1 HUD Showroom Mode – FNV2+

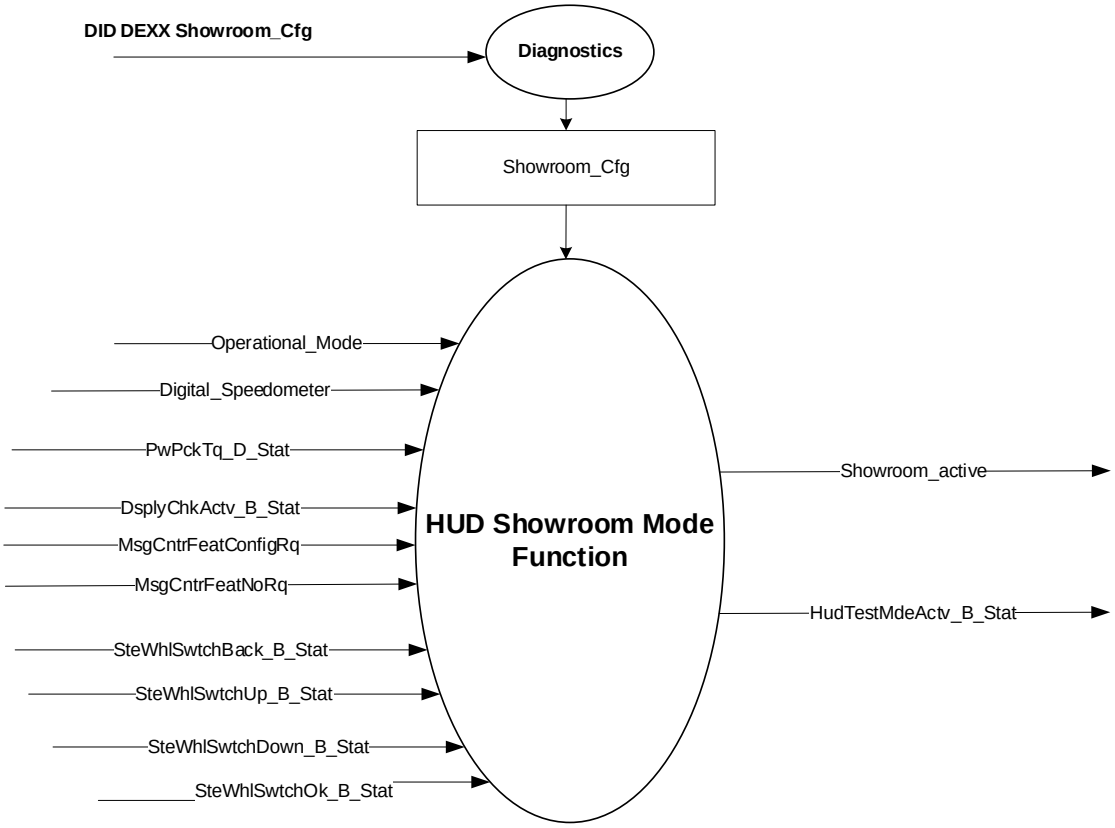
1.1 Functional Description

The Showroom Mode enables dealers and customers to show the functions of the HUD to an interested audience which, without the Showroom Mode, could not see the functions because most of the HUD functions are only perceivable or best perceived while driving.
HUD Showroom mode video is available once entered via the HUD Settings under IPC Menu Structure and select “HUD Showroom Mode” and press “Ok” to see the demonstration/video. The HUD showroom mode will be ceased upon pressing the “Back”, “Up” or “Down” button.

1.2 Interfaces

1.2.1 Interface Context Diagram (I/O Block Diagram)

Showroom Function Context Diagram



1.2.2 Inputs

1.2.2.1 IR-REQ-437841/A-INTERNAL:

- Operational_Mode
- Digital_Speedometer
- Showroom_Cfg

1.2.2.2 MUX signals on the CAN Bus from GWM, IPC or SCCM

1.2.2.2.1 SIG-REQ-437842/A-PwPckTq_D_Stat Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
PwPckTq_D_Stat	2	-	SED	1	0		0	0
		PwPckOff_TqNotAvailable				0x0		
		PwPckOn_TqNotAvailable				0x1		
		StartInPrgrss_TqNotAvail				0x2		
		PwPckOn_TqAvailable				0x3		

1.2.2.2.2 SIG-REQ-437843/A-DsplyChkActv_B_Stat Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
DsplyChkActv_B_Stat	1	-	Number	1	0		0	1
		Inactive				0x0		
		Active				0x1		

1.2.2.2.3 SIG-REQ-437845/A-SteWhlSwtchUp_B_Stat Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
SteWhlSwtchUp_B_Stat	1		SED	1	0		0	1
		Not_Pressed				0x0		
		Pressed				0x1		

1.2.2.2.4 SIG-REQ-437846/A-SteWhlSwtchDown_B_Stat Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
SteWhlSwtchDown_B_Stat	1		SED	1	0		0	1
		Not_Pressed				0x0		
		Pressed				0x1		

1.2.2.2.5 SIG-REQ-437847/A-SteWhlSwtchOK_B_Stat Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
SteWhlSwtchOk_B_Stat	1		SED	1	0		0	1
		Not_Pressed				0x0		
		Pressed				0x1		

1.2.2.2.6 SIG-REQ-438535/A-SteWhlSwtchBack_B_Stat Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
SteWhlSwtchBack_B_Stat	1		SED	1	0		0	1
		Not_Pressed				0x0		
		Pressed				0x1		

1.2.2.2.7 SIG-REQ-448137/A-MsgCntrFeatConfigRq Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
MsgCntrFeatConfigRq	16	-	Undefined	1	0		0 (0x0)	65535 (0xFFFF)

1.2.2.2.8 SIG-REQ-448138/A-MsgCntrFeatNoRq Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
MsgCntrFeatNoRq	16	-	Undefined	1	0		0 (0x0)	65535 (0xFFFF)

1.2.3 Outputs

1.2.3.1 IR-REQ-437848/A-Internal

- Showroom_active indicates the status of the Showroom Mode

1.2.3.2 MUX signals on the CAN

1.2.3.2.1 SIG-REQ-437849/A-HudTestMdeActv_B_Stat Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
HudTestMdeActv_B_Stat	1		SED	1	0		0	1
		Inactive				0x0		
		Active				0x1		

1.3 Function/Performance

1.3.1 F-REQ-437850/A-Operational Modes

Mode	Differentiating Vehicle Conditions
Sleep Mode	Showroom on AHUD Disabled
Limited Mode	Showroom on AHUD Disabled
Normal Mode	Showroom on AHUD Enabled / Disabled
Crank Mode	Showroom on AHUD Disabled

1.3.2 Voltage Levels

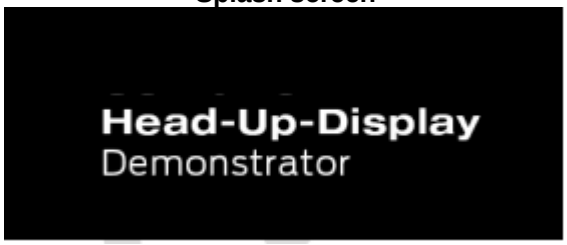
Refer to the HUD Features table located in the Operational Modes and Voltage Range Strategies Section in this SPSS.

1.3.3 Human-Machine Interface

1.3.3.1 Visual

1.3.3.1.1 HMI-REQ-437851/A-Indicator Graphics / Display Format

Splash screen



1.3.3.1.2 Indicator Color Coordinates

Reference section COLOR & ILLUMINATION REQUIREMENTS (GRAPHICS)

1.3.3.2 Audio

No additional audio requirements in HUD Showroom Mode.

1.3.3.3 HMI-REQ-437852/A-Switch Control Logic

The steering wheel switches are shared with the IPC, similar to the Engineering Test Mode.

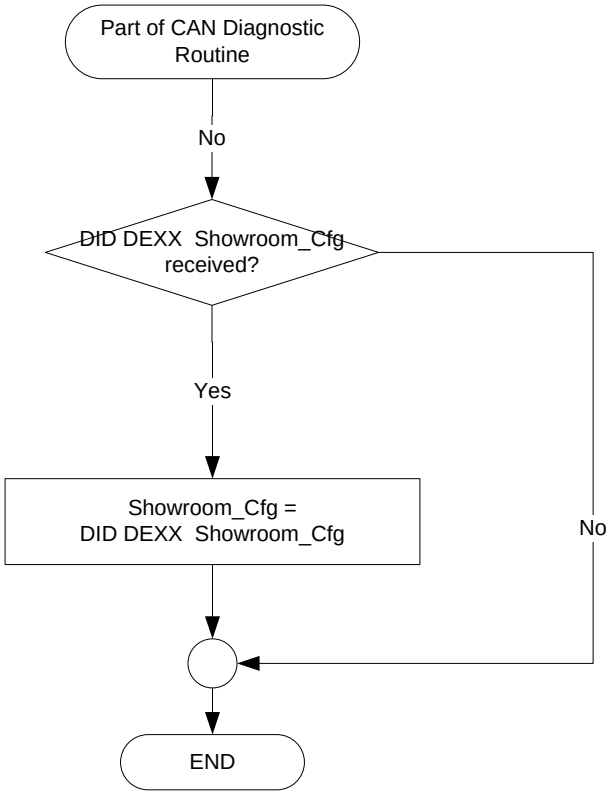
1.3.4 PFM-REQ-437853/A-System Accuracy

Within a 100msec of receiving a message that results in a change of state the HUD will update the display to the proper status.

1.3.5 Operation: Performance and Functional

1.3.5.1 Subsystem Algorithm Flowchart / State Diagram

1.3.5.1.1 F-REQ-437854/A-Showroom Diagnostic Configuration Flowchart



1.3.5.2 Operation Description (supports algorithm flowchart /state diagram)

1.3.5.2.1 F-REQ-437857/B-Entry condition:

- Showroom_Cfg == enabled and
- Operational Mode Normal and
- Engine is off (PwPckTq_D_Stat<2) and
- The car is Parked “P” or not moving (Digital_Speedometer=0) and
- MsgCntrFeatNoRq == 0x0C06 && MsgCntrFeatConfigRq == “(0x01) Play”

1.3.5.2.2 F-REQ-437858/B-Exit conditions:

- When the engine is starting or started (PwPckTq_D_Stat>=2) or
- When the car is not “Parked” and moving (Digital_Speedometer>0) or
- When the Operational Mode is not Normal or
- When the “Back” button (SteWhlSwtchBack_B_Stat) is pressed or
- When the “Up” (SteWhlSwtchUp_B_Stat) or “Down” (SteWhlSwtchDown_B_Stat) button is pressed for other selection or
- MsgCntrFeatNoRq == 0x0C06 && MsgCntrFeatConfigRq == “(0x00) Off”

1.3.5.2.3 F-REQ-437859/B-User control

- Button handling is similar to Engineering Test Mode. While the HUD is evaluating the steering wheel button signal values, the HUD is sending HudTestMdeActv_B_Stat as Active. The HUD pauses evaluating the steering wheel button signal values when the IPC is showing a resettable warning (DsplyChkActv_B_Stat==1), but the Sequence is not paused and there is no reference to ETM or another overlay shown on top of the Showroom Mode sequence.
- Within the Showroom Mode, If MsgCntrFeatNoRq == 0x0C06 && MsgCntrFeatConfigRq == "(0x02) Pause" then Showroom Mode video will pause and play again when MsgCntrFeatNoRq == 0x0C06 && MsgCntrFeatConfigRq == "(0x01) Play"

1.3.5.2.4 F-REQ-437860/A-Visual Sequence in Showroom Mode, according to HMI Specification

- Splash screen
- Welcome animation
- Speedometer, Info Display (Status bar), DAT features/ Warnings (ACC, iACC, CC, Distance Alert, LKS, LCA (Highway Assist Limited)/Highway Assist Extended, ASLD, TSR, ALC (Assisted Lane Change)), Navigation, Notification (Phone), Control Mirror (Drive Mode, Gear, Volume, Radio, Media QuickAction button, etc.), HUD Layouts, Off Road IOD, Driveline, Trail Control, 1-Pedel RTT, Tachometer, PSI, V2I, Trailer Brake Gain and Output, Pitch & Roll, Forward Collision Warning.
- Goodbye animation
- Repeat

  Note: Features which are disabled for program will not display on HUD Showroom Mode. Showroom Mode will display visual features according to the Region selection.

1.3.5.3 FS-REQ-437861/A-Function Safety Classification (EMC)

1.3.5.4 NVM-REQ-437862/A-Memory Storage

Parameter Name	Description	Value at Battery Connect	Value at Wake-up
Showroom_Cfg	State indicator for feature presence controlled via CAN at EOL at VO plant. Set to enabled at HUD Supplier Manufacturing Plant	Use Stored Value	Use Stored Value
Digital_Speedometer (for digital speedo)	Digital vehicle speed as displayed on the HUD be used as exit condition	Note 1	Note 1
Operational_Mode	4 state indicator for HUD operational mode	Limited	Limited, Normal or Crank

Note 1: Please refer to the HUD_Speedometer_Gauge_Digital_-_CGEA1.3 for information

1.3.5.5 F-REQ-437863/A-Reconfigurable Telltale

Yes

1.3.5.6 Prove Out

Not applicable

1.3.5.7 Message Center Msg

None

1.4 Error Handling

1.4.1 Missing Message Strategy

The signals will be declared missing as per the Diagnostics section of this SPSS.

DTCs states and history will be determined as per the Diagnostics section of this SPSS.

1.4.1.1 SR-REQ-437864/A-Missing Message Engine Status

When the message determining the Operational Mode (ID: 0x3B2) or the engine status (ID: 0x167) is missing as per the Diagnostics section of this SPSS, the HUD exits the Showroom Mode.

1.4.2 Invalid Message Strategy

None.

1.5 Diagnostics

1.5.1 Self Test

None

1.5.2 Engineering Test Mode

Reference section “Dealer / Engineering Test Mode (ETM)”

1.5.3 Part II Performance

1.5.3.1 DTC-REQ-437865/A-Supported Diagnostic Trouble Codes (DTCs)

DTC	Description
C15500	Lost Communication with IPC

1.5.3.2 DCR-REQ-437866/A-Supported Configurations ($DExx) DIDs

DID DExx

Block Num	Block Description	Size (bits)	Type	Byte(s)	Bits	State: Description	"0"	"1"	Default	Comments/ Information
PACKETED BLOCKS										
$xx	Option Content (B&A)	*	1	*	1	Showroom_Cfg	Disabled	Enabled	0x00	
*Byte and bit location to be identified in Part II Specification for this cluster										

1.6 Reference Specification

AHUD HMI Specification

1.7 Revision History

SPSS Module Revision History

Revision Level	Name	Change Description	Date
1.0	F. Sethi	Initial VSEM Release for FNV2+ architecture programs	10/01/2021
1.1	F. Sethi	Modified following requirements while changing Feature # from "0x0C04" to correct value "0x0C06": F-REQ-437857/B-Entry condition F-REQ-437858/B-Exit conditions F-REQ-437859/B-User control	1/24/2022