-SR-REQ-025209/B-Language Truth Table (TcSE ROIN-141542-3)

Table describes the output response of the HMI based upon user input to change language setting at the Vehicle Settings Client 1 or Vehicle Settings Client 2, and availability of language in each display.

Language Update Request Made By	~~VS Client~~ Vehicle Settings Language Server 1 LanguageUpdate.Rsp	~~VS Client 2~~ Vehicle Settings Language Server 2 LanguageUpdate.Rsp	HMI Update
VS Client 1	Language_Updated*	Language_Updated	Languages Updated on both VS Client 1 and VS Client 2 HMI
VS Client 2	Language_Updated	Language_Updated*	Languages Updated on both VS Client 1 and VS Client 2 HMI
VS Client 1	Language_Updated*	Language_Not_Supported	VS Client 1 HMI Updated, HMI Message on VS Client 1 that VS Client 2 not supported.
VS Client 2	Language_Not_Supported	Language_Updated*	VS Client 2 HMI Updated, HMI Message on VS Client 2 that VS Client 1 not supported.

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No active Request	Inactive	Inactive	None

* Note: this might be an internal logical signal to a module instead of an actual network signal

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3.1.3.2 VS-SR-REQ-025210/A-Language Status Update Timing (TcSE ROIN-141543-3)

The Vehicle Language settings servers shall respond to a Disp_LangSel.Rq via a LanguageUpdate.Rsp signal within T_Language_Response of receiving the request, and update the Disp_LangSel.St signal with the status of the server's language.

3.1.3.3 VS-TMR-REQ-025211/B-T_Language_Response (TcSE ROIN-146553-2)

Name	Description	Units	Range	Resolution	Default
T_Language_Response	Maximum time allowed between sending a Disp_LangSel.Rq language change message, and receiving a response message from the display modules. Use default value	msec	0-1000	10	250

3.1.3.4 VS-SR-REQ-135143/B-Language following a B+ reset to Language Servers

The Cluster shall store the current language such that upon a loss of B+ to the Cluster the Cluster shall remember the current language. Upon B+ re-applied to the Cluster the Cluster shall use the language that was used before loss of B+. The Cluster shall update the language status signal with the correct language within 500 msec of network bus wake-up.

Upon a loss of B+ to Non-Cluster Vehicle Language Servers (ex APIM, MFD, CHR…) when B+ is re-applied to the Non-Cluster Vehicle Language Servers they shall use the language in the Cluster language status signal at start-up. After the Non-Cluster Vehicle Language Servers get the current language to use the other language requirements apply such that a language request is needed to change languages.

Note: Crank events are normal vehicle operations and vehicle language shall not be lost by the language servers for crank events. Worst case cold crank events are defined in the EMC specification and in the Stations Management SPSS.

Ex. The user disconnects the battery to the vehicle and later reconnects the battery

- Pre-condition:
  1. Language X is active in the Cluster and Centerstack Display module (ex. SYNC, MFD…)
- Event:
  1. B+ is removed from the vehicle (disconnect battery from the vehicle)
  2. After 30 minutes the battery is re-connected to the vehicle (could be any time but 30 min used for this example).
- Post-condition:
  1. The network bus wakes up when B+ is re-applied
  2. The Cluster may initially set the language status to Inactive/Invalid (usually the initialization value) until the Cluster language status message is updated with Language X. The Cluster has to publish the language in the status message within 500 msec of network bus wake-up
  3. Then Non-Cluster Vehicle Language Servers (ex APIM, MFD, CHR…) update their language to the Language X in the Cluster Language Status message.

3.1.3.5 VS-SR-REQ-193890/B-Enhanced Memory - Language for Active Personality Profile

All Vehicle Language Servers that support enhanced memory shall store the language for each personality profile (ex Vehicle, Per1, Per2, Per3, Per4) between power mode changes, bus asleep / awake and between B+ resets.

The Cluster and Non-Cluster Vehicle Language Servers (ex APIM, MFD, CHR…) do not normally listen to each other's language status information to update language unless the Client request a language update (exceptions for things like B+ resets). For enhanced memory though when the active personality profile changes (ex Pers_1 to Per_3) then the Non-

Cluster Vehicle Language Servers (ex APIM, MFD, CHR…) shall monitor the Cluster Language Status message after the active personality change and update the language to what is in the Cluster status message for the new personality profile.

- The Non-Cluster Vehicle Language Servers shall wait 1.5 second (hysteresis protection) from the time the Personality Profile changes until the time they update to the language indicated in the Cluster status message.
- Exception 1: If the Language indicated in the Cluster language status message the Non-Cluster Language Server does not support then the Language Server shall go to the stored language for that active personality profile and ignore the Cluster language statue message.
- Exception 2: If for the new personality profile the stored language is one the Non-Cluster Vehicle Language Client previously requested a language that the Cluster responded it did not support then the Non-Cluster Vehicle Language Server shall go to the stored language for the new personality profile and ignore the Cluster language status message.

Network bus start-up:
At network bus start-up the Active Personality may be different than the last active personality. Modules initializing from network bus start-up shall look at the Active Personality signal at start-up so they can load the right language without adding delays to the start-up.

From a network bus asleep state the Non-Cluster Vehicle Language Servers shall use what language is stored for the personality profile and shall not use the Cluster language status message (exception B+ resets).

3.1.4 Sequence Diagrams

3.1.4.1 VS-SD-REQ-025212/A-Set Language (TcSE ROIN-118736-4)

Linked Elements
VS-UC-REQ-025370/A-Set Language to English (TcSE ROIN-121358-3)

Scenarios

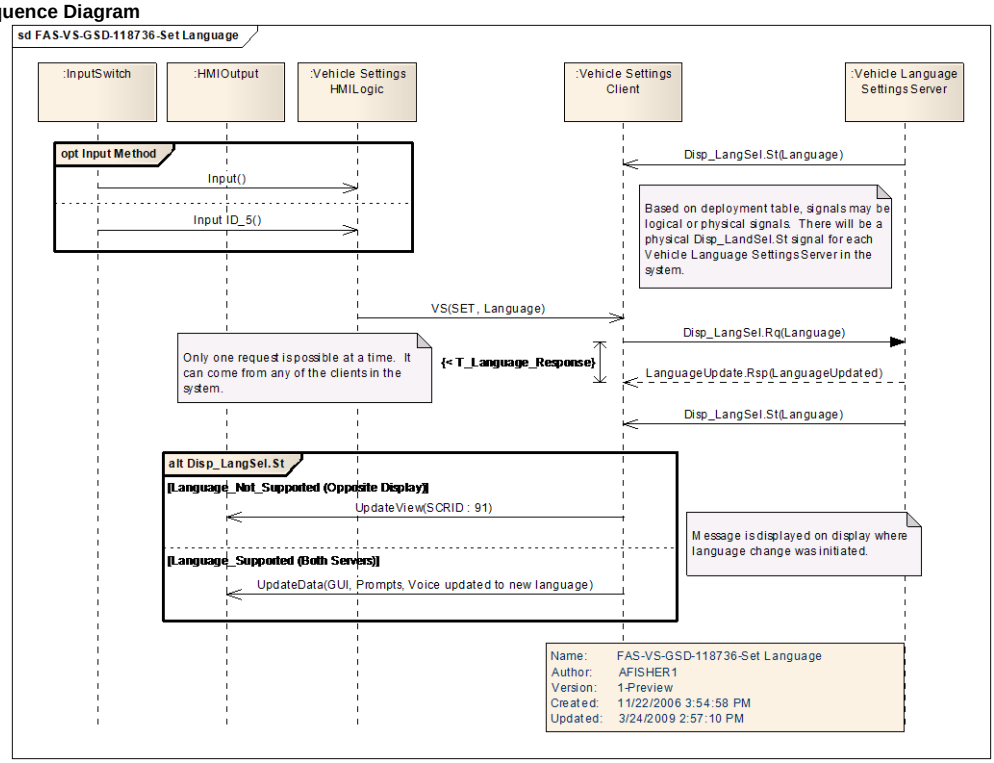
Normal Usage
The user selects <Language units change> via the HMI.

Constraints

Pre-condition
Center Stack Display is On, Settings units menu is active.

Post-condition
{Language units are updated to newly selected setting} via the HMI.

Sequence Diagram



3.2 VS-FUN-REQ-025213/C-Set Distance Units (TcSE ROIN-292327-1)

Note: The set operation for Imperial or Metric in this function will be superseded by the Settings in the Centerstack SPSS Measure Unit function (VS-FUN-REQ234037-Measure Units) when DI settings move from the Cluster to Centerstack HMI.

3.2.1 Interface Requirements - Distance

3.2.1.1 MD-REQ-025516/C-DISP_Miles_Kilometers_Rq (TcSE ROIN-273811)

Message Type: Request

This method is used to request a status change of Distance Unit.

Name	Literals	Value	Description
Mode	-	-	
	Metric	0x0	The parameter "Metric" is used to request the distance unit kilometers.
	Imperial	0x1	The parameter "Imperial" is used to request the distance unit miles.
	Inactive	0x3	

3.2.1.2 MD-REQ-243934/B-Disp_Miles_Kilometers.St

Message Type: Status

Signal from the Vehicle Settings Server stating what the setting is for Distance units.

Logical Signal Name	Literals	Value	Description
Disp_Miles_Kilometers.St	Metric (kilometers)	0x0	
	Imperial (miles)	0x1	

3.2.2 Use Cases

3.2.2.1 VS-UC-REQ-025214/A-Set Distance Units (TcSE ROIN-290601)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On. Distance Setting is set to {Unit X}
Scenario Description	User selects {Unit Y}via the HMI
Post-conditions	HMI is updated to {Unit Y}
List of Exception Use Cases	NA
Interfaces	G-HMI SWC CBI

3.2.3 Functional Requirements

3.2.3.1 VS-SR-REQ-025215/A-Change Distance Units Status update timing (TcSE ROIN-149492-1)

The vehicle settings server shall respond to a Disp_Miles_Kilometers.Rq via the Disp_Miles_Kilometers.St signal within T_Dist_Response of receiving the request.

3.2.3.2 VS-SR-REQ-025434/A-Multiple Disp_Miles_Kilometers.Rq signals (TcSE ROIN-150819-1)

The vehicle settings server shall ignore all new Disp_Miles_Kilometers.Rq signals for T_Dist_Response after receiving the initial Disp_Miles_Kilometers.Rq signal.

3.2.3.3 VS-TMR-REQ-025216/B-T_Disp_Response (TcSE ROIN-149488-2)

Name	Description	Units	Range	Resolution	Default
T_Disp_Response	Maximum time allowed between sending a Disp_Miles_Kilometers.Rq distance change message, and receiving a response message from the display modules. Use default value	msec	0-1000	10	250

3.2.4 Sequence Diagrams

3.2.4.1 VS-SD-REQ-025217/A-Set Distance Units (TcSE ROIN-118743-3)

Linked Elements
VS-UC-REQ-025372/A-Set Distance Units (TcSE ROIN-121364-2)

Scenarios

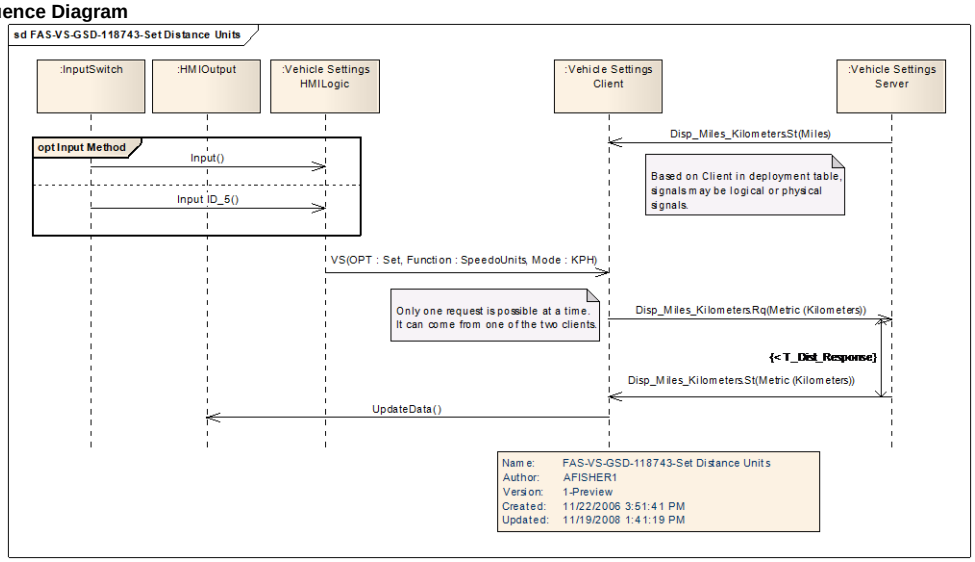
Normal Usage
The user selects <Kilometers units> via the HMI.

Constraints

Pre-condition
Center Stack Display is On, Settings units menu is active. Distance units are currently set to miles.

Post-condition
{Distance units are updated to kilometers on the HMI}

Sequence Diagram



3.3 VS-FUN-REQ-025218/D-Set Temperature Units (TcSE ROIN-292331-1)

Note: for the PDC module on the Phoenix architecture reference the "Settings for Vehicle Interface Processor (VIP) in Integrated Cluster" spec for VIP and CCPU inter-processor communication.

3.3.1 Interface Requirement - Temperature

3.3.1.1 MD-REQ-025380/B-Disp_Temperature.Rq (TcSE ROIN-297369)

Message Type: Request

This signal requests to change the temperature units displayed.

Logical Signal Name	Literals	Value	Description
DISP_Temperature.Rq	Celsius	0x0	
	Fahrenheit	0x1	
	Inactive	0x3	

3.3.1.2 MD-REQ-025453/B-Disp_Temperature.St (TcSE ROIN-297374)

Message Type: Status

Signal from the Vehicle Settings Server stating what the setting is for temperature units.

Logical Signal Name	Literals	Value	Description
DISP_Temperature.St	Celsius	0x0	
	Fahrenheit	0x1	

3.3.2 Use Cases

3.3.2.1 VS-UC-REQ-025219/A-Set Temperature Units (TcSE ROIN-290602)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On Current Unit is {Unit X}
Scenario Description	User selects {Unit Y} via the HMI.
Post-conditions	HMI is updated to {Unit Y}
List of Exception Use Cases	NA
Interfaces	G-HMI

3.3.3 Functional Requirements

3.3.3.1 *VS-SR-REQ-025220/A-Change Temperature Units Status update timing (TcSE ROIN-149493-1)*

The vehicle settings server shall respond to a Disp_Temperature.Rq via the Disp_Temperature.St signal within T_Temp_Response of receiving the request.

3.3.3.2 *VS-SR-REQ-025433/A-Multiple Disp_Temperature.Rq signals (TcSE ROIN-150818-1)*

The vehicle settings server shall ignore all new Disp_Temperature.Rq signals for T_Temp_Response after receiving the initial Disp_Temperature.Rq signal.

3.3.3.3 VS-TMR-REQ-025221/B-T_Temp_Response (TcSE ROIN-149489-2)

Name	Description	Units	Range	Resolution	Default
T_Temp_Response	Maximum time allowed between sending a Disp_Temperature.Rq temperature units change message, and receiving a response message from the display modules. Use default value	msec	0-1000	10	250

3.3.4 Sequence Diagrams

3.3.4.1 VS-SD-REQ-025222/A-Set Temperature Units (TcSE ROIN-118750-3)

Linked Elements
VS-UC-REQ-025374/A-Set Temperature Units to Fahrenheit (TcSE ROIN-121370-2)

Scenarios

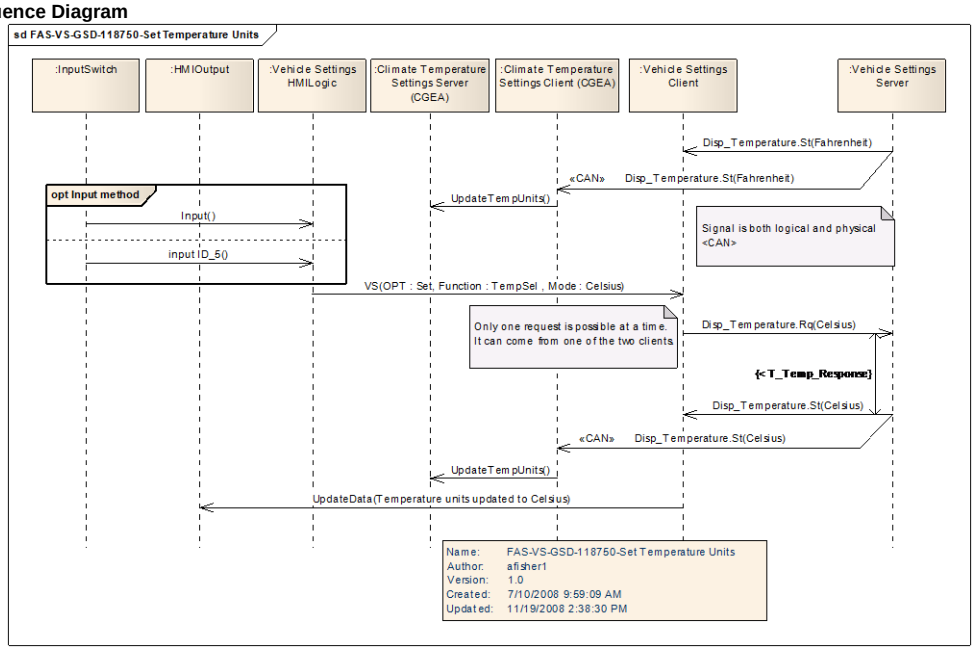
Normal Usage
The user selects <Celsius units> via the HMI.

Constraints

Pre-condition
Center Stack Display is On, Settings units menu is active. Temperature units are currently set to Fahrenheit.

Post-condition
{Temperature units are updated to Celsius on the HMI}

Sequence Diagram



3.4 Ambient Lighting - Variant 1

3.4.1 VSv2-FUN-REQ-025223/C-Ambient Lighting- Set Color (TcSE ROIN-292314-1)

3.4.1.1 Interface Requirements

3.4.1.1.1 MD-REQ-025388/C-LightAmbColor_No_Rq (TcSE ROIN-297407)

Message Type: Request

This signal requests selection of color for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq	Invalid / No Data Exits	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	
	Reserved	0x11 to 0xFF	

3.4.1.1.2 MD-REQ-025456/D-LightAmbColor_No_Actl (TcSE ROIN-297421)

Message Type: Status

This signal from Ext Vehicle Settings Function to the Vehicle Settings Client gives the status of the ambient lighting color.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl	OFF / Inactive / No Data Exists	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Cont	0x04 – 0xFF	separate document defines what the Color ID's are

3.4.1.2 Use Cases

3.4.1.2.1 VS-UC-REQ-025224/A-Ambient Lighting- Set Color (TcSE ROIN-290603)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On
Scenario Description	The user selects <updated Ambient Lighting color setting> via the HMI
Post-conditions	The vehicle HMI indicates {Updated status of Ambient Lighting Color setting}
List of Exception Use Cases	NA
Interfaces	G-HMI CBI

3.4.1.3 Requirements

3.4.1.3.1 VS-SR-REQ-025225/E-Ambient Lighting - Color Change Request Latency (TcSE ROIN-141572-1)

The Vehicle Settings Client shall ignore the LightAmbColor_No_Actl status message for T_Response_light_color after sending a LightAmbColor_No_Rq to the Ext Vehicle Settings Function to allow for Latency on the response back from the Vehicle Setting Server (don't want to act on a periodic status message from Vehicle Setting Server that wasn't yet updated). All other times the Vehicle Settings Client shall update based on the LightAmbColor_No_Actl.St signal including updating its LightAmbColor_No_Rq signal to match.

After T_Response_Light_Color the Vehicle Settings Client shall use the last state received in the LightAmbColor_No_Actl signal.

Note: Since the LightAmbColor_No_Rq is event-periodic and some Vehicle Settings Client modules keep the last state the Vehicle Setting Server if it updates its status message to a new value may want to implement a similar strategy has above (don't want to act on a periodic status message from Vehicle Setting Client that wasn't yet updated).

3.4.1.3.2 VS-TMR-REQ-025226/C-T_Response_light_color (TcSE ROIN-146542-2)

Name	Description	Units	Range	Resolution	Default
T_Response_light_color	Minimum amount of time between LightAmbColor_No_Rq color change and acting upon a LightAmbColor_No_Actl signal by the vehicle settings client. Use the default value	msec	0-1000	10	500

3.4.1.3.3 VS-SR-REQ-117709/D-Turning ON and OFF Ambient Lighting

Turning OFF ambient lighting the Ambient Lighting:
When turning OFF ambient lighting from the Vehicle Setting Client the Vehicle Settings Client shall send:
LightAmbIntsty_No_Rq = 0x0 0% Intensity / Ambient Lighting OFF, AND
LightAmbColor_No_Rq shall stay at the currently selected value (equal to input LightAmbColor_No_Actl_St).

When the Ambient Lighting Vehicle Setting Server receives LightAmbIntsty_No_Rq = "0x0 0% Intensity" then the Vehicle Settings Server shall turn OFF Ambient Lighting.

The Ambient Lighting Vehicle Setting Server shall not respond to LightAmbColor_No_Rq requests that are 0x0 Inactive / No Data Exists and shall treat those requests as don't cares (ex can continue to use the last valid value for color and send this in signal LightAmbColor_No_Actl_St).

If LightAmbColor_No_Actl_St = 0x0 OFF / Inactive / No Data Exists then the Vehicle Settings Client shall set LightAmbColor_No_Rq to 0x0 Inactive / No Data Exists and turn the Ambient Lighting HMI OFF.
Note: only the CGEA 1.2 Vehicle Settings Server uses the OFF state in LightAmbColor_No_Actl_St. C1MCA and CGEA 1.3 architectures use LightAmbColor_No_Actl_St = 0x0 as Inactive / No Data Exists.

When the Ambient Lighting Vehicle Setting Client receives LightAmbIntsty_No_Actl_St = “0x0 0% Intensity” then the Vehicle Settings Client shall turn OFF Ambient Lighting on the HMI (after T_Response_Light_Intensity from the request to turn OFF Ambient Lighting if requested Ambient Lighting OFF).

Bus Start-Up or Module reset and avoiding 0x0 init values turning OFF Ambient Lighting when it is ON:
When the network bus starts-up the Vehicle Settings Client / Server modules may send 0x0 init values before sending the actual values. The Vehicle Settings Client and Server shall not let the init values sent on bus start-up turn OFF ambient lighting if it is still on (ie LightAmbIntsty_No_Rq = 0x0 0% Intensity, LightAmbIntsty_No_Actl_St = “0x0 0% Intensity”, or LightAmbColor_No_Actl_St = 0x0 OFF).

At network bus start-up:

1. the Ambient Lighting Vehicle Setting Server can implement a blanking period so that if at bus wakes up the Vehicle Setting Server receives ‘LightAmbIntsty_No_Rq = 0x0 0% Intensity’ (ie if 0x0 is default init CAN value) then Vehicle Settings Server can ignore these values at start-up so the current Ambient Lighting Intensity value is not reset to OFF.
2. the Ambient Lighting Vehicle Setting Client can implement a blanking period so that if at bus wakes up the Vehicle Setting Client receives LightAmbIntsty_No_Actl_St = “0x0 0% Intensity”, OR LightAmbColor_No_Actl_St = 0x0 OFF (ie if 0x0 is default init CAN value) then Vehicle Settings Client can ignore these values at start-up so the current Ambient Lighting value are not reset to OFF.
3. Since the Ambient Lighting Intensity Request and Status signals (LightAmbIntsty_Rq / LightAmbIntsty_No_Actl) don’t have a “0x0 No Data Exists / Inactive” state for network bus wake-up when the network bus wakes up it is preferred if the Vehicle Settings Client / Server publish the last signal state/encoding of their respective signal. This would mean not publishing the network init value at network bus wake-up unless that was the last state before the network bus went to sleep.

If the Ambient Lighting Vehicle Setting Client has a reset (ex B+) while the Vehicle Setting Server stays active on network bus (ex SYNC module resets causing it’s CAN signals to be re-initialized while BCM stays active on CAN bus):

1. Since the Vehicle Settings Client request signals are in the same message to avoid the case where a Vehicle Setting Client module resets results in turning OFF Ambient Lighting from an ON state to OFF the Vehicle Setting Server could implement the following:
    a. If both “LightAmbIntsty_No_Rq / LightAmbColor_No_Rq” equal 0x0 then the Vehicle Setting Server could treat 0x0 encodings as a don’t cares so ambient lighting is not turned OFF.

Turning ON Ambient Lighting:
If the user turns back ON Ambient Lighting from an OFF condition then the Vehicle Setting Client shall use the last Intensity value before Ambient Lighting was turned OFF.

Exception: If there was a B+ reset to the Vehicle Setting Client then after the reset the Vehicle Setting Client shall use 100% intensity for LightAmbIntsty_No_Rq after the user selects a color ID.

3.4.1.4 Sequence Diagrams

3.4.1.4.1 VS-SD-REQ-025227/A-Ambient Lighting- Set Color (TcSE ROIN-118722-2)

Linked Elements
VS-FUN-REQ-025367/A-Ambient Lighting- Set Color (TcSE ROIN-119875-1)
VSv2-FUN-REQ-025223/C-Ambient Lighting- Set Color (TcSE ROIN-292314-1)

Scenarios

Normal Usage
The user selects <updated Ambient Lighting color setting> via the HMI

Constraints

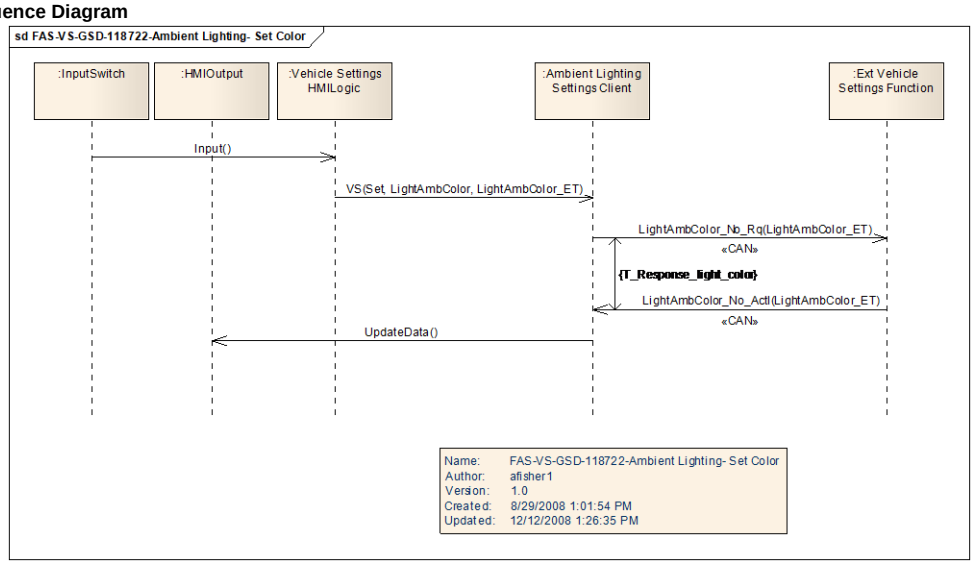
Pre-condition

Center Stack Display is On, Settings units menu is active.

Post-condition

The vehicle HMI indicates {Updated status of Ambient Lighting Color setting}

Sequence Diagram



3.4.2 VSv2-FUN-REQ-025228/C-Ambient Lighting- Set Intensity (TcSE ROIN-292320-1)

3.4.2.1 Interface Requirements

3.4.2.1.1 MD-REQ-025389/C-LightAmbIntsty_No_Rq (TcSE ROIN-297420)

Message Type: Request

This signal requests selection of intensity for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Rq	0% Intensity / Ambient Lighting OFF	0x0	
	1% Intensity	0x1	
	2% Intensity	0x2	
	cont.		
	100% Intensity	0x64	
	Reserved	0xFF	

3.4.2.1.2 MD-REQ-025457/D-LightAmbIntsty_No_Actl (TcSE ROIN-297422)

Message Type: Status

This signal from the Ext Vehicle Settings Function to the Vehicle Settings Client gives the status of Ambient Lighting Intensity

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Actl	0% Intensity / Ambient Lighting OFF	0x00	
	1% intensity	0x01	
	2% intensity	0x02	
	cont		
	100% intensity	0x64	
	Reserved	0x65 – 0xFF	

3.4.2.2 Use Cases

3.4.2.2.1 VS-UC-REQ-025229/A- Ambient Lighting- Set Intensity (TcSE ROIN-290604)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On
Scenario Description	The user selects <updated Ambient Lighting Intensity setting> via the HMI
Post-conditions	The vehicle HMI indicates {Updated status of Ambient Lighting Intensity setting}
List of Exception Use Cases	NA
Interfaces	G-HMI CBI

3.4.2.3 Requirements

3.4.2.3.1 VS-SR-REQ-025230/D-Ambient Lighting - Intensity Change Request Latency (TcSE ROIN-141573-1)

The Vehicle settings client shall ignore the LightAmbIntsty_No_Actl status message for T_Response_light_intensity after sending a LightAmbIntsty_No_Rq to the Ext Vehicle Settings Function to allow for Latency on the response back from the Ambient Lighting Vehicle Setting Server (don't want to act on a periodic status message from the Vehicle Setting Server that wasn't yet updated). All other times the Vehicle Settings Client shall update based on the LightAmbIntsty_No_Actl.St signal including updating its LightAmbIntsty_No_Rq signal to match.

After T_Response_Light_Intensity the Vehicle Setting Client shall use the last state received in the LightAmbInsty_No_Actl signal.

Note: Since the LightAmbIntsty_No_Rq is event-periodic and some Vehicle Settings Client modules keep the last state the Vehicle Setting Server if it updates its status message to a new value may want to implement a similar strategy has above (don't want to act on a periodic status message from Vehicle Setting Client that wasn't yet updated).

3.4.2.3.2 VS-TMR-REQ-025231/B-T_Response_light_intensity (TcSE ROIN-146541-2)

Name	Description	Units	Range	Resolution	Default
T_Response_light_intensity	Minimum amount of time between LightAmbIntsty_No_Rq color change and acting upon a LightAmbIntsty_No_Actl signal by the vehicle settings client. Use the default value	msec	0-1000	10	500

3.4.2.3.3 VS-HMI-REQ-097951/A-Ambient Lighting Intensity

Reference HMI vehicle specific documents for screen flow. If HMI and this requirement contradict follow the HMI specification.

Ambient Lighting Intensity signal values will be adjusted per HMI in the following increments:

For CGEA1.3 /C1MCA (Please verify for particular module with HMI team):

Name	Literals	Value	Description
Mode	-	-	
	Inactive	int *LightAmbIntsty_ET* 0x00 0% Intensity 0x01 1% Intensity ... 0x64 100% Intensity 0xFF Reserved	Ambient Lighting Intensity Selection from Vehicle Settings Client to Ext Vehicle Settings Function

For CGEA 1.2 (Please verify for particular module with HMI team)::

Value	Description
0x00	0% Intensity
0x14	20% Intensity
0x28	40% Intensity
0x3C	60% Intensity
0x50	80% Intensity
0x64	100% Intensity

3.4.2.4 Sequence Diagrams

3.4.2.4.1 VS-SD-REQ-025232/A-Ambient Lighting- Set Intensity (TcSE ROIN-118729-2)

Linked Elements
VSv2-FUN-REQ-025228/C-Ambient Lighting- Set Intensity (TcSE ROIN-292320-1)
VS-FUN-REQ-025368/A-Ambient Lighting- Set Intensity (TcSE ROIN-119880-1)

Scenarios

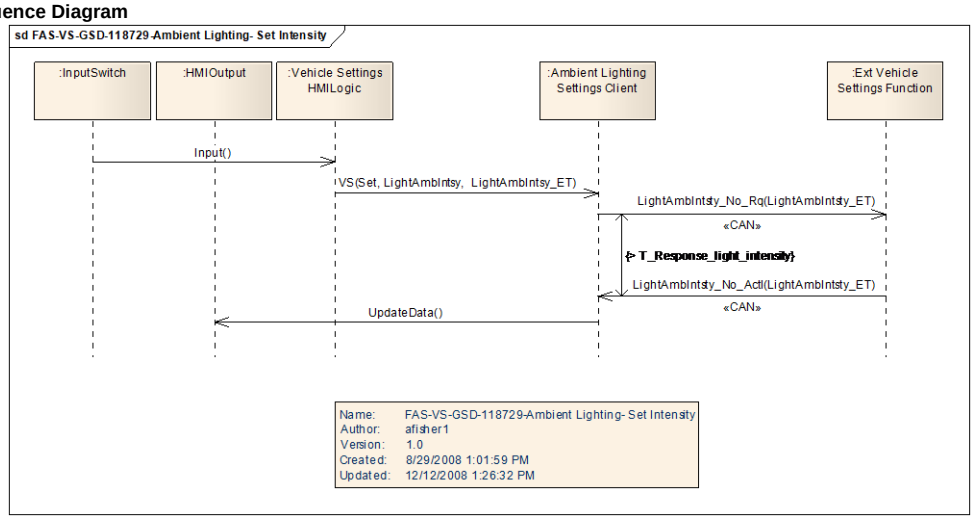
Normal Usage
The user selects <updated Ambient Lighting Intensity setting> via the HMI

Constraints

Pre-condition
Center Stack Display is On, Settings units menu is active.

Post-condition
The vehicle HMI indicates {Updated status of Ambient Lighting Intensity setting}

Sequence Diagram



3.5 VSv2-FUN-REQ-192195/A-Ambient Lighting - Variant 2

3.5.1 VSv2-IIR-REQ-192188/B-Ambient Lighting Settings Client_Tx - Variant 2

Note: Regardless what is in the CAN dB the logical encodings for the signals listed in the in the Ambient Lighting – Variant 2 SPSS interface descriptions shall be used

3.5.1.1 MD-REQ-192189/B-LightAmbColor_No_Rq - Variant 2

Message Type: Request

The Ambient Lighting Client uses this signal to request the color selection for ambient lighting from the Ambient Lighting Server.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	
	Reserved	0x11 to 0xFF	

3.5.1.2 MD-REQ-192190/B-LightAmbIntsty_No_Rq - Variant 2

Message Type: Request

This signal requests the selection of intensity for ambient lighting.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Rq – Variant 2	Inactive / No Data Exits	0x00	
	0% Intensity / Ambient Lighting OFF	0x01	
	1% Intensity	0x02	
	2% Intensity	0x03	
	3% Intensity	0x04	
	cont.	…	
	100% Intensity	0x65	
	Ambient Lighting Turn ON	0x66	

3.5.1.3 MD-REQ-426848/A-LghtAmbRqSrc_B_Stat

Message Type: Status

Signal from the Phoenix PDC Ambient Lighting Client module indicating if in manual or automatic mode

Logical Signal Name	Literals	Value	Description
LghtAmbRqSrc_B_Stat	Manual	0x0	
	Auto	0x1	

3.5.2 VSv2-IIR-REQ-192192/A-Ambient Lighting Settings Client_Rx - Variant 2

3.5.2.1 MD-REQ-192193/C-LightAmbColor_No_Actl - Variant 2

Message Type: Status

This signal gives status of ambient lighting color (variant 2) status.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Cont.	0x04 – 0xFF	Reference separate document with the ambient light Colors and Color ID's used

3.5.2.2 MD-REQ-192194/C-LightAmbIntsty_No_Actl - Variant 2

Message Type: Status

This signal gives the status of Ambient Lighting Intensity.

Logical Signal Name	Literals	Value	Description
LightAmbIntsty_No_Actl – Variant 2	0% Intensity / Ambient Lighting OFF	0x00	
	1% Intensity / Ambient Lighting ON	0x01	
	2% Intensity / Ambient Lighting ON	0x02	
	3% Intensity / Ambient Lighting ON	0x03	
	cont.		
	100% Intensity / Ambient Lighting ON	0x64	

3.5.3 Use Cases

3.5.3.1 VS-UC-REQ-192241/A-Changing Ambient Lighting Color

Actors	Vehicle Occupant
Pre-conditions	Ambient Lighting is turned ON Infotainment System is powered ON Color X is active in the vehicle Intensity Y is active in the vehicle Ambient Lighting HMI is active
Scenario Description	The user select Color Y via the HMI
Post-conditions	Color Y ambient lighting is turned on in the vehicle Ambient lighting remains at Intensity Y in the vehicle The HMI shows Color Y active and Intensity Y
Interfaces	Vehicle Interface, G-HMI

3.5.3.2 VS-UC-REQ-192242/A-Changing Ambient Lighting Intensity

Actors	Vehicle Occupant
Pre-conditions	Ambient Lighting is turned ON Infotainment System is powered ON Color X is active in the vehicle Intensity X is active in the vehicle Ambient Lighting HMI is active
Scenario Description	The user select Intensity Y via the HMI
Post-conditions	Intensity Y is active in the vehicle The HMI shows intensity Y is active
Interfaces	Vehicle Interface, G-HMI

3.5.3.3 VS-UC-REQ-192243/A-Turning ON Ambient Lighting by selecting a color

Actors	Vehicle Occupant
Pre-conditions	Ambient Lighting is turned OFF with the previous Intensity value of Y used before ambient lighting was turned OFF. Infotainment System is powered ON. Ambient Lighting HMI is active.
Scenario Description	The user selects Color X via the HMI to turn ON ambient lighting
Post-conditions	Ambient Lighting Color X turns on in the vehicle. The Ambient Lighting Intensity value Y becomes active in the vehicle The HMI shows Color X and Intensity Y
Interfaces	Vehicle Interface, G-HMI

3.5.3.4 VS-UC-REQ-192244/A-Turning ON Ambient Lighting via ON/OFF HMI selection

Actors	Vehicle Occupant
Pre-conditions	Ambient Lighting is turned OFF with the previous intensity value of X and color of Y used before ambient lighting was turned off. Infotainment System is powered ON Ambient Lighting HMI is active.
Scenario Description	The user selects Ambient Lighting ON via the HMI
Post-conditions	Ambient Lighting turned ON with intensity X and color Y active in the vehicle The HMI shows ambient lighting on with intensity X and color Y
Interfaces	Vehicle Interface, G-HMI

3.5.3.5 VS-UC-REQ-192245/A-Turning OFF Ambient Lighting

Actors	Vehicle Occupant
Pre-conditions	Ambient Lighting is ON in the vehicle Ambient Lighting HMI is active Infotainment System is powered ON
Scenario Description	The user select Ambient Lighting OFF via the HMI
Post-conditions	The Ambient Lighting is turned OFF in the vehicle The HMI shows Ambient Lighting turned OFF
Interfaces	Vehicle Interface, G-HMI

3.5.3.6 VS-UC-REQ-192246/A-Enhanced Memory - Recall new personality profile with Ambient Lighting active

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is Powered ON Enhanced Memory is turned ON The Active Personality profile is Profile 1 with Color A and Intensity B Ambient Lighting HMI is active Personality profile 3 is NOT active but when it was last active Color X and Intensity Y were active for ambient lighting
Scenario Description	The user select Profile 3 to be the active personality profile from the memory seat button (would apply for any enhanced memory recall method)
Post-conditions	Personality 3 becomes the active personality profile Ambient Lighting is active in the vehicle with Color X and Intensity Y The HMI shows Color X and Intensity Y
Interfaces	Vehicle Interface, G-HMI

3.5.3.7 VS-UC-REQ-192247/A-Enhanced Memory - New Profile at Network Wake-up

Actors	Vehicle Occupant
Pre-conditions	Network Bus is asleep Before network was asleep enhanced memory active personality profile was profile 2 Profile 3 is NOT active (profile 3 was last set to Color X, Intensity Y) Ambient Lighting is OFF

	Ignition Status is OFF, Delayed Accessory is OFF Infotainment System is powered OFF
Scenario Description	1. The user enters the vehicle with a keyfob associated to profile 3 2. Network bus wakes up and indicates that profile 3 is active 3. User keys to run from Ignition OFF
Post-conditions	Ambient Lighting becomes active for Profile 3 with Color X and Intensity Y active in the vehicle. If the user goes to the ambient lighting HMI it shows Color X and Intensity Y
Interfaces	Vehicle Interface, G-HMI

3.5.4 Requirements

3.5.4.1 VS-SR-REQ-192228/A-Ambient Lighting Server handling of "Inactive" in the Request signals

The Ambient Lighting Server shall treat LightAmbColor_No_Rq = Inactive and LightAmbIntsty_No_Rq = Inactive as don't cares and shall not update the LightAmbColor_No_Actl and LightAmbIntsty_No_Actl status signals based on the request signals set to Inactive.

3.5.4.2 VS-SR-REQ-192229/A-Bus Start-up

At network bus start-up the Ambient Lighting Server shall only publish the actual ambient lighting values of LightAmbColor_No_Actl and LightAmbIntsty_No_Actl and shall not publish the network init values.

At network bus start-up the Ambient Lighting Client shall set the request signals to Inactive.

3.5.4.3 VS-HMI-REQ-192230/B-Ambient Lighting HMI

The Ambient Lighting Client shall only display, on the ambient lighting HMI, the values indicated in the LightAmbColor_No_Actl and LightAmbIntsty_No_Actl status signals from the Ambient Lighting Server.

If the Ambient Lighting HMI is being displayed, a change in the ambient lighting status signal shall update the HMI.

If the Ambient Lighting Server sends LightAmbIntsty_No_Actl = "0% Intensity / Ambient Lighting OFF" then the Ambient Lighting Client HMI shall set Ambient Lighting HMI OFF. Note this is regardless of what is in the LightAmbColor_No_Actl status signal.

3.5.4.4 VS-SR-REQ-192238/C-Ambient Lighting Request and Response signals

The Ambient Lighting Client, when requesting an Ambient Lighting Color or Ambient Lighting Intensity value, shall set the color or intensity being requested and then set the request signal back to inactive.

- When setting the request signal back to inactive the Ambient Lighting Client shall set to Inactive within 50 msec of making the request.
- When setting the request signal back to inactive the Ambient Lighting Client shall set to Inactive no sooner than 20 msec after making the request.

- ~~Note: this protects for the case if the Ambient Lighting Server was on another bus that was asleep and the first message was lost.~~

The Ambient Lighting Server shall respond back to the LightAmbColor_No_Rq and LightAmbIntsty_No_Rq request signals within 150 msec of receiving the ambient lighting request.

Ex.

1. User selects a new ambient lighting color from the HMI
2. Ambient Lighting Client sets LightAmbIntsty_No_Rq = Color X and then 35 msec later sets LightAmbIntsty_No_Rq = Inactive.
3. The Ambient Lighting Server responds back within 150 msec of receiving LightAmbIntsty_No_Rq = Color X with LightAmbColor_No_Actl = Color X.
4. The Ambient Lighting Client updates the Ambient Lighting HMI based on the LightAmbColor_No_Actl status signal.

3.5.4.5 VS-SR-REQ-192239/A-Turning ON and OFF Ambient Lighting

The Ambient Lighting Client can request the Ambient Lighting is turned ON using LightAmbIntsty_No_Rq = “Ambient Lighting Turn ON” or Ambient Lighting is turned OFF using “0% Intensity / Ambient Lighting Turn OFF”.

The Ambient Lighting Server is responsible for remembering the Color and Intensity values between Power Mode / Ignition cycles, network bus wake-ups, and B+ resets.

If Ambient Lighting is turned OFF the Ambient Lighting Server shall remember the color and intensity values before ambient lighting was turned OFF.

If Ambient Lighting is turned off (ie LightAmbIntsty_No_Actl = 0% Intensity / Ambient Lighting OFF) and if the Ambient Lighting Server receives LightAmbIntsty_No_Rq = “Ambient Lighting Turn ON” then the Ambient Lighting Server shall be responsible for publishing the Color and Intensity values to be used when turned ON.

- The Ambient Lighting Client could request Ambient Lighting ON with a particular Color set, OR
- The Ambient Lighting Client could request Ambient Lighting ON with the Color and Intensity set to Inactive

3.5.4.6 VS-SR-REQ-192240/A-Enhanced Memory - Ambient Lighting

If Enhanced Memory is configured ON in the Ambient Lighting Client than this “Ambient Lighting – Variant 2” strategy shall be used.

If Enhanced Memory is configured ON in the Ambient Lighting Server than this “Ambient Lighting – Variant 2” strategy shall be used.

The Ambient Lighting Server shall update the LightAmbColor_No_Actl and LightAmbIntsty_No_Actl status signals when changing to new enhanced memory profiles (ie when the active personality profile changes).

- If the Ambient Lighting Server is turned OFF the Ambient Lighting Server shall remember what all the personality profiles where before they were turned off (in case turned back on).

If the Ambient Lighting Client HMI is active the Ambient Lighting Client HMI will automatically update to whatever the new Color and Intensity values are when there is a new active personality since the Ambient Lighting Client will use the LightAmbColor_No_Actl and LightAmbIntsty_No_Actl status signals when they are updated.

3.5.4.7 VS-SR-REQ-426847/A-LghtAmbRqSrc_B_Stat signal usage

The Ambient Lighting Client shall not be set “LghtAmbRqSrc_B_Stat = Auto” unless explicitly called out in a feature SPSS spec (ex Rejuvenate SPSS). All other times the Ambient Lighting Client shall have LghtAmbRqSrc_B_Stat set to Manual. Reference the feature SPSS spec for when “Auto” would be set and when “Manual” would be set.

This requirement is only for the Phoenix PDC Module. At the time this spec was written this was not for other modules that might be the Ambient Lighting Client (ex RACM).

3.5.4.8 VS-SR-REQ-507539/A-Ambient Lighting Insensity - variant 2

For FNV2 and FVN3 the Ambient Lighting Server only supports the intensity values called out in the table below.

The Ambient Lighting Client is only allowed to request the intensity values called out in the table below.

Signal Encoding name	LightAmbIntsty_No_Rq	LightAmbIntsty_No_Actl
Inactive / No Data Exits	0x0	N/A
0% Intensity / Ambient Lighting OFF	0x1	0x0
20% Intensity	0x15	0x14
40% Intensity	0x29	0x28

60% Intensity	0x3D	0x3C
80% Intensity	0x51	0x50
100% Intensity	0x65	0x64
ON	0x66	Will be updated with the last intensity stored

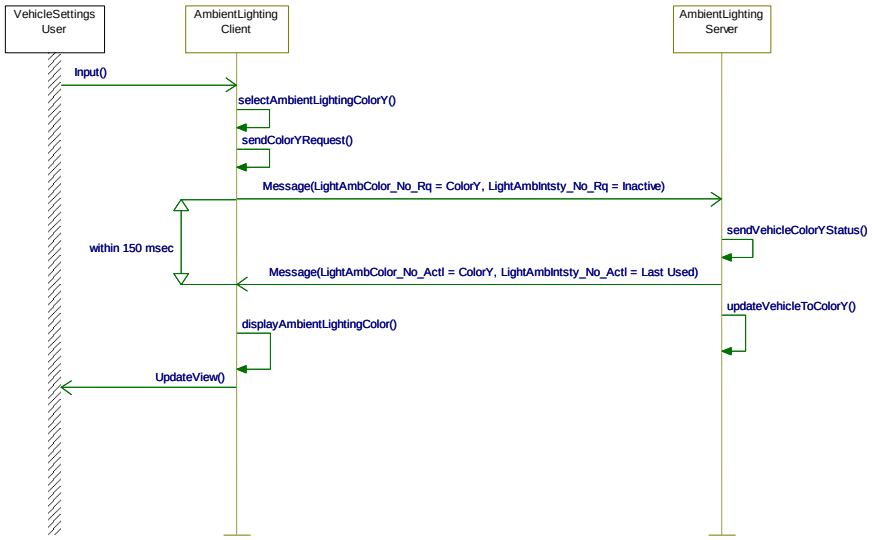
3.5.5 Sequence Diagrams

3.5.5.1 VS-SD-REQ-193188/A-Changing Ambient Lighting Color

Pre-condition:
Color Y is not the active color

Event:
User selects color Y

Post-condition:
Color Y is active on the HMI and the vehicle

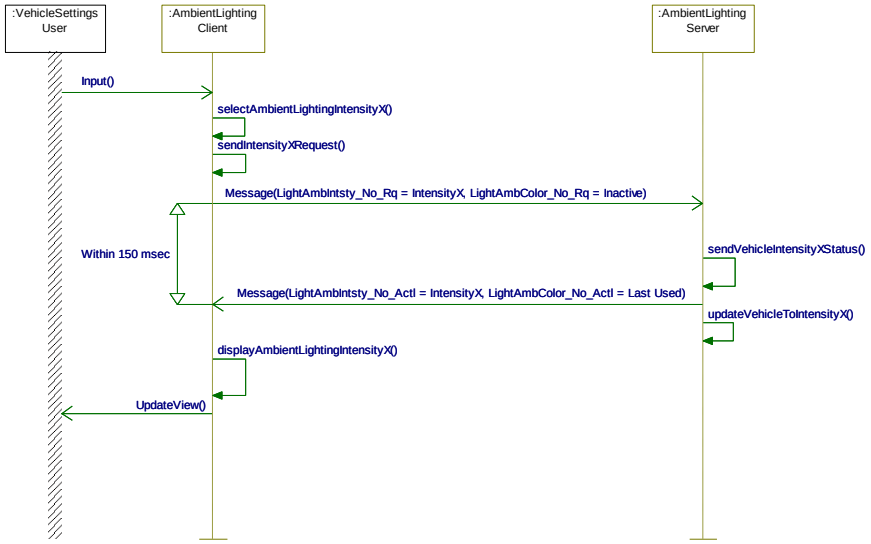


3.5.5.2 VS-SD-REQ-193207/A-Changing Ambient Lighting Intensity

Pre-condition:
Intensity X is not the active intensity

Event:
User selects intensity X

Post-Condition:
Intensity X is shown on the HMI and Intensity X is active in the vehicle

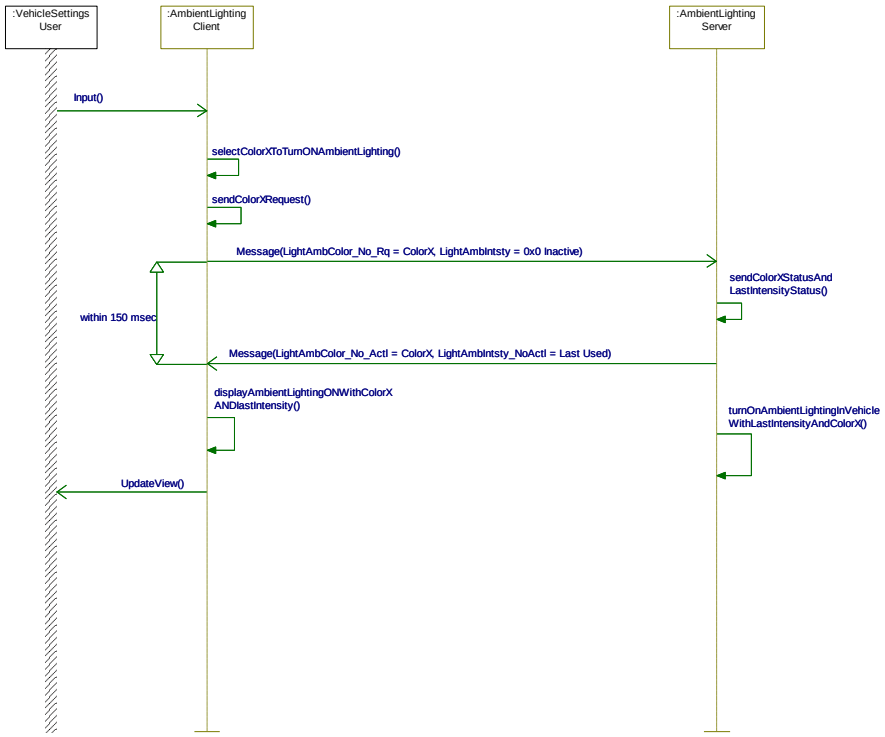


3.5.5.3 VS-SD-REQ-193443/B-Turning ON Ambient Lighting by selecting a Color

Pre-Condition:
Ambient Lighting was previously turned OFF via the HMI
Ambient Lighting in the vehicle is OFF

Event:
User selects colorX to turn ON ambient lighting

Post-Condition:
Ambient Lighting HMI is shown with ColorX active
Ambient Lighting Intensity is shown with last Intensity before turned back ON
Ambient Lighting is turned ON in the vehicle



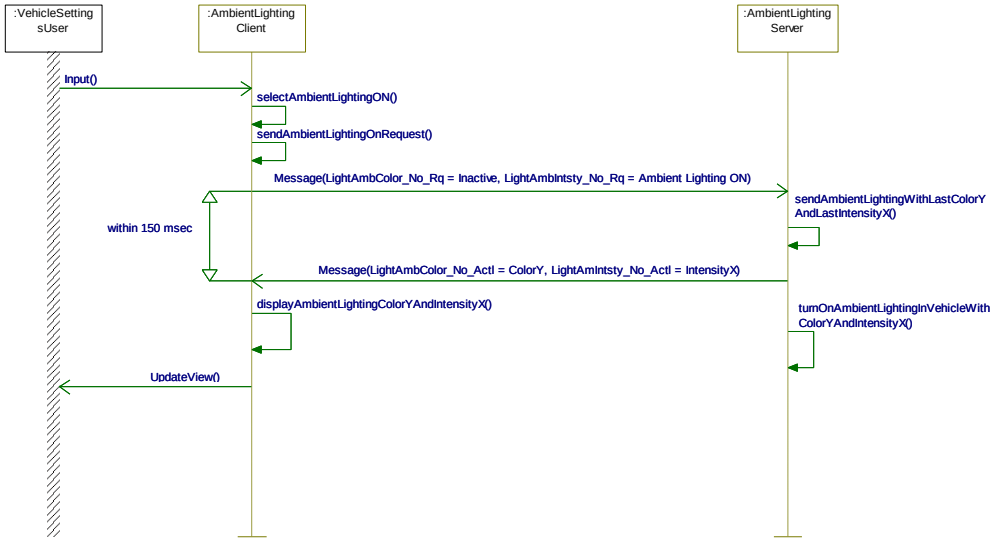
Note: if enhanced memory is turned on then in the sequence diagram for network signal LightAmbIntsty_No_Actl = 'Last Used' is referring to the last used Intensity for the personality profile being turned on.

3.5.5.4 VS-SD-REQ-193446/A-Turning ON Ambient Lighting via ON/OFF HMI Selection

Pre-Condition:
Ambient Lighting turned OFF with the previous Color when last ON set to ColorY
Ambient Lighting turned OFF with the previous Intensity when last ON set to IntensityX

Event:
The user selects Ambient Lighting ON via the HMI

Post-Condition:
Ambient Lighting HMI shows Ambient Lighting ON with ColorY and IntensityX
Ambient Lighting is turned ON in the vehicle with ColorY and IntensityX

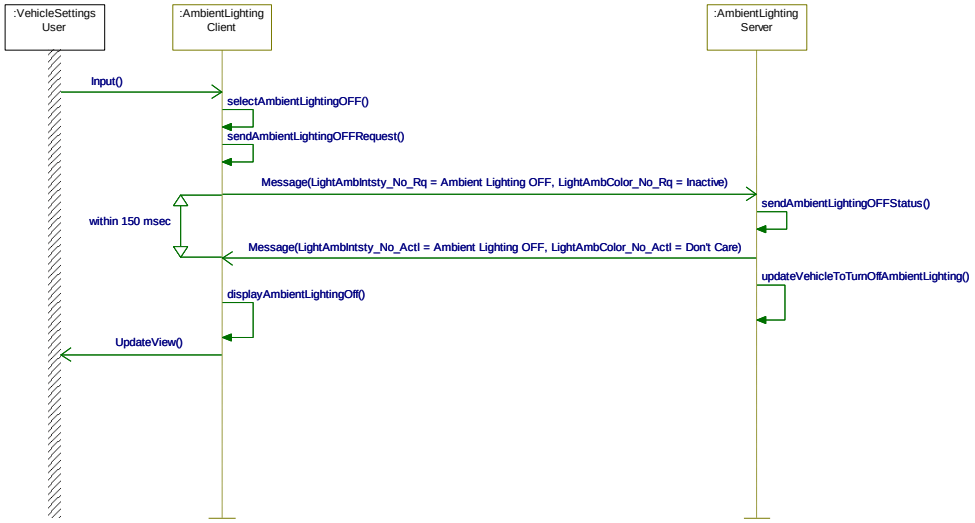


3.5.5.5 VS-SD-REQ-193447/A-Turning OFF Ambient Lighting

Pre-Condition:
Ambient Lighting HMI is active showing Ambient Lighting is ON

Event:
The user selects Ambient Lighting OFF via the HMI

Post-Condition:
The HMI shows Ambient Lighting turned OFF
Ambient Lighting is OFF in the vehicle

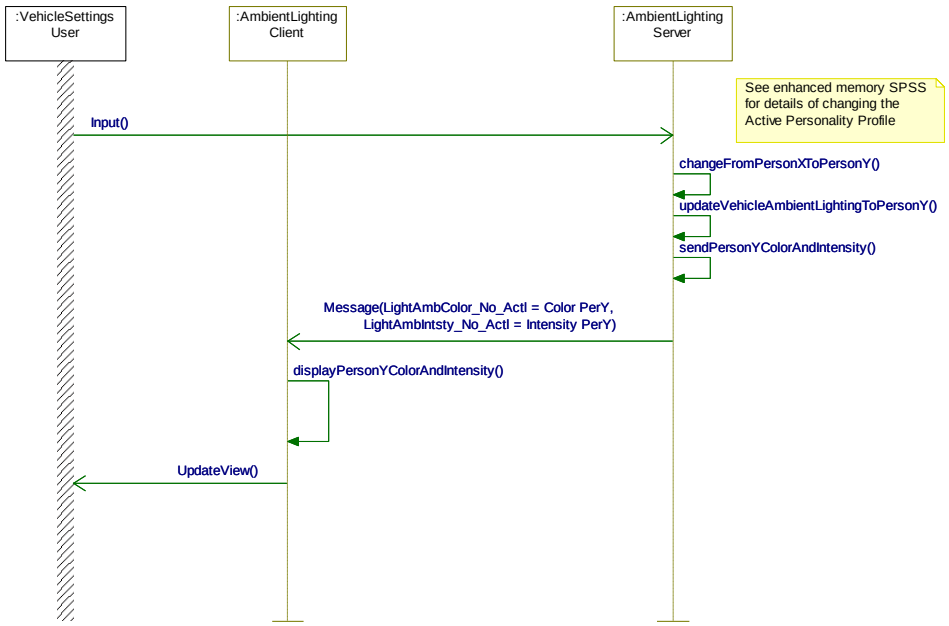


3.5.5.6 VS-SD-REQ-193487/B-Enhanced Memory - Recall new personality profile with Ambient Lighting active

Pre-Condition:
Ambient Lighting HMI is active for PersonX

Event:
User changes from PersonX to PersonY

Post-Condition:
Ambient Lighting HMI is active for PersonY

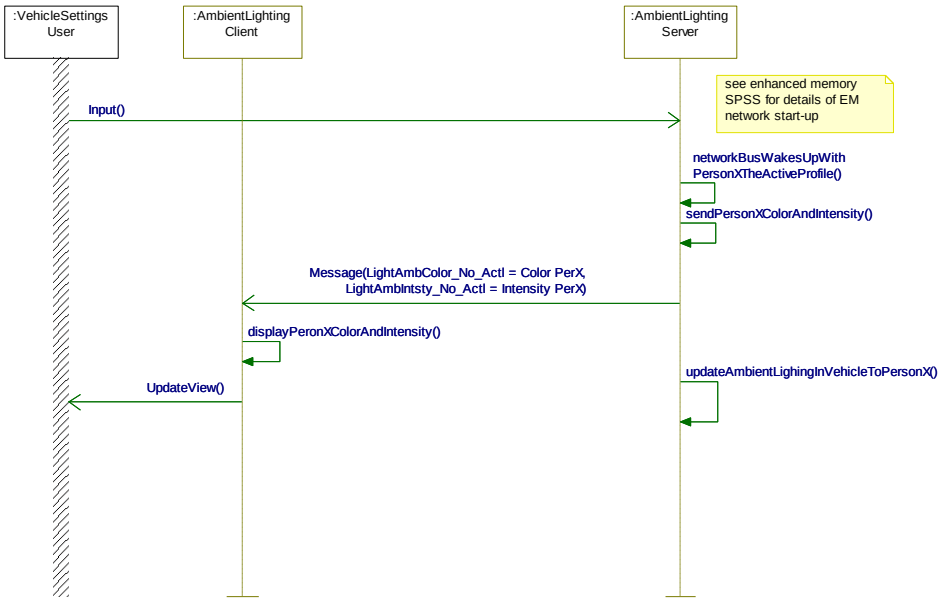


3.5.5.7 VS-SD-REQ-193489/A-Enhanced Memory - New Profile at Network Wake-up

Pre-Condition:
Network bus is asleep
When Network bus last awake Person Z was the active profile

Event:
1. Network bus wakes up
2. The Active Profile is Person X
3. The Ambient Lighting HMI screen is selected

Post-Condition:
Ambient Lighting HMI is active for Person X


:VehicleSettings User
:AmbientLighting Client
:AmbientLighting Server
see enhanced memory SPSS for details of EM network start-up
Input()
networkBusWakesUpWith PersonXTheActiveProfile()
sendPersonXColorAndIntensity()
Message(LightAmbColor_No_Actl = Color PerX, LightAmbIntsty_No_Actl = Intensity PerX)
displayPeronXColorAndIntensity()
updateAmbientLighingInVehicleToPersonX()
UpdateView()

3.6 VS-FUN-REQ-025233/C-Touch Panel Beeps Settings (TcSE ROIN-292335-1)

3.6.1 Interface Requirements - Beeps

3.6.1.1 MD-REQ-025379/B-Bezel_Beeps.Rq (TcSE ROIN-297362)

Message Type: Request

This signal requests to change the Bezel Beeps settings.

Logical Signal Name	Literals	Value	Description
Bezel_Beeps.Rq	Inactive	0x0	
	Enabled	0x1	
	Disabled	0x2	

3.6.1.2 MD-REQ-025385/B-Bezel_Beeps.St (TcSE ROIN-297423)

Message Type: Status

This signal provides the status of Bezel Beeps settings (Enabled/ Disabled).

Logical Signal Name	Literals	Value	Description
Bezel_Beeps.St	Invalid	0x0	
	Enabled	0x1	
	Disabled	0x2	

3.6.1.3 MD-REQ-025386/B-Bezel_Beeps_Supported.St (TcSE ROIN-297429)

Message Type: Status

Signal from the Vehicle Settings Beep Server telling the Vehicle Settings Beep Client if Bezel Beeps are supported or not supported

Logical Signal Name	Literals	Value	Description
Bezel_Beeps_Supported.St	Invalid	0x0	
	Supported	0x1	
	Not Supported	0x2	

3.6.2 Use Cases

3.6.2.1 VS-UC-REQ-025234/A- Set Tone Panel Beep mode (TcSE ROIN-290777)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On. Touch Panel Beeps is set to {mode X}.

Scenario Description	User selects <Mode Y> via the HMI.
Post-conditions	HMI is updated to {Mode Y}.
List of Exception Use Cases	NA
Interfaces	G-HMI CBI

3.6.3 Functional Requirements

3.6.3.1 VS-SR-REQ-025235/A-Touch panel beeps Supported / Not supported by Bezel interface module (TcSE ROIN-141577-2)

The vehicle settings beep server shall tell the vehicle settings client via the Bezel_Beeps_Supported.St signal whether touch panel beeps are supported or not supported. For example if they are not supported the display module HMI will not offer the option to enable / disable the beeps.

If the beep menu display (for enabling or disabling beeps) is End Of Line configurable then the Beep menu display module (Vehicle Settings Client) shall ignore the _Beeps_Supported display configuration signal(s) and use the EOL configuration for the beeps menu pick. See the Infotainment Diagnostic Spec for beep EOL configuration details.

Note: The vehicle settings beep server may not have a Bezel_Beeps_Supported.St CAN signal in the CAN dB if EOL configurable.

3.6.3.2 VS-REQ-025236/A-Enabling and Disabling Beeps (TcSE ROIN-273465)

The Vehicle Settings Beep Client can enable/disable beeps via the Bezel_Beeps.Rq signal.

The Vehicle Setting Beep Client shall remember the beeps setting between ignition cycles and power mode changes.

The Vehicle Setting Beep Server shall remember the beeps setting between ignition cycles and power mode changes.

3.6.3.3 VS-FUR-REQ-025237/A-EFP/ECP Beeps Default Parameters (TcSE ROIN-285003-1)

The EFP beep parameters shall be defaulted as shown below when:
- First shipped to the plant, or
- Upon loss of B+ power (if it causes a loss of Enable/Disable Beep parameters). The EFP shall be able to survive vehicle cranks and remember the Beep parameters.

If touch sense EFP :
Bezel_Beep_St = 0x1 Enabled
Bezel_Beeps_Supported = 0x1 Supported

If non Touch sense EFP:
Bezel_Beeps_Supported = 0x2 Not_Supported
Bezel_Beep_St = 0x0 (Invalid)

3.6.4 Sequence Diagrams

3.6.4.1 VS-SD-REQ-025238/A-Touch Panel Beeps (TcSE ROIN-118715-1)

Scenarios

Normal Usage
The user selects <turn Touch panel beeps on/off> via the HMI

Constraints

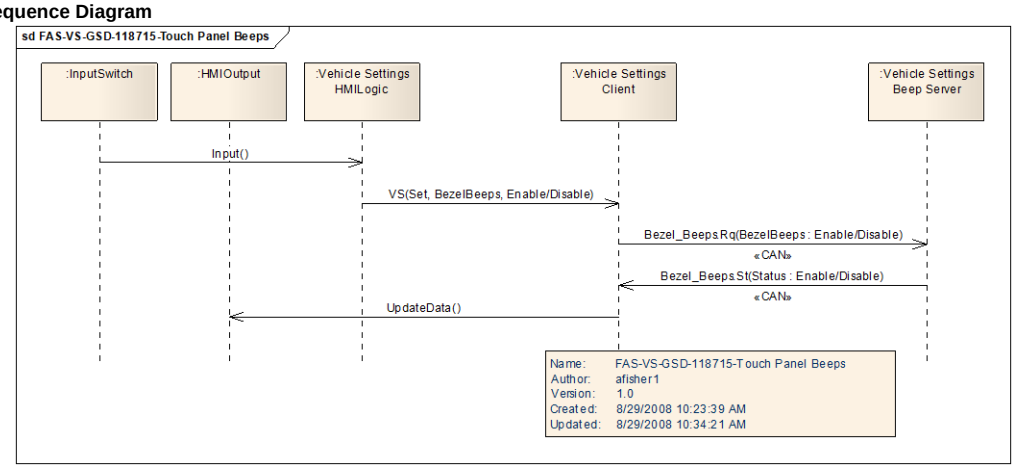
Pre-condition

Center Stack Display is On, Settings units menu is active.

Post-condition

The vehicle HMI indicates {Updated status of Touch Panel Beeps setting}

Sequence Diagram



3.7 VS-FUN-REQ-025239/D-Set 12/24 hour mode setting (TcSE ROIN-292339-1)

Note: for the PDC module on the Phoenix architecture reference the "Settings for Vehicle Interface Processor (VIP) in Integrated Cluster" spec for VIP and CCPU inter-processor communication.

3.7.1 Interface Requirements - 12/24 hour mode

3.7.1.1 MD-REQ-025381/B-TimeAdjust.Rq (TcSE ROIN-297370)

Message Type: Request

This signal requests to change the setting for 12/24 hour mode.

Logical Signal Name	Literals	Value	Description
TimeAdjust.Rq	Inactive	0x0	
	12h_mode	0x1	
	24h_mode	0x2	

3.7.1.2 MD-REQ-025462/B-VehTimeFormat.St (TcSE ROIN-297375)

Message Type: Status

Signal by the Vehicle Settings Server to provide the status of the 12/24 hour time mode setting.

Logical Signal Name	Literals	Value	Description
VehTimeFormat.St	Invalid	0x0	
	12h_mode	0x1	
	24h_mode	0x2	

3.7.2 Functional Requirements

3.7.2.1 VS-SR-REQ-099559/A-12/24 Hour Status Storage

The Vehicle Settings Server shall retain the value for 12/24 hour mode for the VehTimeFormat signal across ignition cycles and sleep cycles. The Vehicle Settings Server shall only initialize VehTimeFormat apon battery connects.

3.7.2.2 VS-SR-REQ-099560/A-12/24 Hour Default Setting

The Vehicle Settings Server shall support a default configuration for 12 or 24 hour mode based on the vehicle market they are supporting. The VehicleTimeFormat signal shall be set on battery connect based on the configuration value used to determine 12 or 24 hour mode. If no configuration/value is available then the default shall be 12 hour mode.

3.7.2.3 VS-SR-REQ-099558/A-12/24 Hour Mode Error Handling

In the case that the Vehicle Settings Server is reporting an invalid value for 12/24 hour mode status the Vehicle Settings Client shall display the setting selected by the user. The setting displayed shall be retained through ignition/sleep cycles. If the Vehicle Settings Server starts to transmit a valid value in the 12/24 hour mode status then the Vehicle Settings Client shall update to the value received and refresh their stored value if necessary. The request from the Vehicle settings client does not require the vehicle settings server to reply with an updated status to update their HMI. (Example, Client sends request 24h to Server, Server ignores and continues to send invalid. Client updates HMI with 24h and stores internal the value)

If the TimeAdjust (SetTimeFormat) signal equals 0x0 Inactive or 0x3 Not Used the Vehicle Settings Server shall ignore these values and continue reporting the current value in VehicleTimeFormat.

3.7.3 Use Cases

3.7.3.1 VS-UC-REQ-025240/A- Set Time Format 12/24 hour mode (TcSE ROIN-290605)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On. Clock time format is set to {mode X}.
Scenario Description	User selects <Mode Y> via the HMI.
Post-conditions	HMI is updated to {Mode Y}.
List of Exception Use Cases	NA
Interfaces	G-HMI CBI

3.7.4 Sequence Diagrams

3.7.4.1 VS-SD-REQ-025241/A-Set 12/24 hour mode (TcSE ROIN-174033-1)

Linked Elements
VS-UC-REQ-025395/A-Set Time Format 12/24 hour mode (TcSE ROIN-174042-1)

Scenarios

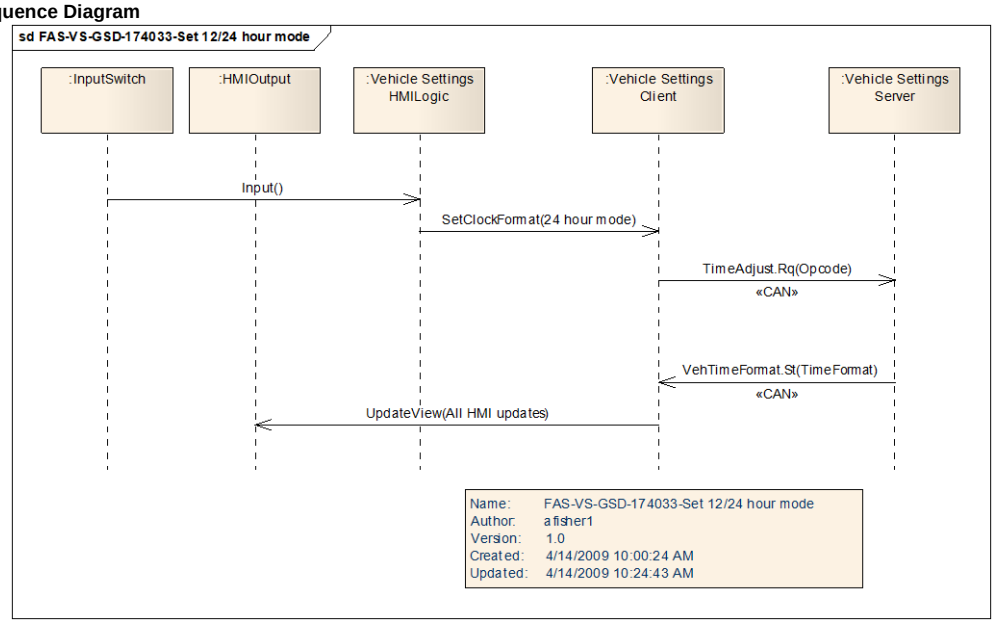
Normal Usage
The user selects <24 hour mode > via the HMI.

Constraints

Pre-condition
Center Stack Display is On, Settings units menu is active. Hour mode is currently set to 12 hours.

Post-condition
{Hour mode is updated to 24 hour mode on the HMI}

Sequence Diagram



3.8 VS-FUN-REQ-025246/E-Charge Port Light Ring (TcSE ROIN-292385-1)

3.8.1 Interface Requirements - Charge Port Light Ring

3.8.1.1 MD-REQ-025392/C-ChargePortLightRing_St (TcSE ROIN-270412)

If the CharePortLightRingClient supports both variants of the Charge Port Light Ring signals below then when selecting Charge Port Light Ring HMI the signal that will get updated will depend on what variant Charge Port Light Ring is configured for.

Variant 1 of ChargePortLightRing_St:
CAN Signal Name: CenterStackRing_D_Actl

Value	Equal
0x0	Null
0x1	Off
0x2	On
0x3	LimitedOn

Variant 2of ChargePortLightRing_St:
CAN Signal Name: ChrgStatDsply_D_Rq

Value	Equal
0x0	Off
0x1	On (default)
0x2	NotUsed_1
0x3	NotUsed_2

3.8.2 Use Cases

3.8.2.1 VS-UC-REQ-025247/A-Adjust Charge Port Light Ring (TcSE ROIN-290607)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On
Scenario Description	The user selects a new charge port light ring setting
Post-conditions	The charge port light ring setting is updated and displayed to the user.
List of Exception Use Cases	NA
Interfaces	G-HMI

3.8.3 Requirements

3.8.3.1 VS-SR-REQ-238151/A-ChargePortLightRing_St signal

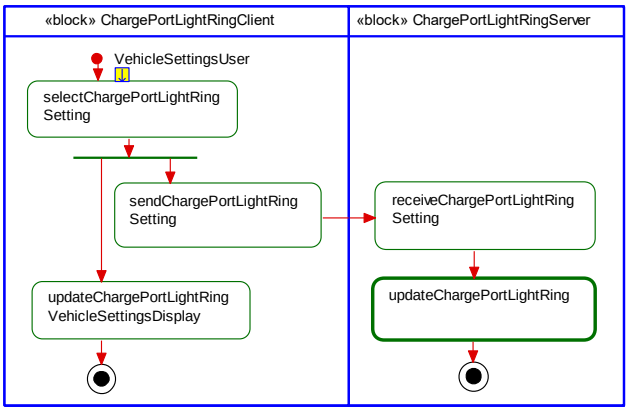
Once a selection is made for the Charge Port Light setting on the HMI the ChargePortLightRingClient shall keep this value set and save this setting between power modes (ie HMIAudioMode → ON → OFF → ON).

3.8.4 White Box View

3.8.4.1 VS-ACT-REQ-025152/A-Adjust Charge Port Light Ring (TcSE ROIN-270411)

Linked Elements
VS-SD-REQ-025248/A-Adjust Charge Port Light Ring (TcSE ROIN-270410)

Activity Diagram



3.8.4.2 VS-SD-REQ-025248/A-Adjust Charge Port Light Ring (TcSE ROIN-270410)

Scenarios

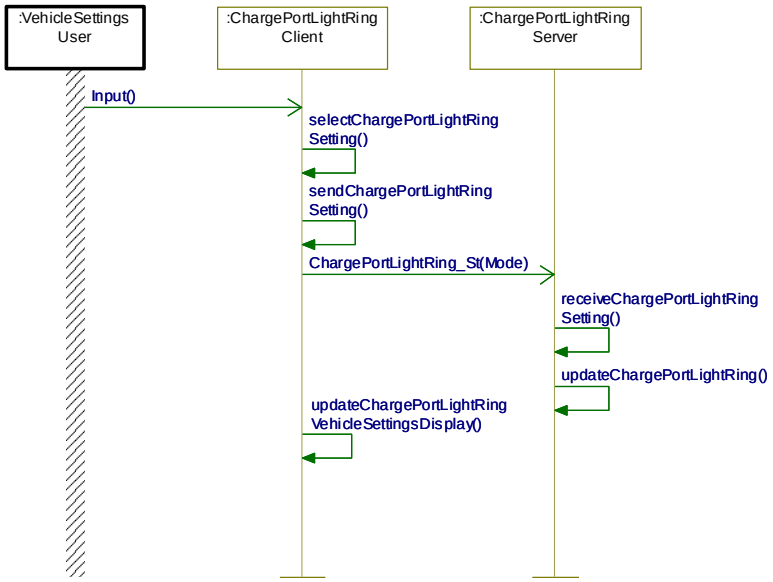
Normal Usage
The user selects a new charge port light ring setting using an input on the charge port light ring vehicle setting display.

Constraints

Pre-condition
The charge port light ring vehicle setting display is active.

Post-condition
The charge port light ring setting is updated and displayed to the user.

Sequence Diagram



3.9 VSv2-FUN-REQ-131582/B-Charge Cord Unlock

3.9.1 Interface Requirements - Charge Cord Unlock

3.9.1.1 MD-REQ-093985/B-ChargePortUnlock_Rq

Message Type: Request

This signal is requested by the Charge Port Unlock Client for the Charge Port Unlock Server to unlock the charge port connector.

Logical Signal Name	Literals	Value	Description
ChargePortUnlock_Rq	No_Request	0x0	
	Unlock Request	0x1	

~~*3.9.1.2 MD-REQ-132658/C-ChrgCrdLck_D_Stat*~~

~~Message Type: Response and Status~~

~~This signal reports the status of the Charge Port Unlock Server~~

~~Literals~~	~~Value~~	~~Description~~
~~Inactive / Retain~~	~~0x0~~	~~Retain treat same as Inactive. This supports requirement "IFS-MMCAN-REQ-015112-Invalid-NoDataExists", when in this state the charge port unlock client remembers the last state.~~
~~Unlocked~~	~~0x1~~	
~~Locked~~	~~0x2~~	
~~UnlockInProgress~~	~~0x3~~	
~~Unlocked / LockInProgress~~	~~0x4~~	~~This will say when the Lock is in Progress but to be treated as Unlocked by the Charge Port Unlock Client~~
~~Locked / Unlock_Fail~~	~~0x5~~	~~Unlock_Fail is treated the same as status set to Locked for the Charge Port Unlock Client~~
~~Unlocked / Lock_Fail~~	~~0x6~~	~~Lock_Fail is treated the same as status set to Unlocked for the Charge Port Unlock Client~~
~~Locked / Faulty~~	~~0x7~~	~~Faulty is treated the same as status set to Locked for the Charge Port Unlock Client~~

3.9.1.3 ChrgCrdLck_D_Falt

Message Type: Response and Status

This signal reports the status of the Charge Port Unlock Server for Popup to display.

Logical Signal Name	Literals	Value	Description
ChrgCrdLck_D_Falt	NoFault	0x0	No popup
	CSI Fault	0x1	"Unlock button failure. Press Close to unlock"
	HardwareFault	0x2	"Cord lock system failure. See owner's manual"

~~3.9.2 Use Cases~~

~~*3.9.2.1 VS-UC-REQ-130593/B-Unlock Charge Cord from Centerstack*~~

~~**Actors**~~	~~Vehicle Occupant~~
~~**Pre-conditions**~~	~~Infotainment System is On~~ ~~Charge cord is locked (ex charging in progress)~~ ~~HMI for charge cord locked is shown~~ ~~Ignition Status is Run~~
~~**Scenario Description**~~	~~The user selects unlock charge cord HMI from the infotainment Charge Cord Unlock Client~~
~~**Post-conditions**~~	~~The charger module (ie Charge Port Unlock Server) reports that the charge cord unlock is in progress.~~ ~~The HMI indicates the charge cord unlock is in progress.~~ ~~The charger module reports that the Charge Cord is unlocked.~~ ~~HMI shows Charge Cord Unlocked~~
~~**Interfaces**~~	~~G-HMI~~

~~*3.9.2.2 VS-UC-REQ-130595/B-User tries to access Centerstack Charge Car Unlock HMI when Not in Run*~~

~~**Actors**~~	~~Vehicle Occupant~~
~~**Pre-conditions**~~	~~Infotainment System is On~~ ~~Charge cord is locked~~ ~~Ignition Status is OFF / Acc~~
~~**Scenario Description**~~	~~The user selects settings menu from the Charge Cord Unlock Client~~
~~**Post-conditions**~~	~~HMI is not available to unlock the charge cord~~
~~**Interfaces**~~	~~G-HMI~~

~~*3.9.2.3 VS-UC-REQ-130596/A-Charge Cord Centerstack HMI when Ignition changes out of Run to OFF or Accessory*~~

~~**Actors**~~	~~Vehicle Occupant~~
~~**Pre-conditions**~~	~~Infotainment System is On~~ ~~Charge cord is locked~~ ~~Ignition Status is Run~~ ~~Settings Menu has Charge Cord Unlock HMI available for selection~~
~~**Scenario Description**~~	~~Ignition is changed to OFF / Accessory~~
~~**Post-conditions**~~	~~HMI is not available to unlock the charge cord~~
~~**Interfaces**~~	~~G-HMI~~

~~*3.9.2.4 VS-UC-REQ-130598/A-User tries to Unlock from the Centerstack but Charge Cord is Not Unlocked*~~

~~**Actors**~~	~~Vehicle Occupant~~
~~**Pre-conditions**~~	~~Infotainment System is On~~ ~~Charge Cord is connected and locked~~

	~~HMI for charge cord locked is shown~~ ~~Ignition Status is Run~~
~~**Scenario Description**~~	~~The user selects unlock charge cord but doesn't unlock~~
~~**Post-conditions**~~	~~HMI doesn't show Unlocked HMI~~
~~**Interfaces**~~	~~G-HMI~~

~~*3.9.2.5 VS-UC-REQ-130653/B-Fast Charging Completes*~~

~~**Actors**~~	~~Vehicle Occupant~~
~~**Pre-conditions**~~	~~Infotainment System is On~~ ~~Charge cord is connected and locked~~ ~~HMI for charge cord locked is shown~~ ~~Ignition Status is Run~~
~~**Scenario Description**~~	~~Charging completes~~
~~**Post-conditions**~~	~~Charge Cord is Unlocked.~~ ~~HMI shows as Unlocked HMI*~~ ~~*HMI shows whatever the status reported from the charging module~~
~~**Interfaces**~~	~~G-HMI~~

~~*3.9.2.6 VS-UC-REQ-130654/A-Charge Cord is Not Connected*~~

~~**Actors**~~	~~Vehicle Occupant~~
~~**Pre-conditions**~~	~~Infotainment System is On~~ ~~Charge cord is not connected~~ ~~Ignition Status is Run~~
~~**Scenario Description**~~	~~Go to the Vehicle Settings HMI screen for Charge Port Unlock~~
~~**Post-conditions**~~	~~HMI shows Unlocked*~~ ~~*HMI shows whatever the status reported from the charging module~~
~~**Interfaces**~~	~~G-HMI~~

~~*3.9.2.7 VS-UC-REQ-130656/A-User selects Unlock from Hard Button*~~

~~**Actors**~~	~~Vehicle Occupant~~
~~**Pre-conditions**~~	~~Infotainment System is On~~ ~~Charge cord is locked~~ ~~HMI for charge cord locked is shown~~ ~~Ignition Status is Run~~ ~~Settings Menu HMI is shown~~
~~**Scenario Description**~~	~~The user selects unlock charge cord via the hard button~~
~~**Post-conditions**~~	~~The charger module reports that the charge cord unlock is in progress.~~

	~~The HMI indicates the charge cord unlock is in progress.~~ ~~The charger module reports that the charge cord is unlocked.~~ ~~HMI shows charge cord unlocked HMI.~~
~~Interfaces~~	~~G-HMI~~

~~*3.9.2.8 VS-UC-REQ-131663/A-User selects Unlock from the Hard Button with Infotainment System OFF*~~

~~Actors~~	~~Vehicle Occupant~~
~~Pre-conditions~~	~~Infotainment System is OFF (ie Infotainment HMI is OFF)~~ ~~Charge cord is locked~~ ~~Ignition Status is Off~~
~~Scenario Description~~	~~The user selects unlock charge cord via the hard button~~
~~Post-conditions~~	~~No feedback on Infotainment HMI of in progress or lock status.~~ • ~~Note: Charge port light will be used for feedback~~
~~Interfaces~~	~~G-HMI~~

~~*3.9.2.9 VS-UC-REQ-131664/B-User tries to Unlock via hard or soft button but the charger module reports Unlock Fail on the charger status signal*~~

~~Actors~~	~~Vehicle Occupant~~
~~Pre-conditions~~	~~Infotainment System is On~~ ~~Charge Cord is connected and locked~~ ~~HMI for Charge Cord Locked is shown~~ ~~Ignition Status is Run~~
~~Scenario Description~~	~~The user selects unlock charge cord but charger responds with faulted status~~
~~Post-conditions~~	~~HMI displays Locked HMI for unlocked failed~~ • ~~Note: charge port light will be used for feedback~~
~~Interfaces~~	~~G-HMI~~

~~*3.9.2.10 VS-UC-REQ-131665/B-The charger module reports lock fail on the charge status signal*~~

~~Actors~~	~~Vehicle Occupant~~
~~Pre-conditions~~	~~Infotainment System is On~~ ~~Charge Cord is connected~~ ~~Ignition Status is Run~~
~~Scenario Description~~	~~The cord tries to lock, but fails~~
~~Post-conditions~~	~~HMI display Unlocked HMI for Lock Failed~~ • ~~charge port light will be used for feedback~~
~~Interfaces~~	~~G-HMI~~

~~*3.9.2.11 VS-UC-REQ-131666/A-Charger module reports Inactive encoding on the charger status signal*~~

~~Actors~~	~~Vehicle Occupant~~

Pre-conditions	Infotainment System is On Ignition Status is Run
Scenario Description	Charger module powers up and reports Inactive on the status signal
Post-conditions	HMI performs based on last state the charger status signal was received that was not Inactive. This applies only if received Inactive for less than 5 seconds in Run. If receive Inactive more than 5 seconds in Run then the signal is considered missing/unknown. When missing/unknown the HMI shall assume the cord is locked so that the unlock button is available.
Interfaces	G-HMI

3.9.2.12 VS-UC-REQ-131667/B-The Charger Module reports Faulty on the status signal

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On Charge Cord is connected Settings HMI is active Ignition Status is Run
Scenario Description	The charger reports faulty on the charge cord lock status
Post-conditions	HMI displays Locked HMI for faulty • charge port light will be used for feedback
Interfaces	G-HMI

3.9.2.13 VS-UC-REQ-131668/A-The charging module reports Locking In Progress on the charger status signal

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On Charge Cord is connected Ignition Status is Run
Scenario Description	The charger reports Locking In Progress on the charge cord lock status
Post-conditions	HMI shows Unlocked HMI for Locking In Progress • charge port light will be used for feedback
Interfaces	G-HMI

3.9.2.14 VS-UC-REQ-132657/A-User plugs in Charge Cord and Charge Cord is Automatically Locked

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On Charge Cord is not connected

	~~HMI for charge cord unlocked is shown~~ ~~Ignition Status is Run~~ ~~Vehicle settings screen is being viewed~~
~~Scenario Description~~	~~The user plugs in the vehicle~~
~~Post-conditions~~	~~The charger module reports that the charge cord lock is in progress.~~ ~~HMI shows Unlocked HMI*~~ ~~*HMI shows whatever the status reported from the charging module~~ ~~The charger module reports that the charge cord is locked.~~ ~~HMI shows Locked HMI*~~ ~~*HMI shows whatever the status reported from the charging module~~
~~Interfaces~~	~~G-HMI~~

3.9.3 Requirements

~~*3.9.3.1 VS-HMI-REQ-132665/A-Charge Port HMI when Ignition is Run*~~

~~The Charge Port Unlock Client shall only display Charge Port HMI when the Ignition Status is Run.~~

3.9.3.2 User Click on button and send Unlock request to Server

When user trigger the button, the Client should display 'The charging has stopped and the AC charging gun has been unlocked' notification, AND send ChargePortUnlock_Rq = unlock request 1(one) frame to Server, and return to no request automatically.

3.9.3.3 Cord Lock Fault Alert

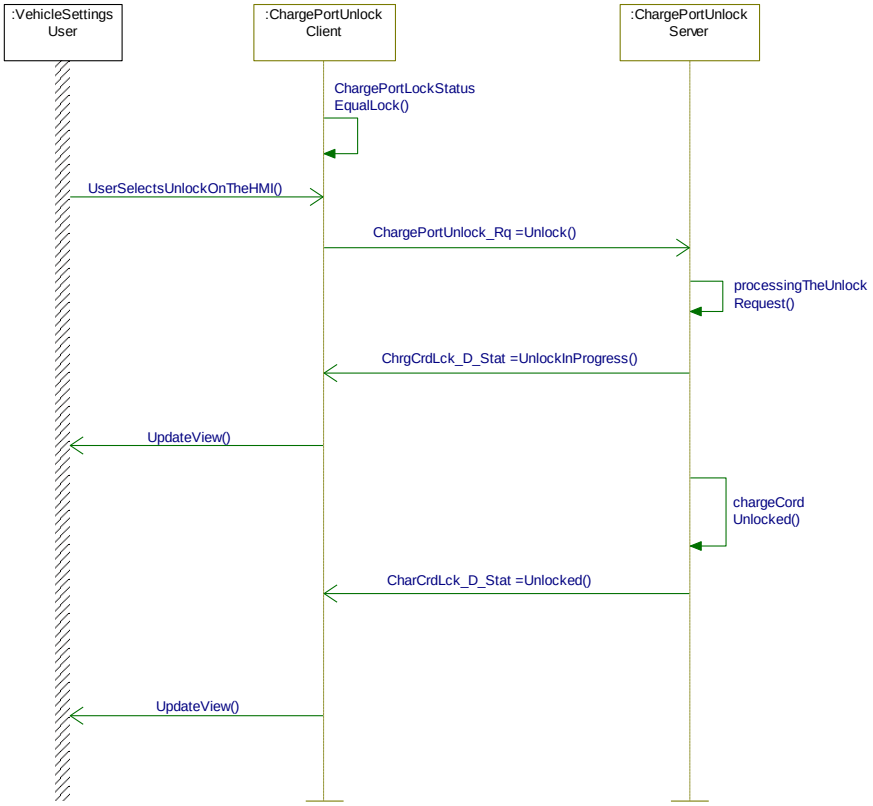
The APIM Center Stack shall display a cord unlock fault popup based on the cord unlock fault signal (ChrgCrdLck_D_Falt) from the BCCM according to the **3.9.1.3 ChrgCrdLck_D_Falt Table**.
The Popup display reference HMI specification.

When the customer closes the "Unlock button failure. Press Close to unlock" popup, the APIM shall send a charge cord unlock request (ChrgCrdUnlock_B_Rq = 0x1) to the BCCM.

3.9.4 Sequence Diagrams

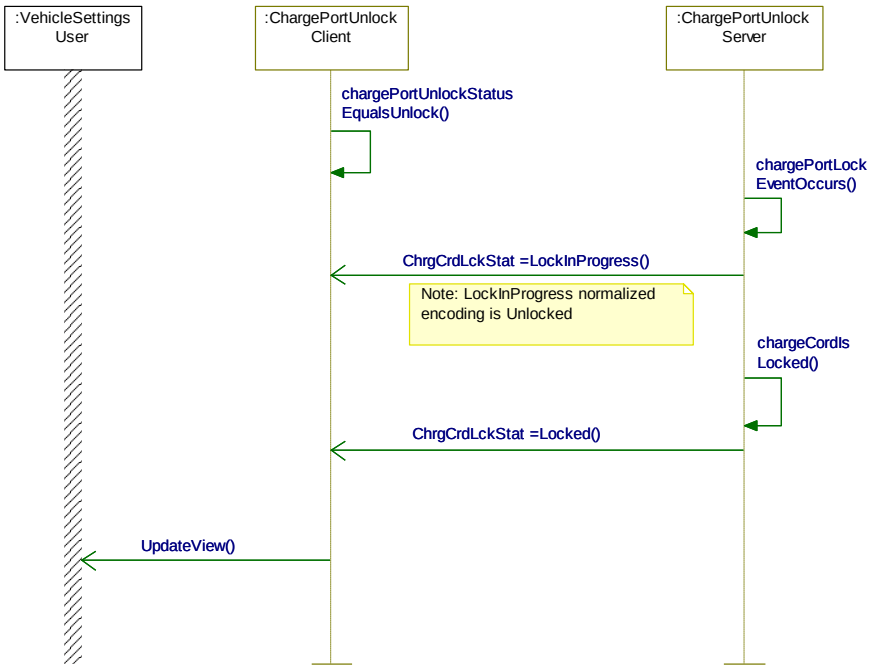
~~*3.9.4.1 VS-SD-REQ-132666/B-Unlock Charge Port from Infotainment HMI*~~

~~Pre-Condition:~~
~~Ignition = Run~~
~~Charge Cord is Locked and Status message is reporting Locked~~



~~*3.9.4.2 VS-SD-REQ-132673/A-Lock Charge Cord*~~

~~Pre-Condition:~~
~~Ignition = Run~~
~~Charge Cord is Unlocked and status message is reporting Unlocked~~


:VehicleSettings User
:ChargePortUnlock Client
:ChargePortUnlock Server
chargePortUnlockStatus EqualsUnlock()
chargePortLock EventOccurs()
ChrgCrdLckStat =LockInProgress()
Note: LockInProgress normalized encoding is Unlocked
chargeCordIs Locked()
ChrgCrdLckStat =Locked()
UpdateView()

3.10 VS-FUN-REQ-023435/C-Edit Keypad Code (TcSE ROIN-284424-1)

3.10.1 Interface Requirements - Keypad

3.10.1.1 MD-REQ-023414/C-CntrStk_D_RqAssoc (TcSE ROIN-284870-1)

Message Type: Request

Note: Request signal from the Keypad Client / Personality Client to the Keypad Server with the keycode operation requested to be performed.

Logical Signal Name	Literals	Value	Description
CntrStk_D_RqAssoc	CHECK_KEYCODE	0x0	
	ERASE_KEYCODE	0x1	
	KEY	0x2	
	NULL	0x3	
	RKE	0x4	
	SET_KEYCODE	0x5	
	Cancel	0x6	
	Not Used	0x7	

3.10.1.2 MD-REQ-023415/B-CntrStkKeycodeActl (TcSE ROIN-284871-1)

Message Type: Request

Note: Keycode signal from the Keypad Client / Personality Client to the Keypad Server / PersonalizationFunction Server to be used for verifying factory keycode or for changing current keycode.

Logical Signal Name	Literals	Value	Description
CntrStkKeycodeActl	Keycode	0x0000 – 0xFFFF	See table below for decoding

CntrStkKeycodeActl Note: The Keycode entered from the center stack to the personalization. This is a bit encoded CAN signal. 001 = 1/2 button pressed 010 = 3/4 button pressed 011 = 5/6 button pressed 100 = 7/8 button pressed 101 = 9/0 button pressed 000, 110, 111 are Invalid entries.	CntrStkKeycodeActl Note: Bit 15 is ignored Bits 14 - 12 : First button pressed Bits 11 - 9 : Second button pressed Bits 8 - 6 : Third button pressed Bits 5 - 3 : Fourth button pressed Bits 2 - 0 : Fifth button pressed Where, bit 0 is the right most bit of this CAN signal. Example of decoding the Keycode from the CAN signal: CAN Signal Value: 0x58D1 Bit 15 Bit 14 Bit 13 Bit 12 Bit 11 Bit 10 Bit 9 Bit 8 0 1 0 1 1 0 0 0 Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit 0 1 1 0 1 0 0 0 1 Bit 15 is ignored. Bits 14 – 12: (9/0) First Button Pressed Bits 11 - 9 :(7/8) Second button pressed Bits 8 - 6 :(5/6) Third button pressed Bits 5 - 3 :(3/4) Fourth button pressed Bits 2 - 0 :(1/0) Fifth button pressed

3.10.1.3 MD-REQ-023425/B-AssocConfirm_D_Actl (TcSE ROIN-284863-1)

Message Type: Status

Note: Keypad Server / PersonalizationFunction Server communicates the state of the requested keycode association

Logical Signal Name	Literals	Value	Description
AssocConfirm_D_Actl	None	0x0	
	DISASSOCIATE	0x1	
	DUPLICATE	0x2	
	ERASE	0x3	
	IN_PROGRESS	0x4	
	KEYCODE_ACCEPTED	0x5	
	KEYCODE_REJECTED	0x6	
	ASSOCIATE	0x7	

3.10.2 Use Cases

3.10.2.1 VS-UC-REQ-023436/A-Set Keypad Code for Current User (TcSE ROIN-290608)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On In key pad set mode
Scenario Description	The user enters <factory code, and then enters a valid new key code> via HMI. This is unique from all other entered key codes.
Post-conditions	New Keycode is stored {appropriate HMI is displayed}
List of Exception Use Cases	E1- VS-GUC-290609 -Invalid Keypad Code Entry E2- VS-GUC-290610 -Invalid Duplicate Keypad Code Entry E3- VS-GUC-290611 -Cancel Keypad Set Process
Interfaces	G-HMI Vehicle System Interface

3.10.2.2 VS-UC-REQ-023437/A-Erase Keypad Code from Current User (TcSE ROIN-290612)

Use Case Title	Erase Keypad Code from current user
Actors	Vehicle Occupant
Pre-conditions	Infotainment system is On In key pad set mode
Scenario Description	The user enters <factory code, and then selects erase key code> via HMI.
Post-conditions	The keycode is erased. {Appropriate HMI is displayed}
List of Exception Use Cases	E1-VS-GUC-290609 -Invalid Keycode Entry E2- VS-GUC-290611 -Cancel Keypad Set Process
Interfaces	G-HMI Vehicle System Interface

3.10.2.3 VS-UC-REQ-023438/A-Invalid Keypad Code Entry (TcSE ROIN-290609)

Linked Elements
VS-UC-REQ-023436/A-Set Keypad Code for Current User (TcSE ROIN-290608)
VS-UC-REQ-023437/A-Erase Keypad Code from Current User (TcSE ROIN-290612)

Use Case Title	Invalid keycode entry
Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On In key pad set mode
Scenario Description	The user enters an invalid factory code.
Post-conditions	HMI indicates {invalid key code entered message}. Keycode is not Set or Erased
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.10.2.4 VS-UC-REQ-023439/A-Invalid Duplicate Keypad Code Entry (TcSE ROIN-290610)

Linked Elements
VS-UC-REQ-023436/A-Set Keypad Code for Current User (TcSE ROIN-290608)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On
Scenario Description	The user enters a duplicate key code
Post-conditions	HMI indicates {Duplicate key code entered message}. Keycode is not Set.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

3.10.2.5 VS-UC-REQ-023440/A-Cancel Keypad Set Process (TcSE ROIN-290611)

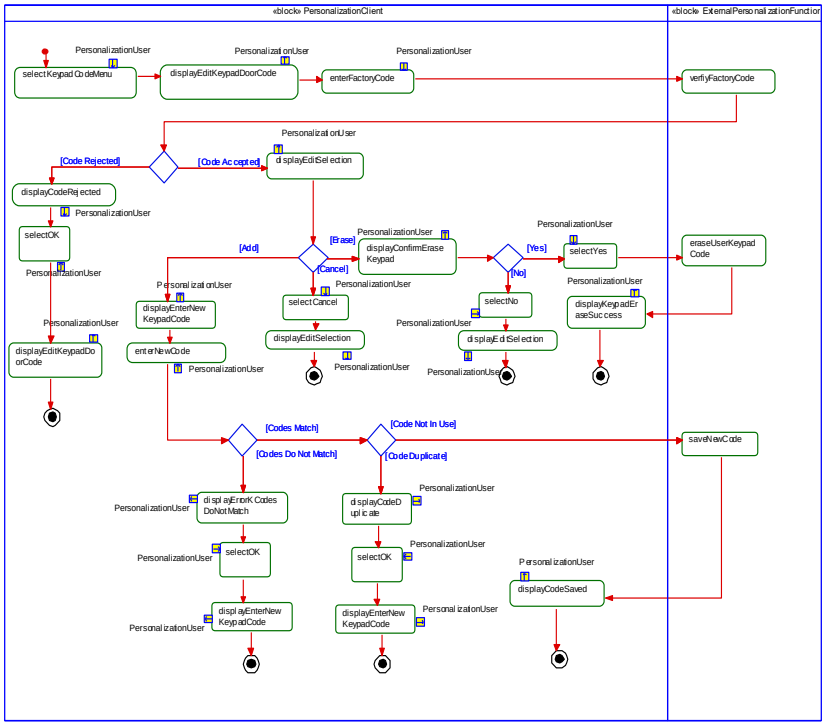
Linked Elements
VS-UC-REQ-023436/A-Set Keypad Code for Current User (TcSE ROIN-290608)
VS-UC-REQ-023437/A-Erase Keypad Code from Current User (TcSE ROIN-290612)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On In key pad set mode
Scenario Description	Exit key pad set screen, while before setting keypad code.
Post-conditions	Operation is aborted.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface

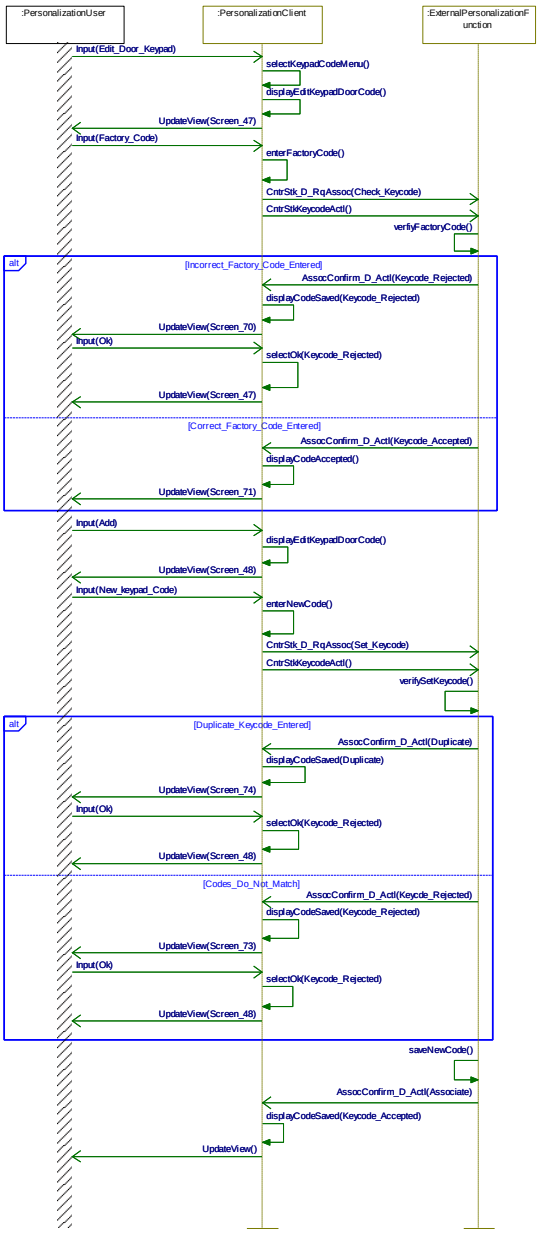
3.10.3 White Box Views

3.10.3.1 VS-ACT-REQ-023441/A-Edit Key Pad Code (TcSE ROIN-284422-1)

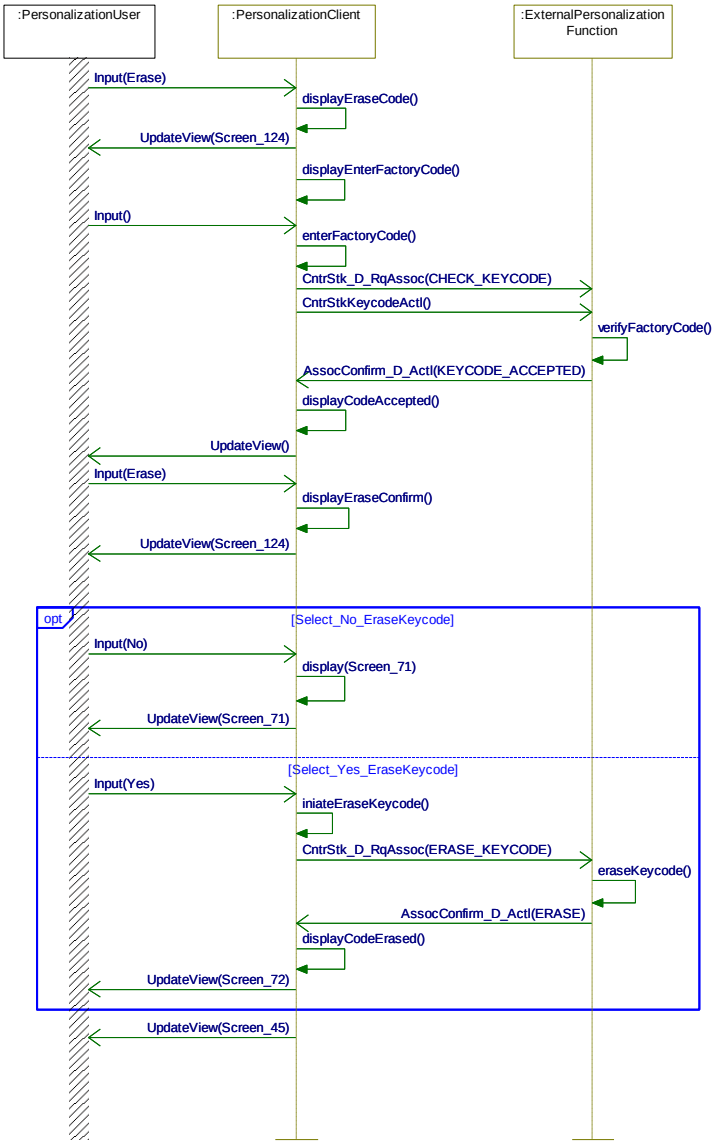
Activity Diagram



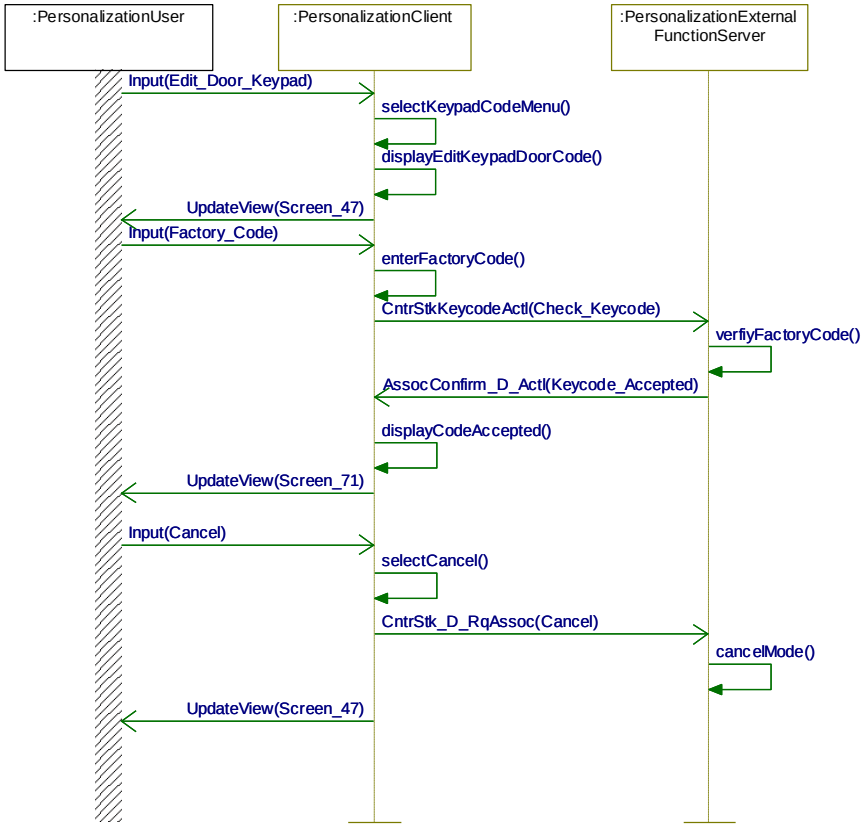
3.10.3.2 VS-SD-REQ-023442/B-Set Keypad Code for current user (TcSE ROIN-129661-2)



3.10.3.3 VS-SD-REQ-023443/B-Erase Keypad Code from current user (TcSE ROIN-129691-1)



3.10.3.4 VS-SD-REQ-086469/A-Cancel Keypad Code Edit



3.11 VSv2-FUN-REQ-331323/A-Edit Keypad Code - Variant 2

3.11.1 Interface Requirements - Keypad

3.11.1.1 MD-REQ-331324/A-CntrStk2_D_RqAssoc

Message Type: Request

Note: Request signal from the Keypad Client to the Keypad Server with the keycode operation requested to be performed.

Logical Signal Name	Literals	Value	Description
CntrStk2_D_RqAssoc	CHECK_KEYCODE	0x0	
	ERASE_KEYCODE	0x1	
	KEY	0x2	
	NULL	0x3	
	RKE	0x4	
	SET_KEYCODE	0x5	
	Cancel	0x6	
	Not Used	0x7	

Note: init value in the CAN dB for this signal should be 0x3 Null

3.11.1.2 MD-REQ-330676/A-KeyPadCodeDgtX_D_Stat

Message Type: Status

Keycode signal from the Keypad Client to the Keypad Server to be used for verifying factory keycode or for changing current keycode.

Note: the “X” in KeyPadCodeDgtX_D_Stat represents 1 – 7 for each of the 7 keypad signals

Logical Signal Name	Literals	Value	Description
KeyPadCodeDgtX_D_Stat	EndofString	0x0	
	Button1_2or1	0x1	Ex. HMI has button 1_2 option or HMI has an individual 1 digit
	Button2	0x2	Ex. HMI allows selection of individual 2 digit
	Button3_4or3	0x3	
	Button4	0x4	
	Button5_6or5	0x5	
	Button6	0x6	
	Button7_8or7	0x7	
	Button8	0x8	
	Button9_0or9	0x9	
	Button0	0xA	
	Button7_8and9_0	0xB	Not used, treat as a don’t care. Added for legacy reasons per the BCM team
	NotUsed1	0xC	
	NotUsed2	0xD	
	NotUsed3	0xE	
	NotUsed4	0xF	

Note: there would be 7 signals KeyPadCodeDgt1_D_Stat – KeyPadCodeDgt7_D_Stat where X represents the signal number

3.11.1.3 MD-REQ-023425/B-AssocConfirm_D_Actl (TcSE ROIN-284863-1)

Message Type: Status

Note: Keypad Server / PersonalizationFunction Server communicates the state of the requested keycode association

Logical Signal Name	Literals	Value	Description
AssocConfirm_D_Actl	None	0x0	
	DISASSOCIATE	0x1	
	DUPLICATE	0x2	
	ERASE	0x3	
	IN_PROGRESS	0x4	
	KEYCODE_ACCEPTED	0x5	
	KEYCODE_REJECTED	0x6	
	ASSOCIATE	0x7	

3.11.2 Use Cases

3.11.2.1 VS-UC-REQ-331327/A-Set Keypad Code for Current User

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On In keypad set mode
Scenario Description	The user enters <factory code, and then enters a valid new keycode> via HMI. This is unique from all other entered keycodes.
Post-conditions	New keycode is stored {appropriate HMI is displayed}
List of Exception Use Cases	E1- VS-GUC-290609 -Invalid Keypad Code Entry E2- VS-GUC-290610 -Invalid Duplicate Keypad Code Entry E3- VS-GUC-290611 -Cancel Keypad Set Process
Interfaces	G-HMI Vehicle System Interface
Notes	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

3.11.2.2 VS-UC-REQ-331328/A-Erase Keypad Code from Current User

Actors	Vehicle Occupant
Pre-conditions	Infotainment system is On In keypad set mode
Scenario Description	The user enters <factory code, and then selects erase keycode> via HMI.
Post-conditions	The keycode is erased. {Appropriate HMI is displayed}
List of Exception Use Cases	E1-VS-GUC-290609 -Invalid Keycode Entry E2- VS-GUC-290611 -Cancel Keypad Set Process

Interfaces	G-HMI Vehicle System Interface
Notes	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

3.11.2.3 VS-UC-REQ-331329/A-Invalid Keypad Code Entry

Linked Elements
VS-UC-REQ-331327/A-Set Keypad Code for Current User
VS-UC-REQ-331328/A-Erase Keypad Code from Current User

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On In keypad set mode
Scenario Description	The user enters an invalid factory code.
Post-conditions	HMI indicates {invalid key code entered message}. Keycode is not Set or Erased
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface
Notes	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

3.11.2.4 VS-UC-REQ-331330/A-Invalid Duplicate Keypad Code Entry

Linked Elements
VS-UC-REQ-331327/A-Set Keypad Code for Current User

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On
Scenario Description	The user enters a duplicate keycode
Post-conditions	HMI indicates {Duplicate keycode entered message}. Keycode is not Set.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface
Notes	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

3.11.2.5 VS-UC-REQ-331331/A-Cancel Keypad Set Process

Linked Elements
VS-UC-REQ-331327/A-Set Keypad Code for Current User
VS-UC-REQ-331328/A-Erase Keypad Code from Current User

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is On

	In keypad set mode
Scenario Description	Exit key pad set screen, while before setting keypad keycode.
Post-conditions	Operation is aborted.
List of Exception Use Cases	NA
Interfaces	G-HMI Vehicle System Interface
Notes	Unless the keypad signals are made wake-up signals then outside of Run the interface with the Keypad Server might not wake-up the bus the Keypad Server is on and the feature might not work outside of Run. HMI might want to limit entering the keycode to Run if that is the case.

3.11.3 Requirements

3.11.3.1 VS-SR-REQ-331337/B-Keypad Client supporting both Variant 1 and Variant 2 request signals at the same time

The Keypad Client shall send both the Variant 1 and Variant 2 keypad request signals at the same time when performing a keypad keycode function operation. To support this the Keypad Client shall:

- Send the variant 1 request signals CntrStk_D_RqAssoc and CntrStkKeycodeActl from the function "VS-FUN-REQ-023435-Edit Keypad Code", AND
- Send the variant 2 request signals Cntrstk2_D_RqAssoc and KeyPadCodeDgtX_D_Stat from this variant 2 function ("VSv2-FUN-REQ-331323-Edit Keypad Code – Variant 2).
    - For the Cntrstk2_D_RqAssoc signal, once the selected value (ex SET_KEYCODE) is put on the CAN bus then 100 msec later Cntrstk2_D_RqAssoc would be set to Null.
    - For the KeyPadCodeDgtX_D_Stat signals, once the selected values are set for each signal (ex Button8) then 100 msec later all the KeyPadCodeDgtX_D_Stat signals would be set back to EndofString.

The Keypad Client shall use the same response signal AssocConfirm_D_Actl from the Keypad Server (same signal in both variant 1 and variant 2 functions).

The Keypad Server shall determine if the variant 2 signals are to be used (Cntrstk2_D_RqAssoc, KeyPadCodeDgtX_D_Stat) or variant 1 signals are to be used (CntrStk_D_RqAssoc, CntrStkKeycodeActl). The Keypad Server shall only respond to one set of request and keycode signals from the Keypad Client.

- Disclaimer: the Keypad Server was using the strategy in the bullets below at the time of the spec release. If the strategy changes in the future (ex use configurations, only supports the new signals) that won't impact the strategy of the Keypad Client. The KeyPad Server shall only respond to either variant 1 or variant2 requests signals but not both regardless what strategy they use.
    - Keypad Server uses signals Cntrstk2_D_RqAssoc, KeyPadCodeDgtX_D_Stat:
        - If the new Keypad Client signals (Cntrstk2_D_RqAssoc, KeyPadCodeDgtX_D_Stat) are on the bus (would be in a new CAN message ID) then use these signal. If they are on the bus the Keypad Server shall support the new signals in this function.
    - Keypad Server uses signals CntrStk_D_RqAssoc, CntrStkKeycodeActl:
        - If the signals Cntrstk2_D_RqAssoc, KeyPadCodeDgtX_D_Stat are not received by the Keypad Server (Due to an older revision of the module) then the KeyPad Server shall support the signals CnterStk_D_RqAssoc, CntrsStkKeycodeActl in "VS-FUN-REQ-023435-Edit Keypad Code".

3.11.3.2 VS-SR-REQ-331338/A-Number of digits in Keycode

The EndOfString encoding in the KeyPadCodeDgtX_D_Stat signals is used to indicate how many button presses from the keypad keycode are being sent to the keypad server. The EndOfString shall be set in the KeyPadCodeDgtX_D_Stat signals not being used.

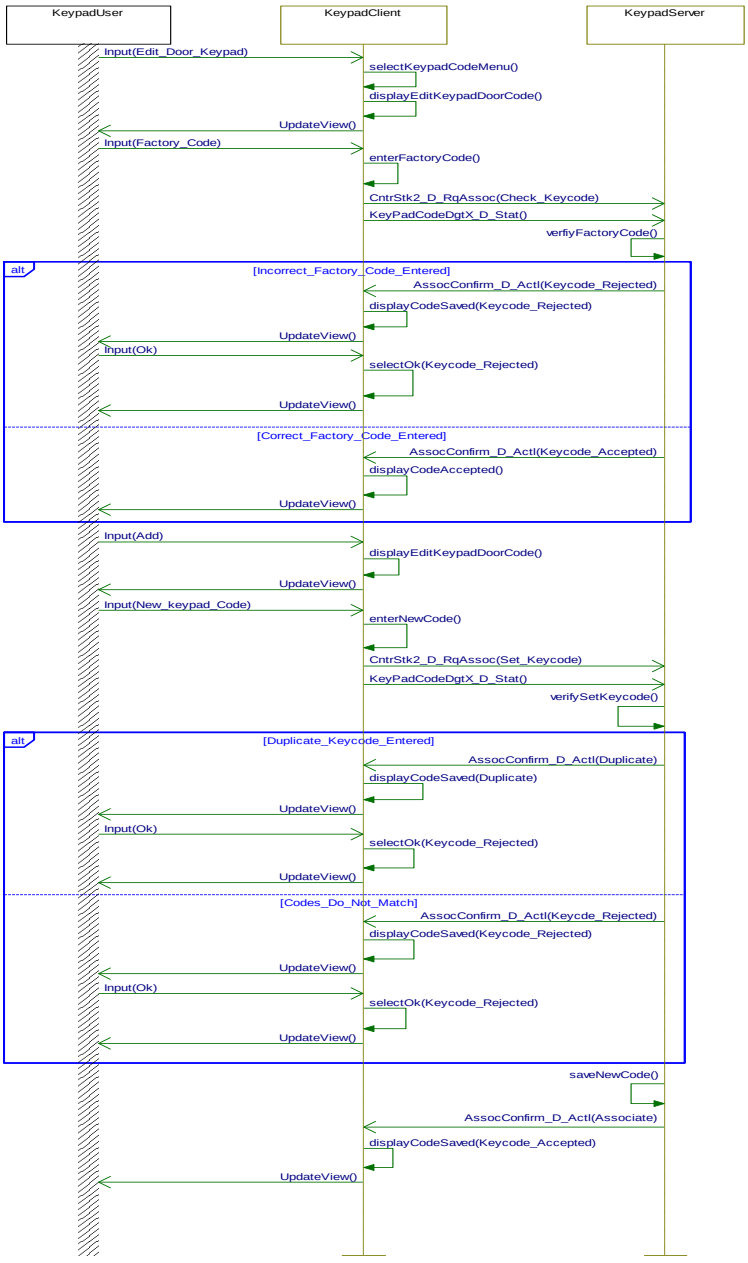
Example:

- For a 5 digit keycode with a keycode of 1_2, 3_4, 1_2, 9_0, 5_6 would be sent from the Keypad Client as follows:
    - KeypadCodeDgt1_D_Actl = 0x1 Button1_2or1

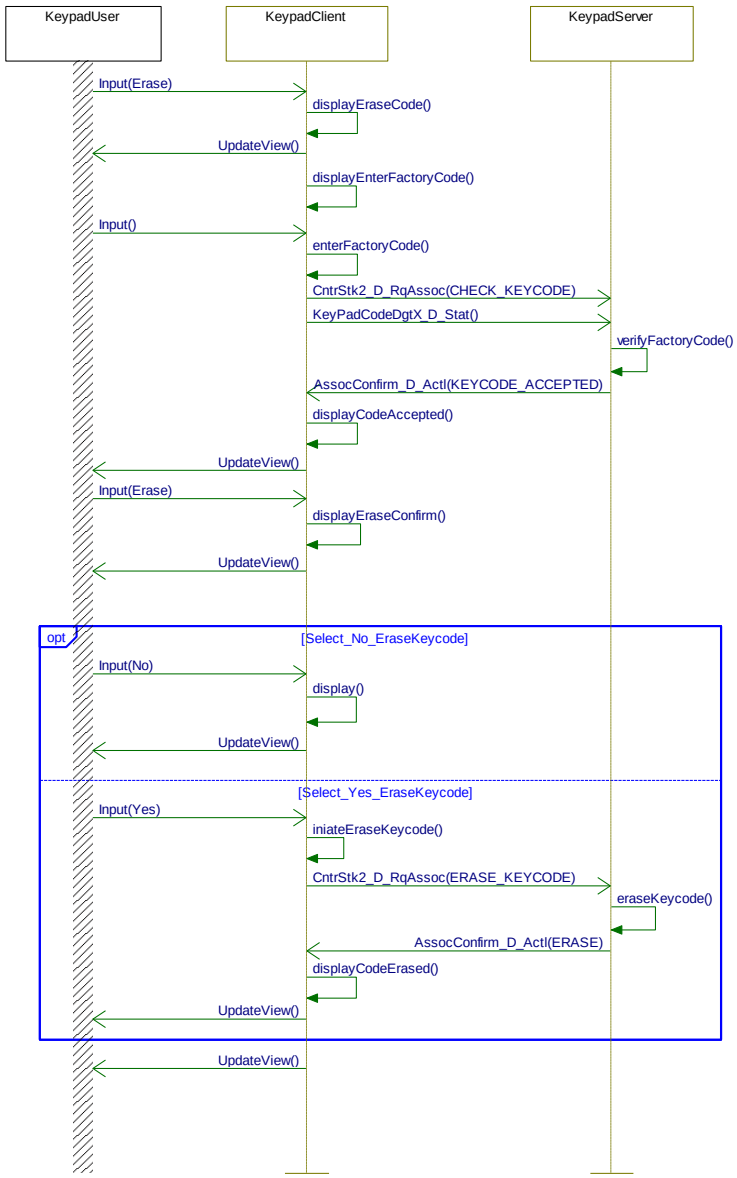
- KeypadCodeDgt2_D_Actl = 0x3 Button3_4or3
- KeypadCodeDgt3_D_Actl = 0x1 Button1_2or1
- KeypadCodeDgt4_D_Actl = 0x9 Button9_0or9
- KeypadCodeDgt5_D_Actl = 0x5 Button5_6or5
- KeypadCodeDgt6_D_Actl = 0x0 EndOfString
- KeypadCodeDgt7_D_Actl = 0x0 EndOfString

3.11.4 Sequence Diagrams

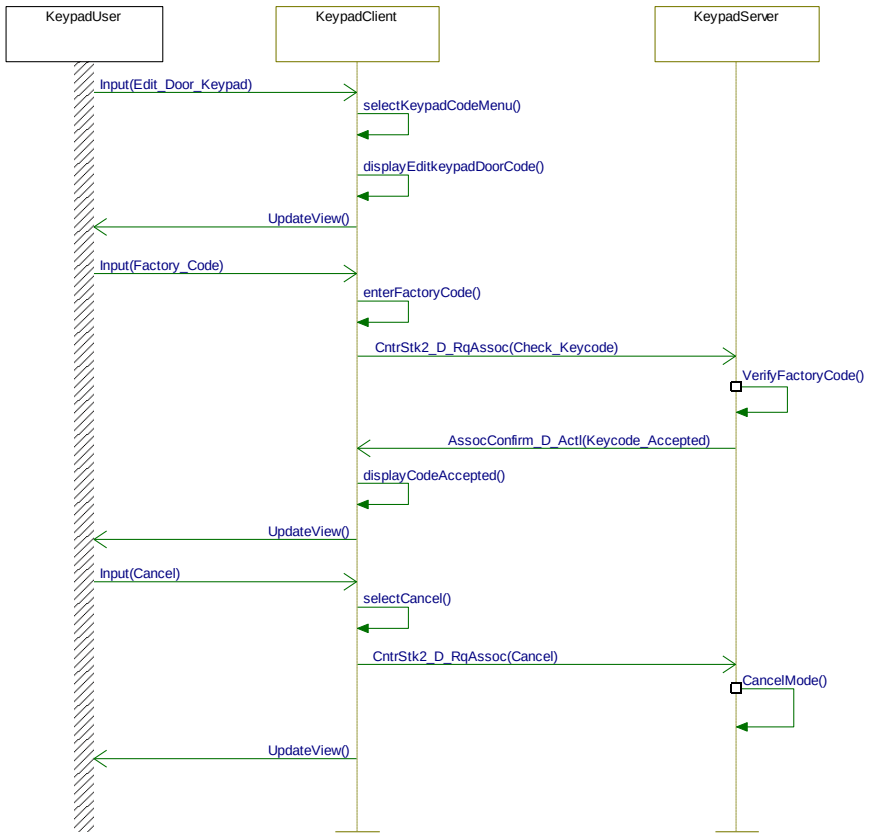
3.11.4.1 VS-SD-REQ-331333/A-Set Keypad Code for current user


KeypadUser
KeypadClient
KeypadServer
Input(Edit_Door_Keypad)
selectKeypadCodeMenu()
displayEditKeypadDoorCode()
UpdateView()
Input(Factory_Code)
enterFactoryCode()
CntrStk2_D_RqAssoc(Check_Keycode)
KeyPadCodeDgtX_D_Stat()
verfiyFactoryCode()
alt
[Incorrect_Factory_Code_Entered]
AssocConfirm_D_Actl(Keycode_Rejected)
displayCodeSaved(Keycode_Rejected)
UpdateView()
Input(Ok)
selectOk(Keycode_Rejected)
UpdateView()
[Correct_Factory_Code_Entered]
AssocConfirm_D_Actl(Keycode_Accepted)
displayCodeAccepted()
UpdateView()
Input(Add)
displayEditKeypadDoorCode()
UpdateView()
Input(New_keypad_Code)
enterNewCode()
CntrStk2_D_RqAssoc(Set_Keycode)
KeyPadCodeDgtX_D_Stat()
verifySetKeycode()
alt
[Duplicate_Keycode_Entered]
AssocConfirm_D_Actl(Duplicate)
displayCodeSaved(Duplicate)
UpdateView()
Input(Ok)
selectOk(Keycode_Rejected)
UpdateView()
[Codes_Do_Not_Match]
AssocConfirm_D_Actl(Keycde_Rejected)
displayCodeSaved(Keycode_Rejected)
UpdateView()
Input(Ok)
selectOk(Keycode_Rejected)
UpdateView()
saveNewCode()
AssocConfirm_D_Actl(Associate)
displayCodeSaved(Keycode_Accepted)
UpdateView()

3.11.4.2 VS-SD-REQ-331334/A-Erase Keypad Code from current user



3.11.4.3 VS-SD-REQ-331335/A-Cancel Keypad Code Edit



3.12 VS-FUN-REQ-025341/F-Master Reset_Super Reset - APIM (TcSE ROIN-296290-1)

3.12.1 Overview

The Master Reset / Super Reset feature is used to reset customer settings, feature settings, connectivity settings within the vehicle, cloud and from mobile app, and perform de-authorization (if applicable).

For Master Reset functionality related to modules besides SYNC/Phoenix, please see the Embedded Modem Reset SPSS and for the AHU / DSP AMP Station Management SPSS for audio settings.

For a local master reset (not resetting any other modules) when go from Transport Mode to Normal Mode see the APIM Power Management SPSS.

For all other reset functionality outside of Master Reset (Remote Reset, Feature Resets, Reset Control, etc.), please see the Embedded Modem Reset SPSS.

For Enhanced Memory requirement "ENMEM-REQ-105569-Driver Profiles Deleted During Master Reset" see Enhanced Memory SPSS for other corresponding enhanced memory requirements and system interfaces.

3.12.2 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Master Reset feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Vehicle Settings Master Reset Client	APIM
Vehicle Settings Server for sequence diagram	AHU, DSP AMP (AHU Master Reset Server / Vehicle Settings Server for its audio settings that are reset) ECG
EnhancedMemoryInterfaceClient	APIM
Vehicle Settings Language Servers	SYNC and Cluster Phoenix architecture: APIM PDC

3.12.3 Logical to Physical CAN signal Mapping - Master Reset

This Master Reset deployment table maps the logical signals to the physical CAN signals.

Note: This is for reference only. If there is a conflict between the name in the CAN signal name column and what is found in the actual CAN dB then the CAN dB takes precedent. Please bring to Ford's attention if there is a conflict.

Logical SPSS Signal Name	CAN signal name
FactoryReset.Rq	FactoryReset_Rq
	SDARS_FactoryReset_Rq
FactoryReset.St	FactoryReset_St
	SDARS_Factory_Reset_St

3.12.4 Interface Requirements - Master Reset

3.12.4.1 MD-REQ-213361/C-FactoryReset_Rq

Message Type: Request

Signal sent by the Master Reset Client to initiate a Master Reset

Logical Signal Name	Literals	Value	Description
FactoryReset_Rq	Inactive	0x0	
	ResetFactoryDefaults	0x1	

3.12.4.2 MD-REQ-222036/C-FactoryReset.St

Message Type: Status

Signal sent by the Master Reset components (ex AHU) indicating that the master reset default settings were restored for a master reset event

Logical Signal Name	Literals	Value	Description
FactoryReset.St	Inactive	0x0	
	FactoryDefaultsRestored	0x1	
	Reserved	0x2	
	Reserved	0x3	

3.12.5 Use Cases

3.12.5.1 VS-UC-REQ-025342/A-User Decides to Restore Module back to its Original Factory State while Driving (Driver Restriction = ON) (TcSE ROIN-298054)

Actors	Vehicle Occupant
Pre-conditions	Infotainment system is available Driver Restriction = ON
Scenario Description	The user will like to perform a Master Reset while the vehicle is moving (Driver Restriction = ON)
Post-conditions	All Master Reset functionality should be a disabled
List of Exception Use Cases	E1 – Master reset started and user drivers off (Driver Restriction = ON)
Interfaces	G-HMI

3.12.5.2 VS-UC-REQ-025343/A-Master Reset Started and User Drivers Off (Driver Restriction = ON) (TcSE ROIN-298057)

Linked Elements
VS-UC-REQ-025342/A-User Decides to Restore Module back to its Original Factory State while Driving (Driver Restriction = ON) (TcSE ROIN-298054)

Actors	Vehicle Occupant
Pre-conditions	Same as normal use case
Scenario Description	User starts master reset and then drives off (turning ON driver restriction)
Post-conditions	Master reset and any reboots (if necessary) will continue as normal
List of Exception Use Cases	N/A
Interfaces	G-HMI

3.12.5.3 VS-UC-REQ-025344/B-User Decides to Restore Module Back to its Original Factory State (TcSE ROIN-298055)

Actors	Vehicle Occupant
Pre-conditions	Infotainment system is available Driver Restriction = OFF
Scenario Description	User select {Master Reset} option on the HMI The systems is locked out from usage until Master reset has completed successfully (if required, an immediate reboot shall occur right after master reset completion)
Post-conditions	~~All dynamic system & PII data is securely deleted and module is return back to its original factory state~~ Module(s) are returned back to its original factory state for applicable settings / features / functions
List of Exception Use Cases	E1 – Loss of power while performing Master Reset E2 – Failure to remove/disconnect devices
Interfaces	G-HMI

3.12.5.4 VS-UC-REQ-025345/A-Loss of Power While Performing Master Reset (TcSE ROIN-298058)

Linked Elements
VS-UC-REQ-213362/B-User Decides to Restore Module Back to its Original Factory State - Integrated AHU
VS-UC-REQ-025344/B-User Decides to Restore Module Back to its Original Factory State (TcSE ROIN-298055)

Actors	Vehicle Occupant
Pre-conditions	Same as Normal Usage Use Case
Scenario Description	The user acknowledge the master reset action While Master reset functionality is active the module loses power After a few minutes the module acquires power
Post-conditions	Master reset actions shall not be preserved across power cycles. Only the master reset steps that took place while the module had power were the items deleted/restored.
List of Exception Use Cases	N/A
Interfaces	G-HMI

3.12.5.5 VS-UC-REQ-025346/A-Failure to Remove/Disconnect Devices (TcSE ROIN-298059)

Linked Elements
VS-UC-REQ-213362/B-User Decides to Restore Module Back to its Original Factory State - Integrated AHU
VS-UC-REQ-025344/B-User Decides to Restore Module Back to its Original Factory State (TcSE ROIN-298055)

Actors	Vehicle Occupant
Pre-conditions	Same as Normal Usage Use Case
Scenario Description	The user acknowledge the master reset action None of the index or connected devices are removed (i.e. iPod & BT Phone) Master reset functionality is active
Post-conditions	Same as Normal Usage Use Case. Master Reset should be able to ignore devices not removed.
List of Exception Use Cases	N/A
Interfaces	G-HMI

3.12.5.6 VS-UC-REQ-025347/B-User Decides to Reboot the Module (TcSE ROIN-298056)

Actors	Vehicle Occupant
Pre-conditions	Infotainment system is available

Scenario Description	User applies Center Stack Button combination for a set period of time ~~User is presented with {reboot warning} HMI with a set period of time~~
Post-conditions	An immediate reboot shall occur
List of Exception Use Cases	~~E1 - User cancels via the {reboot warning} HMI~~
Interfaces	G-HMI CBI

3.12.5.7 VS-UC-REQ-025348/B-User Cancels via the {Reboot Warning} HMI - DELETED (TcSE ROIN-298060)

Linked Elements
VS-UC-REQ-025347/B-User Decides to Reboot the Module (TcSE ROIN-298056)

Actors	~~Vehicle Occupant~~\
Pre-conditions	~~Same as Normal Usage Use Case~~\
Scenario Description	~~User cancels the manual reboot via the {reboot warning} HMI~~\
Post-conditions	~~Reboot is cancelled~~\
List of Exception Use Cases	~~N/A~~\
Interfaces	~~G-HMI~~\

3.12.5.8 VS-UC-REQ-025349/C-Master Reset (TcSE ROIN-296294)

Actors	Vehicle occupant
Pre-conditions	Center stack display is ON
Scenario Description	The user selects <Master Reset> via HMI.
Post-conditions	A master reset is performed and restores affected settings, features and functions to their applicable default state.
Comments	The use case applies to multiple modules restoring to their factory defaults for applicable settings, features and functions (ex audio settings, presets etc).
Interfaces	G-HMI

3.12.6 Requirements

3.12.6.1 VS-SR-REQ-015044/E-Master Reset request to the infotainment components (TcSE ROIN-174375-1)

During a Master Reset, the Vehicle Settings Master Reset Client shall issue a FactoryReset.Rq = ResetFactoryDefaults to the ~~SDARS Server~~ infotainment components.

Note: when the infotainment components (ex AHU, Smart DSP AMP...) receive “FactoryReset_Rq = ResetFactoryDefaults” they will reset to their default settings things such as the Audio Settings (ex Bass, Treble, Volume…) and SDARS settings.

SPSS to CAN dB mapping: For this FactoryReset.Rq the Vehicle Setting Master Reset Client shall send “0x104 MFD_Request_Signals3 : SDARS_FactoryReset_Rq”.

3.12.6.2 VS-SR-REQ-213252/C-Master Reset request using the signal FactoryReset_Rq

During a Master Reset, the Vehicle Settings Master Reset Client shall issue a FactoryReset.Rq = ResetFactoryDefaults. ~~to the TCU~~.

SPSS to CAN dB mapping: For this FactoryReset.Rq the Vehicle Setting Master Reset Client shall send both FactoryReset_Rq and SDARS_FactoryReset_Rq set to ResetFactoryDefaults. For details for SDARS_FactoryReset_Rq see requirement "VS-REQ-015044-Master Reset request to the infotainment components".

3.12.6.3 VS-FUR-REQ-136296/C-Master Reset Language

The APIM / IAHU Master Reset shall not change the currently selected language the APIM / IAHU module is using. For example, if Spanish is the language and the user then does a Master Reset then after the Master Reset Spanish shall still be the language.

The APIM / IAHU Master Reset shall have the APIM / IAHU send a language request so the Vehicle Settings Language Servers (ex. Cluster) to go to the currently selected Language by the APIM / IAHU. For example, if the Cluster was at English and APIM / IAHU is at Spanish and the user then selects Master Reset the APIM / IAHU would request the Cluster to go to Spanish.

Note: IAHU is integrated AHU for those modules which send out the Master Reset (mutually exclusive to APIM).

The requirement does not apply for the APIM PDC on the Phoenix architecture.

3.12.6.4 VS-FUR-REQ-025350/B-Reboot module using Center Stack (TcSE ROIN-298037-1)

The user shall be able to perform an immediate reboot by holding a combination of center Stack buttons for 5 seconds. Combination = TBD.

See HMI specs for button combinations for Multimedia Reboot and see the HMI specs for button combinations.

3.12.6.5 VS-FUR-REQ-025351/B-Secure Deletion (TcSE ROIN-298038-1)

Secure deletion must overwrite/erase the memory in such a way that the data can't be observed in a subsequent bitwise copy of the entire flash area.

This requirement does not apply to the APIM PDC on the Phoenix architecture.

3.12.6.6 VS-FUR-REQ-025352/B-Secure Data Storage - Copies (TcSE ROIN-298039-1)

PII data must not be copied/cached elsewhere in the system unless those copies are securely deleted as well.

This requirement is not applicable to the APIM PDC on the Phoenix architecture.

3.12.6.7 VS-FUR-REQ-025353/A-Remove all PII & Specific Applications Data (TcSE ROIN-298040-1)

A mechanism in the HMI shall provide the user with the ability to remove all PII and specific applications data.

3.12.6.8 VS-FUR-REQ-025354/C-Master Reset Completion Time Limit (TcSE ROIN-298041-1)

Master Reset shall not take longer than 45 seconds.

TBD on time for Phoenix PDC

3.12.6.9 VS-FUR-REQ-025355/A-Restore Factory Settings and Default Values (TcSE ROIN-298042-1)

The APIM Master Reset shall have an option to securely delete all content and restore all factory settings to its default values. See all items in *P01a_Master_Reset.xls* for expected behavior details.

3.12.6.10 VS-FUR-REQ-025356/B-Clean Cache (TcSE ROIN-298043-1)

After securely deleting and restoring all settings the system shall clear any remaining system/application cache.

This requirement is not applicable to APIM PDC on the Phoenix architecture.

3.12.6.11 VS-FUR-REQ-025357/A-Immediate Reboot after Completion (TcSE ROIN-298044-1)

After securely deleting and restoring all settings the system shall perform an immediate reboot.

3.12.6.12 VS-FUR-REQ-025358/B-Feature Unavailability during Master Reset (TcSE ROIN-298045-1)

For any immediate reboot the user confirmation message shall include a warning about the unavailability of rear view camera and other vehicle APIM / IAHU dependent features.

Note: IAHU is for Integrated AHU (mutually exclusive with APIM)

3.12.6.13 VS-FUR-REQ-025359/A-Confirmation Message & Device Disconnect Info (TcSE ROIN-298046-1)

A user confirmation message shall include a description of the function that will be performed and the appropriate devices that must be disconnected.

3.12.6.14 VS-FUR-REQ-025360/B-Dynamic/Manual Registration to Master Reset Service (TcSE ROIN-298047-1)

Third-party or external software applications/plug-ins shall be allow to register to a global master reset event.

Not applicable for Phoenix APIM PDC

3.12.6.15 VS-FUR-REQ-025361/A-System Blocked until Master Reset Completed (TcSE ROIN-298048-1)

After the master reset feature is activated the user shall not be able to perform any other functions in the systems after master reset completes and system reboot occurs.

3.12.6.16 VS-FUR-REQ-025362/A-Secure Delete APIs (TcSE ROIN-298049-1)

All data shall be securely deleted during Master Reset using the appropriate secure deletion APIs determined by Ford Motor Company.

3.12.6.17 VS-FUR-REQ-025363/B-Baseline OTA Data (TcSE ROIN-298050-1)

APIM's Baseline OTA data shall never be removed (e.i. STL, RDS-TMC).

This requirement is not applicable to APIM PDC on the Phoenix architecture.

3.12.6.18 VS-FUR-REQ-025364/B-System Upgrades and/or Languages Not Removable (TcSE ROIN-298051-1)

Installed language packs and System upgrades shall never be removed during Master Reset.

This requirement is not applicable to APIM PDC on the Phoenix architecture.

3.12.6.19 VS-FUR-REQ-025365/B-Driver Restriction 2 (TcSE ROIN-298053)

Driver restriction shall apply to master reset and its features. This options shall not be available while the vehicle is moving and driver restriction = ON

3.12.6.20 VS-FUR-REQ-433164/A-Master Reset impact to VIP Cluster software (Phoenix PDC only)

During a Master Reset the PDC (Phoenix Domain Controller) VIP Cluster functionality and Cluster HMI shall NOT be reset or changed in anyway.

3.12.6.21 VS-F-REQ-443897/A-Master Reset - AOS Reset Types to Perform (Phoenix)

When requested to perform a Master Reset, the APIM PDC shall also perform the below AOS native resets:

- Perform Android 'Reset network settings'
- Perform Android 'Reset app preferences settings'
- Perform Android 'Reset app preferences settings'

~~Reset app notifications~~
~~Reset disabled apps~~
~~Reset default applications for actions~~
~~Reset background data restrictions for apps~~
~~Reset permission restrictions~~

Reference the Android source code for details.

3.12.6.22 ENMEM-REQ-105569/F-Driver Profiles Deleted During Master Reset

The storage and maintenance of the Driver Profiles of Enhanced Memory shall comply with the design and requirements of Master Reset (refer to the latest version of VS-FUN-REQ-025341-Master Reset to Factory Defaults).

When a Master Reset operation is executed:

1. The EnhancedMemoryInterfaceClient shall delete all internal Driver Profile data (i.e. Profile Name, Button Association, Profile Number Association) for all Driver Profiles
2. If a keyfob is associated to a Driver Profile(s) the following actions shall be performed:
   - The EnhancedMemoryInterfaceClient shall request to disassociate the keyfob via EnMemProfilePairingRq(KeyPairing=DisassociateKey)
   - The EnhancedMemoryProfileServer shall respond with a successful keyfob disassociation via EnMemKeyPairing_St(KeyPairing=KeyDisassociated)
   - The EnhancedMemoryProfileServer shall update the status of PersKeyPairing_St to KeyNotAssociated for the Driver Profile deleted
   - If there is more than one profile with keys paired, the EnhancedMemoryInterfaceClient shall repeat bullet 1 above for all profiles with keys paired until all the keyfobs are dissociated from all profiles
3. If a phone is associated to a Driver Profile(s) the following actions shall be performed:
   - The EnhancedMemoryInterfaceClient shall request to disassociate the phone via EnMemProfilePairingRq(KeyPairing=DisassociatePhone)
   - The EnhancedMemoryProfileServer shall respond with a successful phone disassociation via EnMemKeyPairing_St(KeyPairing=KeyDisassociated)
   - The EnhancedMemoryProfileServer shall update the status of PersPhonePairing_St to NoPhonesAssociated for the Driver Profile deleted
   - If there is more than one profile with phones paired, the EnhancedMemoryInterfaceClient shall repeat bullet 1 above for all profiles with phones paired until all the phones are dissociated from all profiles
4. If an NFC key is associated to a Driver Profile(s) the following actions shall be performed:
   - The EnhancedMemoryInterfaceClient shall request to disassociate the NFC key via EnMemProfilePairingRq(PersIndex = #, NFCKeyPairing = DisassociateKey#)
   - The EnhancedMemoryProfileServer shall respond with a successful NFC key disassociation via EnMemKeyPairing_St(KeyPairing=KeyDisassociated)
   - The EnhancedMemoryProfileServer shall update the key index of PersNFCKeyPairing_St(PersNFCKey#Index = Inactive) for the disassociated key of the deleted Driver Profile
   - If there is more than one NFC key associated to a profile, the EnhancedMemoryInterfaceClient shall repeat bullet 1 for all associated NFC keys (PersNFCKey1Index to PersNFCKey4Index)
   - If there is more than one profile with NFC keys paired, the EnhancedMemoryInterfaceClient shall repeat bullet 1 above for all profiles with NFC keys paired until all the NFC keys are dissociated from all profiles (PersIndex = 1,2,3,4)

5. The EnhancedMemoryInterfaceClient shall send a recall request for Vehicle Profile via InfotainmentRecall_Rq(PersIndex = Vehicle)
6. The EnhancedMemoryInterfaceClient shall OptOut of all profiles and set all active personalities in PersonalityOptIn_St to NotOptedIn
7. The EnhancedMemoryInterfaceClient shall set the Enhanced Memory feature status to Off via EnhancedMemory_St(Status = ProfileOff)
8. The EnhancedMemoryProfileServer shall send a recall request for Vehicle to the EnhancedMemoryPositionClient via MemoryPosition_St. Note: this step does not apply to the EnhancedMemoryInterfaceClient and is don't care for the EnhancedMemoryInterfaceClient
9. The EnhancedMemoryInterfaceClient shall send a Factory Reset request to the EnhancedMemoryServers via FactoryReset_Rq(Type = Reset) to perform Master Reset on the EnhancedMemoryServers that support Master Reset (ex. AHU resets SDARS presets - see SDARS SPSS for details). If the EnhancedMemoryServer supports FactoryReset_Rq, all profiles shall reset (ex. SDARS presets reset for all profiles).
10. The EnhancedMemoryInterfaceClient performs a reboot for Master Reset following VS-FUN-REQ-025341-Master Reset to Factory Defaults).
    - Note: the EnhancedMemoryInterfaceClient/Infotainment System Master shall send the FactoryReset_Rq before shutting down the Infotainment System (i.e. sends FactoryReset_Rq(Type = Reset) while HMI_HMIMode_St = On).

Reference sequence diagram ENMEM-SD-REQ-197509-Master Reset for details

3.12.6.23 VS-SR-REQ-362537/B-Master Reset Setting when MyKey is active

The Vehicle Settings Master Reset Client shall not perform a Master Reset when MyKey is active (ie IgnKeyType_D_Actl = Key_In_Ign_MyKey).

When a MyKey is active the Master Reset setting shall be greyed out or not visible. See HMI specs for details.

If the IgnKeyType_D_Actl is not on the bus when ignition does not equal Run (ex Acc, Delay Acc, extended play) then assume the last signal state received.

Signal Name	Encodings	Value	Description
IgnKeyType_D_Actl	-	-	Type of key that is in the ignition
	Key_Read_In_Progress	0x0	Key(s) will be read now
	Key_In_Ign_Standard_Key	0x1	Admin (full) mode
	Key_In_Ign_MyKey	0x2	MyKey restricted mode
	Key_Not_Prgm_Read_Failure	0x3	
	Unknown	0xE	Disable MyKey System mode
	Invalid	0xF	Initial value

Phoenix only:
If the APIM PDC module is not doing the pre-conditions for a Master Reset (see embedded modem SPSS for details) then this requirement would not apply to APIM PDC.

3.12.6.24 VS-F-REQ-446837/A-Master Reset Security Specification

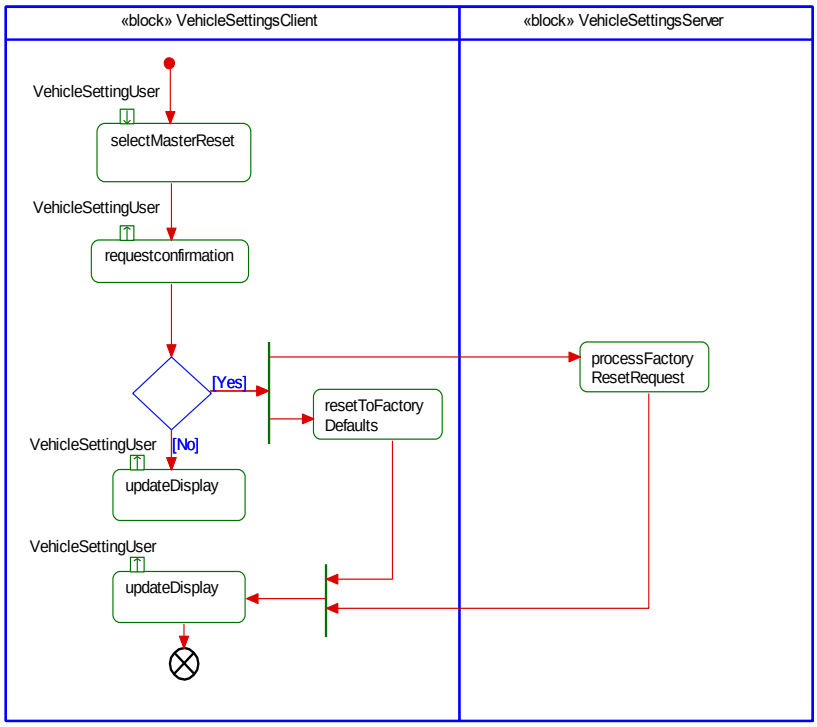
The requirements in the Master Reset Security Specification shall be followed.

3.12.7 White Box Views

3.12.7.1 VS-ACT-REQ-025151/A-Master Reset (TcSE ROIN-296296-1)

Linked Elements
VS-SD-REQ-025366/A-Master Reset (TcSE ROIN-296298)

Activity Diagram



3.12.7.2 VS-SD-REQ-025366/A-Master Reset (TcSE ROIN-296298)

Scenarios

Normal Usage

User requests {Master Reset} via the HMI.

Constraints

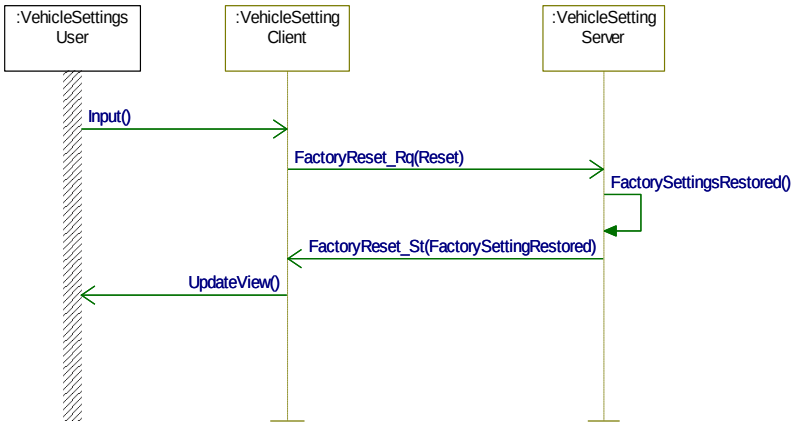
Pre-condition

CenterStack is On.

Post-condition

Requested Restore is completed.

Sequence Diagram



3.13 VS-FUN-REQ-474181/A-Master Reset_Super Reset - APIM variant 2 (Embedded Modem Reset Server does the Pre-Conditions)

3.13.1 Overview

This variant 2 of Master Reset / Super Reset is applicable when the Embedded Modem Reset Server handles the pre-conditions for Master Reset.

The Master Reset / Super Reset feature is used to reset customer settings, feature settings, connectivity settings within the vehicle, cloud and from mobile app, and perform de-authorization (if applicable).

For Master Reset functionality related to modules besides APIM, please see the Embedded Modem Reset SPSS (except for AHU and DSP AMP)

See the AHU / DSP AMP Station Management SPSS for AHU / DSP AMP audio settings master reset.

Phoenix Architecture Only: For Master Reset functionality related to the SOA interface between the Embedded Modem Reset Interface Client and the Embedded Modem Reset Server and whether a Master Reset occurs, please see the Embedded Modem Reset SPSS for details. For Master Reset availability HMI, please see the Embedded Modem Reset SPSS for details.

For a local master reset (not resetting any other modules) when go from Transport Mode to Normal Mode see the APIM Power Management SPSS.

For all other reset functionality outside of Master Reset (Remote Reset, Feature Resets, Reset Control, etc.), please see the Embedded Modem Reset SPSS.

For Enhanced Memory requirement "ENMEM-REQ-105569-Driver Profiles Deleted During Master Reset" see Enhanced Memory SPSS for other corresponding enhanced memory requirements and system interfaces.

3.13.2 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Master Reset feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Vehicle Settings Master Reset Client / Vehicle Settings Master Reset CAN Client (sequence diagram)	APIM
Vehicle Settings Master Reset CAN Server modules	AHU, DSP AMP (Server for its audio settings that are reset)
Infotainment Components (in requirement)	AHU, DSP AMP
EnhancedMemoryInterfaceClient	APIM
Embedded Modem Reset Server	ECG
Embedded Modem Reset Interface Client	APIM
Vehicle Settings Language Servers	SYNC and Cluster Phoenix architecture: APIM PDC

3.13.3 Logical to Physical CAN signal mapping - Master Reset variant 2

This Master Reset deployment table maps the logical signals to the physical CAN signals.

Note: This is for reference only. If there is a conflict between the name in the CAN signal name column and what is found in the actual CAN dB then the CAN dB takes precedent. Please bring to Ford's attention if there is a conflict.

Logical SPSS Signal Name	CAN signal name
FactoryReset.Rq	FactoryReset_Rq
	SDARS_FactoryReset_Rq
FactoryReset.St	FactoryReset_St
	SDARS_Factory_Reset_St

3.13.4 Interface Requirements - Master Reset variant 2

3.13.4.1 MD-REQ-213361/C-FactoryReset_Rq

Message Type: Request

Signal sent by the Master Reset Client to initiate a Master Reset

Logical Signal Name	Literals	Value	Description
FactoryReset_Rq	Inactive	0x0	
	ResetFactoryDefaults	0x1	

3.13.4.2 MD-REQ-222036/C-FactoryReset.St

Message Type: Status

Signal sent by the Master Reset components (ex AHU) indicating that the master reset default settings were restored for a master reset event

Logical Signal Name	Literals	Value	Description
FactoryReset.St	Inactive	0x0	
	FactoryDefaultsRestored	0x1	
	Reserved	0x2	
	Reserved	0x3	

3.13.5 Use Cases - variant 2

3.13.5.1 VSv2-UC-REQ-474223/A-User Performs a Master Reset / Super Reset

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is ON Master Reset HMI is not restrictive (see embedded modem SPSS for details)
Scenario Description	The user selects {Master Reset} option on the HMI and a master reset occurs (if pre-conditions met)
Post-conditions	The system is locked out from usage until Master reset has completed successfully (if required, an immediate reboot shall occur right after master reset completion) The module restores affected settings, features and functions to their applicable default state.

Notes	Other modules do perform master resets also but this use case is for the APIM module and does not necessarily apply to other modules.

3.13.5.2 VSv2-UC-REQ-474204/A-User decides to try to perform a Master Reset while driving (Driver Restrictions = ON)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is powered ON Driver Restrictions = ON
Scenario Description	The user would like to perform a Master/Super Reset while the vehicle is moving (Driver Restriction = ON)
Post-conditions	All Master/Super Reset functionality should be disabled
Notes	The Super Reset HMI might be driver restricted while Driver Restrictions = ON and the vehicle is moving

3.13.5.3 VSv2-UC-REQ-474205/A-Master Reset Started and the User Drives Off (Driver Restriction = ON)

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is ON Master Reset HMI is not restrictive (see embedded modem SPSS for details)
Scenario Description	User starts master reset and then drives off
Post-conditions	Master reset and any reboots (if necessary) will continue as normal
Notes	

3.13.5.4 VSv2-UC-REQ-474224/A-Loss of Power While Performing Master Reset

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is ON Master Reset HMI is not restrictive (see embedded modem SPSS for details)
Scenario Description	The user starts a master reset action While Master reset functionality is active the module loses power After a few minutes the module acquires power
Post-conditions	Master reset actions shall not be preserved across power cycles. Only the master reset steps that took place while the module had power were the items deleted/restored.
Notes	This use case is for the APIM module and does not necessarily apply to other modules

3.13.5.5 VSv2-UC-REQ-474225/A-Failure to Remove/Disconnect Devices

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is ON Master Reset HMI is not restrictive (see embedded modem SPSS for details)
Scenario Description	The user performs a master reset None of the index or connected devices are removed (i.e. USB & BT Phone) Master reset functionality is active

Post-conditions	Master Reset should be able to ignore devices not removed and module restores affected settings, features, functions to their applicable default state
Notes	This use case is for the APIM module and does not necessarily apply to other modules

3.13.5.6 VSv2-UC-REQ-474226/A-User Decides to Reboot the Module

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is ON There are no pre-conditions preventing a reboot
Scenario Description	The user interfaces with the HMI to reboot the module
Post-conditions	An immediate reboot occurs
Notes	This does not apply to Master Reset / Super Reset but is legacy in this spec This use case is for the APIM module and does not necessarily apply to other modules

3.13.6 Requirements - variant 2

3.13.6.1 VS-SR-REQ-015044/E-Master Reset request to the infotainment components (TcSE ROIN-174375-1)

During a Master Reset, the Vehicle Settings Master Reset Client shall issue a FactoryReset.Rq = ResetFactoryDefaults to the ~~SDARS Server~~ infotainment components.

Note: when the infotainment components (ex AHU, Smart DSP AMP...) receive “FactoryReset_Rq = ResetFactoryDefaults” they will reset to their default settings things such as the Audio Settings (ex Bass, Treble, Volume…) and SDARS settings.

SPSS to CAN dB mapping: For this FactoryReset.Rq the Vehicle Setting Master Reset Client shall send “0x104 MFD_Request_Signals3 : SDARS_FactoryReset_Rq”.

3.13.6.2 VS-SR-REQ-213252/C-Master Reset request using the signal FactoryReset_Rq

During a Master Reset, the Vehicle Settings Master Reset Client shall issue a FactoryReset.Rq = ResetFactoryDefaults. ~~to the TCU~~.

SPSS to CAN dB mapping: For this FactoryReset.Rq the Vehicle Setting Master Reset Client shall send both FactoryReset_Rq and SDARS_FactoryReset_Rq set to ResetFactoryDefaults. For details for SDARS_FactoryReset_Rq see requirement “VS-REQ-015044-Master Reset request to the infotainment components”.

3.13.6.3 VS-FUR-REQ-136296/C-Master Reset Language

The APIM / IAHU Master Reset shall not change the currently selected language the APIM / IAHU module is using. For example, if Spanish is the language and the user then does a Master Reset then after the Master Reset Spanish shall still be the language.

The APIM / IAHU Master Reset shall have the APIM / IAHU send a language request so the Vehicle Settings Language Servers (ex. Cluster) to go to the currently selected Language by the APIM / IAHU. For example, if the Cluster was at English and APIM / IAHU is at Spanish and the user then selects Master Reset the APIM / IAHU would request the Cluster to go to Spanish.

Note: IAHU is integrated AHU for those modules which send out the Master Reset (mutually exclusive to APIM).

The requirement does not apply for the APIM PDC on the Phoenix architecture.

3.13.6.4 VS-FUR-REQ-025350/B-Reboot module using Center Stack (TcSE ROIN-298037-1)

The user shall be able to perform an immediate reboot by holding a combination of center Stack buttons for 5 seconds. Combination = TBD.

See HMI specs for button combinations for Multimedia Reboot and see the HMI specs for button combinations.

3.13.6.5 VS-FUR-REQ-025353/A-Remove all PII & Specific Applications Data (TcSE ROIN-298040-1)

A mechanism in the HMI shall provide the user with the ability to remove all PII and specific applications data.

3.13.6.6 VS-FUR-REQ-025354/C-Master Reset Completion Time Limit (TcSE ROIN-298041-1)

Master Reset shall not take longer than 45 seconds.

TBD on time for Phoenix PDC

3.13.6.7 VS-FUR-REQ-025355/A-Restore Factory Settings and Default Values (TcSE ROIN-298042-1)

The APIM Master Reset shall have an option to securely delete all content and restore all factory settings to its default values. See all items in *P01a_Master_Reset.xls* for expected behavior details.

3.13.6.8 VS-FUR-REQ-025357/A-Immediate Reboot after Completion (TcSE ROIN-298044-1)

After securely deleting and restoring all settings the system shall perform an immediate reboot.

3.13.6.9 VS-FUR-REQ-025358/B-Feature Unavailability during Master Reset (TcSE ROIN-298045-1)

For any immediate reboot the user confirmation message shall include a warning about the unavailability of rear view camera and other vehicle APIM / IAHU dependent features.

Note: IAHU is for Integrated AHU (mutually exclusive with APIM)

3.13.6.10 VS-FUR-REQ-025359/A-Confirmation Message & Device Disconnect Info (TcSE ROIN-298046-1)

A user confirmation message shall include a description of the function that will be performed and the appropriate devices that must be disconnected.

3.13.6.11 VS-FUR-REQ-025361/A-System Blocked until Master Reset Completed (TcSE ROIN-298048-1)

After the master reset feature is activated the user shall not be able to perform any other functions in the systems after master reset completes and system reboot occurs.

3.13.6.12 VS-FUR-REQ-025362/A-Secure Delete APIs (TcSE ROIN-298049-1)

All data shall be securely deleted during Master Reset using the appropriate secure deletion APIs determined by Ford Motor Company.

3.13.6.13 VS-FUR-REQ-025365/B-Driver Restriction 2 (TcSE ROIN-298053)

Driver restriction shall apply to master reset and its features. This options shall not be available while the vehicle is moving and driver restriction = ON

3.13.6.14 VS-FUR-REQ-433164/A-Master Reset impact to VIP Cluster software (Phoenix PDC only)

During a Master Reset the PDC (Phoenix Domain Controller) VIP Cluster functionality and Cluster HMI shall NOT be reset or changed in anyway.

3.13.6.15 VS-F-REQ-443897/A-Master Reset - AOS Reset Types to Perform (Phoenix)

When requested to perform a Master Reset, the APIM PDC shall also perform the below AOS native resets:

- Perform Android 'Reset network settings'
- Perform Android 'Reset app preferences settings'
- Perform Android 'Reset app preferences settings'

~~- Reset app notifications~~
~~- Reset disabled apps~~
~~- Reset default applications for actions~~
~~- Reset background data restrictions for apps~~
~~- Reset permission restrictions~~

Reference the Android source code for details.

3.13.6.16 ENMEM-REQ-105569/F-Driver Profiles Deleted During Master Reset

The storage and maintenance of the Driver Profiles of Enhanced Memory shall comply with the design and requirements of Master Reset (refer to the latest version of VS-FUN-REQ-025341-Master Reset to Factory Defaults).

When a Master Reset operation is executed:

11. The EnhancedMemoryInterfaceClient shall delete all internal Driver Profile data (i.e. Profile Name, Button Association, Profile Number Association) for all Driver Profiles
12. If a keyfob is associated to a Driver Profile(s) the following actions shall be performed:
    - The EnhancedMemoryInterfaceClient shall request to disassociate the keyfob via EnMemProfilePairingRq(KeyPairing=DisassociateKey)
    - The EnhancedMemoryProfileServer shall respond with a successful keyfob disassociation via EnMemKeyPairing_St(KeyPairing=KeyDisassociated)
    - The EnhancedMemoryProfileServer shall update the status of PersKeyPairing_St to KeyNotAssociated for the Driver Profile deleted
    - If there is more than one profile with keys paired, the EnhancedMemoryInterfaceClient shall repeat bullet 1 above for all profiles with keys paired until all the keyfobs are dissociated from all profiles
13. If a phone is associated to a Driver Profile(s) the following actions shall be performed:
    - The EnhancedMemoryInterfaceClient shall request to disassociate the phone via EnMemProfilePairingRq(KeyPairing=DisassociatePhone)
    - The EnhancedMemoryProfileServer shall respond with a successful phone disassociation via EnMemKeyPairing_St(KeyPairing=KeyDisassociated)
    - The EnhancedMemoryProfileServer shall update the status of PersPhonePairing_St to NoPhonesAssociated for the Driver Profile deleted
    - If there is more than one profile with phones paired, the EnhancedMemoryInterfaceClient shall repeat bullet 1 above for all profiles with phones paired until all the phones are dissociated from all profiles
14. If an NFC key is associated to a Driver Profile(s) the following actions shall be performed:
    - The EnhancedMemoryInterfaceClient shall request to disassociate the NFC key via EnMemProfilePairingRq(PersIndex = #, NFCKeyPairing = DisassociateKey#)
    - The EnhancedMemoryProfileServer shall respond with a successful NFC key disassociation via EnMemKeyPairing_St(KeyPairing=KeyDisassociated)

- The EnhancedMemoryProfileServer shall update the key index of PersNFCKeyPairing_St(PersNFCKey#Index = Inactive) for the disassociated key of the deleted Driver Profile
- If there is more than one NFC key associated to a profile, the EnhancedMemoryInterfaceClient shall repeat bullet 1 for all associated NFC keys (PersNFCKey1Index to PersNFCKey4Index)
- If there is more than one profile with NFC keys paired, the EnhancedMemoryInterfaceClient shall repeat bullet 1 above for all profiles with NFC keys paired until all the NFC keys are dissociated from all profiles (PersIndex = 1,2,3,4)

15. The EnhancedMemoryInterfaceClient shall send a recall request for Vehicle Profile via InfotainmentRecall_Rq(PersIndex = Vehicle)
16. The EnhancedMemoryInterfaceClient shall OptOut of all profiles and set all active personalities in PersonalityOptIn_St to NotOptedIn
17. The EnhancedMemoryInterfaceClient shall set the Enhanced Memory feature status to Off via EnhancedMemory_St(Status = ProfileOff)
18. The EnhancedMemoryProfileServer shall send a recall request for Vehicle to the EnhancedMemoryPositionClient via MemoryPosition_St. Note: this step does not apply to the EnhancedMemoryInterfaceClient and is don't care for the EnhancedMemoryInterfaceClient
19. The EnhancedMemoryInterfaceClient shall send a Factory Reset request to the EnhancedMemoryServers via FactoryReset_Rq(Type = Reset) to perform Master Reset on the EnhancedMemoryServers that support Master Reset (ex. AHU resets SDARS presets - see SDARS SPSS for details). If the EnhancedMemoryServer supports FactoryReset_Rq, all profiles shall reset (ex. SDARS presets reset for all profiles).
20. The EnhancedMemoryInterfaceClient performs a reboot for Master Reset following VS-FUN-REQ-025341-Master Reset to Factory Defaults).
    - Note: the EnhancedMemoryInterfaceClient/Infotainment System Master shall send the FactoryReset_Rq before shutting down the Infotainment System (i.e. sends FactoryReset_Rq(Type = Reset) while HMI_HMIMode_St = On).

Reference sequence diagram ENMEM-SD-REQ-197509-Master Reset for details

3.13.6.17 VS-SR-REQ-362537/B-Master Reset Setting when MyKey is active

The Vehicle Settings Master Reset Client shall not perform a Master Reset when MyKey is active (ie IgnKeyType_D_Actl = Key_In_Ign_MyKey).

When a MyKey is active the Master Reset setting shall be greyed out or not visible. See HMI specs for details.

If the IgnKeyType_D_Actl is not on the bus when ignition does not equal Run (ex Acc, Delay Acc, extended play) then assume the last signal state received.

Signal Name	Encodings	Value	Description
IgnKeyType_D_Actl	-	-	Type of key that is in the ignition
	Key_Read_In_Progress	0x0	Key(s) will be read now
	Key_In_Ign_Standard_Key	0x1	Admin (full) mode
	Key_In_Ign_MyKey	0x2	MyKey restricted mode
	Key_Not_Prgm_Read_Failure	0x3	
	Unknown	0xE	Disable MyKey System mode
	Invalid	0xF	Initial value

Phoenix only:
If the APIM PDC module is not doing the pre-conditions for a Master Reset (see embedded modem SPSS for details) then this requirement would not apply to APIM PDC.

3.13.6.18 VS-F-REQ-446837/A-Master Reset Security Specification

The requirements in the Master Reset Security Specification shall be followed.

3.13.7 Sequence Diagrams

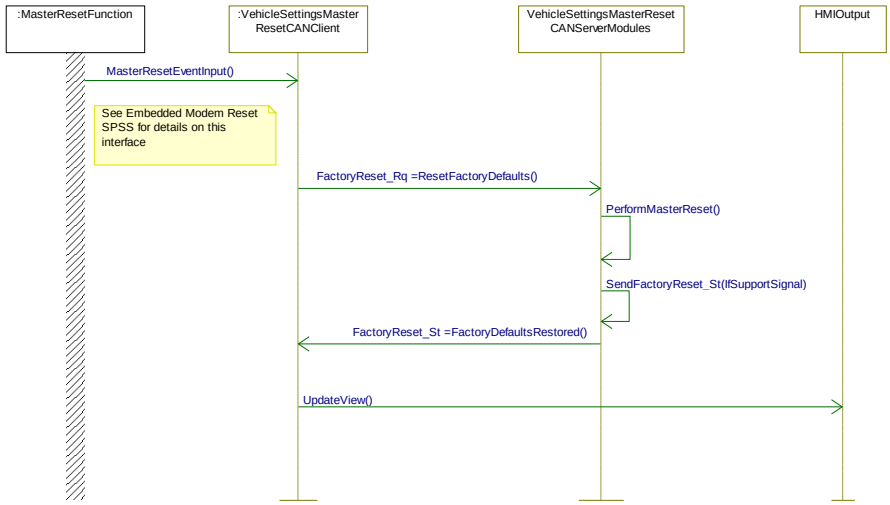
3.13.7.1 VSv2-SD-REQ-474227/A-Master Reset - CAN interface for external modules

Pre-condition:

Infotainment System is ON
Master Reset HMI is not restrictive (see embedded modem SPSS for details)
Vehicle Settings Master Reset Client receives input to perform the master reset (see embedded modem SPSS for details)

Event:

Master Reset CAN signal sent to applicable modules



3.14 VS-FUN-REQ-096818/D-Set Valet Mode

3.14.1 Interface Requirement - Valet Mode

3.14.1.1 MD-REQ-097285/C-ValetMode_St

Message Type: Status

Signal used to indicate the Valet Mode Status.

Logical Signal Name	Literals	Value	Description
ValetMode_St	Invalid / Null	0x0	
	OFF	0x1	
	ON	0x2	
	Not Used	0x3	

3.14.2 Use Cases

3.14.2.1 VS-UC-REQ-096810/B-Enable/Disable Valet Mode

Actors	Vehicle Occupant
Pre-conditions	Infotainment System is powered ON (ie HMIAudioMode = ON). Valet Mode is available in the HMI.
Scenario Description	The user selects activate or deactivate Valet Mode from the HMI.
Post-conditions	Valet Mode is activated if user selects activate Valet Mode Features that are restricted by Valet Mode are now locked out Valet Mode is deactivated if user selects deactivate Valet Mode Features that were locked out by Valet Mode are no longer restricted
Notes	
Interfaces	G-HMI, Vehicle System Interface

3.14.3 Requirements

3.14.3.1 VS-FUR-REQ-104343/D-Valet Mode Infotainment Operation

The valet mode feature allows the touch screen (if touch screen on module) to be locked out using a 4 digit pin.

During activation, the touchscreen is locked out, and certain functionality is suspended/disabled as defined by HMI.

Valet mode is disabled using the same 4 digit pin that was used during activation.

There is a predetermined default pin that can be used to disable valet mode as defined by HMI.

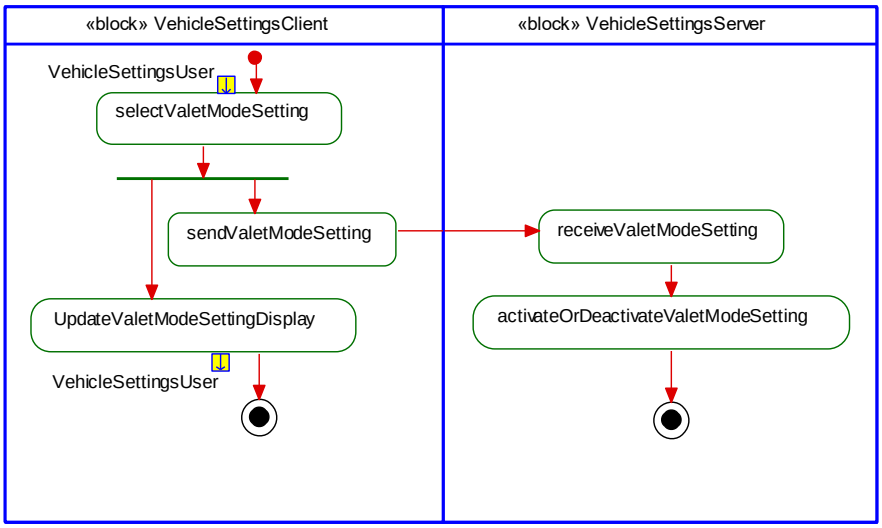
Valet mode shall only be disabled using a matching 4 digit pin to what was used to enable the feature or by the default pin.

While Valet mode is enabled it shall not be disabled over ignition cycles (ie HMIAudioMode turning OFF to ON to OFF..), during a battery reset (cold reboot) or after performing the user activated multimedia system reboot via the manual 2 button press procedure as called out by the HMI (ex. radio power + seek up).

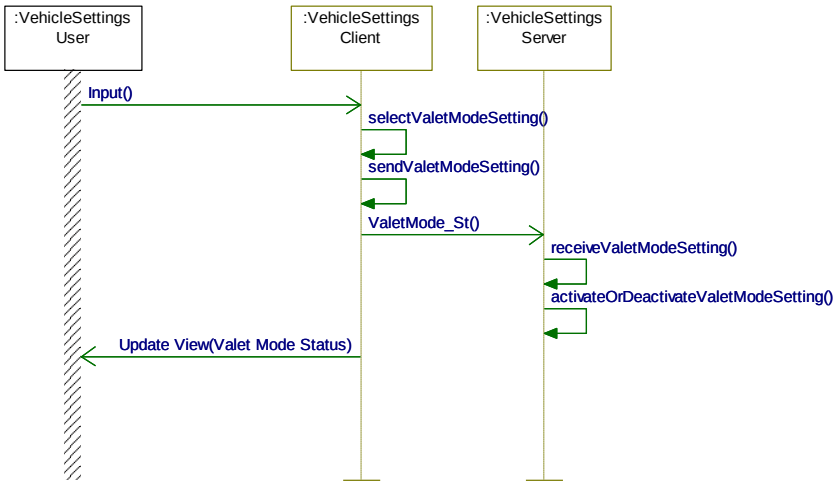
Upon activation/deactivation, the current valet mode state is communicated using the ValetMode_St signal. ValetMode_St = ON shall enable Valet Mode and ValetMode_St = OFF shall disable Valet Mode for modules receiving this signal. Modules receiving the ValetMode_St signal shall determine what features/functions to lock out while ValetMode is active.

3.14.4 White Box Views

3.14.4.1 VS-ACT-REQ-096820/A-Set Valet Mode



3.14.4.2 VS-SD-REQ-097279/B-Set Valet Mode



Note: Vehicle Setting Server can be the same module as the Vehicle Setting Client (ex locking screen which requires a PIN to unlock) or the Vehicle Settings Server could be a different module then the Vehicle Setting Client would require bus communication (ex. locking glove box if supported).

3.15 VS-FUN-REQ-334503/B-Drive History Reset

Note: for the PDC module on the Phoenix architecture reference the “Settings for Vehicle Interface Processor (VIP) in Integrated Cluster” spec for VIP and CCPU inter-processor communication.

3.15.1 VS-CLD-REQ-339750/A-Drive History Client

The Drive History Client is responsible for requesting the Long Term Drive History Reset to the Drive History Server

3.15.2 VS-CLD-REQ-342947/A-Drive History Server

3.15.3 Interface Requirements

3.15.3.1 MD-REQ-338982/B-LongTermReset_B_RqMnu

Message Type: Request

Note: Request signal from the Drive History Client to the Drive History Server to reset the long term drive history information

Logical Signal Name	Literals	Value	Description
LongTermReset_B_RqMnu	OFF	0x0	
	ON	0x1	

Note: init value in the CAN dB for this signal should be 0x0 OFF

3.15.4 Requirements

3.15.4.1 VS-SR-REQ-334504/B-Drive History Reset

When the drive history setting is selected to reset the long term drive history the Drive History Client shall:

1. Set the signal LongTermReset_B_RqMnu to ON from OFF, AND
2. Hold the LongTermReset_B_RqMnu set to ON for 2 seconds +/- 10%, then
3. Set LongTermReset_B_RqMnu back to OFF

Note: There is no status signal back for the Drive History Client indicating if the reset was successful or not.

The Drive History Client is only allowed to display Drive History Long Term Reset Setting HMI when Ignition = Run or Accessory. See HMI specification for when this setting is actually shown (could be more limited) but this setting cannot be shown outside for Run/ACC

HMI Setting ID
1024

3.16 VS-FUN-REQ-333193/B-Low Battery Alert

Note: for the PDC module on the Phoenix architecture reference the “Settings for Vehicle Interface Processor (VIP) in Integrated Cluster” spec for VIP and CCPU inter-processor communication.

3.16.1 VS-CLD-REQ-341184/A-Low Battery Alert Client

The Low Battery Alert Client interfaces with the user via HMI and is responsible for sending the Low Battery setting request to the Low Battery Server.

3.16.2 VS-CLD-REQ-341185/A-Low Battery Alert Server

The Low Battery Alert Server is responsible for control of the Low Battery Alert function and interfaces with the Low Battery Alert Server

3.16.3 Interface Requirements

3.16.3.1 MD-REQ-341180/B-BattTracLoThres_D_Stat

Message Type: Status

Note: Status signal from the Low Battery Alert Server with the status of the Low Battery Alert function

Logical Signal Name	Literals	Value	Description
BattTracLoThres_D_Stat	Null	0x0	
	20 mi / 32 km	0x1	Cluster speedometer major speed scale units MPH
	30 mi / 48 km	0x2	
	50 mi / 80 km	0x3	
	30 km / 18 mi	0x4	Cluster speedometer major speed scale units Km/h
	50 km / 31 mi	0x5	
	80 km / 50 mi	0x6	
	Not Used	0x7	

3.16.3.2 MD-REQ-341183/B-BattTracLoThres_D_Rq

Message Type: Request

Note: Request signal from the Low Battery Alert Client to the Low Battery Alert Server to set the feature

Logical Signal Name	Literals	Value	Description
BattTracLoThres_D_Rq	Null	0x0	
	20 mi / 32 km	0x1	Cluster speedometer major speed scale units MPH
	30 mi / 48 km	0x2	
	50 mi / 80 km	0x3	
	30 km / 18 mi	0x4	Cluster speedometer major speed scale units Km/h
	50 km / 31 mi	0x5	
	80 km / 50 mi	0x6	
	Not Used	0x7	

3.16.3.3 MD-REQ-341190/A-SpeedoMajorUnit_D_Confg

Message Type: Status

Note: Status signal from the Low Battery Alert Client with the status of the speedometer speed scale units

Logical Signal Name	Literals	Value	Description
SpeedoMajorUnit_D_Confg	Null	0x0	
	MPH	0x1	
	KPH	0x2	
	Not Used	0x3	

3.16.4 Requirements

3.16.4.1 VS-REQ-341338/A-Low Battery Alert Server functional requirement

The Low Battery Alert Server shall publish the status of what Low Battery Alert value is used to alert the driver via the BattTracLoThres_D_Stat signal.

The Low Battery Alert Server shall use the SpeedoMajorUnit_D_Confg signal to determine if the BattTracLoThres_D_Stat uses encodings Speedometer Major Units MPH or KPH values.

- If SpeedoMajorUnit_D_Confg = MPH then 0x1, 0x2 and 0x3 shall be used.
- If SpeedoMajorUnit_D_Confg = KPH then 0x4, 0x5 and 0x6 shall be used
- If SpeedoMajorUnit_D_Confg = Null then use the last MPH or KPH setting. The Low Battery Alert Server will have to remember this setting between ignition cycles.

Note: The Low Battery Alert Client which sends SpeedoMajorUnit_D_Confg may set the signal to Null when powering up when ignition goes from OFF to Run.

BattTracLoThres_D_Stat	SpeedoMajorUnit_D_Confg
0x0 Null	
0x1 20 mi / 32 km	MPH
0x2 30 mi / 48 km	
0x3 50 mi / 80 km	
0x4 30 km / 18 mi	KPH
0x5 50 km / 31 mi	
0x6 80 km / 50 mi	
0x7 Not Used	

3.16.4.2 VS-REQ-341290/A-Low Battery Alert Client functional requirement

The Low Battery Alert Client shall use the BattTracLoThres_D_Stat status signal to update the settings HMI to show what setting Low Battery Alert is set to.

The Low Battery Alert Client shall use the BattTracLoThres_D_Rq signal to request a Low Battery Alert setting selected by the user.

The Low Battery Alert Client shall broadcast the Speedometer Major Units that is used (MPH/KPH) in the SpeedoMajorUnit_D_Confg signal whenever the infotainment system is on (ie HMI_HMIMode_St = ON).

- The Low Battery Alert Client shall know the speedometer major units for a particular market based on:
  - the country code the Low Battery Alert Server is configured for, and

- what Speedometer Major Unit is used for that country based on requirement "VS-REQ-341178-Mapping Table – Speedometer Major Units".

The Low Battery Alert Client shall use the Measure Units setting to determine if the Low Battery Alert setting is displayed in MPH or KPH on the HMI. See requirement VS-SR-REQ-234039-Measure Units in the Settings in the Centerstack SPSS for details.

- Ex. BattTracLoThresh_D_Stat is set to 0x1 20 mi / 32 km then,
  - If the measure units setting is set to miles, then 20 mi would be shown on the HMI
  - If the measure units setting is set to km, then 32 km would be shown on the HMI

The Low Battery Alert Client is only allowed to display the Low Battery Alert Setting HMI when Ignition_Status = Run or Accessory. See HMI specification for when this setting is actually shown (could be more limited) but this setting cannot be shown outside for Run/ACC.

- Note: if show this setting in accessory the measure units last state would need to remembered outside of Run so the Low Battery Alert Client know whether to show in MPH or KPH

HMI Setting ID
1023

3.16.4.3 VS-HMI-REQ-342159/A-HMI display options for Low Battery Alert - Low Battery Alert Client

Possible Low Battery Alert HMI settings that can be displayed:

1. Speedometer Major Units is MPH and Measure Units is set to miles:

20 miles
30 miles
50 miles

2. Speedometer Major Units is MPH and Measure Units is set to kilometers:

32 km
48 km
80 km

3. Speedometer Major Units is KPH and Measure Units is set to kilometers:

30 km
50 km
80 km

4. Speedometer Major Units is KPH and Measure Units is set to miles:

18 miles
31 miles
50 miles

3.16.4.4 VS-SR-REQ-341887/A-Selecting a Low Battery Alert Setting via the HMI

When a Low Battery Alert setting is selected via the HMI:

1. The Low Battery Alert Client shall set BattTracLoThres_D_Rq to the selected setting.

2. The Low Battery Alert Server shall respond within 100 msec to the BattTracLoThres_D_Rq signal setting request with the response via the BattTracLoThres_D_Stat signal and set the Low Battery Alert threshold to what was selected.
3. The Low Battery Alert Client shall update its HMI with the Low Battery Threshold value in the BattTracLoThres_D_Stat signal.

Note: See sequence diagram with example

3.16.4.5 VS-SR-REQ-341178/B-Mapping Table - Speedometer Major Units

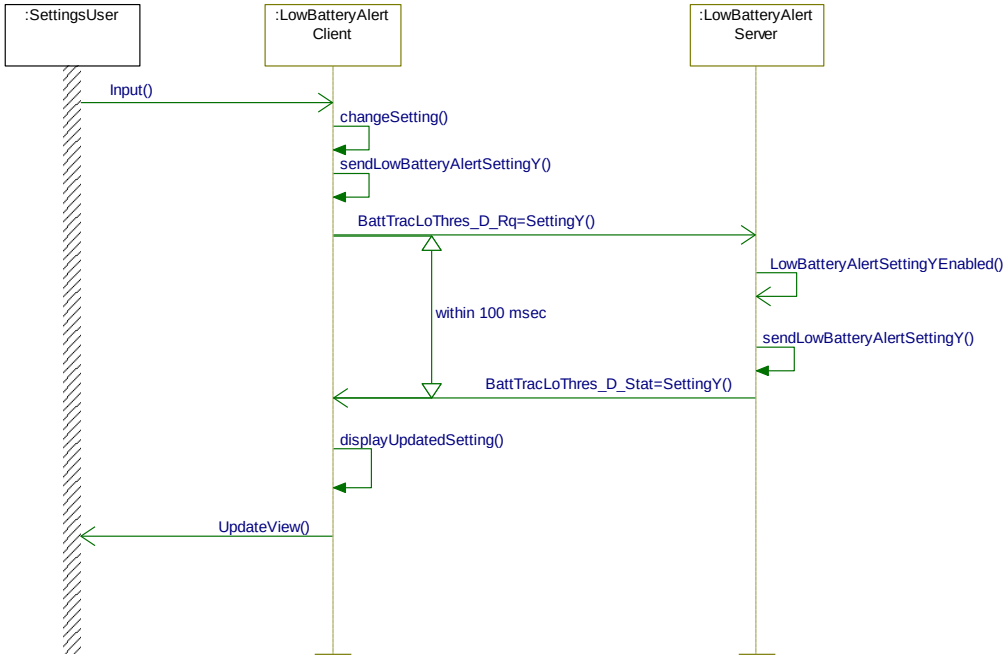
The table below maps the country to the Cluster major speedometer speed scale units (MPH or Km/h).

Market	Cluster Speedometer major speed scale units
US and US Territories	MPH
UK	MPH
All other markets	Km/h

3.16.5 Sequence Diagrams

3.16.5.1 VS-SD-REQ-341844/A-Low Battery Alert Setting Selection

Pre-condition:
Low Battery Alert has setting X active



3.17 VS-FUN-REQ-339665/A-Propulsion Sound

3.17.1 VS-CLD-REQ-339751/A-Propulsion Sound Client

The Propulsion Sound Client interfaces with the user via HMI and is responsible for sending the propulsion sound setting request to the propulsion sound server.

3.17.2 VS-CLD-REQ-339752/B-Propulsion Sound Server

The Propulsion Sound Server is responsible for control of the propulsion sound function and interfaces with the Propulsion Sound Client.

3.17.3 Use Case

3.17.3.1 VS-UC-REQ-340217/A-User Enables Propulsion Sound Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Infotainment system is ON Propulsion Sound is Disabled
Scenario Description	User change propulsion sound setting to enabled
Post-conditions	Propulsion sound is enabled Propulsion sound HMI is shown set to enabled.
Notes	Propulsion sound is just referring to propulsion sound interior to vehicle

3.17.3.2 VS-UC-REQ-340218/A-User Disables Propulsion Sound Setting

Actors	Vehicle front seat occupant
Pre-conditions	Infotainment System is ON Propulsion Sound is Enabled
Scenario Description	User changes propulsion sound setting to disabled
Post-conditions	Propulsion sound is disabled Propulsion sound HMI is shown set to disabled
Notes	Propulsion sound is just referring to propulsion sound interior to vehicle

3.17.4 Interface Requirements

3.17.4.1 MD-REQ-339666/A-PrplSnd_D_Rq

Message Type: Request

Note: Request signal from the Propulsion Sound Client to the Propulsion Sound Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
PrplSnd_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

3.17.4.2 MD-REQ-339747/B-PrplSnd_D_Stat

Message Type: Status

Note: Status signal from the Propulsion Sound Server with the status of Propulsion Sound feature

Logical Signal Name	Literals	Value	Description
PrplSnd_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	
	Faulty	0x3	

3.17.5 Requirements

3.17.5.1 VS-SR-REQ-339667/A-Propulsion Sound Client requesting change to propulsion sound

The Propulsion Sound Client shall use the PrplSnd_D_Stat status signal to show the propulsion sound feature as Enabled or Disabled.

Ex. At infotainment feature start-up (ex ignition OFF to RUN) there is no setting selected by the customer but the HMI shows the status of the propulsion sound setting based on if PrplSnd_D_Stat is set to Enabled or Disabled.

The propulsion sound setting can be changed (if HMI support outside of Run) whenever HMI_HMIMode_St = ON (ie infotainment system is ON).

When the propulsion sound setting is selected via the HMI:

1. The Propulsion Sound Client shall set the PrplSnd_D_Rq to enabled or disabled based on what the user selected
2. The Propulsion Sound Server shall respond within T_PrplSnd_Rsp to the PrplSnd_D_Rq request with the response of the propulsion sound via the PrplSnd_D_Stat signal.
3. The Propulsion Sound Client shall update its HMI (if there is an update) with the Propulsion Sound Status after receiving the PrplSnd_D_Stat response to the request.

HMI Setting ID
1025

3.17.5.2 VS-TMR-REQ-339748/A-T_PrplSnd_Rsp

Name	Description	Units	Range	Resolution	Default
T_PrplSnd_Rsp	Maximum time the Propulsion Sound Server shall take to respond to the request in the PrplSnd_D_Rq signal. The response will be in the PrplSnd_D_Stat signal. Maximum time defined as the default value	msec	0-1000	5	100

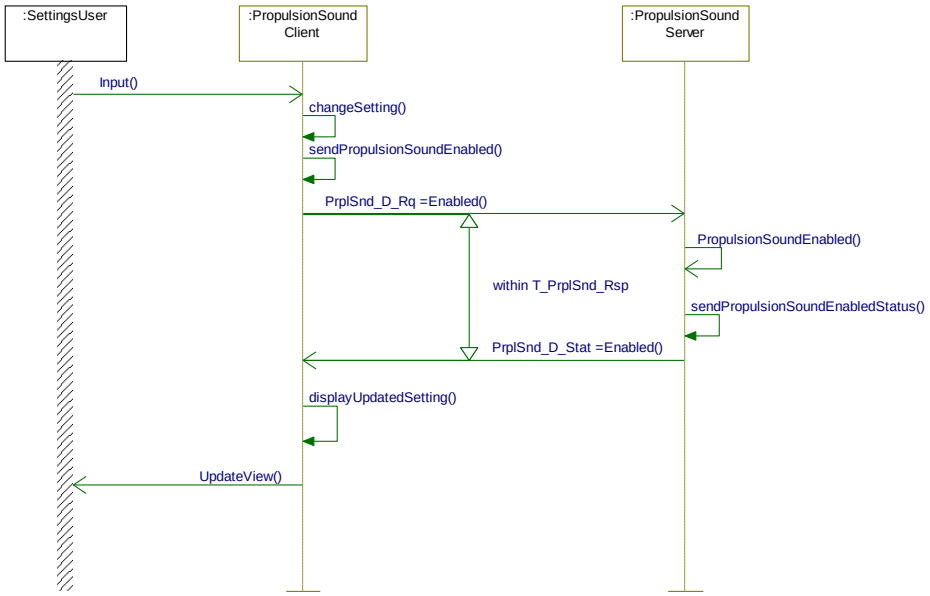
3.17.5.3 VS-SR-REQ-372580/A-Propulsion Sound Faulty state

The Propulsion Sound Server shall set the signal PrplSnd_D_Stat = Faulty when there is fault in the propulsion sound system causing the propulsion sound feature to be disabled.

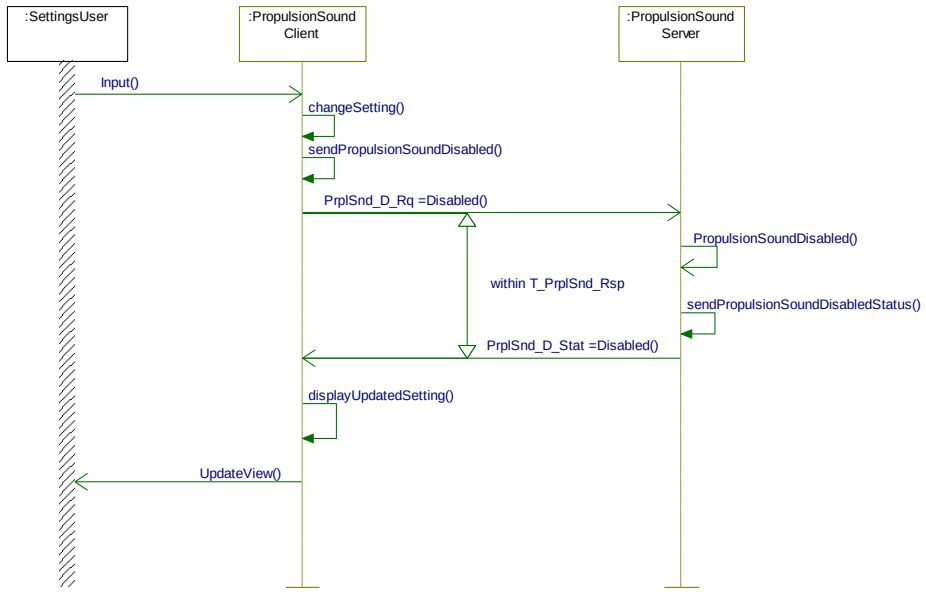
The Propulsion Sound Client HMI shall not allow the user to Enable/Disable the propulsion sounds setting when the Propulsion Sound Client receives PrplSnd_D_Stat = Faulty. See the HMI specification on how this is implemented (ex greying out the setting, removing the setting…).

3.17.6 Sequence Diagrams

3.17.6.1 VS-SD-REQ-340180/A-Propulsion Sound set to Enabled via the HMI



3.17.6.2 VS-SD-REQ-340184/A-Propulsion Sound set to Disabled via the HMI



3.18 VS-FUN-REQ-339729/A-Drive Mode Auto/Manual Ambient Lighting setting

3.18.1 VS-CLD-REQ-340540/A-Ambient Lighting Drive Mode Client

The Ambient Lighting Drive Mode Client interfaces with the user via HMI and is responsible for sending the Ambient Lighting Drive Mode setting request to the Ambient Lighting Drive Mode Server.

3.18.2 VS-CLD-REQ-340542/A-Ambient Lighting Drive Mode Server

The Ambient Lighting Drive Mode Server is responsible for the ambient lighting drive mode function and interfaces with the Ambient Lighting Drive Mode Client.

3.18.3 Use Cases

3.18.3.1 VS-UC-REQ-340546/A-User Enables Auto Ambient Lighting via HMI Setting

Actors	Vehicle front seat occupant(s)
Pre-conditions	Ambient Lighting is in manual mode Ambient Lighting auto/manual settings HMI shows manual as selected Ignition is in Run
Scenario Description	User selects the setting for auto mode via the HMI
Post-conditions	Ambient Lighting is in auto mode and the color is tied to drive mode Ambient Lighting auto/manual settings HMI shows auto mode selected
Notes	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle. Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

3.18.3.2 VS-UC-REQ-340547/A-User Disables Auto Ambient Lighting via HMI Setting

Actors	Vehicle front seat occupant(s)
Pre-conditions	Ambient Lighting is in auto mode Ambient Lighting auto/manual settings HMI shows auto as selected Ignition is in Run
Scenario Description	User selects the setting for manual mode via the HMI
Post-conditions	Ambient Lighting is in manual mode and the color is not tied to drive mode Last saved manual mode color becomes the ambient light color Ambient Lighting auto/manual settings HMI shows manual mode selected
Notes	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

3.18.3.3 VS-UC-REQ-340548/A-User changes color while in Auto Ambient Lighting

Actors	Vehicle front seat occupant(s)
Pre-conditions	Ambient Lighting is in auto mode Ambient Lighting auto/manual settings HMI shows auto as selected Ignition is in Run
Scenario Description	User selects a color via the ambient lighting HMI
Post-conditions	The selected color is the new ambient lighting color and is the saved manual mode color Ambient Lighting is in manual mode and the color is not tied to drive mode Ambient Lighting auto/manual settings HMI shows manual mode selected
Notes	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

3.18.3.4 VS-UC-REQ-340551/A-User changes color while in Manual Ambient Lighting

Actors	Vehicle front seat occupant(s)
Pre-conditions	Ambient Lighting is in manual mode Ambient Lighting auto/manual settings HMI shows manual as selected Ignition is in Run
Scenario Description	User selects a color via the ambient lighting HMI
Post-conditions	The selected color is the new ambient lighting color and is the saved manual mode color Ambient Lighting is in manual mode and the color is not tied to drive mode Ambient Lighting auto/manual settings HMI shows manual mode selected
Notes	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

3.18.3.5 VS-UC-REQ-340569/A-Drive Mode change while in Auto Ambient Lighting mode

Actors	Vehicle front seat occupant(s)
Pre-conditions	Ambient Lighting is in auto mode The current drive mode ambient lighting color is active Ambient Lighting auto/manual settings HMI shows auto as selected Ignition is in Run

Scenario Description	The vehicle changes to new drive mode
Post-conditions	The ambient lighting color for the new drive mode is the new ambient lighting color (color could be the same or different from the previous color) Ambient Lighting auto/manual settings HMI shows auto mode selected
Notes	See Ambient Lighting Drive Mode Server specification for pre-conditions for activating ambient lighting in the vehicle Ambient Lighting intensity is not affected by auto / manual mode and is not tied to drive mode when in auto mode

3.18.4 Interface Requirements

3.18.4.1 MD-REQ-339730/A-LghtAmbDrvMde_D_Rq

Message Type: Request

Note: Request signal from the Ambient Lighting Drive Mode Client to the Ambient Lighting Drive Mode Server to select if Ambient Lighting is tied to Drive Mode or not.

Logical Signal Name	Literals	Value	Description
LghtAmbDrvMde_D_Rq	Null	0x0	
	Manual	0x1	
	Automatic	0x2	

3.18.4.2 MD-REQ-340538/A-LghtAmbDrvMde_B_Stat

Message Type: Status

Note: Status signal from the Ambient Lighting Drive Mode Server with the status of whether Ambient Lighting is tied to Drive Mode or not.

Logical Signal Name	Literals	Value	Description
LghtAmbDrvMde_B_Stat	Manual	0x0	
	Automatic	0x1	

3.18.4.3 MD-REQ-192193/C-LightAmbColor_No_Actl - Variant 2

Message Type: Status

This signal gives status of ambient lighting color (variant 2) status.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Actl – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	

	Color ID3	0x03	
	Cont.	0x04 – 0xFF	Reference separate document with the ambient light Colors and Color ID's used

3.18.4.4 MD-REQ-192189/B-LightAmbColor_No_Rq - Variant 2

Message Type: Request

The Ambient Lighting Client uses this signal to request the color selection for ambient lighting from the Ambient Lighting Server.

Logical Signal Name	Literals	Value	Description
LightAmbColor_No_Rq – Variant 2	Inactive	0x00	
	Color ID1	0x01	
	Color ID2	0x02	
	Color ID3	0x03	
	Color ID4	0x04	
	Color ID5	0x05	
	Color ID6	0x06	
	Color ID7	0x07	
	Color ID8	0x08	
	Color ID9	0x09	
	Color ID10	0x0A	
	Color ID11	0x0B	
	Color ID12	0x0C	
	Color ID13	0x0D	
	Color ID14	0x0E	
	Color ID15	0x0F	
	Color ID16	0x10	
	Reserved	0x11 to 0xFF	

3.18.5 Requirements

3.18.5.1 VS-SR-REQ-341024/A-Ambient Lighting Strategy required to be used when supporting Automatic/Manual Ambient Lighting Drive Mode

In order to support Manual and Auto Mode (color tied to drive mode in auto) both the Ambient Lighting Drive Mode Client and Server shall support "VSv2-FUN-192195-Ambient Lighting – Variant 2".

3.18.5.2 VS-REQ-341020/A-Ambient Lighting Drive Mode Server functional requirement

The Ambient Lighting Drive Mode Server shall publish the Auto/Manual mode status via the LghtAmbDrvMde_B_Stat signal

When in Auto mode, only the ambient lighting color is tied to Drive Mode. The Ambient Lighting Drive Mode Server shall update the ambient lighting color based on drive mode.

Ambient Lighting Intensity is not tied to auto mode (ie not tied to drive mode).

If enhanced memory is supported the Ambient Lighting Drive Mode Server shall update the LghtAmbDrvMde_B_Stat signal to reflect the Auto/Manual status for the new personality profile. See Ambient Lighting Drive Mode Server enhanced memory specification for details.

If the user selects a color during auto mode (ie receives LightAmbColor_No_Rq) then the Ambient Lighting Drive Mode Server shall change to manual mode and update LghtAmbDrvMde_B_Stat to manual mode to reflect the update.

See Ambient Lighting Drive Mode Server specification for additional details and requirements.

3.18.5.3 VS-REQ-341017/A-Ambient Lighting Drive Mode Client functional requirement

The Ambient Lighting Drive Mode Client shall use the LghtAmbDrvMde_B_Stat status signal to update the settings HMI to show whether the Ambient Lighting is in Auto or Manual mode.

The Ambient Lighting Drive Mode Client shall use the LghtAmbDrvMde_D_Rq signal to request Auto or Manual mode.

HMI Setting ID
1026

3.18.5.4 VS-SR-REQ-341018/A-Enabling/Disabling Ambient Lighting Auto/Manual setting via the HMI

When the Ambient Lighting Automatic / Manual Drive Mode setting is selected via the HMI:

1. The Ambient Lighting Drive Mode Client shall set LghtAmbDrvMde_D_Rq to select Automatic or Manual based on what the user selected.
2. The Ambient Lighting Drive Mode Server shall respond with T_LghtAmbDrvMde_Rsp to the LghtAmbDrvMde_D_Rq Manual or Automatic request with the response via the LghtAmbDrvMde_B_Stat signal.
3. The Ambient Lighting Drive Mode Client shall update its HMI (if there is an update) with the Ambient Lighting Auto/Manual mode status after receiving the LightAmbDrvMde_B_Stat response to the request

Note: See sequence diagrams with examples

The Auto/Manual setting on the HMI should only be available for selection when the ignition_status = Run.

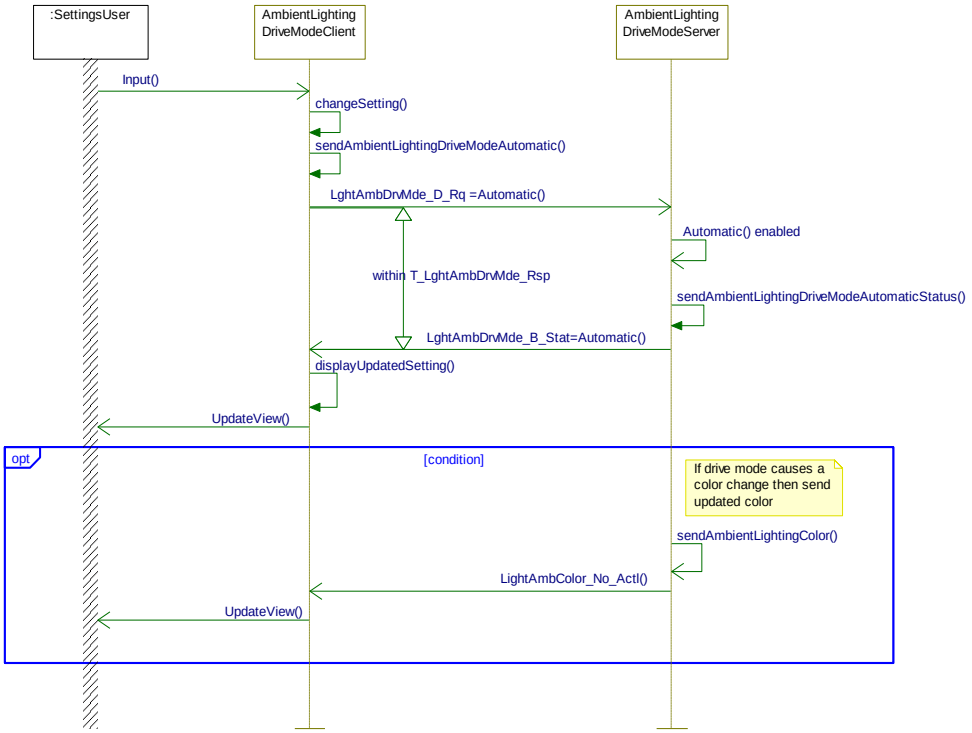
3.18.5.5 VS-TMR-REQ-340545/A-T_LghtAmbDrvMde_Rsp

Name	Description	Units	Range	Resolution	Default
T_LghtAmbDrvMde_Rsp	Maximum time the Ambient Lighting Drive Mode Server shall take to respond to the request in the LghtAmbDrvMde_D_Rq signal. The response will be in the LghtAmbDrvMde_B_Stat signal. Maximum time defined as the default value	msec	0-1000	5	100

3.18.6 Sequence Diagrams

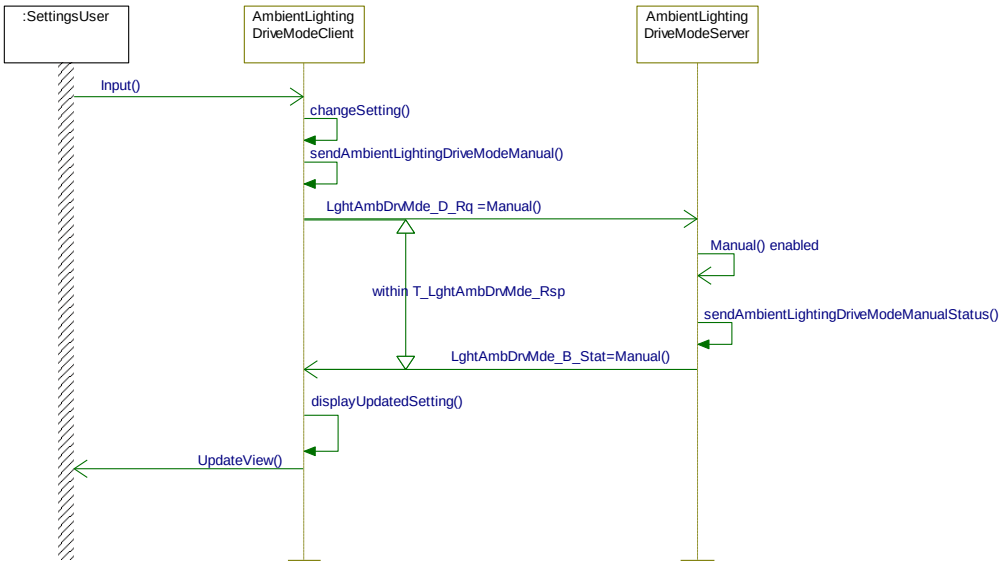
3.18.6.1 VS-SD-REQ-341028/A-Ambient Lighting Drive Mode set to Automatic via the HMI

Pre-Condition:
Ambient Lighting Drive Mode set to manual



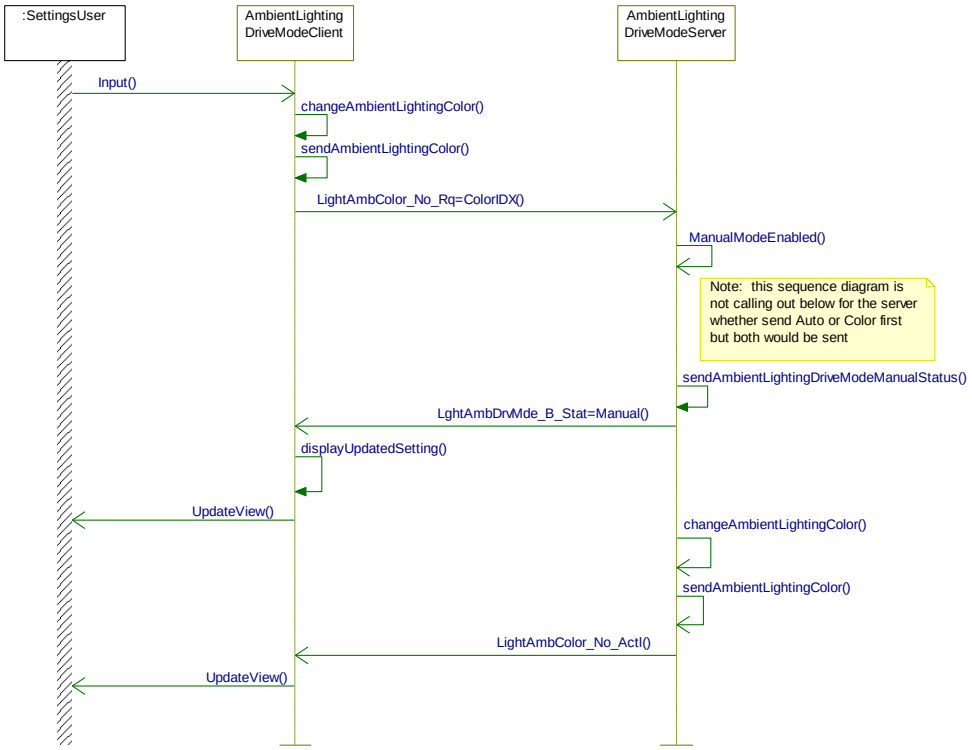
3.18.6.2 VS-SD-REQ-341027/A-Ambient Lighting Drive Mode set to Manual via the HMI

Pre-Condition:
Ambient Lighting Drive Mode in Auto Mode



3.18.6.3 VS-SD-REQ-341050/A-User changes ambient lighting color while in auto mode

Pre-Condition:
Ambient Lighting Drive Mode in Auto mode


:SettingsUser
AmbientLighting DriveModeClient
AmbientLighting DriveModeServer
Input()
changeAmbientLightingColor()
sendAmbientLightingColor()
LightAmbColor_No_Rq=ColorIDX()
ManualModeEnabled()
Note: this sequence diagram is not calling out below for the server whether send Auto or Color first but both would be sent
sendAmbientLightingDriveModeManualStatus()
LghtAmbDrvMde_B_Stat=Manual()
displayUpdatedSetting()
UpdateView()
changeAmbientLightingColor()
sendAmbientLightingColor()
LightAmbColor_No_Actl()
UpdateView()

3.19 VS-FUN-REQ-347046/A-Eco-Idle

3.19.1 VS-CLD-REQ-347054/A-Eco-Idle Client

The Eco-Idle Client interfaces with the user via the HMI and is responsible for sending the Eco-Idle Setting request to the Eco-Idle Server.

3.19.2 VS-CLD-REQ-347055/A-Eco-Idle Server

The Eco-Idle Server is responsible for the control of the Eco-Idle function and interfaces with the Eco-Idle Client.

3.19.3 Use Cases

3.19.3.1 VS-UC-REQ-347814/A-User Enables Eco-Idle Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Eco-Idle is Disabled
Scenario Description	User changes Eco-Idle setting to enabled via the HMI
Post-conditions	Eco-Idle is enabled Eco-Idle HMI is shown set to enabled.
Notes	

3.19.3.2 VS-UC-REQ-347815/A-User Disables Eco-Idle Setting

Actors	Vehicle front seat occupant
Pre-conditions	Ignition is in Run Eco-Idle is enabled
Scenario Description	User changes Eco-Idle setting to disabled via the HMI
Post-conditions	Eco-Idle is disabled Eco-Idle HMI is shown set to disabled
Notes	

3.19.4 Interface Requirements

3.19.4.1 MD-REQ-347056/A-EcoIdl_D_Rq

Message Type: Request

Note: Request signal from the Eco-Idle Client to the Eco-Idle Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
EcoIdl_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

3.19.4.2 MD-REQ-347057/A-EcoIdl_D_Stat

Message Type: Status

Note: Status signal from the Eco-Idle Server with the status of Eco-Idle feature

Logical Signal Name	Literals	Value	Description
EcoIdl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

3.19.5 Requirements

3.19.5.1 VS-SR-REQ-347812/A-Eco-Idle Setting change

The Eco-Idle Client shall use the EcoIdl_D_Stat status signal from the Eco-Idle Server to show the Eco-Idle setting as Enabled or Disabled.

The Eco-Idle setting shall be available on the HMI when ignition_status = Run.

When the Eco-Idle setting is selected via the HMI:

1. The Eco-Idle Client shall set the EcoIdl_D_Rq signal to enabled or disabled based on what the user selected
2. The Eco-Idle Server shall respond within T_EcoIdle_Rsp to the EcoIld_D_Rq request with the response of the Eco-Idle Server via the EcoIdle_D_Stat signal.
3. The Eco-Idle Client shall update the HMI (if there is an update) with the Eco-Idle status after receiving the EcoIdle_D_Stat response to the request.

HMI Setting ID
1037

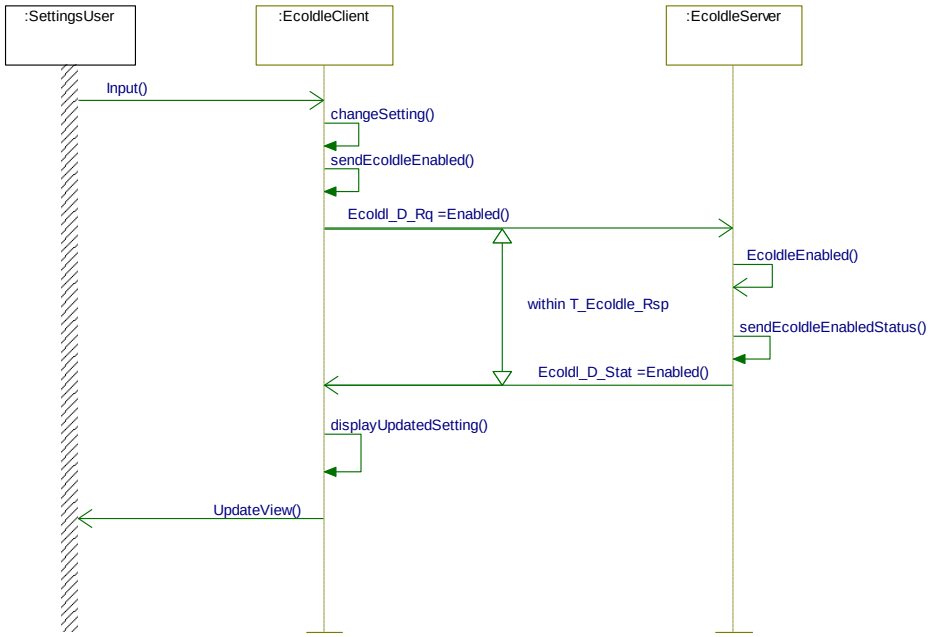
3.19.5.2 VS-TMR-REQ-347813/A-T_EcoIdle_Rsp

Name	Description	Units	Range	Resolution	Default
T_EcoIdle_Rsp	Maximum time the Eco-Idle Server shall take to respond to the EcoIdl_D_Rq signal. The response will be in the EcoIdl_D_Stat signal. Maximum time defined as the default value	msec			100

3.19.6 Sequence Diagrams

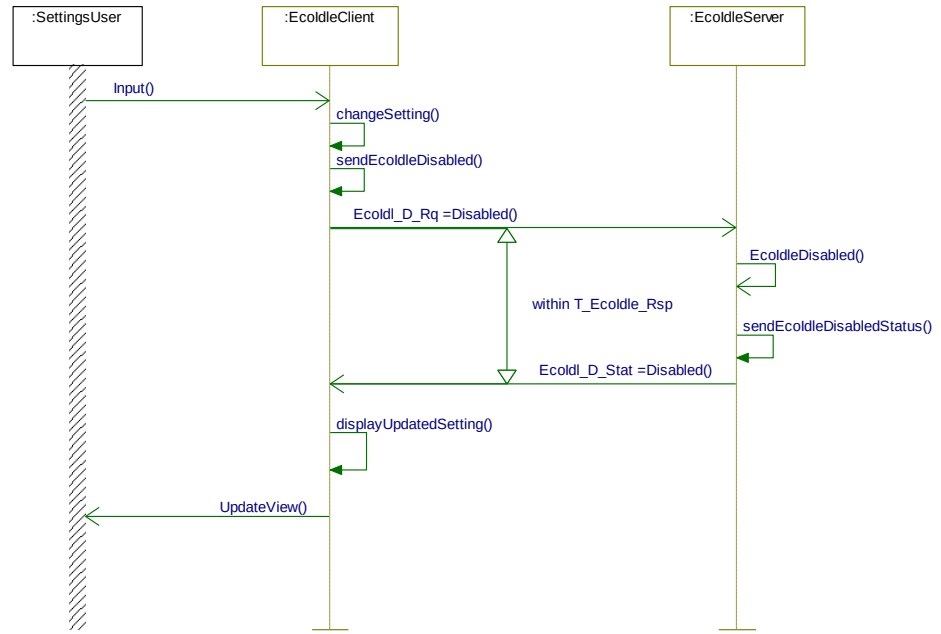
3.19.6.1 VS-SD-REQ-347816/A-Eco-Idle set to Enabled via the HMI

Pre-Condition: Eco-Idle is Disabled



3.19.6.2 VS-SD-REQ-347817/A-Eco-Idle set to Disabled via the HMI

Pre-condition: Eco-Idle is Enabled


:SettingsUser
:EcoIdleClient
:EcoIdleServer
Input()
changeSetting()
sendEcoIdleDisabled()
EcoIdl_D_Rq =Disabled()
EcoIdleDisabled()
within T_EcoIdle_Rsp
sendEcoIdleDisabledStatus()
EcoIdl_D_Stat =Disabled()
displayUpdatedSetting()
UpdateView()

3.20 VS-FUN-REQ-362897/A-Quiet Time for Exhaust Mode

3.20.1 Overview

The user will be able to enable “Quiet Mode” thru the setting menu. This is so that a loud exhaust mode does not cause any noise disturbance to anybody based on the time of day (ex early in the morning). Once enabled, the user can schedule a start and end time for the quiet mode. If the vehicle is started between the quiet modes start and end time then the vehicle’s exhaust will be in a quiet mode.

3.20.2 VS-CLD-REQ-362990/A-Quiet Time Client

The Quiet Time Client interfaces with the user via the HMI and is responsible for interfacing with the Quiet Time Server. This includes sending the quiet time requests and receiving the quiet time responses from the Quiet Time Server. See SPSS requirements for details

3.20.3 VS-CLD-REQ-362991/A-Quiet Time Server

The Quiet Time Server is responsible for the control of the Quiet Time function and interfaces with the Quiet Time Client.

3.20.4 Use Cases

3.20.4.1 VS-UC-REQ-365616/A-User Enabled Quiet Time Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Quiet Time setting is disabled
Scenario Description	User changes Quiet Time setting to enabled via the HMI
Post-conditions	Quiet Time setting is enabled Quiet Time setting HMI is shown set to enabled. The user can change the Quiet Time start and end times
Notes	

3.20.4.2 VS-UC-REQ-365617/A-User Disabled Quiet Time Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Quiet Time setting is enabled
Scenario Description	User changes Quiet Time setting to disabled via the HMI
Post-conditions	Quiet Time setting is disabled Quiet Time setting HMI is shown set to disabled. The user cannot change the Quiet Time start and end times
Notes	

3.20.4.3 VS-UC-REQ-365618/A-User changes Quiet Time start and end times

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run

	Quiet Time setting is enabled
Scenario Description	User changes, via the HMI, the Quiet Time start and quiet time end times
Post-conditions	The Quiet Time start and Quiet Time end times are updated and the exhaust is in quiet mode between those times. Quiet Time HMI shows the updated start and end times.
Notes	

3.20.5 Interface Requirements

3.20.5.1 MD-REQ-365621/A-EngExhMdeHrEnbl_D_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quite Time Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnbl_D_Rq	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	
	Menu Not Configured	0x3	

3.20.5.2 MD-REQ-365620/A-EngExhMdeHrEnbl_D_Stat

Message Type: Status

Status signal from the Quiet Time Server with the status of the Quiet Time setting

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnbl_D_Stat	Null	0x0	HMI setting treated as unknown (ex HMI greyed out, setting not shown as selected…)
	Disabled	0x1	
	Enabled	0x2	

3.20.5.3 MD-REQ-365623/A-EngExhMdeHrStrt_D_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quite Time Server to request the Quiet Time start hour

Logical Signal Name	Literals	Value	Description
EngExhMdeHrStrt_D_Rq	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	…	…	

	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

3.20.5.4 MD-REQ-365626/A-EngExhMdeHrStrt_D_Stat

Message Type: Status

Status signal from Quiet Time Server with the value the Quiet Time Start Hour is set to

Logical Signal Name	Literals	Value	Description
EngExhMdeHrStrt_D_Stat	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	…	…	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

3.20.5.5 MD-REQ-365627/A-EngExhMdeHrEnd_D_Rq

Message Type: Request

Request signal from Quiet Time Client to the Quite Time Server to request the Quiet Time end hour

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnd_D_Rq	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	…	…	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

3.20.5.6 MD-REQ-365628/A-EngExhMdeHrEnd_D_Stat

Message Type: Status

Status signal from Quiet Time Server with the value the Quiet Time End Hour is set to

Logical Signal Name	Literals	Value	Description
EngExhMdeHrEnd_D_Stat	Null	0x0	
	Hour 0 (12 am)	0x1	
	Hour 1 (1 am)	0x2	
	Hour 2 (2 am)	0x3	
	Hour 3 (3 am)	0x4	
	…	…	
	Hour 21 (9 pm)	0x16	
	Hour 22 (10 pm)	0x17	
	Hour 23 (11 pm)	0x18	

Note: Whether time is displayed in 12 or 24 mode depends what HMI setting is set for 12/24 hour mode.
Reference function "VS-FUN-REQ-025239-Set 12/24 hour mode setting" in the Vehicle Setting SPSS for details.

3.20.6 Requirements

3.20.6.1 VS-SR-REQ-365809/A-Quiet Time Enable/Disable Setting change

The Quiet Time Client shall use the EngExhMdeHrEnbl_D_Stat status signal from the Quiet Time Server to show the Quiet Time setting as Enabled or Disabled.

The Quiet Time setting shall only be available on the HMI when the ignition_status = Run.

When the Quiet Time enable/disable setting is selected via the HMI:

1. The Quiet Time Client shall set the EngExhMdeHrEnbl_D_Rq signal to enabled or disabled based on what the user selected, and then 100 msec +/- 10% later set the signal back to Null.
2. The Quiet Time Server shall respond within T_QuietTime_Rsp to the EngExhMdeHrEnbl_D_Rq request with the response of the Quiet Time Server via the EngExhMdeHrEnbl_D_Stat signal. Note, the Quiet Time Server does not wait for EngExhMdeHrEnbl_D_Rq = Null before responding, it responds to the initial EngExhMdeHrEnbl_D_Rq = enable/disable request.
3. The Quiet Time Client shall update the HMI (if there is an update) with the Quiet Time status after receiving the EngExhMdeHrEnbl_D_Stat response to the request.

See sequence diagrams for examples

The Quiet Time Server shall broadcast the current enable/disable state in the EngExhMdeHrEnbl_D_Stat status signal as long as that is current state of the Quiet Time feature.

Ex. If the Quiet Time feature is enabled on the vehicle, then the Quiet Time Server would be broadcasting the signal EngExhMdeHrEnbl_D_Stat set as enabled in its periodic status signal. Note that Null encoding state is only for start-up if the Quiet Time Server has not yet powered up and doesn't know the status of the feature.

When the Quiet Time Client has the Quiet Time feature configured OFF so that no Quiet Time HMI is shown, the Quiet Time Client shall set EngExhMdeHrEnbl_D_Rq equal to "Menu Not Configured". The EngExhMdeHrEnbl_D_Rq signal shall not be set back to Null in this case and shall instead always hold the "Menu Not Configured" encoding state (ie send "Menu Not Configured" periodically on the network bus).

HMI Setting ID
251

3.20.6.2 VS-SR-REQ-365811/A-Quiet Time Start and End time Setting change

The Quiet Time Client shall use the EngExhMdeHrStrt_D_Stat (start time) and EngExhMdeHrEnd_D_Stat (end time) status signals from the Quiet Time Server to show the Quiet Time Start and End times on the HMI.

The Quiet Time start and end time settings shall only be available on the HMI when the ignition_status = Run.

When the Quiet Time Start time setting is selected via the HMI:

1. The Quiet Time Client shall set the EngExhMdeHrStrt_D_Rq signal to the start time (ex start hour 10 pm) based on what the user selected, and then 100 msec +/- 10% later set the signal back to Null.
2. The Quiet Time Server shall respond within T_QuietTime_Rsp to the EngExhMdeHrStrt_D_Rq request with the response of the Quiet Time Server via the EngExhMdeHrStrt_D_Stat signal. Note, the Quiet Time Server does not wait for EngExhMdeHrStrt_D_Rq = Null before responding, it responds to the EngExhMdeHrStrt_D_Rq = Hour_X request.
3. The Quiet Time Client shall update the HMI (if there is an update) with the Quiet Time start time after receiving the EngExhMdeHrStrt_D_Stat response to the request.

See sequence diagrams for examples

When the Quiet Time End time setting is selected via the HMI:

1. The Quiet Time Client shall set the EngExhMdeHrEnd_D_Rq signal to the end time (ex end hour 8 am) based on what the user selected, and then 100 msec +/- 10% later set the signal back to Null.
2. The Quiet Time Server shall respond within T_QuietTime_Rsp to the EngExhMdeHrEnd_D_Rq request with the response of the Quiet Time Server via the EngExhMdeHrEnd_D_Stat signal. Note, the Quiet Time Server does not wait for EngExhMdeHrEnd_D_Rq = Null before responding, it responds to the EngExhMdeHrEnd_D_Rq = Hour_X request.
3. The Quiet Time Client shall update the HMI (if there is an update) with the Quiet Time end time after receiving the EngExhMdeHrEnd_D_Stat response to the request.

See sequence diagrams for examples

The Quiet Time Server shall broadcast the current Quiet Time Start and End time in the EngExhMdeHrStrt_D_Stat and EngExhMdeHrEnd_D_Stat status signals as long as that is current state of the Quiet Time feature.

Ex. If the Quiet Time feature End time is set to 8 am on the vehicle, then the Quiet Time Server would be broadcasting the signal EngExhMdeHrEnd_D_Stat set as Hour 8 (8 am) in its periodic status signal. Note Null is only for start-up if the Quiet Time Server has not yet powered up and doesn't know the status of the feature.

HMI Setting ID
252

3.20.6.3 VS-TMR-REQ-365810/A-T_QuietTime_Rsp

Name	Description	Units	Range	Resolution	Default
T_QuietTime_Rsp	Maximum time the Quiet Time Server shall take to respond to the Quiet Time request signals. The response will be in the Quiet Time status signal. Maximum time defined as the default value	msec			200

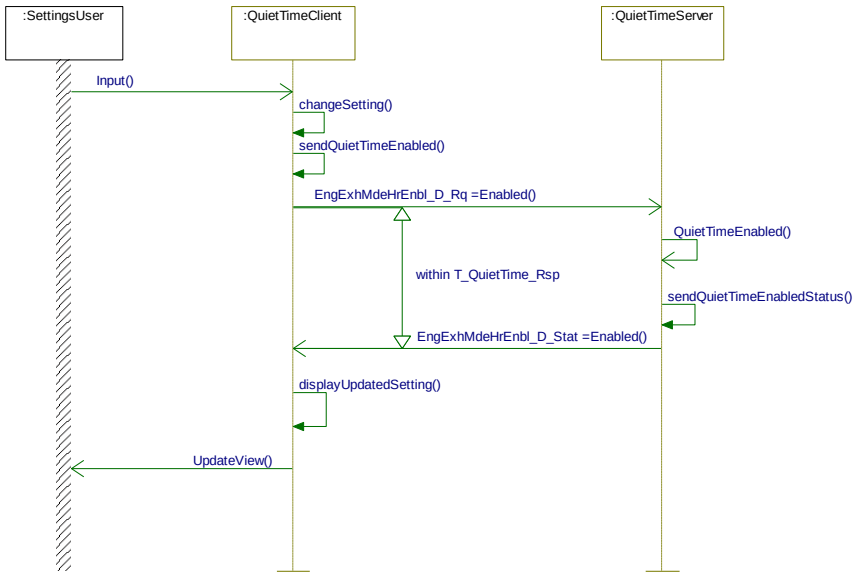
3.20.6.4 VS-SR-REQ-365642/A-HMI Speed Limited

The Quiet Time HMI is speed limited. Reference requirement "DRIVE-REQ-025157-HMI Driving Restrictions – General Applications" in the Driver Restrictions SPSS for details and signal interface.

3.20.7 Sequence Diagrams

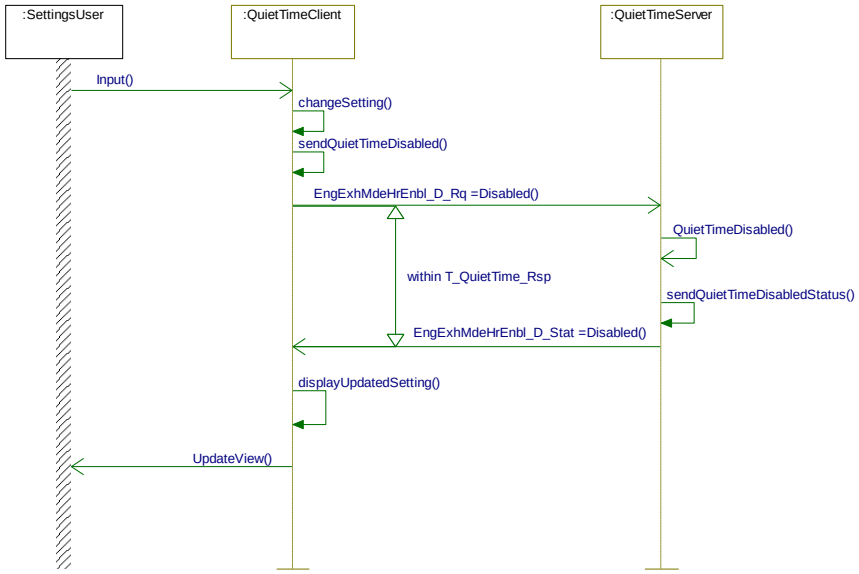
3.20.7.1 VS-SD-REQ-365814/A-Quiet Time set to Enabled via the HMI

Pre-Condition: Quiet Time is Disabled



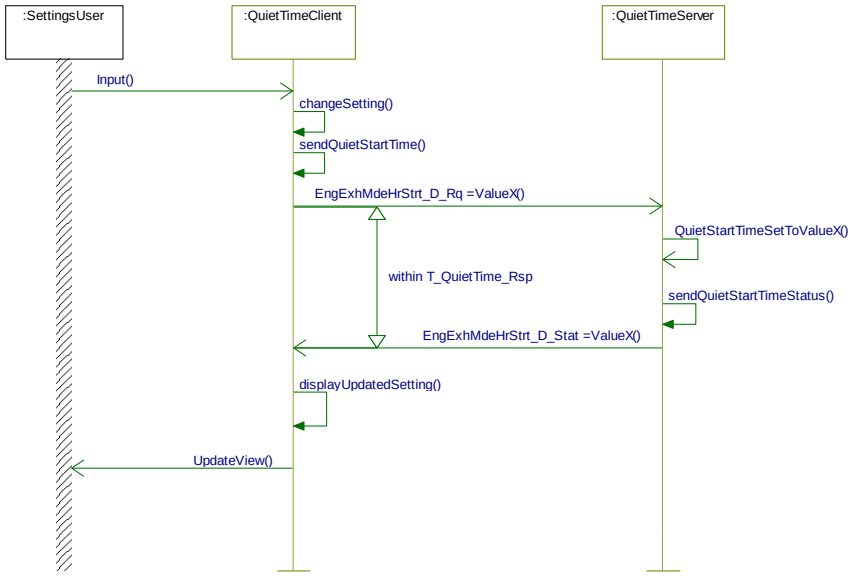
3.20.7.2 VS-SD-REQ-365815/A-Quiet Time set to Disabled via the HMI

Pre-condition: Quiet Time is Enabled



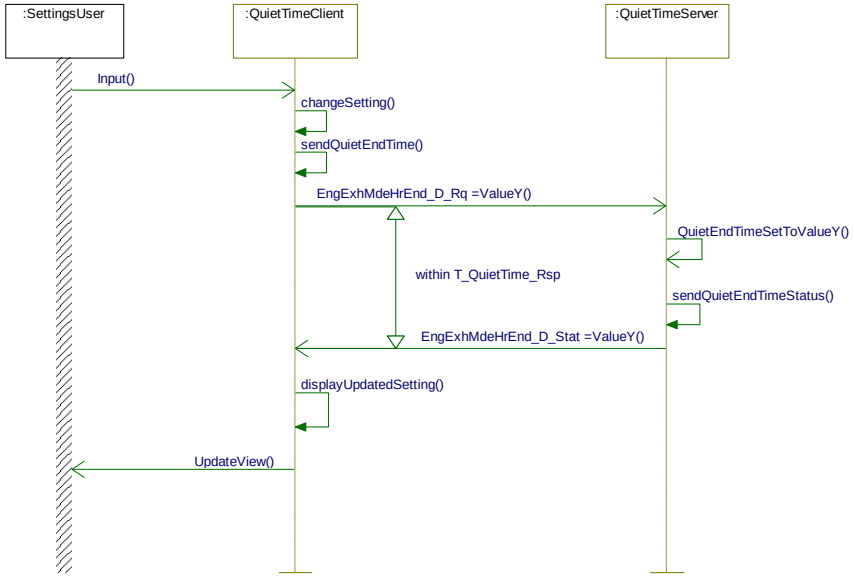
3.20.7.3 VS-SD-REQ-365816/A-Quiet Start Time set via the HMI

Pre-Condition: Quiet Time is enabled



3.20.7.4 VS-SD-REQ-365820/A-Quiet End Time set via the HMI

Pre-condition: Quiet Time is Enabled



3.21 VS-FUN-REQ-375892/A-Trail Turn Assist

3.21.1 Overview

Trail Turn Assist is a feature intended to assist the Driver by reducing the turning radius of the vehicle in low-speed, technical off-road environments that require large steering input. This is accomplished through application of negative (brake) torque to the inside rear wheel of the turning vehicle while the driver is steering in a given direction.

Trail Turn Assist is intended to enhance the User Experience by reducing the Driver effort required to negotiate difficult off-road terrain (for example, allowing the vehicle to make a tight turn in a single maneuver that might otherwise require a 3-point turn).

3.21.2 Terminology and Abbreviations

Term	Description
APIM	Accessory Protocol Interface Module
ABS	Antilock Braking System module

3.21.3 VS-CLD-REQ-375893/A-Trail Turn Assist Client

The Trail Turn Assist Client interfaces with the user via the HMI and is responsible for interfacing with the Trail Turn Assist Server. This includes sending the HMI settings requests and receiving the responses from the Trail Turn Assist Server. See SPSS requirements for details.

3.21.4 VS-CLD-REQ-375896/A-Trail Turn Assist Server

The Trail Turn Assist Server is responsible for the control of the Trail Turn Assist feature and interfaces with the Trail Turn Assist Client.

3.21.5 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Trail Turn Assist feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Trail Turn Assist Client	APIM
Trail Turn Assist Server	ABS

3.21.6 Interface Requirements

3.21.6.1 MD-REQ-375908/A-TurnAsstSwtch_D_Stat

Message Type: Status

This signal is used by the Trail Turn Assist Client to broadcast the HMI Trail Turn Assist setting button status.

Logical Signal Name	Literals	Value	Description
TurnAsstSwtch_D_Stat	Not Pressed	0x0	
	Pressed	0x1	

	Not Used	0x2	
	Faulty	0x3	

3.21.6.2 MD-REQ-375918/A-OrtaSwtchLamp_B_Rq

Message Type: Request

This signal is used by the Trail Turn Assist Server to broadcast the Trail Turn Assist setting button status it requests to be displayed on the Trail Turn Assist Client HMI.

Logical Signal Name	Literals	Value	Description
OrtaSwtchLamp_B_Rq	OFF / Disabled	0x0	Show the Trail Turn Assist setting HMI as OFF / Disabled
	ON / Enabled	0x1	Show the Trail Turn Assist setting HMI as ON / Enabled

3.21.7 Use Cases

3.21.7.1 VS-UC-REQ-375924/A-User Enables Trail Turn Assist

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run The Trail Turn Assist feature is disabled The Trail Turn Assist setting is disabled
Scenario Description	User presses the Trail Turn Assist setting HMI
Post-conditions	The Trail Turn Assist feature is enabled The Trail Turn Assist setting HMI is shown as Enabled
Notes	

3.21.7.2 VS-UC-REQ-375925/A-User Disables Trail Turn Assist

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run The Trail Turn Assist feature is enabled The Trail Turn Assist setting is enabled
Scenario Description	User presses the Trail Turn Assist setting HMI
Post-conditions	The Trail Turn Assist feature is disabled The Trail Turn Assist setting HMI is shown as disabled
Notes	

3.21.8 Requirements

3.21.8.1 VS-SR-REQ-375934/A-Trail Turn Assist Setting Soft Button Pressed / Not Pressed Handling

The Trail Turn Assist feature setting soft button shall be treated as a momentary push button. When the user presses anywhere in the touch zone of the soft button, the Trail Turn Assist Client shall set the value of the TurnAsstSwtch_D_Stat signal to the Pressed value. The TurnAsstSwtch_D_Stat signal shall be kept in the Pressed state as long as the user keeps the soft button pressed. When the user releases the soft button, the Trail Turn Assist Client shall set the value of the TurnAssSwtch_D_Stat signal back to the Not Pressed value.

3.21.8.2 VS-SR-REQ-375946/A-Trail Turn Assist Settings Change

The Trail Turn Assist Server shall broadcast the current Trail Turn Assist feature state as enabled or disabled in the OrtaSwtchLamp_B_Rq signal.

The Trail Turn Assist Client shall use the OrtaSwtchLamp_B_Rq signal from the Trail Turn Assist Server to show the Trail Turn Assist setting as enabled or disabled.

The Trail Turn Assist HMI setting shall only be available on the HMI when the ignition_status = Run.

When the Trail Turn Assist setting is selected via the HMI:

1. The user pressing and releasing the Trail Turn Assist Client soft-button will generate a Pressed and then Not Pressed event in the TurnAsstSwtch_D_Stat signal.
    a. Note for when using an enable / disable HMI switch: if either enable or disable is selected a Pressed will be sent and kept at a pressed state until the user releases their finger then the Trail Turn Assist Client will send Not Pressed.
2. The Pressed and then Not Pressed in the TurnAsstSwtch_D_Stat signal is then processed by the Trail Turn Assist Server. If all the conditions are met, the Trail Turn Assist Server will update the OrtaSwtchLamp_B_Rq signal with the updated enabled/disabled state within T_TrailTurnAssist_Rsp.
3. The Trail Turn Assist Client shall then update the HMI setting to reflect the new feature state in the OrtaSwtchLamp_B_Rq signal (enabled or disabled).

See sequence diagrams for examples.

HMI Setting ID
1080

3.21.8.3 VS-TMR-REQ-375949/A-T_TrailTurnAssist_Rsp

Name	Description	Units	Range	Resolution	Default
T_TrailTurnAssist_Rsp	Maximum time the Trail Turn Assist Server shall take to respond to the Trail Turn Assist TurnAsstSwtch_D_Stat signal Pressed then Not Pressed state change. The response will be in the OrtaSwtchLamp_B_Rq signal. Maximum time defined as the default value	msec			150

3.21.8.4 VS-SR-REQ-375947/A-Conditions for setting TurnAsstSwtch_D_Stat signal to Faulty

Anytime the Trail Turn Assist Client detects a failure with the Trail Turn Assist HMI or its controls, then the Trail Turn Assist Client shall set TurnAsstSwtch_D_Stat equal to Faulty. This includes failure to register touch input, persistent contact or "stuck button" condition, etc.

Anytime the vehicle's ignition_status = Run and the OrtaSwtchLamp_B_Rq signal is missing for 5 seconds or more than the Trail Turn Assist Client shall set TurnAsstSwtch_D_Stat equal to Faulty.

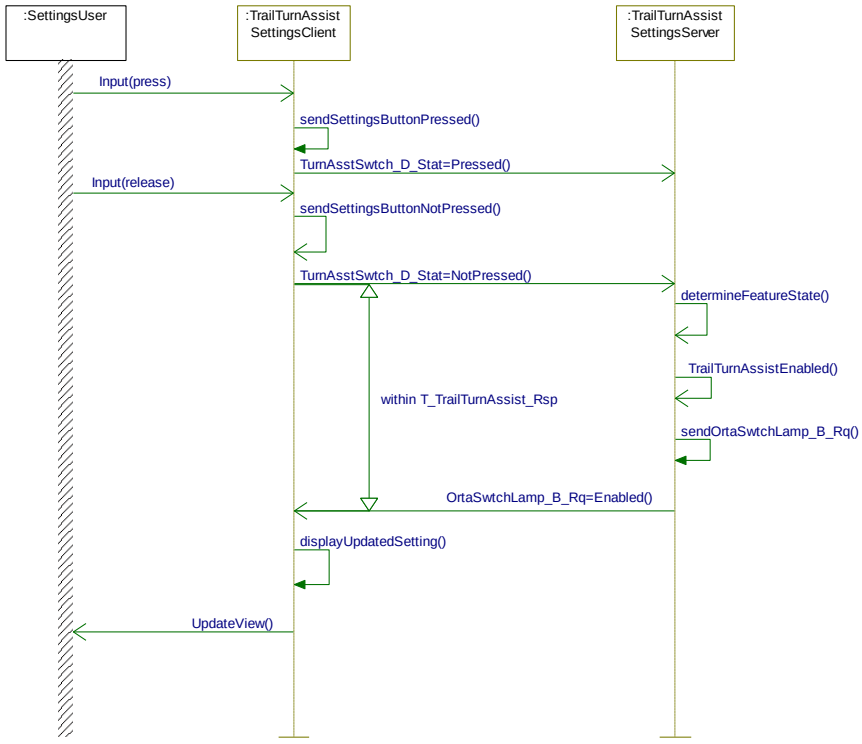
When the conditions above are not met for a fault condition then the TurnAsstSwtch_D_Stat signal shall be set to the current button state (ie Pressed or Not Pressed).

3.21.9 Sequence Diagrams

3.21.9.1 VS-SD-REQ-375951/A-Trail Turn Assist set to Enabled via the HMI

Pre-Condition: Trail Turn Assist is Disabled

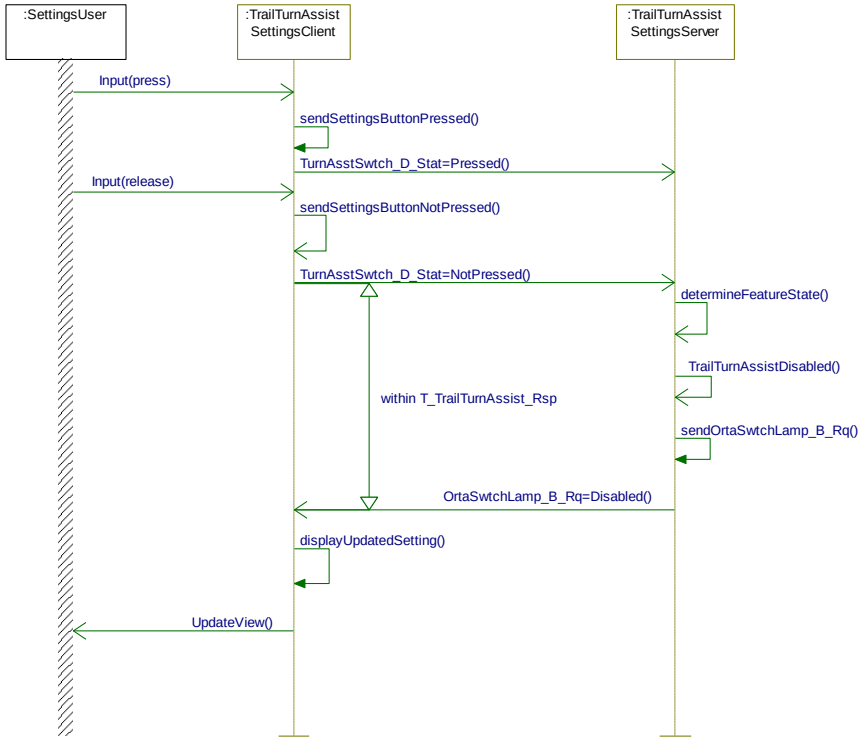
Event: User presses the Trail Turn Assist settings HMI



3.21.9.2 VS-SD-REQ-375952/A-Trail Turn Assist set to Disabled via the HMI

Pre-condition: Trail Turn Assist Enabled

Event: User presses the Trail Turn Assist settings HMI


:SettingsUser
:TrailTurnAssist SettingsClient
:TrailTurnAssist SettingsServer
Input(press)
sendSettingsButtonPressed()
TurnAsstSwtch_D_Stat=Pressed()
Input(release)
sendSettingsButtonNotPressed()
TurnAsstSwtch_D_Stat=NotPressed()
determineFeatureState()
TrailTurnAssistDisabled()
within T_TrailTurnAssist_Rsp
sendOrtaSwtchLamp_B_Rq()
OrtaSwtchLamp_B_Rq=Disabled()
displayUpdatedSetting()
UpdateView()

3.22 Clear Exit Assist

3.22.1 VS-FUN-REQ-354248/A-Clear Exit Assist Setting

3.22.1.1 VS-CLD-REQ-354250/A-Clear Exit Assist Settings Client

The Clear Exit Assist Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Clear Exit Assist Settings Server. The Clear Exit Assist Settings Client is responsible for sending the Clear Exit Assist setting request signal to the Clear Exit Assist Settings Server.

3.22.1.2 VS-CLD-REQ-354251/A-Clear Exit Assist Settings Server

The Clear Exit Assist Settings Server is responsible for the control of the Clear Exit Assist settings function and interfaces with the Clear Exit Assist Settings Client.

3.22.1.3 Use Cases

3.22.1.3.1 VS-UC-REQ-354326/A-User Enables Clear Exit Assist Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Clear Exit Assist is Disabled
Scenario Description	User changes Clear Exit Assist setting to enabled via the HMI
Post-conditions	Clear Exist Assist is enabled Clear Exist Assist setting HMI is shown set to enabled.
Notes	

3.22.1.3.2 VS-UC-REQ-354327/A-User Disables Clear Exit Assist Setting

Actors	Vehicle front seat occupant
Pre-conditions	Ignition is in Run Clear Exit Assist is enabled
Scenario Description	User changes Clear Exit Assist setting to disabled via the HMI
Post-conditions	Clear Exit Assist is disabled Clear Exit Assist Setting HMI is shown set to disabled
Notes	

3.22.1.4 Interface Requirements

3.22.1.4.1 MD-REQ-354255/A-ClrExitAsstEnbl_D_RqMnu

Message Type: Request

Request signal from the Clear Exit Assist Settings Client to the Clear Exit Assist Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
	Null	0x0	

ClrExitAsstEnbl_D_RqMnu	Disabled	0x1	
	Enabled	0x2	

3.22.1.4.2 MD-REQ-354256/A-ClrExitAsst_D_Stat

Message Type: Status

Status signal from the Clear Exit Assist Settings Server with the status of Clear Exit Assist feature

Logical Signal Name	Literals	Value	Description
ClrExitAsst_D_Stat	Null	0x0	HMI setting treated as unknown (ex HMI greyed out, setting not shown as selected…)
	Disabled	0x1	
	Enabled	0x2	

3.22.1.5 Requirements

3.22.1.5.1 VS-SR-REQ-354328/A-Clear Exit Assist Setting change

The Clear Exit Assist Settings Client shall use the ClrExitAsst_D_Stat status signal from the Clear Exit Assist Server to show the Clear Exit Assist setting as Enabled or Disabled.

The Clear Exit Assist setting shall be available on the HMI when ignition_status = Run.

When the Clear Exit Assist setting is selected via the HMI:

1. The Clear Exit Assist Settings Client shall set the ClrExitAsstEnbl_D_RqMnu signal to enabled or disabled based on what the user selected
2. The Clear Exit Assist Settings Server shall respond within T_ClrExitAsst_Rsp to the ClrExitAsstEnbl_D_RqMnu request with the response of the Clear Exit Assist Setting Server via the ClrExitAsst_D_Stat signal.
3. The Clear Exit Assist Setting Client shall update the HMI (if there is an update) with the clear exit assist settings status after receiving the ClrExitAsst_D_Stat response to the request.

HMI Setting ID
1037

3.22.1.5.2 VS-TMR-REQ-354329/A-T_ClrExitAsst_Rsp

Name	Description	Units	Range	Resolution	Default
T_ClrExitAsst_Rsp	Maximum time the Clear Exit Assist Setting Server shall take to respond to the ClrExitAsstEnbl_D_RqMnu signal. The response will be in the ClrExitAsst_D_Stat signal. Maximum time defined as the default value	msec			100

3.22.1.5.3 VS-SR-REQ-354254/A-MyKey settings

When a MyKey is active the Clear Exit Assist Setting shall be greyed out or not visible. See HMI specs for details.

Clear Exit Assist feature is enabled with a MyKey so any Centerstack clear exit assist warnings or pop-ups shall be supported.

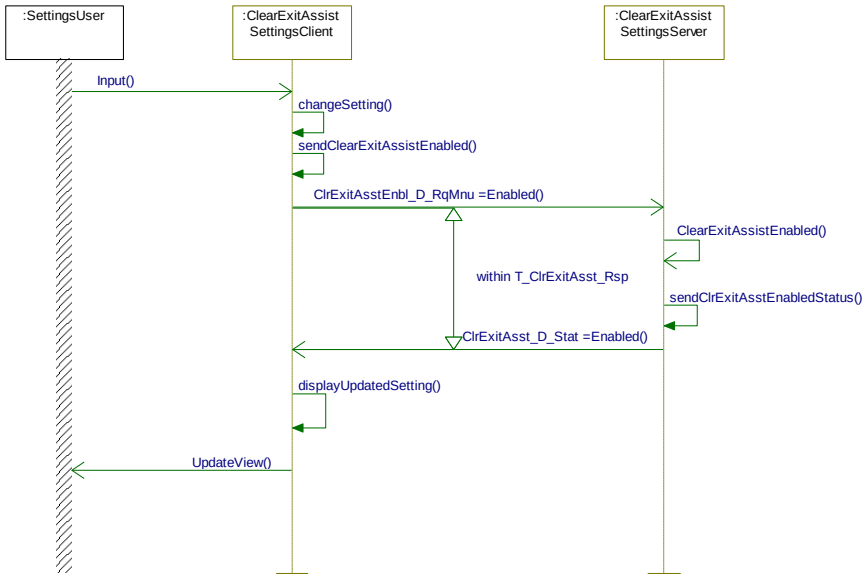
Activating MyKey Settings Limit:
MyKey is active when IgnKeyType_D_Actl equals KeyInIgnMyKey.

Signal Name	Encodings	Value	Description
IgnitionKeyType	-	-	Type of key that is in the ignition
	KeyReadInProgress	0x0	Key(s) will be read now
	KeyInIgnStandardKey	0x1	Admin (full) mode
	KeyInIgnMyKey	0x2	MyKey restricted mode
	Unknown	0xE	Disable MyKey System mode
	Invalid	0xF	Initial value

3.22.1.6 Sequence Diagrams

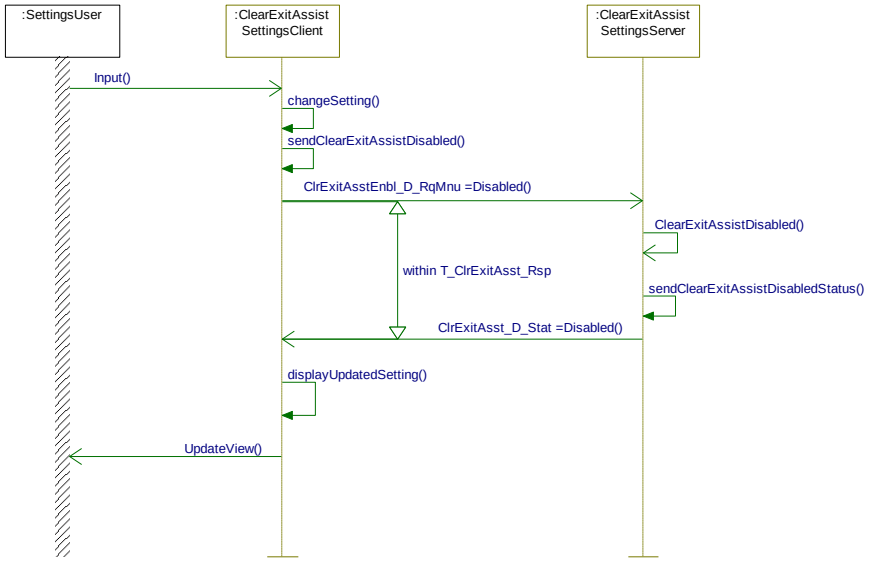
3.22.1.6.1 VS-SD-REQ-354580/A-Clear Exit Assist set to Enabled via the HMI

Pre-Condition: Clear Exit Assist is set to Disabled



3.22.1.6.2 VS-SD-REQ-354581/A-Clear Exit Assist set to Disabled via the HMI

Pre-condition: Clear Exit Assist is set to Enabled


:SettingsUser
:ClearExitAssist SettingsClient
:ClearExitAssist SettingsServer
Input()
changeSetting()
sendClearExitAssistDisabled()
ClrExitAsstEnbl_D_RqMnu =Disabled()
ClearExitAssistDisabled()
within T_ClrExitAsst_Rsp
sendClearExitAssistDisabledStatus()
ClrExitAsst_D_Stat =Disabled()
displayUpdatedSetting()
UpdateView()

3.22.2 VS-FUN-REQ-359558/A-Clear Exit Assist Warning

3.22.2.1 VS-CLD-REQ-359585/A-Clear Exit Assist Warning Client

The Clear Exit Assist Warning Client interfaces with the user via the HMI and interfaces with the Clear Exit Assist Warning Server to determine if HMI updates are needed.

3.22.2.2 VS-CLD-REQ-359586/A-Clear Exit Assist Warning Server

The Clear Exit Assist Warning Server is responsible for the control to the Clear Exit Assist function and interfaces with the Clear Exit Assist Warning Client.

3.22.2.3 PWRMAN-CLD-REQ-359656/A-Infotainment System Master

3.22.2.4 Use Cases

DA = Delayed Accessory
CEA = Clear Exit Assist

3.22.2.4.1 VS-UC-REQ-362233/B-Activate Clear Exit Assist HMI Warning while the ignition is in Run/Acc

Actors	Vehicle front left seat occupant
Pre-conditions	Vehicle is parked Ignition is in Run or Accessory Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client)
Scenario Description	Road object is approaching the left door zone from behind. Front left seat occupant pulls inner door handle triggering a Clear Exit Warning event.
Post-conditions	The Centerstack HMI warning is updated for the object approaching from rear left (ie left side object approaching from behind).
Notes	Not all the possible use cases are listed for the different seat occupants pulling the inner door handles and the warnings associated with them. See signal ClrExitAsstMsgTxt2_D_Rq encodings for the different possible HMI warnings to be displayed on the Clear Exit Assist Warning Client. This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc… The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs. The use case is the way the feature is supposed to work (not error conditions). The Clear Exit Assist Warning Client shall follow all the requirement in this spec. The signals in the SPSS describe when to show the warning. If the requirements don't mention exceptions then follow what is in this spec. Example: if the Clear Exit Assist setting is disabled and the Clear Exit Assist Warning Client received a signal to display the CEA warning then the warning would still be displayed even though the setting is disabled (ie error condition).

3.22.2.4.2 VS-UC-REQ-362289/A-Second Clear Exit Assist HMI Warning while the ignition is in Run/Acc

Actors	Vehicle front left and front right seat occupant
Pre-conditions	Vehicle is parked Ignition is in Run or Accessory Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client). Clear Exit Assist rear left object approaching event is active with the HMI Warning displayed. The CEA rear left object approaching warning event was initiated by a front left occupant when pulling their door handle.
Scenario Description	Second road object is approaching the right door zone from behind. Front right seat occupant pulls inner door handle
Post-conditions	The Centerstack HMI warning is updated for the object approaching from rear left and rear right at the same time.
Notes	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc… The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

3.22.2.4.3 VS-UC-REQ-362287/A-Activate Clear Exit Assist HMI Warning when in Delayed Accessory

Actors	Vehicle rear left seat occupant
Pre-conditions	Vehicle is parked Ignition is in Run Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client). The Clear Exit Assist Warning power mode timer has not expired
Scenario Description	User turns the ignition OFF entering delayed accessory Road object is approaching the left door zone from behind. Rear left seat occupant pulls inner door handle triggering a Clear Exit Warning event
Post-conditions	Delayed Accessory is not ended (rear door doesn't end delayed accessory). The Centerstack HMI warning is updated for the object approaching from rear left (ie left side object approaching from behind).
Notes	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc… The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

3.22.2.4.4 VS-UC-REQ-362259/A-Activate Clear Exit Assist HMI Warning when exiting the vehicle causing DA to end and CEA timer has not expired

Actors	Vehicle front right seat occupant
Pre-conditions	Vehicle is parked Ignition is in Run Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client) The Clear Exit Assist Warning power mode timer has not expired
Scenario Description	User turns the ignition to OFF and Delayed Accessory becomes active Road object is approaching the right door zone from behind. Front right seat occupant pulls inner door handle.
Post-conditions	Delayed Accessory is ended when front right door is opened. The Infotainment Centerstack display HMI module remains powered up with Delayed Accessory OFF. The Centerstack HMI warning is updated for the object approaching from rear left (ie left side object approaching from behind).
Notes	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc… At time this use case was written the clear exit assist power mode timer controlled by the Clear Exit Assist Warning Server was for 3 minutes after ignition OFF. The Clear Exit Assist Warning Client will display any ClrExitAsstMsgTxt2_D_Rq Clear Exit Assist warning it receives while powered up (ex HMI_HMIMode_St = ON, ClrExitAsstActv_B_Rq = True). The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

3.22.2.4.5 VS-UC-REQ-362293/A-No Clear Exit Assist HMI Warning when exiting the vehicle and CEA timer expired

Actors	Vehicle front left seat occupant
Pre-conditions	Vehicle is parked Ignition is OFF and Delayed Accessory OFF Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered down (ie Clear Exit Assist Warning Client) The Clear Exit Assist Warning power mode timer has expired
Scenario Description	Road object is approaching the right door zone from behind. Front left seat occupant pulls inner door handle.
Post-conditions	The Infotainment Centerstack display HMI module remains powered down with Delayed Accessory OFF.

	The Centerstack HMI warning is not updated for the object approaching from rear left (ie left side object approaching from behind).
Notes	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc… At time this use case was written the clear exit assist power mode timer controlled by the Clear Exit Assist Warning Server was for 3 minutes after ignition OFF. The Clear Exit Assist Warning Client will display any ClrExitAsstMsgTxt2_D_Rq Clear Exit Assist warning it receives while powered up (ex HMI_HMIMode_St = ON, ClrExitAsstActv_B_Rq = True). The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

3.22.2.4.6 VS-UC-REQ-362296/A-Activate Clear Exit Assist HMI Warning when entering and exiting the vehicle when the CEA timer has not expired

Actors	Vehicle front left seat occupant
Pre-conditions	Vehicle is parked Ignition is OFF and Delayed Accessory is Active Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client) The Clear Exit Assist Warning power mode timer has not expired
Scenario Description	Person exits the vehicle ending delayed accessory and closes the door Person re-enters the vehicle to the front left seat and closes the door Road object is approaching the left door zone from behind. Front left seat occupant pulls inner door handle.
Post-conditions	The Clear Exit Assist Warning power mode timer has not expired The Infotainment Centerstack display HMI module remains powered up with Delayed Accessory OFF. The Centerstack HMI warning is updated for the object approaching from rear left (ie left side object approaching from behind).
Notes	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc… At time this use case was written the clear exit assist power mode timer controlled by the Clear Exit Assist Warning Server was for 3 minutes after ignition OFF. The Clear Exit Assist Warning Client will display any ClrExitAsstMsgTxt2_D_Rq Clear Exit Assist warning it receives while powered up (ex HMI_HMIMode_St = ON, ClrExitAsstActv_B_Rq = True). The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

3.22.2.4.7 VS-UC-REQ-362295/A-No Clear Exit Assist HMI Warning when entering and exiting vehicle with CEA timer expired

Actors	Vehicle front left seat occupant
Pre-conditions	Vehicle is parked Ignition is OFF and Delayed Accessory is Active Clear Exit Assist is Enabled Infotainment Centerstack display HMI module powered on (ie Clear Exit Assist Warning Client) The Clear Exit Assist Warning power mode timer has not expired
Scenario Description	Person exits the vehicle ending delayed accessory and closes the door The Clear Exit Assist Warning power mode timer expires Person re-enters the vehicle to the front left seat and closes the door Road object is approaching the left door zone from behind. Front left seat occupant pulls inner door handle.
Post-conditions	The Infotainment Centerstack display HMI module does not remain powered up with Delayed Accessory OFF. The Centerstack HMI warning is not updated for the object approaching from rear left (ie left side object approaching from behind).
Notes	This use case post-conditions do not cover non-infotainment modules functions for a Clear Exit Assist warning event like cluster controlled chimes, cluster HMI, if doors do or don't open during object approaching event etc… At time this use case was written the clear exit assist power mode timer controlled by the Clear Exit Assist Warning Server was for 3 minutes after ignition OFF. The Clear Exit Assist Warning Client will display any ClrExitAsstMsgTxt2_D_Rq Clear Exit Assist warning it receives while powered up (ex HMI_HMIMode_St = ON, ClrExitAsstActv_B_Rq = True). The Clear Exit Assist Warning Client only supports the this use case for requirements and sequence diagrams defined in this SPSS or HMI specs.

3.22.2.5 Interface Requirements

3.22.2.5.1 MD-REQ-359587/A-ClrExitAsstMsgTxt2_D_Rq

Message Type: Request

Request signal from the Clear Exit Assist Warning Server to the Clear Exit Assist Warning Client to display the warning HMI

Logical Signal Name	Literals	Value	Description
ClrExitAsstMsgTxt2_D_Rq	No Info / No Warning	0x0	
	Rear Left	0x1	
	Rear Right	0x2	
	Front Left	0x3	
	Front Right	0x4	

	Rear Left and Rear Right	0x5	
	Front Left and Front Right	0x6	
	Rear Left and Front Right	0x7	
	Front Left and Rear Right	0x8	
	Reserved	…	
	Reserved	0xF	

3.22.2.5.2 MD-REQ-359588/A-ClrExitAsstActv_B_Rq

Message Type: Request

Request signal from the Clear Exit Assist Warning Server to the Clear Exit Assist Warning Client / Infotainment System Master to remain powered up to display the clear exit assist warning HMI

Logical Signal Name	Literals	Value	Description
ClrExitAsstActv_B_Rq	False	0x0	
	True	0x1	

3.22.2.6 Requirements

3.22.2.6.1 VS-SR-REQ-359973/B-Clear Exit Assist warning HMI

When the Clear Exit Assist Warning Client receives the ClrExitAsstMsgTxt2_D_Rq request signal from the Clear Exit Assist Warning Server set to a warning value (ex Front Left) then the Clear Exist Assist Warning Client shall display the corresponding warning HMI.

- As long as a warning encoding in ClrExitAsstMsgTxt2_D_Rq is held to a specific warning value then the Clear Exit Assist Warning Client shall continue to show the warning HMI.
  - Ex. if ClrExitAsstMsgTxt2_D_Rq = Rear Left then hold the corresponding HMI for Rear Left as long as the signal is held at Rear Left.
  - Error Handling: If the ClrExitAsstMsgTxt2_D_Rq signal was being held to a specific value for a warning HMI and then the signal becomes missing for greater then 5 seconds then the Clear Exit Assist Warning Client shall treat the ClrExtAsstTxt2_D_Rq signal as though "No Info / No Warning" is being received.

Note: see HMI spec for priority of pop-ups between different features

The Clear Exit Assist Warning Server shall only hold the signal ClrExitAsstMsgTxt2_D_Rq set to a warning value as long as the condition is true. Once there warning event has ended the ClrExitAsstMsgTxt2_D_Rq signal shall be set back to "No Info / No Warning".

- Note: if the Clear Exit Assist Warning Server does not put the ClrExitAsstMsgTxt2_D_Rq signal back to "No Info / No Warning" signal encoding immediately after the event ends then this may cause other important HMI to not be shown on the Clear Exit Assist Warning Client HMI.

3.22.2.6.2 PWRMAN-SR-REQ-359648/A-Clear Exit Assist Power Moding

The Clear Exit Assist Warning Client shall update the HMI with the applicable HMI Warning when it receives the signal ClrExtAsstMsgTxt_D_Rq2 from the Clear Exit Assist Warning Server set to a particular warning encoding.

For the Clear Exit Assist feature the Clear Exit Assist Warnings can be displayed on the Clear Exit Assist Warning Client's HMI whenever the infotainment system is on (ie HMI_HMIMode_St = ON) or in MMInactive (Sleep/Standby) power mode as specified below.

The Infotainment System Master / Clear Exit Assist Warning Client shall support Clear Exit Assist Warning HMI in MMInactive (Sleep/Standby) power mode (ie HMI_HMIMode_St = OFF) when the following applies:

1. The Clear Exit Assist Warning Server power mode signal is set as ClrExitAsstActv_B_Rq = True, AND
2. 240 seconds has not elapsed since the signal Delay_Acc went from ON to OFF.

The Infotainment System Master / Clear Exit Assist Warning Client shall NOT remain powered up capable of displaying Clear Exit Assist HMI in MMInactive (Sleep/Standby) power mode because of the Clear Exit feature (might remain powered up because of other features) when the following applies:

1. The Clear Exit Assist Warning Server power mode signal ClrExitAsstActv_B_Rq = False, OR
2. 240 seconds has elapsed since the signal Delay_Acc went from ON to OFF

The Infotainment System Master / Clear Exit Assist Warning Client shall NOT keep the network awake for the Clear Exit Assist feature. This includes not keeping the network bus awake when ClrExitAsstActv_B_Rq = True and HMIAudioMode = OFF.

If the infotainment system master is in MMInactive (Sleep/Standby), with the network asleep but the conditions are true to be powered up for the Clear Exit Assist Warning feature then the Infotainment System Master shall power up locally (ie remain powered up waiting for warning signals even though the network bus is asleep).

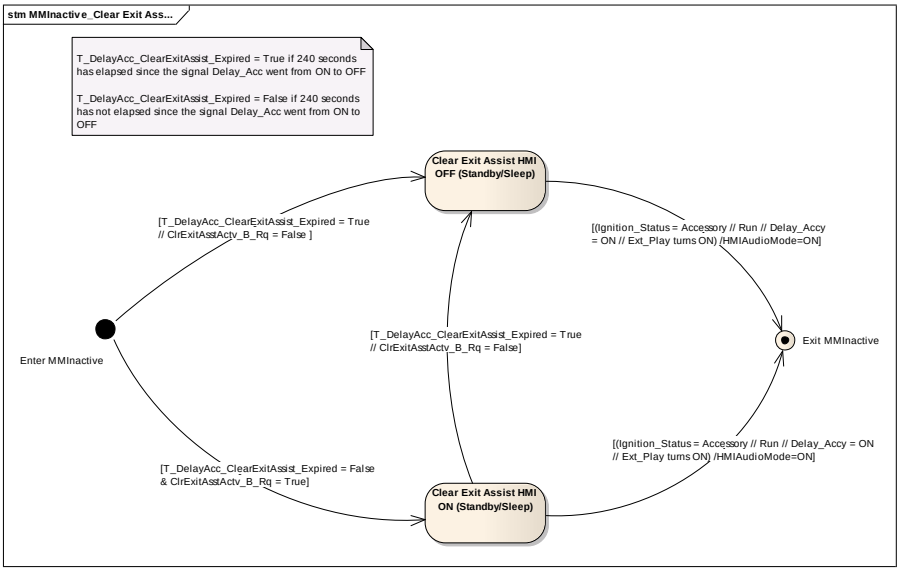
- Note: if the network bus is asleep then the Infotainment System Master / Clear Exit Assist Warning Client shall assume the last state of the ClrExitAsstActv_B_Rq signal.

If the ClrExitAsstActv_B_Rq is not on the network bus for 5 seconds or more while the signal Ignition_Status = RUN then the Infotainment System Master / Clear Exit Assist Warning Client shall consider the signal ClrExitAsstActv_B_Rq missing. When ClrExitAsstActv_B_Rq is missing the Infotainment System Master shall NOT remain powered up capable of displaying Clear Exit Assist HMI in MMInactive (Sleep/Standby) power mode because of the Clear Exit feature (might remain powered up because of other features).

Note:

- The Infotainment System Master and Clear Exit Assist Warning Client may be the same module. See implementation guide for details

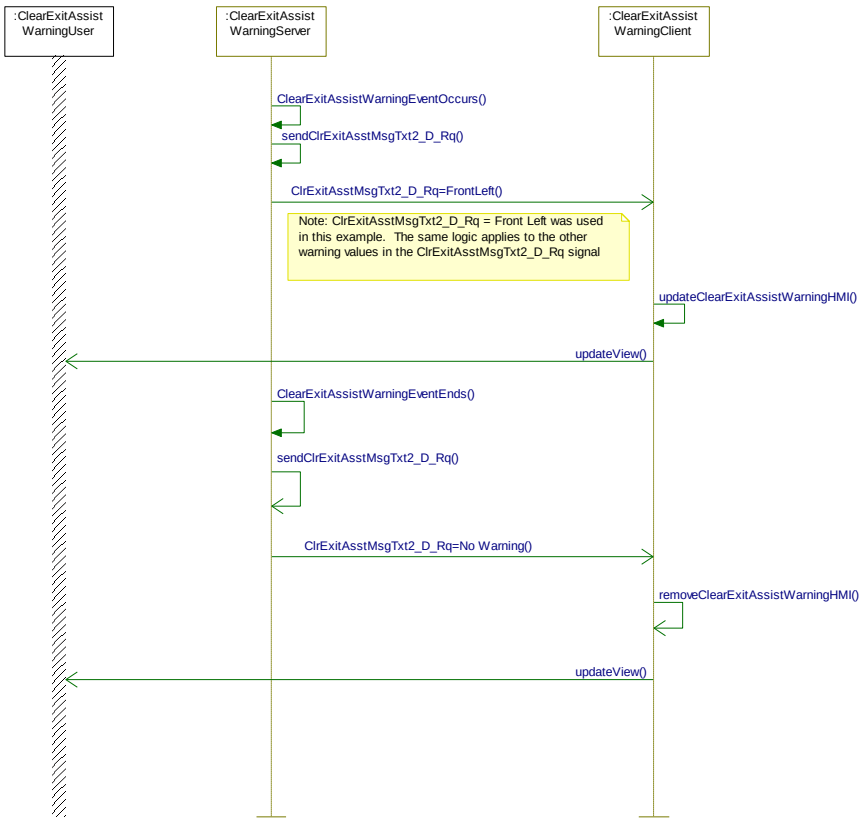
3.22.2.6.3 PWRMAN-SR-REQ-359676/A-MMInactive Sleep_Standby Clear Exit Assist Power Mode Diagram



3.22.2.7 Sequence Diagrams

3.22.2.7.1 VS-SD-REQ-361333/A-Clear Exist Assist HMI Warning Event

Pre-condition:
No Clear Exit Assist HMI warning is active with the signal ClrExitAsstMsgTxt2_D_Rq = No Warning.



3.23 VS-FUN-REQ-383899/A-Lane Biasing Setting (Highway Assist)

3.23.1 Overview

To mimic normal driving behavior, the Lane Biasing feature will move the vehicle laterally in certain driving situations e.g. when passing other vehicles, driver selected to drive with an offset, building an extra lane for emergency vehicles in certain regions.

3.23.2 VS-CLD-REQ-383974/A-Lane Biasing Settings Client

The Lane Biasing Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Lane Biasing Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Lane Biasing Settings Server.

3.23.3 VS-CLD-REQ-383975/A-Lane Biasing Settings Server

The Lane Biasing Assist Settings Server is responsible for the control of the Lane Biasing settings function and interfaces with the Lane Biasing Settings Client.

3.23.4 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Lane Biasing Setting feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Lane Biasing Settings Client	APIM
Lane Biasing Settings Server	ADAS

3.23.5 Interface Requirements

3.23.5.1 MD-REQ-383981/A-TjaLaneBiasEnbl_D_RqMnu

Message Type: Request

Request signal from the Lane Biasing Setting Client to the Lane Biasing Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
TjaLaneBiasEnbl_D_RqMnu	Null	0x0	
	Disable	0x1	
	Enable	0x2	

3.23.5.2 MD-REQ-383982/A-TjaLaneBiasEnbl_D_Stat

Message Type: Status

Status signal from the Lane Biasing Settings Server with the status of Lane Biasing feature

Logical Signal Name	Literals	Value	Description
TjaLaneBiasEnbl_D_Stat	Inactive	0x0	
	Disabled	0x1	
	Enabled	0x2	

3.23.6 Use Cases

3.23.6.1 VS-UC-REQ-383983/A-User Enables Lane Biasing Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Lane Biasing is Disabled
Scenario Description	User changes Lane Biasing setting to enabled via the HMI
Post-conditions	Lane Biasing is enabled Lane Biasing setting HMI is shown set to enabled.
Notes	

3.23.6.2 VS-UC-REQ-383987/A-User Disables Lane Biasing Setting

Actors	Vehicle front seat occupant
Pre-conditions	Ignition is in Run Lane Biasing setting is enabled
Scenario Description	User changes Lane Biasing setting to disabled via the HMI
Post-conditions	Lane Biasing is disabled Lane Biasing Setting HMI is shown set to disabled
Notes	

3.23.7 Requirements

3.23.7.1 VS-SR-REQ-384253/A-Lane Biasing Setting change

The Lane Biasing Settings Client shall use the TjaLaneBiasEnbl_D_Stat status signal from the Lane Biasing Setting Server to show the Lane Biasing setting as Enabled or Disabled on the HMI.

The Lane Biasing setting shall be available on the HMI when ignition_status = Run.

When the Lane Biasing setting is selected via the HMI:

1. The Lane Biasing Setting Client shall set the TjaLaneBiasEnbl_D_RqMnu signal to enabled or disabled based on what the user selected and then 100 msec (+/- 10%) after setting enabled/disabled set the signal back to Null.
2. The Lane Biasing Settings Server shall respond within T_LaneBias_Rsp to the TjaLaneBiasEnbl_D_RqMnu enable/disable request with the response via the TjaLanBiasEnbl_D_Stat signal. Note: the Lane Biasing Settings Server does not wait for the Null before responding.
3. The Lane Biasing Setting Client shall update the HMI (if there is an update) with the Lane Biasing assist settings status after receiving the TjaLaneBiasEnbl_D_Stat response to the request.

HMI Setting ID
1081

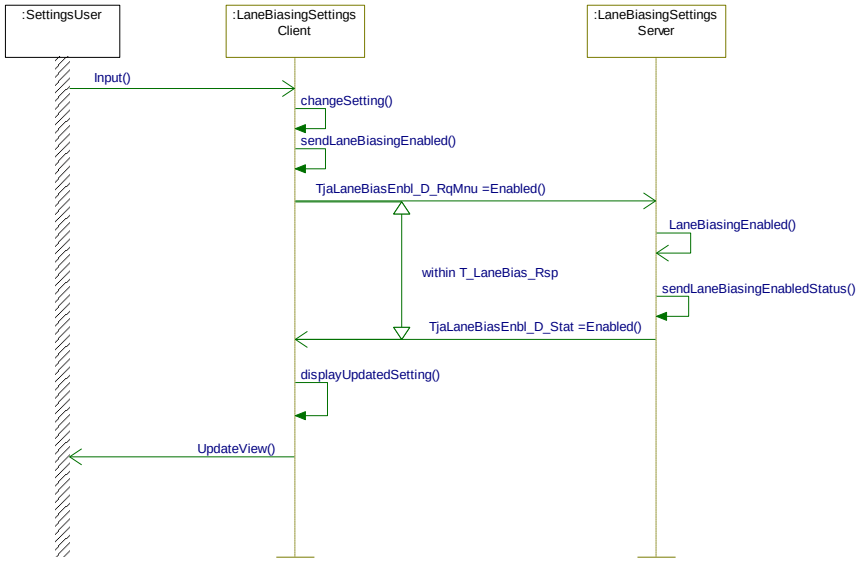
3.23.7.2 VS-TMR-REQ-384254/A-T_LaneBias_Rsp

Name	Description	Units	Range	Resolution	Default
T_LaneBias_Rsp	Maximum time the Lane Biasing Setting Server shall take to respond to the TjaLaneBiasEnble_D_RqMnu request signal. The response will be in the TjaLaneBiasEnbl_D_Stat signal. Maximum time defined as the default value	msec			100

3.23.8 Sequence Diagrams

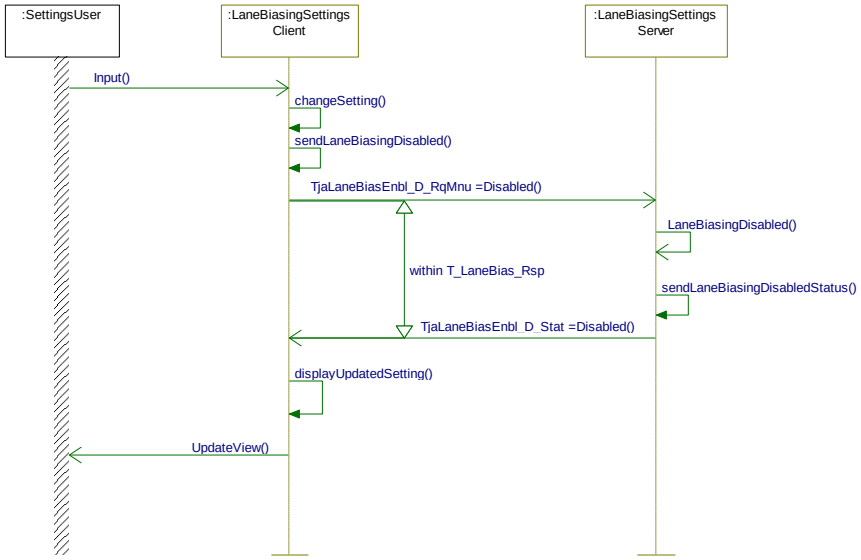
3.23.8.1 VS-REQ-384257/A-Lane Biasing set to Enabled via the HMI

Pre-Condition: Lane Biasing setting is set to Disabled



3.23.8.2 VS-REQ-384276/A-Lane Biasing set to Disabled via the HMI

Pre-condition: Lane Biasing setting is set to Enabled


:SettingsUser
:LaneBiasingSettings Client
:LaneBiasingSettings Server
Input()
changeSetting()
sendLaneBiasingDisabled()
TjaLaneBiasEnbl_D_RqMnu =Disabled()
LaneBiasingDisabled()
within T_LaneBias_Rsp
sendLaneBiasingDisabledStatus()
TjaLaneBiasEnbl_D_Stat =Disabled()
displayUpdatedSetting()
UpdateView()

3.24 VS-FUN-REQ-392197/A-Curve Speed Control - Intelligent Adaptive Cruise Control

3.24.1 Overview

Adaptive cruise control with curve speed control will adjust the vehicle speed to road geometry such as for roundabouts, curves or highway exits.

3.24.2 VS-CLD-REQ-392418/A-Curve Speed Control Settings Client

The Curve Speed Control Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Curve Speed Control Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Curve Speed Control Settings Server.

3.24.3 VS-CLD-REQ-392419/A-Curve Speed Control Settings Server

The Curve Speed Control Settings Server is responsible for the control of the Curve Speed Control function and interfaces with the Curve Speed Control Settings Client.

3.24.4 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Curve Speed Control Setting feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Curve Speed Control Settings Client	APIM
Curve Speed Control Settings Server	ADAS

3.24.5 Interface Requirements

3.24.5.1 MD-REQ-399907/A-IaccCrvVCtlEnbl_D_Rq

Message Type: Request

Request signal from the Curve Speed Control Setting Client to the Curve Speed Control Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
IaccCrvVCtlEnbl_D_Rq	Null	0x0	
	Disable	0x1	
	Enable	0x2	

3.24.5.2 MD-REQ-399906/A-IaccCrvVCtlEnbl_D_Stat

Message Type: Status

Status signal from the Curve Speed Control Settings Server with the status of Curve Speed Control feature

Logical Signal Name	Literals	Value	Description
IaccCrvVCtlEnbl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

3.24.6 Use Cases

3.24.6.1 VS-UC-REQ-399909/A-User Enables Curve Speed Control Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Curve Speed Control is Disabled
Scenario Description	User changes the Curve Speed Control setting to enabled via the HMI
Post-conditions	Curve Speed Control is enabled Curve Speed Control setting HMI is shown set to enabled.
Notes	

3.24.6.2 VS-UC-REQ-399910/A-User Disables Curve Speed Control Setting

Actors	Vehicle front seat occupant
Pre-conditions	Ignition is in Run Curve Speed Control setting is enabled
Scenario Description	User changes the Curve Speed Control setting to disabled via the HMI
Post-conditions	Curve Speed Control is disabled The Curve Speed Control Setting HMI is shown set to disabled
Notes	

3.24.7 Requirements

3.24.7.1 VS-SR-REQ-400065/A-Curve Speed Control Setting change

The Curve Speed Control Client shall use the IaccCrvVCtlEnbl_D_Stat status signal from the Curve Speed Control Setting Server to show the Curve Speed Control setting as Enabled or Disabled on the HMI.

The Curve Speed Control setting shall be available on the HMI when ignition_status = Run.

When the Curve Speed Control setting is selected via the HMI:

1. The Curve Speed Control Setting Client shall set the IaccCrvVCtlEnbl_D_Rq signal to enabled or disabled based on what the user selected and then 100 msec (+/- 10%) after setting enabled/disabled set the signal back to Null.
2. The Curve Speed Control Settings Server shall respond within T_CurveSpeedControl_Rsp to the IaccCrvVCtlEnbl_D_Rq enable/disable request with the response via the IaccCrvVCtlEnbl_D_Stat signal. Note: the Curve Speed Control Setting Server does not wait for the Null before responding.
3. The Curve Speed Control Client shall update the HMI (if there is an update) with the Curve Speed Control settings status after receiving the IaccCrvVCtlEnbl_D_Stat response to the request.

HMI Setting ID
1086

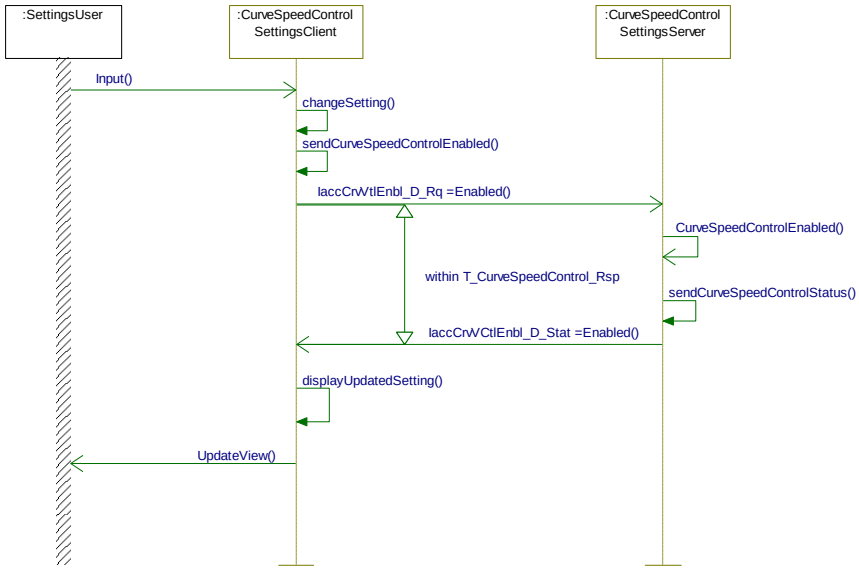
3.24.7.2 VS-TMR-REQ-400066/A-T_CurveSpeedControl_Rsp

Name	Description	Units	Range	Resolution	Default
T_CurveSpeedControl_Rsp	Maximum time the Curve Speed Control Setting Server shall take to respond to the IaccCrvVCtlEnbl_D_Rq request signal. The response will be in the IaccCrvVCtlEnbl_D_Stat signal. Maximum time defined as the default value	msec			100

3.24.8 Sequence Diagrams

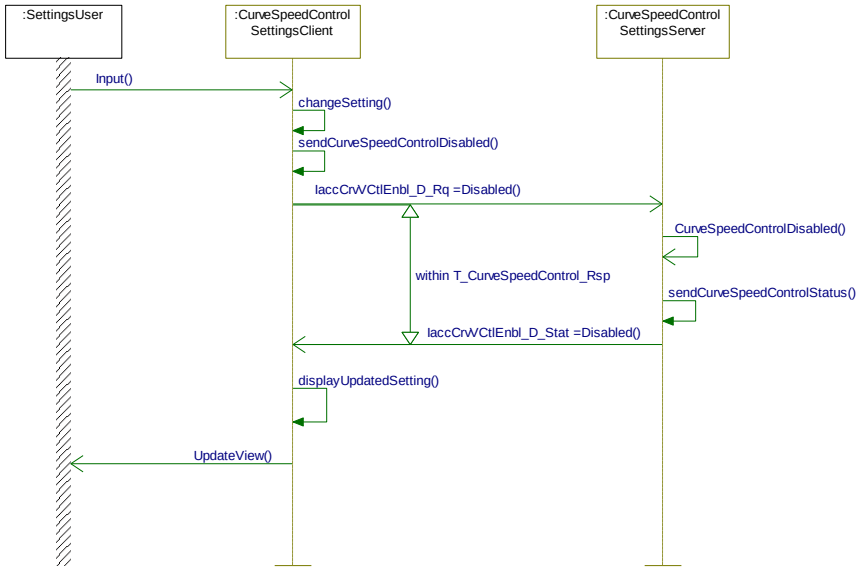
3.24.8.1 VS-SD-REQ-400195/A-Curve Speed Control set to Enabled via the HMI

Pre-Condition: Curve Speed Control is set to Disabled



3.24.8.2 VS-SD-REQ-400196/A-Curve Speed Control set to Disabled via the HMI

Pre-Condition: Curve Speed Control is set to Enabled


:SettingsUser
:CurveSpeedControl SettingsClient
:CurveSpeedControl SettingsServer
Input()
changeSetting()
sendCurveSpeedControlDisabled()
laccCrvVCtlEnbl_D_Rq =Disabled()
CurveSpeedControlDisabled()
within T_CurveSpeedControl_Rsp
sendCurveSpeedControlStatus()
laccCrvVCtlEnbl_D_Stat =Disabled()
displayUpdatedSetting()
UpdateView()

3.25 VS-FUN-REQ-406293/A-Assisted Lane Change

3.25.1 Overview

Assisted Lane Change feature will conduct a lane change upon driver request to the requested side, when activated in the menu. Request is made by usage of turn indicator activation

3.25.2 VS-CLD-REQ-406297/A-Assisted Lane Change Settings Client

The Assisted Lane Change Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Assisted Lane Change Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Assisted Lane Change Settings Server.

3.25.3 VS-CLD-REQ-406298/A-Assisted Lane Change Settings Server

The Assisted Lane Change Assist Settings Server is responsible for the control of the Assisted Lane Change settings function and interfaces with the Assisted Lane Change Settings Client.

3.25.4 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Assisted Lane Change Setting feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Assisted Lane Change Settings Client	APIM
Assisted Lane Change Settings Server	ADAS

3.25.5 Interface Requirements

3.25.5.1 VS-MD-REQ-406310/A-TjaLcEnbl_D_RqMnu

Request signal from the Assisted Lane Change Setting Client to the Assisted Lane Change Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
TjaLcEnbl_D_RqMnu	Null	0x0	
	Disable	0x1	
	Enable	0x2	

3.25.5.2 VS-MD-REQ-406311/A-TjaLcEnbl_D_Stat

Message Type: Status

Status signal from the Assisted Lane Change Settings Server with the status of Assisted Lane Change feature

Logical Signal Name	Literals	Value	Description

TjaLcEnbl_D_Stat	Inactive	0x0	
	Disabled	0x1	
	Enabled	0x2	

3.25.6 Use Cases

3.25.6.1 VS-UC-REQ-406331/A-User Enables Assisted Lane Change Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Assisted Lane Change is Disabled
Scenario Description	User changes Assisted Lane Change setting to enabled via the HMI
Post-conditions	Assisted Lane Change is enabled Assisted Lane Change setting HMI is shown set to enabled.
Notes	

3.25.6.2 VS-UC-REQ-406332/A-User Disables Assisted Lane Change Setting

Actors	Vehicle front seat occupant
Pre-conditions	Ignition is in Run Assisted Lane Change setting is enabled
Scenario Description	User changes Assisted Lane Change setting to disabled via the HMI
Post-conditions	Assisted Lane Change is disabled Assisted Lane Change Setting HMI is shown set to disabled
Notes	

3.25.7 Requirements

3.25.7.1 VS-SR-REQ-406333/A-Assisted Lane Change setting change

The Assisted Lane Change Settings Client shall use the TjaLcEnbl_D_Stat status signal from the Assisted Lane Change Setting Server to show the Assisted Lane Change setting as Enabled or Disabled on the HMI.

The Assisted Lane Change setting shall be available on the HMI when ignition_status = Run.

When the Assisted Lane Change setting is selected via the HMI:

1. The Assisted Lane Change Setting Client shall set the TjaLcEnbl_D_RqMnu signal to enabled or disabled based on what the user selected and then 100 msec (+/- 10%) after setting enabled/disabled set the signal back to Null.
2. The Assisted Lane Change Settings Server shall respond within T_AssistLaneChange_Rsp to the TjaLcEnbl_D_RqMnu enable/disable request with the response via the TjaLcEnbl_D_Stat signal. Note: the Assisted Lane Change Settings Server does not wait for the Null before responding.
3. The Assisted Lane Change Setting Client shall update the HMI (if there is an update) with the Assisted Lane Change assist settings status after receiving the TjaLcEnbl_D_Stat response to the request.

HMI Setting ID
1087

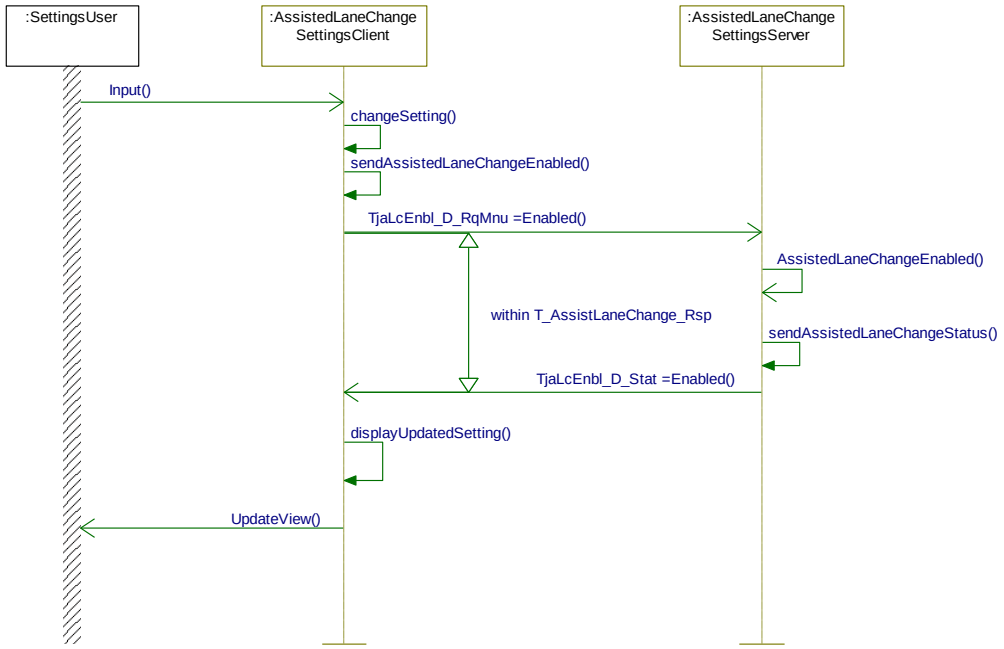
3.25.7.2 VS-TMR-REQ-406334/A-T_AssistLaneChange_Rsp

Name	Description	Units	Range	Resolution	Default
T_AssistLaneChange_Rsp	Maximum time the Assisted Lane Change Setting Server shall take to respond to the TjaLcEnble_D_RqMnu request signal. The response will be in the TjaLcEnbl_D_Stat signal. Maximum time defined as the default value	msec			100

3.25.8 Sequence Diagram

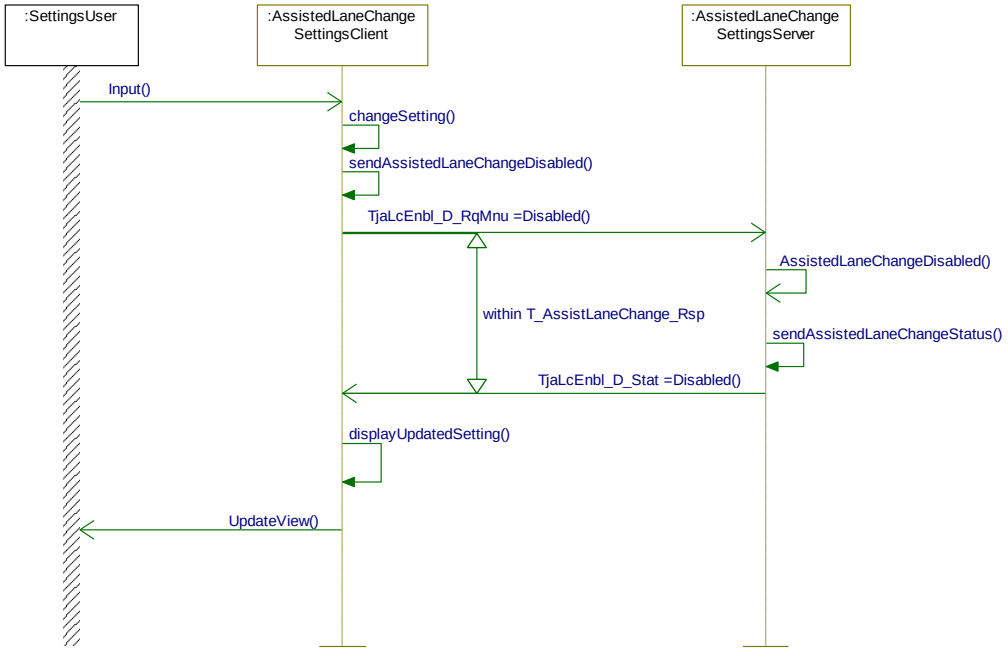
3.25.8.1 VS-SD-REQ-406335/A-Assisted Lane Change set to Enabled via the HMI

Pre-Condition: Assisted Lane Change is set to Disabled



3.25.8.2 VS-SD-REQ-406336/A-Assisted Lane Change set to Disabled via the HMI

Pre-Condition: Assisted Lane Change is set to Enabled


:SettingsUser
:AssistedLaneChange SettingsClient
:AssistedLaneChange SettingsServer
Input()
changeSetting()
sendAssistedLaneChangeDisabled()
TjaLcEnbl_D_RqMnu =Disabled()
AssistedLaneChangeDisabled()
within T_AssistLaneChange_Rsp
sendAssistedLaneChangeStatus()
TjaLcEnbl_D_Stat =Disabled()
displayUpdatedSetting()
UpdateView()

3.26 VS-FUN-REQ-414711/A-Speed Change Chime

3.26.1 Overview

This feature is part of the Traffic Sign Recognition system. It is used to notify the driver in case there is a change in the speed limit detected and displayed in the cluster. When activated in menu, the notification is done via a short chime (beep), every time the speed limit is updated in the cluster. As reference, this feature is needed to meet GSR 2019 / 2144 for EU.

3.26.2 VS-CLD-REQ-414716/A-Speed Change Chime Settings Client

The Speed Change Chime Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Speed Change Chime Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Speed Change Chime Settings Server.

3.26.3 VS-CLD-REQ-414718/A-Speed Change Chime Settings Server

The Speed Change Chime Settings Server is responsible for the control of the speed change chime settings function and interfaces with the Speed Change Chime Settings Client.

3.26.4 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Speed Change Chime Settings feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Speed Change Chime Settings Client	APIM
Speed Change Chime Settings Server	ADAS

3.26.5 Interface Requirements

3.26.5.1 MD-REQ-414719/B-SpeedChngChime_D_Rq

Request signal from the Speed Change Chime Setting Client to the Speed Change Chime Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
SpeedChngChime_D_Rq	Null	0x0	
	Disable	0x1	
	Enable	0x2	

3.26.5.2 MD-REQ-414720/A-SpeedChngChime_D_Stat

Message Type: Status

Status signal from the Speed Change Chime Settings Server with the status of Speed Change Chime feature

Logical Signal Name	Literals	Value	Description
SpeedChngChime_D_Stat	Inactive	0x0	
	Disabled	0x1	
	Enabled	0x2	

3.26.6 Use Cases

3.26.6.1 VS-UC-REQ-414846/A-User Enables Speed Change Chime Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Speed Change Chime is Disabled
Scenario Description	User changes Speed Change Chime setting to enabled via the HMI
Post-conditions	Assisted Speed Change Chime is enabled Assisted Speed Change Chime setting HMI is shown set to enabled.
Notes	

3.26.6.2 VS-UC-REQ-414851/A-User Disables Speed Change Chime Setting

Actors	Vehicle front seat occupant
Pre-conditions	Ignition is in Run Speed Change Chime setting is enabled
Scenario Description	Speed Change Chime setting to disabled via the HMI
Post-conditions	Speed Change Chime is disabled Speed Change Chime Setting HMI is shown set to disabled
Notes	

3.26.7 Requirements

3.26.7.1 VS-SR-REQ-414852/B-Speed Change Chime setting change

The Speed Change Chime Settings Client shall use the SpeedChngChime_D_Stat status signal from the Speed Change Chime Setting Server to show the Speed Change Chime setting as Enabled or Disabled on the HMI.

The Speed Change Chime setting shall be available on the HMI when ignition_status = Run.

When the Speed Change Chime setting is selected via the HMI:

1. The Speed Change Chime Setting Client shall set the SpeedChngChime_D_Rq signal to enabled or disabled based on what the user selected and then 100 msec (+/- 10%) after setting enabled/disabled set the signal back to Null.
2. The Speed Change Chime Settings Server shall respond within T_SpeedChangeChime_Rsp to the SpeedChngChime_D_Rq enable/disable request with the response via the SpeedChngChime_D_Stat signal. Note: the Speed Change Chime Settings Server does not wait for the Null before responding.
3. The Speed Change Chime Setting Client shall update the HMI (if there is an update) with the Speed Change Chime Change settings status after receiving the SpeedChngChime_D_Stat response to the request.

HMI Setting ID
1093

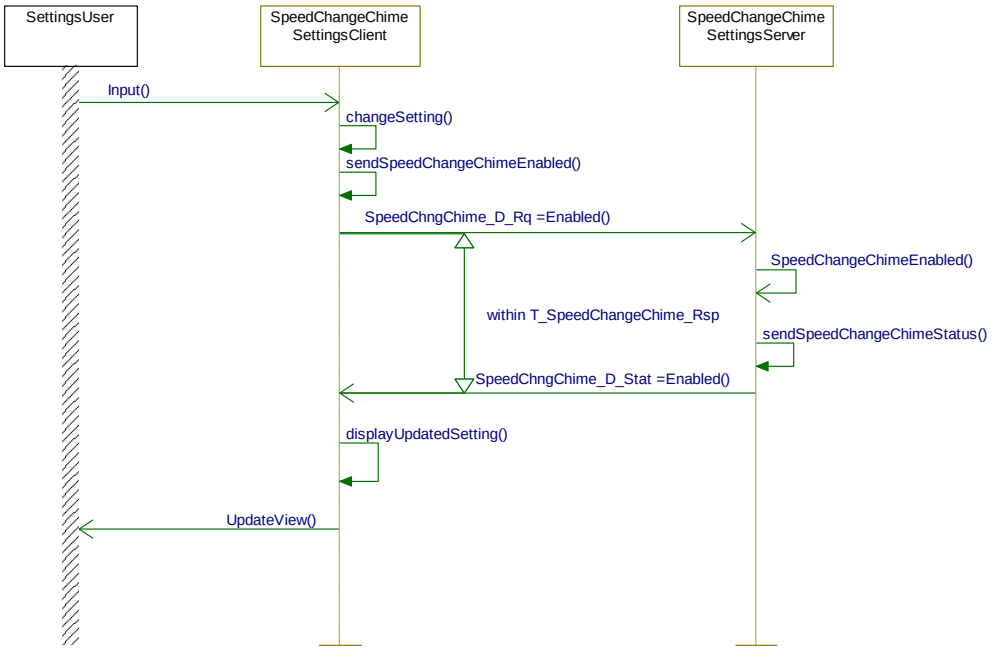
3.26.7.2 VS-TMR-REQ-414853/B-T_SpeedChangeChime_Rsp

Name	Description	Units	Range	Resolution	Default
T_SpeedChangeChime_Rsp	Maximum time the Speed Change Chime Setting Server shall take to respond to the SpeedChngChime_D_Rq request signal. The response will be in the SpeedChngChime_D_Stat signal. Maximum time defined as the default value	msec			100

3.26.8 Sequence Diagrams

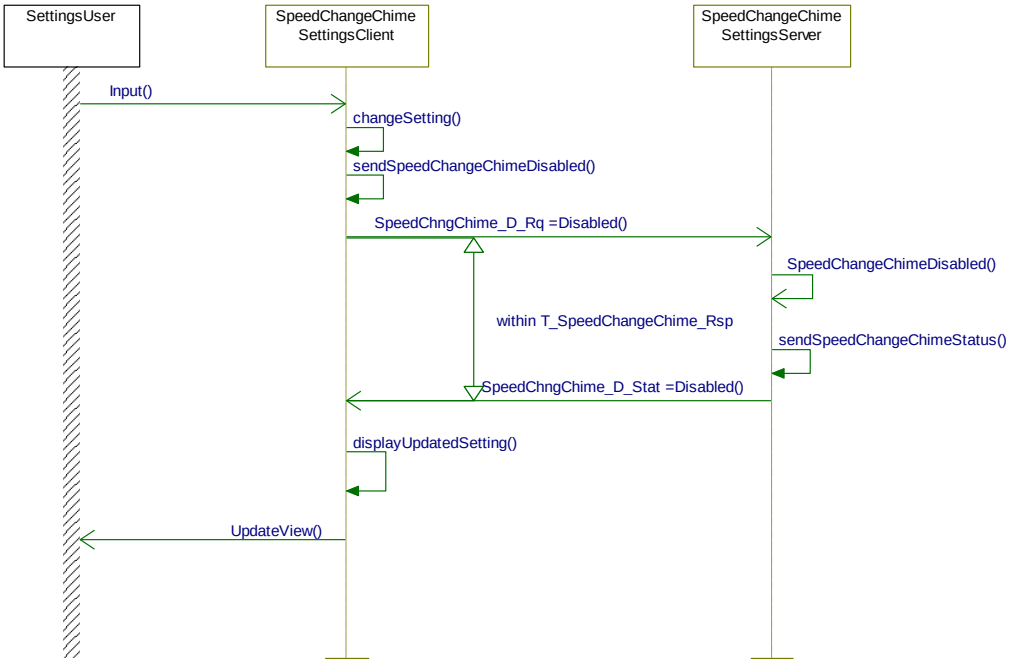
3.26.8.1 VS-SD-REQ-414855/B-Speed Change Chime set to Enabled via the HMI

Pre-Condition: Speed Change Chime is set to Disabled



3.26.8.2 VS-SD-REQ-414856/B-Speed Change Chime set to Disabled via the HMI

Pre-Condition: Speed Change Chime is set to Enabled


SettingsUser
SpeedChangeChime SettingsClient
SpeedChangeChime SettingsServer
Input()
changeSetting()
sendSpeedChangeChimeDisabled()
SpeedChngChime_D_Rq =Disabled()
SpeedChangeChimeDisabled()
within T_SpeedChangeChime_Rsp
sendSpeedChangeChimeStatus()
SpeedChngChime_D_Stat =Disabled()
displayUpdatedSetting()
UpdateView()

3.27 VS-FUN-REQ-450397/A-Blind Spot Information System - Chime

3.27.1 Overview

When enabled, the blind spot chime will be played when a collision with an object in the blind spot is imminent.

3.27.2 VS-CLD-REQ-450417/A-Blind Spot Chime Settings Client

The Blind Spot Chime Settings Client interfaces with the user via the HMI and is responsible for interfacing with the Blind Spot Chime Settings Server. This includes sending the HMI settings requests and receiving the responses and status updates from the Blind Spot Chime Settings Server.

3.27.3 VS-CLD-REQ-450418/A-Blind Spot Chime Settings Server

The Blind Spot Chime Settings Server is responsible for the control of the Blind Spot Chime Settings function and interfaces with the Blind Spot Chime Settings Client.

3.27.4 Physical Mapping of Classes

The table below shows how the logical classes may be mapped to physical modules for the Blind Spot Chime Setting feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Blind Spot Chime Settings Client	APIM
Blind Spot Chime Settings Server	ADAS

3.27.5 Interface Requirements

3.27.5.1 MD-REQ-455277/A-SodChimeEnbl_D_Rq

Message Type: Request

Request signal from the Blind Spot Chime Setting Client to the Blind Spot Chime Settings Server to enable or disable the feature

Logical Signal Name	Literals	Value	Description
SodChimeEnbl_D_Rq	Null	0x0	
	Disable	0x1	
	Enable	0x2	

3.27.5.2 MD-REQ-455278/A-SodChimeEnbl_D_Stat

Message Type: Status

Status signal from the Blind Spot Chime Settings Server with the status of Blind Spot Chime feature

Logical Signal Name	Literals	Value	Description
SodChimeEnbl_D_Stat	Null	0x0	
	Disabled	0x1	
	Enabled	0x2	

3.27.6 Use Cases

3.27.6.1 VS-UC-REQ-455297/A-User Enables Blind Spot Chime Setting

Actors	Vehicle front seat Occupant
Pre-conditions	Ignition is in Run Blind Spot Chime is Disabled
Scenario Description	User changes the Blind Spot Chime setting to enabled via the HMI
Post-conditions	Blind Spot Chime is enabled Blind Spot Chime setting HMI is shown set to enabled.
Notes	

3.27.6.2 VS-UC-REQ-455298/A-User Disables Blind Spot Chime Setting

Actors	Vehicle front seat occupant
Pre-conditions	Ignition is in Run Blind Spot Chime setting is enabled
Scenario Description	User changes the Blind Spot Chime setting to disabled via the HMI
Post-conditions	Blind Spot Chime is disabled The Blind Spot Chime Setting HMI is shown set to disabled
Notes	

3.27.7 Requirements

3.27.7.1 VS-SR-REQ-455317/A-Blind Spot Chime setting change

The Blind Spot Chime Settings Client shall use the SodChimeEnbl_D_Stat status signal from the Blind Spot Chime Settings Server to show the Blind Spot Chime setting as Enabled or Disabled on the HMI.

The Blind Spot Chime setting shall be available on the HMI when ignition_status = Run.

When the Blind Spot Chime setting is selected via the HMI:

1. The Blind Spot Chime Settings Client shall set the SodChimeEnbl_D_Rq signal to enabled or disabled based on what the user selected and then 100 msec (+/- 10%) after setting enabled/disabled set the signal back to Null.
2. The Blind Spot Chime Settings Server shall respond within T_BlindSpotChime_Rsp to the SodChimeEnbl_D_Rq enable/disable request with the response via the SodChimeEnbl_D_Stat signal. Note: the Blind Spot Chime Settings Server does not wait for the Null before responding.
3. The Blind Spot Chime Setting Client shall update the HMI (if there is an update) with the Blind Spot Chime settings status after receiving the SodChimeEnbl_D_Stat response to the request.

HMI Setting ID
1098

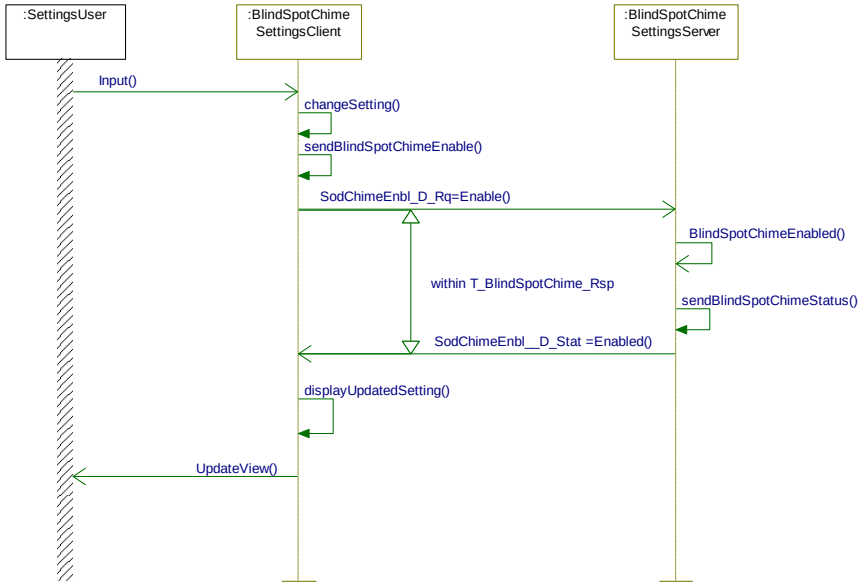
3.27.7.2 TMR-REQ-455337/A-T_BlindSpotChime_Rsp

Name	Description	Units	Range	Resolution	Default
T_BlindSpotChime_Rsp	Maximum time the Blind Spot Chime Setting Server shall take to respond to the SodChimeEnbl_D_Rq request signal. The response will be in the SodChimeEnbl_D_Stat signal. Maximum time defined as the default value	msec			100

3.27.8 Sequence Diagrams

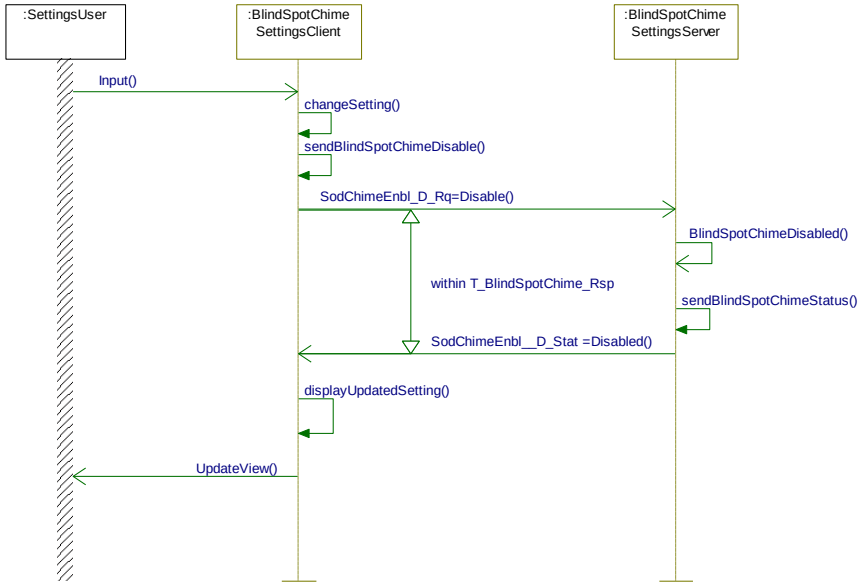
3.27.8.1 VS-SD-REQ-455357/A-Blind Spot Chime set to Enabled via the HMI

Pre-condition: Blind Spot Chime is set to Disabled



3.27.8.2 VS-SD-REQ-455377/A-Blind Spot Chime set to Disabled via the HMI

Pre-condition: Blind Spot Chime is set to Enabled


:SettingsUser
:BlindSpotChime SettingsClient
:BlindSpotChime SettingsServer
Input()
changeSetting()
sendBlindSpotChimeDisable()
SodChimeEnbl_D_Rq=Disable()
BlindSpotChimeDisabled()
within T_BlindSpotChime_Rsp
sendBlindSpotChimeStatus()
SodChimeEnbl__D_Stat =Disabled()
displayUpdatedSetting()
UpdateView()

3.28 VS-FUN-REQ-436523/A-Brake Maintenance Mode

3.28.1 Overview

Brake Maintenance Mode is used on vehicles equipped with EBB modules and EPB rear calipers. Brake Maintenance will both wind back the spindles in the rear calipers and place the EBB module into fallback. This will allow the technician to service the entire foundation brake system. Current implementation for entering maintenance mode involves operation of the EPB switch. Future BEVs will no longer have an EPB switch, therefore we need a way to enter brake maintenance mode through Phoenix Centerstack Menu.

- EBB: Electric Brake Booster (brake-by-wire system that replaces a conventional vacuum brake booster and ABS module)
- EPB: Electric Park Brake (electric motors mounted on the rear calipers that engage the park brake)

3.28.2 Architectural Design

3.28.2.1 VS-CLD-REQ-436705/A-Brake Maintenance Mode Client

The Brake Maintenance Mode Client interfaces via the HMI and is responsible for sending Brake Maintenance Mode requests to the Brake Maintenance Mode Server.

3.28.2.2 VS-CLD-REQ-436706/A-Brake Maintenance Mode Server

The Brake Maintenance Mode Server is responsible for control of the Brake Maintenance Mode function and interfaces with the Brake Maintenance Mode Client.

3.28.2.3 Deployment

The table below shows how the logical classes may be mapped to physical modules for the Brake Maintenance Mode feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Brake Maintenance Mode Client	APIM
Brake Maintenance Mode Server	ABS

3.28.2.4 Interface Requirements

3.28.2.4.1 MD-REQ-436702/A-BrkMaintMde_D_Rq

Message Type: Request

Request signal from the Brake Maintenance Mode Client to the Brake Maintenance Mode Server to enable or disable Brake Maintenance Mode

Logical Signal Name	Literals	Value	Description
BrkMaintMde_D_Rq	No Request / Null	0x0	
	Request Enter Maintenance Mode / Enable	0x1	
	Request Exit Maintenance Mode / Disable	0x2	
	Not Used	0x3	

3.28.2.4.2 MD-REQ-436497/A-PrkBrkMsgTxt_D_Rq

Signal from the Brake Maintenance Mode Server indicating brake maintenance mode is enabled or disabled

Logical Signal Name	Literals	Value	Description
PrkBrkMsgTxt_D_Rq	No_Message	0x0	Disabled (ie Brake Maintenance Mode disabled)
	Message 1	0x1	Enabled (ie Brake Maintenance Mode enabled)
	Message 2	0x2	Disabled
	Message 3	0x3	Disabled
	Message 4	0x4	Disabled
	Message 5	0x5	Disabled
	Message 6	0x6	Disabled
	Message 7	0x7	Disabled
	Message 8	0x8	Disabled
	Message 9	0x9	Disabled
	Message 10	0xA	Enabled
	Message 11	0xB	Disabled
	Message 12	0xC	Disabled
	Message 13	0xD	Disabled
	Message 14	0xE	Disabled
	Message 15	0xF	Disabled

3.28.2.4.3 MD-REQ-436522/A-TrnPrkSys_D_Actl

Message Type: Status

Signal from the Park Brake Server module indicating with the PRNDL status

Logical Signal Name	Literals	Value	Description
TrnPrkSys_D_Actl	Not Known	0x0	
	Park	0x1	Used to tell if the vehicle is in Park
	Transition Close to Park	0x2	
	At No Spring	0x3	
	Transition Close To Out of Park	0x4	
	Out of Park	0x5	
	Override	0x6	
	Out of Range Low	0x7	
	Out of Range High	0x8	
	Frequency Error	0x9	
	Not Used	0xA	
	Not Used	0xB	
	Not Used	0xC	
	Not Used	0xD	
	Not Used	0xE	
	Faulty	0xF	

3.28.2.4.4 MD-REQ-436524/A-TrnNtrlTowCmd_D_Actl

Message Type: Status

Signal from the Neutral Tow and BEV Emergency Tow Server module indicating if they are active or not

Logical Signal Name	Literals	Value	Description
TrnNtrlTowCmd_D_Actl	Normal Mode	0x0	
	Car Wash Mode	0x1	
	Neutral Tow Entry	0x2	Used to tell if Neutral Tow or BEV Emergency Tow is active
	Not Used	0x3	

3.28.3 Use Cases

3.28.3.1 VS-UC-REQ-436717/A-User Enables Brake Maintenance Mode

Actors	Vehicle front seat Occupant
Pre-conditions	Infotainment System is powered ON and Brake Maintenance Mode menu is available If vehicle is a Park by Brake vehicle then BEV Emergency Tow / Neutral Tow must be enabled to be able to enable Brake Maintenance Mode If vehicle is NOT a Park by Brake vehicle then then the vehicle must be in Park to be able to enable Brake Maintenance Mode Brake Maintenance Mode is Disabled
Scenario Description	User changes Brake Maintenance Mode to enabled via the HMI
Post-conditions	Brake Maintenance Mode is Enabled
Notes	

3.28.3.2 VS-UC-REQ-436718/A-User Disables Brake Maintenance Mode

Actors	Vehicle front seat Occupant
Pre-conditions	Infotainment System is powered ON and Brake Maintenance Mode menu is available Brake Maintenance Mode is Enabled
Scenario Description	User changes Brake Maintenance Mode to disabled via the HMI
Post-conditions	Brake Maintenance Mode is Disabled
Notes	

3.28.4 Requirements

3.28.4.1 VS-SR-REQ-437424/A-Pre-conditions for Enabling Brake Maintenance Mode

The Brake Maintenance Mode Client shall be configured for a Park by Brake vehicle or a Non-Park by Brake vehicle.

Park by Brake equipped vehicle pre-condition:
The Brake Maintenance Client shall only request to enter Brake Maintenance Mode via the HMI when the signal TrnNtrlTowCmd_D_Actl = “0x2 Neutral Tow Entry”.

- Note: this is used to indicate if the vehicle is in Neutral Tow or BEV Emergency Tow.

Non-Park by Brake equipped vehicle pre-condition:
The Brake Maintenance Client shall only request to enter Brake Maintenance Mode via the HMI when the signal TrnPrkSys_D_Actl = 0x1 Park.

- Note: this is used to indicate that the vehicle is in Park

3.28.4.2 VS-SR-REQ-437481/A-PrkBrkMsgTxt_D_Rq - status of Brake Maintenance Mode

When the Brake Maintenance Mode Server’s PrkBrkMsgTxt_D_Rq signal is set to 0x1 or 0x10 then Brake Maintenance Mode shall be considered as Enabled (ie in Brake Maintenance Mode) by the Brake Maintenance Mode Client.

When the Brake Maintenance Mode Server’s PrkBrkMsgTxt_D_Rq signal is set to 0x0, 0x2 – 0x9, or 0xB-0xF then Brake Maintenance Mode shall be considered as Disabled (ie not in Brake Maintenance Mode) by the Brake Maintenance Mode Client.

3.28.4.3 VS-SR-REQ-437480/A-Brake Maintenance Mode settings change (request to enter or exit Brake Maintenance Mode)

Note: below for enabling Brake Maintenance Mode is only applicable if the pre-conditions are met

When the Brake Maintenance Mode Setting (either enable or disable brake maintenance mode) is selected via the HMI:

1. The Brake Maintenance Mode Client shall set the BrkMaintMde_D_Rq signal to (Request Enter Maintenance mode – ie enable) or (Request Exit Maintenance Mode – ie disable) based on what the user selected and then 100 msec (+/- 10%) after setting enable/disable set the signal back to Null.
2. The Brake Maintenance Mode Server shall respond within T_BrakeMaintenanceMode_Rsp to the BrkMaintMde_D_Rq enable/disable request with the response via the PrkBrkMsgTxt_D_Rq signal. Note: the Brake Maintenance Mode Server does not wait for the Null before responding.
3. The Brake Maintenance Mode Client shall update the HMI (if there is an update) with the Brake Maintenance Mode settings status after receiving the PrkBrkMsgTxt_D_Rq response to the request.

HMI Setting ID
1097

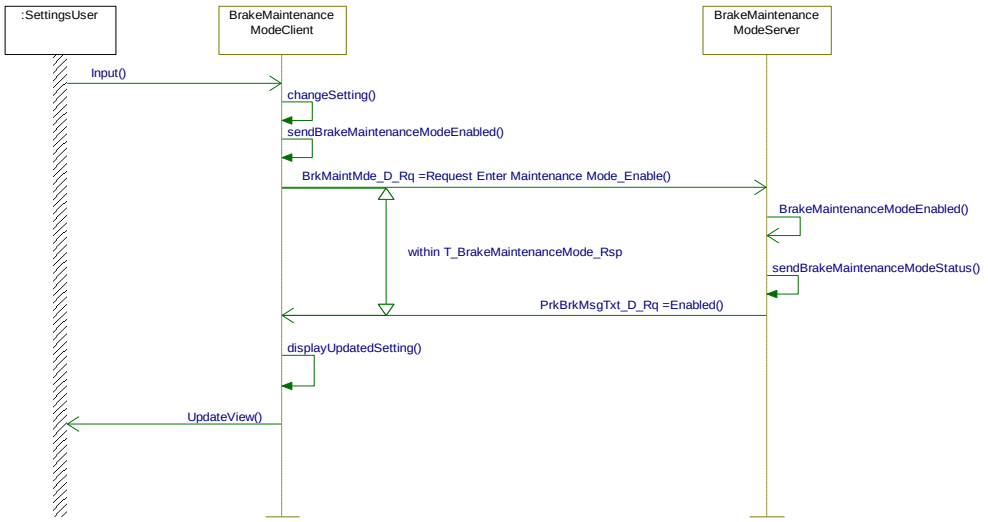
3.28.4.4 VS-TMR-REQ-437497/A-T_BrakeMaintenanceMode_Rsp

Name	Description	Units	Range	Resolution	Default
T_BrakeMaintenanceMode_Rsp	Maximum time the Brake Maintenance Mode Server shall take to respond to the BrkMaintMde_D_Rq request signal. The response will be in the PrkBrkMsgTxt_D_Rq signal. Maximum time defined as the default value	msec			100

3.28.5 Sequence Diagrams

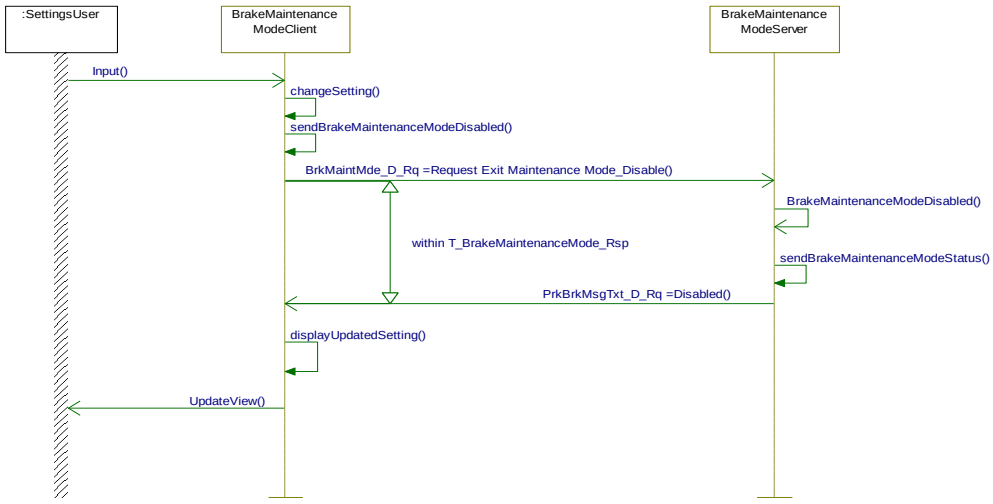
3.28.5.1 VS-SD-REQ-437498/A-Enter Brake Maintenance Mode / Enable via the HMI

Pre-condition: Brake Maintenance Mode is Disabled



3.28.5.2 VS-SD-REQ-437499/A-Exit Brake Maintenance Mode / Disable via the HMI

Pre-condition: Brake Maintenance Mode is set to Enabled (ie in Brake Maintenance Mode)



3.29 VS-FUN-REQ-457677/A-Selectable Theme display

3.29.1 Overview

The Theme Selection setting consists of a list of themes that can be selected by the vehicle occupant. Once an item is selected, the different displays throughout the vehicle will be updated to the corresponding theme.

Note:
1. this is separate from “Cluster Appearance – Cluster menu” using feature number 0x0973 in the Settings in the Centerstack SPSS.
2. Changing theme with drive mode, may or not be supported. See HMI specs if supported or not.

3.29.2 Architectural Design

3.29.2.1 VS-CLD-REQ-457757/A-Selectable Theme HMI Output Client

The Selectable Theme HMI Output Client is responsible for displaying on the HMI the Theme or active Drive Mode theme (if supported) as indicated by the Selectable Theme Server.

3.29.2.2 VS-CLD-REQ-458197/A-Selectable Theme Client

The Selectable Theme Client interfaces via the HMI and is responsible for sending Selectable Theme requests to the Selectable Theme Server.

3.29.2.3 VS-CLD-REQ-457777/A-Selectable Theme Server

The Selectable Theme Server is responsible for control of the Selectable Theme function and interfaces with the Selectable Theme Client(s).

3.29.2.4 Deployment

The table below shows how the logical classes may be mapped to physical modules for the Selectable Theme display feature. The table below covers the lead program.

At the time the specification was written the below table was the latest. If there are additional modules deployed to the class descriptions or the vehicle architecture changed since the spec was written and released, then the applicable implementation guide class description would cover those modules. If there is a conflict between the implementation guide and the table below the implementation guide takes precedent.

Logical Class	Physical Module (ECU)
Selectable Theme HMI Output	HUD, RACM, APIM PDC
Selectable Theme Client	APIM PDC (Phoenix)
Selectable Theme Server	APIM PDC (Phoenix)

3.29.2.5 Interface Requirements

3.29.2.5.1 MD-REQ-457737/A-ThemSel_D_Stat

Message Type: Status

Status signal from the Theme Settings Server with the status of theme used

Logical Signal Name	Literals	Value	Description
	Null	0x0	

ThemSel_D_Stat	Change with Drive Mode	0x1	Treated as a Null if “change with drive mode” is not supported.
	Theme 1	0x2	
	Theme 2	0x3	
	Theme 3	0x4	
	cont.	…	
	Theme 15	0xF	

3.29.2.5.2 MD-REQ-458218/A-ThemSel_D_Rq

Message Type: Request

Request signal from the Theme Settings Client to the Theme Settings Server to select the theme to be used

Logical Signal Name	Literals	Value	Description
ThemSel_D_Rq	Null	0x0	
	Change with Drive Mode	0x1	
	Theme 1	0x2	
	Theme 2	0x3	
	Theme 3	0x4	
	cont.	…	
	Theme 15	0xF	

Note: if the Theme Setting Client and Theme Setting Server are the same module then this is logically internal to that module and there is no CAN signal.

3.29.3 Use Cases

3.29.3.1 VS-UC-REQ-458157/A-User Selects a Theme

Actors	Vehicle front seat Occupant
Pre-conditions	“Theme X” or “Change with Drive Mode” is enabled as the theme for the HMI
Scenario Description	User selects Theme Y via the HMI
Post-conditions	Theme Y is enabled as the theme for the HMI
Notes	Multiple modules HMI might display the same common HMI theme

3.29.3.2 VS-UC-REQ-458177/A-User selects Change with Drive Mode (if supported)

Actors	Vehicle front seat Occupant
Pre-conditions	Theme X is enabled as the theme for the HMI
Scenario Description	User selects “Change with Drive Mode” via the HMI
Post-conditions	“Change with Drive Mode” is enabled as the theme for the HMI

Notes	This use case is only applicable if "Change with Drive Mode" is supported for Themes. See HMI specs if supported. Reference the Selectable Drive Mode SPSS for implementation of Drive Mode themes Multiple modules HMI might display the same common HMI theme/Drive Mode theme

3.29.4 Requirements

3.29.4.1 VS-REQ-484544/A-Change with Drive Mode Not Support for Theme (if applicable)

If changing Themes based on Drive Mode is not supported, then the Selectable Theme Server shall never set ThemSel_D_Stat = "Change with Drive Mode".

If changing Themes based on Drive Mode is not supported and if the Selectable Theme HMI Output module receives ThemSel_D_Stat = "Change with Drive Mode", then the Selectable Theme HMI Output modules shall treat "Change with Drive Mode" the same as a Null. See requirement "VS-REQ-458277-HMI Output for the Theme selection" for Null handling.

See HMI specs if changing Theme's with Drive Mode is supported.

3.29.4.2 VS-SR-REQ-458237/A-Selectable Theme change

When a Theme is selected via the HMI:

1. The Selectable Theme Client shall tell the Selectable Theme Server what Theme was selected.
2. The Selectable Theme Server shall respond within T_ThemSel_Rsp by updating the ThemSel_D_Stat signal with the Theme setting that is requested (unless specified otherwise for exception cases).
3. The Selectable Theme HMI Output Client(s) shall update the HMI (if there is an update) with the Theme that is enabled in the ThemSel_D_Stat periodic signal.

Note:

- If changing Themes with drive mode is supported, then when say "Theme" above this could be Theme 1 – Theme X or the "Change with Drive Mode" for the settings selection.
- When the Selectable Theme Client and Selectable Theme Server are the same module then the interface between the Client and Server is only from the logical level.

HMI Setting ID
1099

3.29.4.3 VS-SR-REQ-458277/A-HMI Output for the Theme selection

The Selectable Theme HMI Output Client(s) shall use the theme selected in the ThemSel_D_Stat signal on their HMI displays.

The ThemSel_D_Stat encoding 0x0 Null shall be treated as a don't care and by the Selectable Theme HMI Output Clients. The Selectable Theme HMI Output Clients shall retain the last signal encoding for their theme display when ThemSel_D_Stat is set to 0x0 Null.

See HMI spec for the HMI themes to be displayed to the user corresponding with the Theme 1 – Theme X encodings in the ThemSel_D_Stat signal.

This SPSS does not define the Drive Mode themes that are used. When ThemSel_D_Stat equals “Change with Drive Mode” then reference the Selectable Drive Mode SPSS or applicable drive mode specification. This is only applicable if changing Themes with Drive Mode is supported.

3.29.4.4 VS-SR-REQ-458297/A-Default - Theme selection

For the Selectable Theme Server default Theme out of the factory (before the user has selected a Theme) reference the HMI specs.

The Selectable Theme HMI Output module(s) shall default to the default Theme defined in the HMI specs out of the factory if the signal ThemSel_D_Stat = 0x0 Null.

- Note: if ThemSel_D_Stat equals a value other then 0x0 Null then the Selectable Theme HMI Output modules shall use the Theme in this status signal.

Note:

While booting up the Selectable Theme Server may not have the Theme selected in the ThemSel_D_Stat signal for a certain amount of time and may be set to 0x0 Null (ie don’t care, theme status unknown) until the Theme status is known.

3.29.4.5 VS-SR-REQ-458317/A-Theme retention between power mode cycles

The Selectable Theme Server shall retain the active theme setting between power modes.

The Selectable Theme HMI Output module(s) shall retain the last active theme setting between power modes from the ThemSel_D_Stat signal. If ThemSel_D_Stat = 0x0 Null (ex. unknown theme status while Selectable Theme Server module boots up) that shall not be stored but the last theme signal state shall be stored (non-Null Theme value).

- At start-up if ThemSel_D_Stat = 0x0 Null then the Selectable Theme HMI Output module(s) shall use the last stored value for their theme.
- At start-up if ThemSel_D_Stat = a theme value other then 0x0 Null then the Selectable Theme HMI Output module(s) shall use the Theme in the ThemSel_D_Stat signal (note: this could be change with drive mode, if supported).
- If enhanced memory is supported for this feature, then the Selectable Theme HMI Output modules shall store the theme for each enhanced memory profile and use at start-up for the active profile if ThemSel_D_Stat = 0x0 Null.
    - Once ThemSel_D_Stat equals a theme (including change with drive mode, if supported) then that theme shall be followed.

Example:

1. Theme 3 is active on all the displays
    a. ThemSel_D_Stat = Theme_3
2. The infotainment system powers down and the displays turn off
    a. HMI_HMIMode_St = OFF (ie Ignition_Status = OFF, Delayed_Acc = Inactive)
    b. CAN bus goes to sleep
3. The CAN bus wakes up, ThemSel_D_Stat = 0x0 Null and some of the Selectable Theme HMI Output module displays power up displaying Theme 3 (ie if they power up before the Selectable Theme Server)
    a. Ex. if a Selectable Theme HMI Output module display powered up with Ignition_Status = Run or HMI_HMIMode_St = ON while ThemSel_D_Stat = 0x0 Null
4. The Selectable Theme Server powers up with ThemSel_D_Stat = Theme_3 and shows Theme_3 on its HMI.
5. The user selects Theme 4 on the HMI and the Selectable Theme Server sets ThemSel_D_Stat = Theme_4
6. All the Selectable Theme HMI Output modules update their displays to Theme 4.

3.29.4.6 VS-TMR-REQ-464217/A-T_ThemSel_Rsp

Name	Description	Units	Range	Resolution	Default

T_ThemSel_Rsp	Maximum time the Selectable Theme Server shall take to respond to the ThemSel_D_Rq signal. The response will be in the ThemSel_D_Stat signal. Note: if the Selectable Theme Client and Server are the same module then T_ThemSel_Rsp is the time from the user selects theme on the HMI until the ThemSel_D_Stat signal is updated. Maximum time defined as the default value	msec			75

3.29.5 Sequence Diagrams

3.29.5.1 VS-SD-REQ-464197/A-New Theme selected

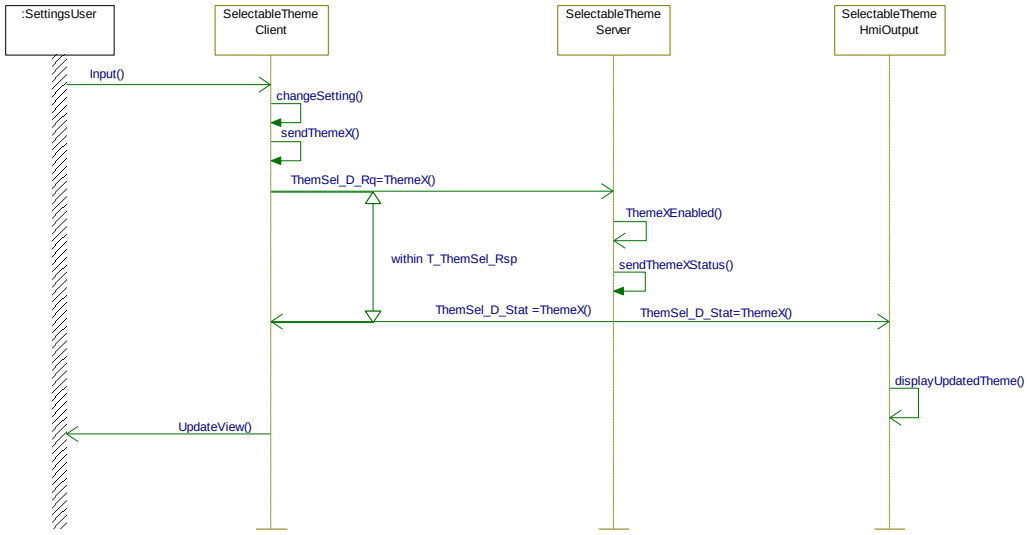
Pre-condition:

Theme X is not selected

Event:

Theme X selected

Note: if Selectable Theme Client and Server are integrated in one module then the ThemSel_D_Rq request signal is not used and is only shown from the logical level internally.



4 Appendix: Reference Documents

Reference #	Document Title
1	Settings in the Centerstack SPSS – for settings that moved from the Cluster to Centerstack/APIM
2	APIM Clock Spec
3	A69 Language spec (non-Phoenix) / SPSS Language System Requirements for Phoenix (Phoenix only)
4	HMI specifications
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