





1 HUD_Speed Limit Function – CGEA1.3

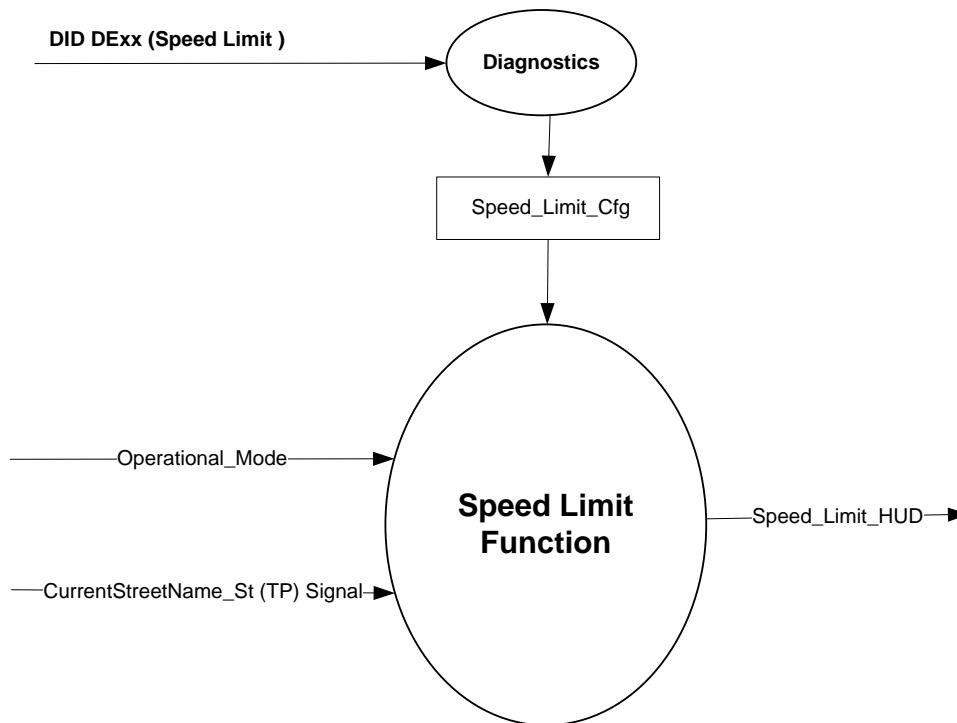
1.1 Functional Description

The Speed Limit feature is a mechanism for displaying the speed limit of the current vehicle path to the user. Speed Limit feature relies on the Transport Protocol (TP) data transmitted by the NAV feature from APIM module.

1.2 Interfaces

1.2.1 Interface Context Diagram (I/O Block Diagram)

Speed Limit Function Context Diagram



1.2.2 Inputs

1.2.2.1 IR-REQ-300355/A-INTERNAL

- Operational_Mode

1.2.2.2 **MUX Messages**

1.2.2.2.1 SIG-REQ-300353/A-CurrentStreetName_St (TP) Signal

Signal Name	Size (bits)	Detail	Units	Res.	Offset	State Encoded	Min	Max
CurrentStreetName_St	6							
		Byte 5 is used for Speed Limit display	none	1	x		0 (0x0)	255 (0xFF)



1.2.3 IR-REQ-300360/A-Outputs

- Speed_Limit_HUD

1.3 Function/Performance

1.3.1 REQ-300362/A-Operational Modes

Mode	Differentiating Vehicle Conditions
Sleep Mode	TSR Display Messages Disabled
Limited Mode	TSR Display Messages Disabled
Normal Mode	TSR Display Messages Enabled / Disabled
Crank Mode	TSR Display Messages Enabled / Disabled

1.3.2 Voltage Levels

Refer to the Cluster 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-300354/A-Indicator Graphics / Display Format

Please refer to the program specific menu structure for exact graphics.
Example graphic for the Speed Limit is shown below:



1.3.3.1.2 Indicator Color Coordinates

Reference section COLOR & ILLUMINATION REQUIREMENTS (GRAPHICS)

1.3.3.2 *Audio*

None

1.3.3.3 *Switch Control Logic*

None



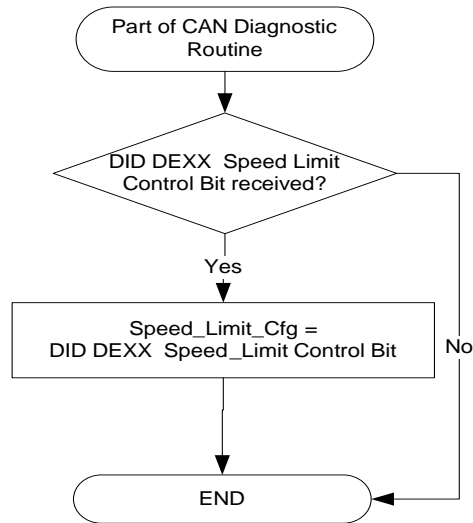
1.3.4 PFM-REQ-300361/A-System Accuracy

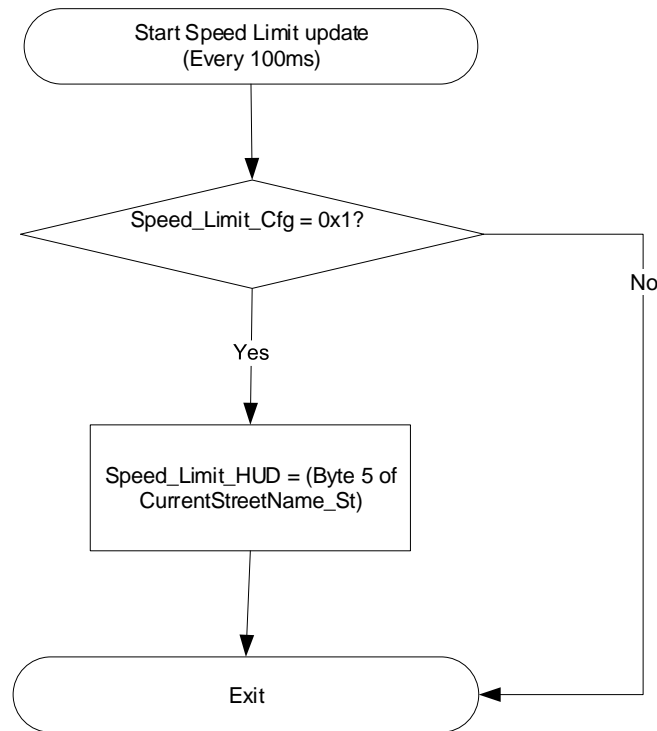
Within a 100msec of receiving a message that results in a change of state the cluster will update the display to the proper status.

1.3.5 Operation: Performance and Functional

1.3.5.1 F-REQ-300356/B-Subsystem Algorithm Flowchart / State Diagram

Speed Limit Configuration Flowchart



**Speed limit input request Flowcharts****1.3.5.2 Operation Description (supports algorithm flowchart /state diagram)**

- HUD should follow the Transport Protocol (see section 1.6) for handling the TP messages.

1.3.5.3 Function Safety Classification (EMC)

Class B

1.3.5.4 NVM-REQ-300357/B-Memory Storage

Parameter Name	Description	Value at Battery Connect	Value at Wake-up
CurrentStreetName_St	TP signal carries the Speed Limit	Do not Init	Do not Init
Speed_Limit_HUD	Speed limit to be displayed. 0x00 Invalid 0x01 1 ... 0xFF 255	0x0	Do not Init
Operational_Mode	4 state indicator for cluster operational mode	Limited	Limited, Normal or Crank

**1.3.5.5 Reconfigurable Telltale**

None

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.
If a signal is declared as missing, the Speed Limit display shall be blank.

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

If Speed_Limit_Cfg = Disabled (0x0), the HUD shall never log a missing message DTC for this feature

1.4.2 Invalid Message Strategy

If the signals is invalid (0x00), the Speed Limit display shall be blank.

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-300358/A-Supported Diagnostic Trouble Codes (DTCs)**

DTC	Description
C25387	Lost Communication with APIM

**1.5.3.2 DCR-REQ-300359/A-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	Speed Limit	Disabled	Enabled	0x00	This option is enabled on FoE variants only.

*Byte and bit location to be identified in Part II Specification for this HUD

1.6 Reference Specification

APIM - Transport Protocol HUD SPSS v1.0 (Draft) Jul 28 2014.

1.7 Revision History**SPSS Module Revision History**

Revision Level	Name	Change Description	Date
1.3	llopezla	This update was done in 4/20/2016 by A.Mathai but was not reflected in VSEM STSS. Speed_Limit_ HUD not to initialize on wakeup to support startup animation.	2/3/2019
1.2	A. Salameh	Initial VSEM RM Release	3/8/2018
1.1	M. Ye	Updated section 1.3.5.1 to use the speed limit from NAV directly without additional logic of unit conversion. In this case, the speed limit shown is not unit aware, it matches the speed limit implementation in the IPC.	8/27/2014
1.0	M. Ye	Initial draft.	8/15/2014