Research & Vehicle Technology
"Infotainment Systems Product Development"

Feature – Driver Restrictions

APIM Infotainment Subsystem Part Specific Specification (SPSS)

Version 1.3
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FORD CONFIDENTIAL

Revision History

Date	Version	Notes	
May 31, 2013	**1.0**	**Initial Release**	
June 11, 2015	**1.1**	**Updated Release**	
	DRIVE-RES-FRD-REQ-025159/B-Driver Restrictions (TcSE ROIN-296684)	MBORREL4: Added Overview and Reference sections for clarification and guidance to applicable documentation	
July 17, 2017	**1.2**	**Updated Release**	
	STR-075960/B-General Requirements (TcSE ROIN-296687)	MBORREL4: Added pre and post CGEA1.3 sections for clarity	
	DRIVE-RES-FUR-REQ-025156/B-HMI Driving Restriction – Video Applications (TcSE ROIN-159092-2)	MBORREL4: Added clarification for audio playback of a restricted video	
	DRIVE-RESv2-FUR-REQ-025158/B-HMI Driving Restriction – Video Applications (TcSE ROIN-279696-2)	MBORREL4: Added clarification for audio playback of a restricted video	
October 26, 2018	**1.3**	**Updated Release**	
	STR-075959/B-Driver Restrictions Interface (TcSE ROIN-296692)	MBORREL4: Added REQ-332822-823	
	MD-REQ-332822/A-FirstRowBucklePassenger_St	MBORREL4: New req.	
	MD-REQ-332823/A-PassengerFrontDetect_St	MBORREL4: New req.	
	STR-075960/C-General Requirements (TcSE ROIN-296687)	MBORREL4: Added pagebreak	
	STR-469923/B-Applicable to CGEA1.3 programs and onward	MBORREL4: Added REQ-332824	
	DRIVE-RES-FUR-REQ-332824/A-HMI Driving Restriction - Passenger Override	MBORREL4: New req.	
	STR-242737/B-Appendix: Reference Documents	MBORREL4: Updated table	

Table of Contents

1 Overview

The Driver Restrictions feature provides driver assist functions to reduce the distraction risk connected to electronic devices built into a vehicle. The National Highway Traffic Safety Administration provides guidelines, some of which recommend disabling several operations unless the vehicle is stopped and in park, such as:

- Manual phone/device pairing
- Manual text entry for the purposes of text messaging and internet browsing
- Video-based entertainment and communications
- Display of certain types of text, including text messages, web pages, social media content

Note: Refer to the "H21j SYNC Gen 3 Driving Restrictions" document wherever this specification mentions "…applicable HMI specifications."

2 Architectural Design

2.1 Driver Restrictions Interface

2.1.1 DRIVE-RES-IIR-REQ-025160/A-APIM Driving Restrictions Interface Requirements (TcSE ROIN-159090-3)

Method	Notes	Parameters
«CAN»PowerMode.St()	Event-Periodic signal sent from the Gateway to the System Master indicating the power mode state of the vehicle	0x0 KeyOut 0x1 Not Used 0x2 Not Used 0x3 Not Used 0x4 Accessory_1 0x5 Not Used 0x6 IgnitionOn_2 0x7 Running_2 0x9 Crank_3
Ignition_Status	Signal sent to the infotainment system indicating the ignition status of the vehicle	0x0 Unknown 0x1 OFF 0x2 Accessory 0x4 Run 0x8 Start 0xF Invalid
Delay_Acc	Signal sent to the infotainment system indicating the status of delayed accessory	0x0 OFF 0x1 ON
«CAN»PRNDL.St()	Gear position the APIM to determine driving restriction enable/disable criteria	0x0: Park 0x1: Reverse 0x2: Neutral 0x3: Drive 0x4: Sport_DriveSport 0x5: Low 0x6: first 0x7: second 0x8: third 0x9: fourth 0xA: fifth 0xB: sixth 0xC: Undefined_Treat_as_Fault 0xD: Undefined_Treat_as_Fault 0xE: Unknown_Position 0xF: Fault
«CAN»Vehicle_Speed.St()	Vehicle Speed to APIM to determine driving restriction enable/disable criteria	See Info-CAN database (KPH)
«CAN»Park_Brake.St()	Parking Brake status to APIM to determine driving restriction enable/disable criteria for manual transmission vehicles	0x0 Disengage 0x1 Engage
ElectronicParkBrake_St	Electronic Parking Brake status to APIM to determine driving restriction enable/disable criteria for manual transmission vehicles with electronic park brakes	0x0: Not_Used 0x1: Rear_Caliper_Closed 0x2: Rear_Caliper_Transition 0x3: RWU_By_EPB_Active 0x4: Rear_Caliper_Open 0x5: EPB_Limphome_Active 0x6: ECD_by_Brake_ECU_Active 0x7: GeneralFault_MaintenceMode

2.1.2   MD-REQ-332822/A-FirstRowBucklePassenger_St

Message Type: Status

Status signal for the first row passenger seat belt buckle.

Name	Literals	Value	Description
Type	-	-	-
	Faulty	0x0	
	Belted	0x1	
	Unbelted	0x2	
	Unknown	0x3	

2.1.3   MD-REQ-332823/A-PassengerFrontDetect_St

Message Type: Status

Status signal indicating the presence of the front passenger.

Name	Literals	Value	Description
Type	-	-	-
	Faulty	0x0	
	Occupied	0x1	
	Empty	0x2	
	Unknown	0x3	

3 General Requirements

3.1 Applicable to Pre-CGEA1.3 programs

3.1.1 DRIVE-RES-FUR-REQ-025155/A-HMI Driving Restriction – General Applications (TcSE ROIN-159091-1)

In accordance with applicable HMI specifications, the driving restriction for general HMI behavior shall be <u>disabled</u> when the following condition is met:
- «CAN» Vehicle_Speed.St() is less than 5 MPH (8.05 KPH).

If this condition is not met, the driving restrictions for general applications shall be <u>enabled</u>.

<u>Missing Message Strategy</u>
If the following condition is met, the driving restrictions for general applications shall be <u>enabled</u>:
- [«CAN» PowerMode.St() = IgnitionOn_2 OR Running_2 OR Crank_3]
    AND «CAN»Vehicle_Speed.St() is missing for 5 seconds]

3.1.2 DRIVE-RES-FUR-REQ-025156/B-HMI Driving Restriction – Video Applications (TcSE ROIN-159092-2)

In accordance with applicable HMI specifications, the driving restriction for video applications shall be <u>disabled</u> (video shall only be allowed) when the following conditions are met:
- [«CAN» PowerMode.St() = IgnitionOn_2 OR Running_2 OR Crank_3]
    AND «CAN» PRNDL.St() = Park OR «CAN» Park_Brake.St() = Engaged OR ElectronicParkBrake_St = Rear_Caliper_Closed]
    AND [«CAN» Vehicle_Speed.St() is less than 1 MPH (1.6 KPH)]
- OR
- «CAN» PowerMode.St() = Key Out OR Accessory_1

If these conditions are not met, the driving restrictions for video applications shall be <u>enabled.</u>

<u>Missing Message Strategy</u>
If any of the following criteria is met, the driving restrictions for video shall be <u>enabled</u>:
- [«CAN» PowerMode.St() = IgnitionOn_2 OR Running_2 OR Crank_3]
    AND [«CAN» Vehicle_Speed.St() is missing for 5 seconds]
- OR
- [«CAN» PowerMode.St() = IgnitionOn_2 OR Running_2 OR Crank_3]
    AND [(«CAN» PRNDL.St() is missing for 5 seconds) AND («CAN» Park_Brake.St() is missing for 5 seconds) AND (ElectronicParkBrake_St is missing for 5 seconds)]

**<u>Note</u>:
- If a video was playing prior to the restriction becoming active, any accompanying audio shall still be allowed to play (remain audiable).

3.2   Applicable to CGEA1.3 programs and onward

3.2.1   DRIVE-RESv2-FUR-REQ-025157/A-HMI Driving Restriction – General Applications (TcSE ROIN-279695-1)

In accordance with applicable HMI specifications, the driving restriction for general HMI behavior shall be <u>disabled</u> when the following condition is met:
- «CAN» Vehicle_Speed.St() is less than 5 MPH (8.05 KPH).

If this condition is not met, the driving restrictions for general applications shall be <u>enabled</u>.

<u>Missing Message Strategy</u>
If the following condition is met, the driving restrictions for general applications shall be <u>enabled</u>:
- [Ignition_Status = Run]
  AND [«CAN»Vehicle_Speed.St() is missing for 5 seconds]

3.2.2   DRIVE-RESv2-FUR-REQ-025158/B-HMI Driving Restriction – Video Applications (TcSE ROIN-279696-2)

In accordance with applicable HMI specifications, the driving restriction for video applications shall be <u>disabled</u> (video shall only be allowed) when the following conditions are met:
- [Ignition_Status = Run]
  AND «CAN» PRNDL.St() = Park OR «CAN» Park_Brake.St() = Engaged OR ElectronicParkBrake_St = Rear_Caliper_Closed]
  AND [«CAN» Vehicle_Speed.St() is less than 1 MPH (1.6 KPH)]
- OR
- [Ignition_Status = Off & Delay_Accy = Off] OR [Ignition_Status = Accessory or Delay_Accy = On]

If these conditions are not met, the driving restrictions for video applications shall be <u>enabled.</u>

<u>Missing Message Strategy</u>
If any of the following criteria is met, the driving restrictions for video shall be <u>enabled</u>:
- [Ignition_Status = Run]
  AND [«CAN» Vehicle_Speed.St() is missing for 5 seconds]
- OR
- [Ignition_Status = Run]
  AND [(«CAN» PRNDL.St() is missing for 5 seconds) AND («CAN» Park_Brake.St() is missing for 5 seconds) AND (ElectronicParkBrake_St is missing for 5 seconds)]

**<u>Note</u>:
- If a video was playing prior to the restriction becoming active, any accompanying audio shall still be allowed to play (remain audiable).

3.2.3   DRIVE-RES-FUR-REQ-332824/A-HMI Driving Restriction - Passenger Override

In accordance with applicable HMI specifications, when the driving restriction is <u>enabled</u> (per REQ-025157 or REQ-025158), the vehicle's passenger shall be offered a method to request a driving restriction override (for specific features) when the following conditions are met:
- PassengerFrontDetect_St = Occupied (0x1), AND
- FirstRowBucklePassenger_St = Belted (0x1)

If these conditions are not met, the passenger override shall <u>not</u> be offered.

<u>Missing Message Strategy</u>
If the following conditions are met, the passenger override shall <u>not</u> be offered:
- PassengerFrontDetect_St is missing for 5 seconds, OR
- FirstRowBucklePassenger_St is missing for 5 seconds

4   Appendix: Reference Documents

Reference #	Document Title
1	Latest version of "H21j SYNC Gen 3 Driving Restrictions" specification
2	Latest version of "H21_SYNC_3_GUI_Design_Standards" specification
3	
4	
5	