|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | | |  |
|  |  | | |  |
|  |  | | |  |
|  | Backtrack  <<Logical Function>> | | |  |
|  |  | | |  |
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**Important Note**

You need to use the RE specification macros provided by the “RE\_SpecificationMacroTemplate.dotm” (refer to “Utilities” on [page “Specification Templates” in the RE Wiki](http://wiki.ford.com/display/RequirementsEngineering/Specification+templates)) to allow seamless VSEM import of the specification content. **Use only these RE specification macros to create requirements** in this specification. Refer to “[How to use the Specification Templates](http://wiki.ford.com/display/RequirementsEngineering/How+to+use+the+Specification+Templates?src=contextnavpagetreemode)” on how to enable and use the macros and the requirements templates in this specification.

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# Function Specification

## Function Overview

### Function Description

This function is used to help the driver to reverse back automatically in narrow road conditions. The system can record up to the latest 50m routine of the vehicle in real time when environment condition and vehicle condition are met.

The system will control the vehicle to reverse back and can display remain distance real time according to the recorded routine after the driver activates the function. During the reversing process, if the system detects obstacles (ex. pedestrians, vehicles or predicts) in danger area, it will execute emergency braking automatically. Driver should observe the surrounding situation so that can take over the vehicle if need to ensure vehicle safety.

## Function Scope

The 29235191.png **– “Backtrack”** function is called by the following functions:

* -974994049.png – “[Logical Function](#_f339044848505b44e4fde35c73559be7)”

### Logical Function

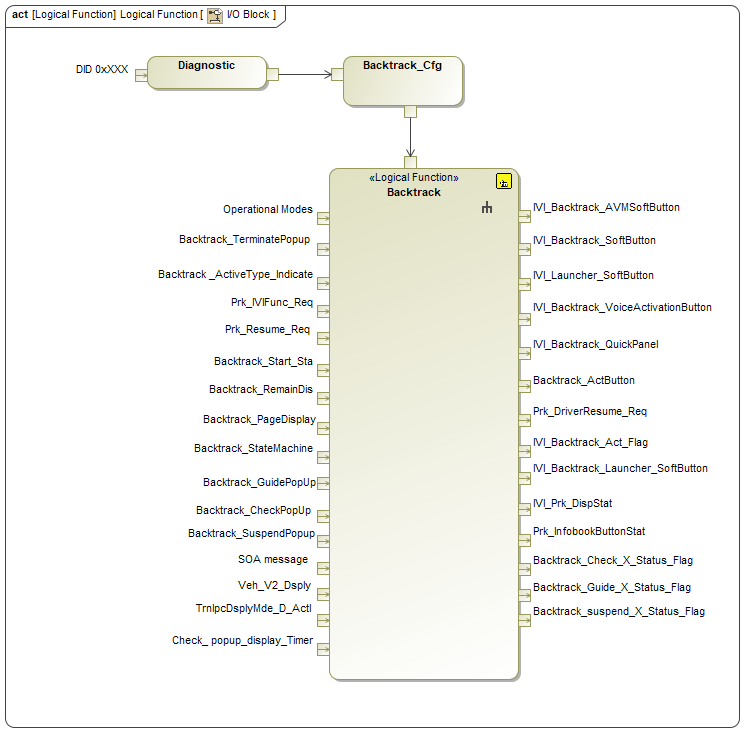


Figure : Activity Diagram of -974994049.png “I/O Block” calling 29235191.png “Backtrack”

## Function Modeling

### Activity Diagrams

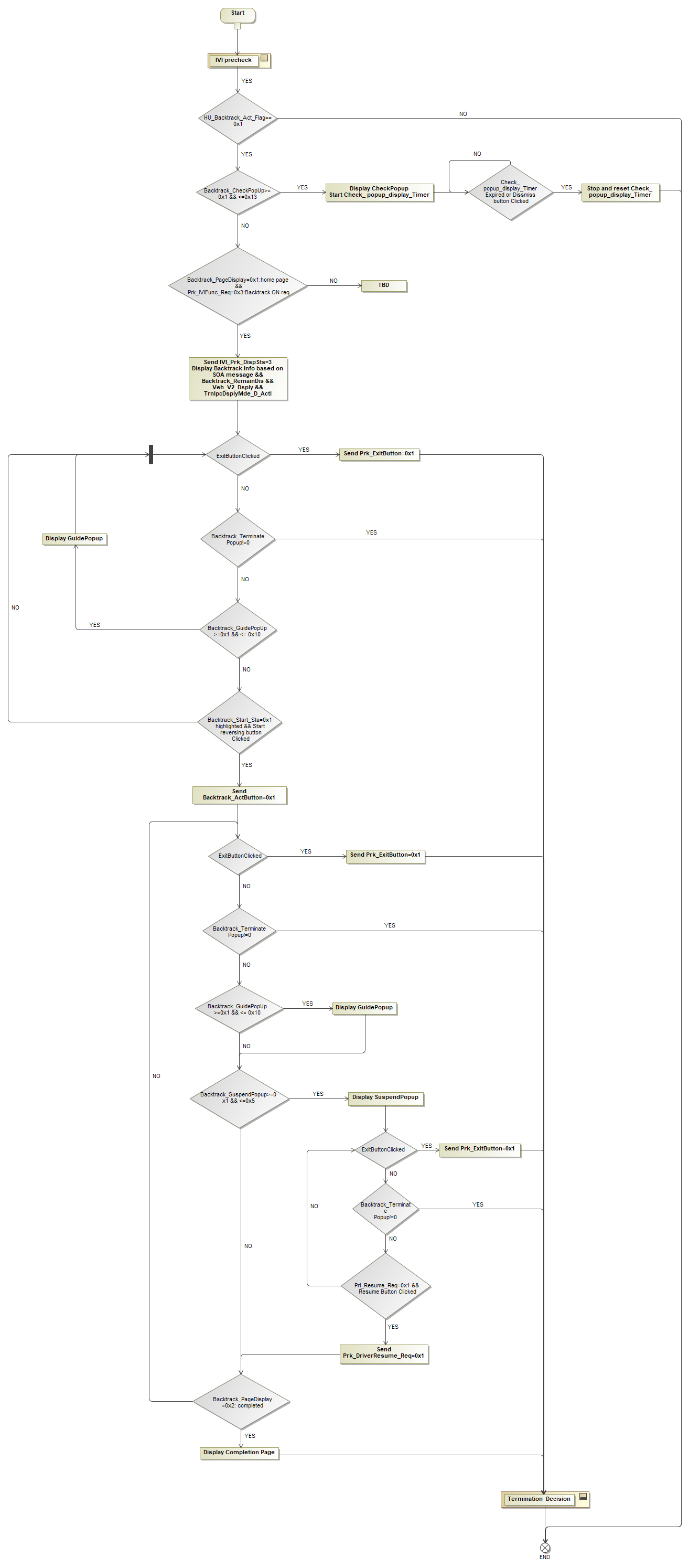


Figure 1: Activity Diagram of Backtrack

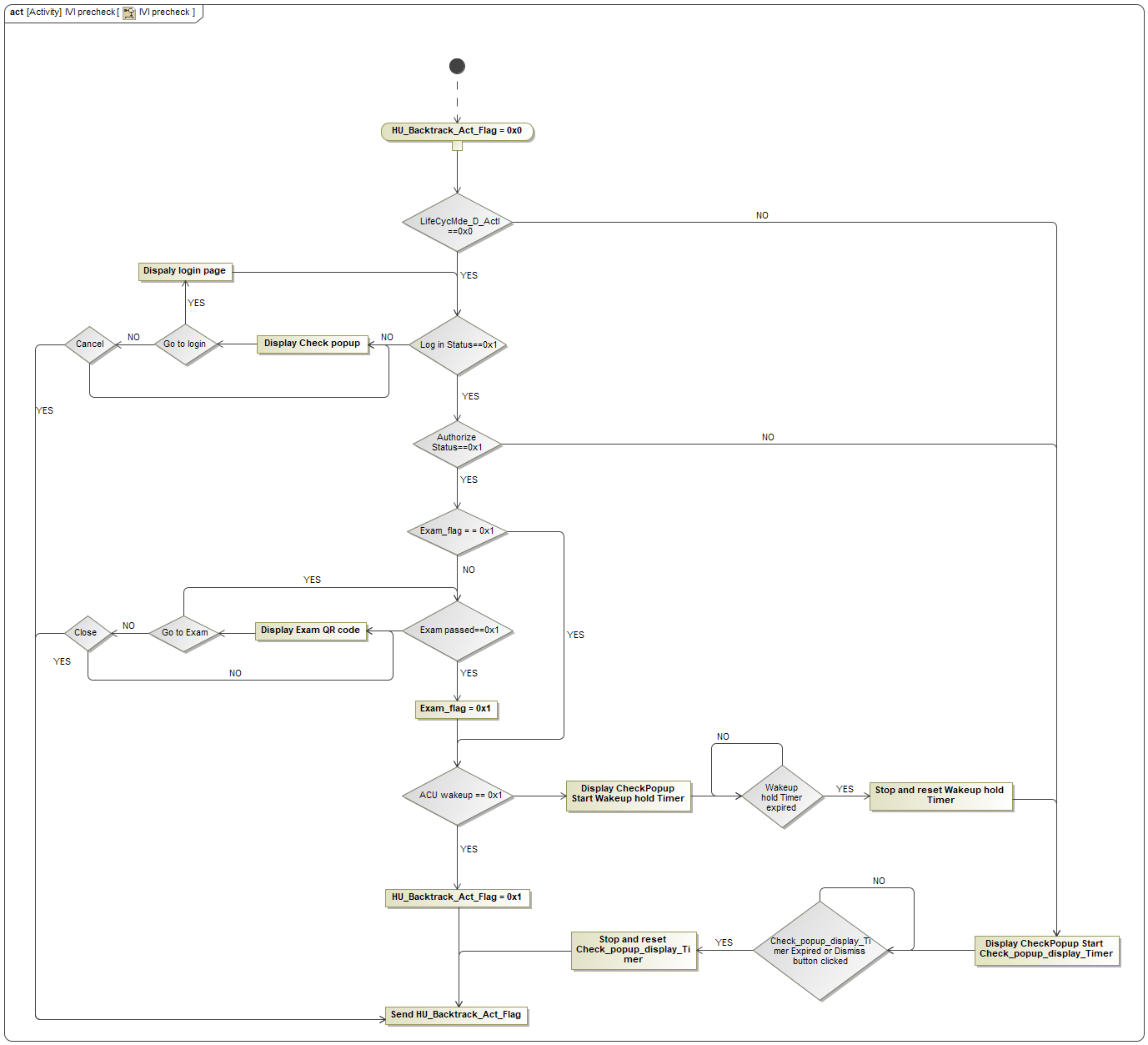


Figure 2: Activity Diagram of IVI precheck

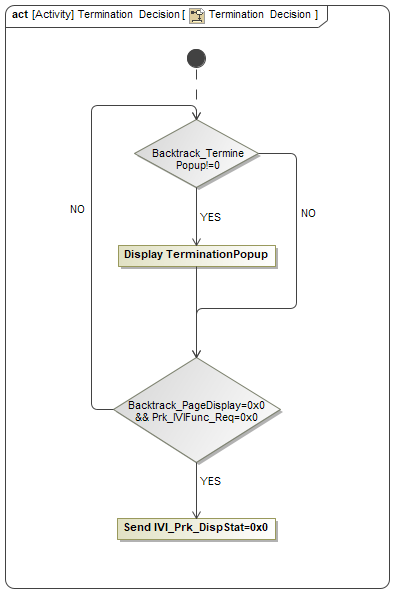


Figure 3: Activity Diagram of Termination Decision

### Sequence Diagrams

No sequence diagram associated to specified function.

### Decision Tables

*No Decision Tables found in the Magicdraw model.*

## Function requirements

### Functional Requirements

#### **Inputs**

##### **Internal flag**

* + Check\_ popup\_display\_Timer

##### **MUX messages on the CAN Bus**

##### **CAN Input Signals**

Backtrack\_TerminatePopup

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_TerminatePopup | 6 |  |  | 1 | 0 |  | 0(0x0) | 63(0X3F) |
|  |  | No Request |  |  |  | 0x0 |  |  |
|  |  | Req\_Quit\_CarModeInvalid |  |  |  | 0x1 |  |  |
|  |  | Req\_Quit\_OTA\_Active |  |  |  | 0x2 |  |  |
|  |  | Req\_Quit\_ADAS |  |  |  | 0x3 |  |  |
|  |  | Req\_Quit\_ABSActvie |  |  |  | 0x4 |  |  |
|  |  | Req\_Quit\_TCSActive |  |  |  | 0x5 |  |  |
|  |  | Req\_Quit\_ESCActive |  |  |  | 0x6 |  |  |
|  |  | Req\_Quit\_eCALL |  |  |  | 0x7 |  |  |
|  |  | Req\_Quit\_CameraBlockage |  |  |  | 0x8 |  |  |
|  |  | Req\_Quit\_USS Blockage |  |  |  | 0x9 |  |  |
|  |  | Req\_Quit\_SlopeTooLarge |  |  |  | 0xA |  |  |
|  |  | Req\_Quit\_SpeedHigh |  |  |  | 0xB |  |  |
|  |  | Req\_Quit\_TirePressureTooLow |  |  |  | 0xC |  |  |
|  |  | Req\_Quit\_RemoteStartForbid |  |  |  | 0xD |  |  |
|  |  | Req\_Quit\_PT\_Ready\_Failed |  |  |  | 0xE |  |  |
|  |  | Req\_Quit\_VehicleLowBattery |  |  |  | 0xF |  |  |
|  |  | Req\_Quit\_TrailerConnected |  |  |  | 0x10 |  |  |
|  |  | Req\_Quit\_TractionControlSystemOff |  |  |  | 0x11 |  |  |
|  |  | Req\_Quit\_PowerpackTorqueStatus ChangesToNotAvailable |  |  |  | 0x12 |  |  |
|  |  | Req\_Quit\_PowerManagementFailure |  |  |  | 0x13 |  |  |
|  |  | Req\_Quit\_LSC\_Error |  |  |  | 0x14 |  |  |
|  |  | Req\_Quit\_EPAS\_Error |  |  |  | 0x15 |  |  |
|  |  | Req\_Quit\_ABS\_Error |  |  |  | 0x16 |  |  |
|  |  | Req\_Quit\_BCM\_Error |  |  |  | 0x17 |  |  |
|  |  | Req\_Quit\_BLEM\_Failure |  |  |  | 0x18 |  |  |
|  |  | Req\_Quit\_Remote\_Device\_Error |  |  |  | 0x19 |  |  |
|  |  | Req\_Quit\_UnexpectedDeactivation\_Of\_LSC |  |  |  | 0x1A |  |  |
|  |  | Req\_Quit\_Unexpected Deactivation\_Of\_ABS |  |  |  | 0x1B |  |  |
|  |  | Req\_Quit\_UnexpectedDeactivation of EPAS |  |  |  | 0x1C |  |  |
|  |  | Req\_Quit\_ExternalECUFailure |  |  |  | 0x1D |  |  |
|  |  | Req\_Quit\_Sys\_Failure |  |  |  | 0x1E |  |  |
|  |  | Req\_Quit\_CAN\_Communication\_Failure |  |  |  | 0x1F |  |  |
|  |  | Req\_Quit\_FunctionOnCheckOvertime |  |  |  | 0x20 |  |  |
|  |  | Req\_Quit \_UserExitViaButtion/Voice |  |  |  | 0x21 |  |  |
|  |  | BrakeExceed\_2min |  |  |  | 0x22 |  |  |
|  |  | Req\_Quit\_GearIntervention |  |  |  | 0x23 |  |  |
|  |  | Req\_Quit\_EPB\_Apply |  |  |  | 0x24 |  |  |
|  |  | Req\_Quit\_SteeringWheel\_Intervention |  |  |  | 0x25 |  |  |
|  |  | Req\_Quit\_MirrorFold |  |  |  | 0X26 |  |  |
|  |  | Req\_Quit\_Unsafe\_Behavior |  |  |  | 0x27 |  |  |
|  |  | Req\_Quit\_Vehcle\_Charging |  |  |  | 0x28 |  |  |
|  |  | Req\_PowerOFF |  |  |  | 0x29 |  |  |
|  |  | Req\_Quit\_InsurmountableObstacle Detected |  |  |  | 0x2A |  |  |
|  |  | Req\_Quit\_TimingOvertime |  |  |  | 0x2B |  |  |
|  |  | Req\_Quit\_MatimeOvertime\_10min |  |  |  | 0x2C |  |  |
|  |  | RecoveryTimeout |  |  |  | 0x2D |  |  |
|  |  | Req\_Quit\_InterruptTimesOverflow |  |  |  | 0x2E |  |  |
|  |  | Req\_Quit\_RemoteMoveDistanceOut\_Of Range |  |  |  | 0x2F |  |  |
|  |  | Req\_Quit\_HandshakeFailed |  |  |  | 0x30 |  |  |
|  |  | Req\_Quit\_SteeringAngle\_Out\_of\_Limit |  |  |  | 0x31 |  |  |
|  |  | Req\_Quit\_Shift\_Operate\_Failed |  |  |  | 0x32 |  |  |
|  |  | Req\_Quit\_TrajectoryDeviation |  |  |  | 0x33 |  |  |
|  |  | Req\_Quit\_ChargeCover |  |  |  | 0x34 |  |  |
|  |  | Req\_Quit\_SpaceLimit |  |  |  | 0x35 |  |  |
|  |  | ParkingSucceed |  |  |  | 0x36 |  |  |
|  |  | Req\_Quit\_Searching\_Timeout |  |  |  | 0x37 |  |  |
|  |  | Req\_Quit\_Actuator feedback abnormal |  |  |  | 0X38 |  |  |
|  |  | Not used |  |  |  | 0x39-0x3F |  |  |

Backtrack \_ActiveType\_Indicate

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack \_ActiveType\_Indicate | 3 |  |  | 1 | 0 |  | 0(0x0) | 7(0x7) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | Backtrack actived by IVI soft button |  |  |  | 0x1 |  |  |
|  |  | Backtrack actived by voice button |  |  |  | 0x2 |  |  |
|  |  | Backtrack actived by AVM soft button |  |  |  | 0x3 |  |  |
|  |  | QuickPanel |  |  |  | 0x4 |  |  |
|  |  | Reserved |  |  |  | 0x5 |  |  |
|  |  | Reserved |  |  |  | 0x6 |  |  |
|  |  | Reserved |  |  |  | 0x7 |  |  |

Prk\_IVIFunc\_Req

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Prk\_IVIFunc\_Req |  |  |  | 1 | 0 |  | 0(0x0) | 7(0x7) |
|  |  | No req |  |  |  | 0x0 |  |  |
|  |  | AVM ON req |  |  |  | 0x1 |  |  |
|  |  | APA ON req |  |  |  | 0x2 |  |  |
|  |  | Backtrack ON req |  |  |  | 0x3 |  |  |
|  |  | HAVP ON req |  |  |  | 0x4 |  |  |
|  |  | Reserved |  |  |  | 0x5 |  |  |
|  |  | Reserved |  |  |  | 0x6 |  |  |
|  |  | Reserved |  |  |  | 0x7 |  |  |

Prk\_Resume\_Req

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Prk\_Resume\_Req | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | No request |  |  |  | 0x0 |  |  |
|  |  | Request |  |  |  | 0x1 |  |  |

Backtrack\_Start\_Sta

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_Start\_Sta | 2 |  |  | 1 | 0 |  | 0(0x0) | 3(0x3) |
|  |  | No display |  |  |  | 0x0 |  |  |
|  |  | Highlighted |  |  |  | 0x1 |  |  |
|  |  | Grey |  |  |  | 0x2 |  |  |
|  |  | Reserved |  |  |  | 0x3 |  |  |

Backtrack\_RemainDis

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_RemainDis | 6 |  | m | 1 | 0 |  | 0 | 63 |
|  |  | 0-50m |  |  |  |  |  |  |

Backtrack\_PageDisplay

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_PageDisplay | 2 |  |  | 1 | 0 |  | 0(0x0) | 3(0x3) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | Backtrack\_Reversing |  |  |  | 0x1 |  |  |
|  |  | Backtrack\_Completed |  |  |  | 0x2 |  |  |
|  |  | Invalid |  |  |  | 0x3 |  |  |

Backtrack\_StateMachine

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_StateMachine | 4 |  |  | 1 | 0 |  | 0(0x0) | 15(0xf) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | Initialization |  |  |  | 0x1 |  |  |
|  |  | Standby |  |  |  | 0x2 |  |  |
|  |  | Checking |  |  |  | 0x3 |  |  |
|  |  | Maneuvering |  |  |  | 0x4 |  |  |
|  |  | Paused |  |  |  | 0x5 |  |  |
|  |  | Terminated |  |  |  | 0x6 |  |  |
|  |  | Disable |  |  |  | 0x7 |  |  |
|  |  | Failure |  |  |  | 0x8 |  |  |
|  |  | Completed |  |  |  | 0x9 |  |  |
|  |  | Reserved |  |  |  | 0xA |  |  |
|  |  | Not used |  |  |  | 0xB~0xf |  |  |

Backtrack\_GuidePopUp

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_GuidePopUp | 5 |  |  | 1 | 0 |  | 0(0x0) | 31(0x1F) |
|  |  | No Popup |  |  |  | 0x0 |  |  |
|  |  | Gear N |  |  |  | 0x1 |  |  |
|  |  | Release Brake Pedal Or Choose Exit |  |  |  | 0x2 |  |  |
|  |  | Release Acclerator |  |  |  | 0x3 |  |  |
|  |  | Doors |  |  |  | 0x4 |  |  |
|  |  | Hood |  |  |  | 0x5 |  |  |
|  |  | Trunk |  |  |  | 0x6 |  |  |
|  |  | Safty Belt |  |  |  | 0x7 |  |  |
|  |  | Press Start |  |  |  | 0x8 |  |  |
|  |  | Keep Vehilce Standstill |  |  |  | 0x9 |  |  |
|  |  | Reversing |  |  |  | 0xA |  |  |
|  |  | Charging Gun |  |  |  | 0xB |  |  |
|  |  | Charger Cover |  |  |  | 0xC |  |  |
|  |  | Press Resume |  |  |  | 0xD |  |  |
|  |  | Rear mirror |  |  |  | 0xE |  |  |
|  |  | Release EPB |  |  |  | 0xF |  |  |
|  |  | Brake |  |  |  | 0x10 |  |  |
|  |  | Reserved |  |  |  | 0x11 |  |  |
|  |  | Not used |  |  |  | 0x12~0x1F |  |  |

Backtrack\_CheckPopUp

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_CheckPopUp | 5 |  |  | 1 | 0 |  | 0(0x0) | 31(0x1F) |
|  |  | No Req |  |  |  | 0x0 |  |  |
|  |  | ACU Failure |  |  |  | 0x1 |  |  |
|  |  | Valid Stored Routine |  |  |  | 0x2 |  |  |
|  |  | Velocity |  |  |  | 0x3 |  |  |
|  |  | Slope |  |  |  | 0x4 |  |  |
|  |  | Ready |  |  |  | 0x5 |  |  |
|  |  | Emergency Call |  |  |  | 0x6 |  |  |
|  |  | failure |  |  |  | 0x7 |  |  |
|  |  | Mode |  |  |  | 0x8 |  |  |
|  |  | Other ADAS Feature Active |  |  |  | 0x9 |  |  |
|  |  | Mobile control |  |  |  | 0xA |  |  |
|  |  | SW is updating |  |  |  | 0xB |  |  |
|  |  | Space is enough |  |  |  | 0xC |  |  |
|  |  | Passed exam |  |  |  | 0xD |  |  |
|  |  | Authorization |  |  |  | 0xE |  |  |
|  |  | Backtrack SW Avail |  |  |  | 0xF |  |  |
|  |  | Wake up |  |  |  | 0x10 |  |  |
|  |  | Log-in |  |  |  | 0x11 |  |  |
|  |  | In Progress |  |  |  | 0x12 |  |  |
|  |  | Mirror |  |  |  | 0x13 |  |  |
|  |  | Reserved |  |  |  | 0x14 |  |  |
|  |  | Reserved |  |  |  | 0x15 |  |  |
|  |  | Not used |  |  |  | 0x16~0x1F |  |  |

Backtrack\_SuspendPopup

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_SuspendPopup | 4 |  |  | 1 | 0 |  | 0(0x0) | 0(0x7) |
|  |  | Default |  |  |  | 0x0 |  |  |
|  |  | Belt |  |  |  | 0x1 |  |  |
|  |  | Doors |  |  |  | 0x2 |  |  |
|  |  | Blocked |  |  |  | 0x3 |  |  |
|  |  | Hood |  |  |  | 0x4 |  |  |
|  |  | Trunk |  |  |  | 0x5 |  |  |
|  |  | Reserved |  |  |  | 0x6 |  |  |
|  |  | Reserved |  |  |  | 0x7 |  |  |

Veh\_V2\_Dsply

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Veh\_V2\_Dsply | 9 |  |  | 1 | 0 |  | 0x0 | 511(0x1FF) |

TrnlpcDsplyMde\_D\_Actl

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| TrnlpcDsplyMde\_D\_Actl | 3 |  | SED | 1 | 0 |  | 0(0x0) | 7(0x7) |
|  |  | Park |  |  |  | 0x0 |  |  |
|  |  | Reverse |  |  |  | 0x1 |  |  |
|  |  | Neutral |  |  |  | 0x2 |  |  |
|  |  | Drive |  |  |  | 0x3 |  |  |
|  |  | Sport |  |  |  | 0x4 |  |  |
|  |  | Manual\_1\_Low |  |  |  | 0x5 |  |  |
|  |  | Manuel\_2 |  |  |  | 0x6 |  |  |
|  |  | Manuel\_3 |  |  |  | 0x7 |  |  |

#### **Outputs**

##### **Internal flag**

* + Backtrack\_Suspend\_X\_Status\_Flag, internal flag used to control suspend warning message in center display.
  + Backtrack\_Check\_X\_Status\_Flag, internal flag used to control the check popup message displayed in the message center.
  + Backtrack\_Guide\_X\_Status\_Flag, internal flag used to control the guide message displayed in the message center.

##### **MUX signals on the CAN Bus**

IVI\_ Backtrack\_SoftButton

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| IVI\_Backtrack\_SoftButton | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | ON |  |  |  | 0x1 |  |  |

IVI\_Prk\_DispStat

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| IVI\_Prk\_DispStat | 3 |  |  | 1 | 0 |  | 0(0x0) | 7(0x7) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | AVM actived |  |  |  | 0x1 |  |  |
|  |  | APA actived |  |  |  | 0x2 |  |  |
|  |  | Backtrack actived |  |  |  | 0x3 |  |  |
|  |  | HAVP active |  |  |  | 0x4 |  |  |
|  |  | Reserved |  |  |  | 0x5 |  |  |
|  |  | Reserved |  |  |  | 0x6 |  |  |
|  |  | Reserved |  |  |  | 0x7 |  |  |

Backtrack\_ActButton

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Backtrack\_ActButton | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | No request |  |  |  | 0x0 |  |  |
|  |  | Requested |  |  |  | 0x1 |  |  |

IVI\_Backtrack\_QuickPanel

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| IVI\_Backtrack\_QuickPanel | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | ON |  |  |  | 0x1 |  |  |

IVI\_Backtrack\_AVMSoftButton

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| IVI\_Backtrack\_AVMSoftButton | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | ON |  |  |  | 0x1 |  |  |

IVI\_Backtrack\_Act\_Flag

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| IVI\_Backtrack\_Act\_Flag | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | Unactivated |  |  |  | 0x0 |  |  |
|  |  | Activated |  |  |  | 0x1 |  |  |

IVI\_Backtrack\_Launcher\_SoftButton

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| IVI\_Backtrack\_Launcher\_SoftButton | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | ON |  |  |  | 0x1 |  |  |

Prk\_DriverResume\_Req

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Prk\_DriverResume\_Req | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | No pressed |  |  |  | 0x0 |  |  |
|  |  | Pressed |  |  |  | 0x1 |  |  |

IVI\_Launcher\_SoftButton

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| IVI\_Launcher\_SoftButton | 1 |  |  | 1 | 0 |  | 0(0x0) | 1(0x1) |
|  |  | OFF |  |  |  | 0x0 |  |  |
|  |  | ON |  |  |  | 0x1 |  |  |

Prk\_InfobookButtonStat

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| Prk\_InfobookButtonStat | 2 |  |  | 1 | 0 |  | 0(0x0) | 2(0x2) |
|  |  | Normal |  |  |  | 0x0 |  |  |
|  |  | Gray |  |  |  | 0x1 |  |  |
|  |  | Not display |  |  |  | 0x2 |  |  |

IVI\_Backtrack\_VoiceActivationButton

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Signal\_Name** | **Size(bits)** | **Detail** | **Units** | **Res.** | **Offset** | **State**  **Encoded** | **Min** | **Max** |
| IVI\_Backtrack\_VoiceActivationButton | 2 |  |  | 1 | 0 |  | 0(0x0) | 2(0x2) |
|  |  | No request |  |  |  | 0x0 |  |  |
|  |  | ON |  |  |  | 0x1 |  |  |
|  |  | OFF |  |  |  | 0x2 |  |  |

State Matrix for Backtrack\_suspend\_X\_Status\_Flag

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational**  **\_Mode** | **BackTrack\_Cfg** | **Backtrack\_SuspendPopup**  **Signal** | **Backtrack\_Suspend\_1**  **\_Status\_Flag** | **Backtrack\_Suspend\_2**  **\_Status\_Flag** | **Backtrack\_Suspend\_3**  **\_Status\_Flag** | **Backtrack\_Suspend\_4**  **\_Status\_Flag** | **Backtrack\_Suspend\_5**  **\_Status\_Flag** |
| Normal | Yes (0x1) | 0x1 | Active | Inactive | Inactive | Inactive | Inactive |
| 0x2 | Inactive | Active | Inactive | Inactive | Inactive |
| 0x3 | Inactive | Inactive | Active | Inactive | Inactive |
| 0x4 | Inactive | Inactive | Inactive | Active | Inactive |
| 0x5 | Inactive | Inactive | Inactive | Inactive | Active |
| Other cases | | | Inactive | Inactive | Inactive | Inactive | Inactive |

* **Backtrack Suspend Warning MC Status Flags to MC Warning Message and Active Chime**

|  |  |  |  |
| --- | --- | --- | --- |
| **Message ID** | **Description of Warning** | **Active MC\_Status\_Flag** | **Active Chime\_Status\_Flag** |
| M5001 | Driver Seat Belt Unbuckled | Backtrack\_Suspend\_1\_Status\_Flag | No Chime |
| M5002 | Doors Ajar | Backtrack\_Suspend\_2\_Status\_Flag | No Chime |
| M5003 | Obstacle Blocked | Backtrack\_Suspend\_3\_Status\_Flag | No Chime |
| M5004 | Hood Ajar | Backtrack\_Suspend\_4\_Status\_Flag | No Chime |
| M5005 | Trunk Ajar | Backtrack\_Suspend\_5\_Status\_Flag | No Chime |

State Matrix for Backtrack\_Guide\_X\_Status\_Flag

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Backtrack\_Cfg** | **Backtrack\_GuidePopUp** | **Backtrack\_Guide\_1\_Status\_Flag** | **Backtrack\_Guide\_2\_Status\_Flag** | **Backtrack\_Guide\_3\_Status\_Flag** | **Backtrack\_Guide\_4\_Status\_Flag** | **Backtrack\_Guide\_5\_Status\_Flag** | **Backtrack\_Guide\_6\_Status\_Flag** | **Backtrack\_Guide\_7\_Status\_Flag** | **Backtrack\_Guide\_8\_Status\_Flag** | **Backtrack\_Guide\_9\_Status\_Flag** | **Backtrack\_Guide\_10\_Status\_Flag** | **Backtrack\_Guide\_11\_Status\_Flag** | **Backtrack\_Guide\_12\_Status\_Flag** | **Backtrack\_Guide\_13\_Status\_Flag** | **Backtrack\_Guide\_14\_Status\_Flag** | **Backtrack\_Guide\_15\_Status\_Flag** | **Backtrack\_Guide\_16\_Status\_Flag** |
| Normal | Enabled | 0x1 | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2 | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x3 | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x4 | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x5 | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x6 | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x7 | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x8 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x9 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0xA | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina |
| 0xB | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina |
| 0xC | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina |
| 0xD | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina |
| 0xE | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina |
| 0xF | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina |
| 0x10 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** |
| Other Cases | | | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Ina** |

* **Backtrack Guide popup MC Status Flags to MC Message and Active Chime**

|  |  |  |  |
| --- | --- | --- | --- |
| **Message ID** | **Description of GuidePopup** | **Active MC\_Status\_Flag** | **Active Chime\_Status\_Flag** |
| M5101 | Please switch to Neutral | Backtrack\_Guide\_1\_Status\_Flag | No Chime |
| M5102 | Release Brake Pedal or Choose Exit | Backtrack\_Guide\_2\_Status\_Flag | No Chime |
| M5103 | Release Accelerator | Backtrack\_Guide\_3\_Status\_Flag | No Chime |
| M5104 | Doors Ajar | Backtrack\_Guide\_4\_Status\_Flag | No Chime |
| M5105 | Hood Ajar | Backtrack\_Guide\_5\_Status\_Flag | No Chime |
| M5106 | Trunk Ajar | Backtrack\_Guide\_6\_Status\_Flag | No Chime |
| M5107 | Please fasten Seatbelt | Backtrack\_Guide\_7\_Status\_Flag | No Chime |
| M5108 | Press “Start reversing” button to get started | Backtrack\_Guide\_8\_Status\_Flag | No Chime |
| M5109 | Keep Vehicle Standstill | Backtrack\_Guide\_9\_Status\_Flag | No Chime |
| M5110 | Reversing | Backtrack\_Guide\_10\_Status\_Flag | No Chime |
| M5111 | Charing Gun | Backtrack\_Guide\_11\_Status\_Flag | No Chime |
| M5112 | Charger door ajar | Backtrack\_Guide\_12\_Status\_Flag | No Chime |
| M5113 | Press “Resume” button to continue reversing | Backtrack\_Guide\_13\_Status\_Flag | No Chime |
| M5114 | Rear mirror error | Backtrack\_Guide\_14\_Status\_Flag | No Chime |
| M5115 | Release EPB | Backtrack\_Guide\_15\_Status\_Flag | No Chime |
| M5116 | Brake | Backtrack\_Guide\_16\_Status\_Flag | No Chime |

State Matrix for Backtrack\_Check\_X\_Status\_Flag

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Backtrack\_Cfg** | **Backtrack\_CheckPopUp** | **Backtrack\_Check\_1\_Status\_Flag** | **Backtrack\_Check\_2\_Status\_Flag** | **Backtrack\_Check\_3\_Status\_Flag** | **Backtrack\_Check\_4\_Status\_Flag** | **Backtrack\_Check\_5\_Status\_Flag** | **Backtrack\_Check\_6\_Status\_Flag** | **Backtrack\_Check\_7\_Status\_Flag** | **Backtrack\_Check\_8\_Status\_Flag** | **Backtrack\_Check\_9\_Status\_Flag** | **Backtrack\_Check\_10\_Status\_Flag** | **Backtrack\_Check\_11\_Status\_Flag** | **Backtrack\_Check\_12\_Status\_Flag** | **Backtrack\_Check\_13\_Status\_Flag** | **Backtrack\_Check\_14\_Status\_Flag** | **Backtrack\_Check\_15\_Status\_Flag** | **Backtrack\_Check\_16\_Status\_Flag** | **Backtrack\_Check\_17\_Status\_Flag** | **Backtrack\_Check\_18\_Status\_Flag** | **Backtrack\_Check\_19\_Status\_Flag** |
| Normal | Enabled | 0x1 | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2 | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x3 | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x4 | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x5 | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x6 | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x7 | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x8 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x9 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0xA | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0xB | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0xC | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0xD | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina | Ina |
| 0xE | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina | Ina |
| 0xF | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina | Ina |
| 0x10 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina | Ina |
| 0x11 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina | Ina |
| 0x12 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** | Ina |
| 0x13 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **ACT** |
| Other Cases | | | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |

* **Backtrack Check popup MC Status Flags to MC Message and Active Chime**

|  |  |  |  |
| --- | --- | --- | --- |
| **Message ID** | **Description of CheckPopup** | **Active MC\_Status\_Flag** | **Active Chime\_Status\_Flag** |
| M5201 | ACU Failure | Backtrack\_Check\_1\_Status\_Flag | No Chime |
| M5202 | Invalid Stored Routine | Backtrack\_Check\_2\_Status\_Flag | No Chime |
| M5203 | High Vehicle speed | Backtrack\_Check\_3\_Status\_Flag | No Chime |
| M5204 | High Slope | Backtrack\_Check\_4\_Status\_Flag | No Chime |
| M5205 | Motion not Ready | Backtrack\_Check\_5\_Status\_Flag | No Chime |
| M5206 | Emergency Call | Backtrack\_Check\_6\_Status\_Flag | No Chime |
| M5207 | ECU failure | Backtrack\_Check\_7\_Status\_Flag | No Chime |
| M5208 | Non-Normal Mode | Backtrack\_Check\_8\_Status\_Flag | No Chime |
| M5209 | Other ADAS Feature Active | Backtrack\_Check\_9\_Status\_Flag | No Chime |
| M5210 | Under Mobile control | Backtrack\_Check\_10\_Status\_Flag | No Chime |
| M5211 | SW is updating | Backtrack\_Check\_11\_Status\_Flag | No Chime |
| M5212 | Limited Space | Backtrack\_Check\_12\_Status\_Flag | No Chime |
| M5213 | Exam not Passed | Backtrack\_Check\_13\_Status\_Flag | No Chime |
| M5214 | No Authorization | Backtrack\_Check\_14\_Status\_Flag | No Chime |
| M5215 | Backtrack SW not Available | Backtrack\_Check\_15\_Status\_Flag | No Chime |
| M5216 | Waiting Wake up | Backtrack\_Check\_16\_Status\_Flag | No Chime |
| M5217 | Not Log-in | Backtrack\_Check\_17\_Status\_Flag | No Chime |
| M5218 | In Progress | Backtrack\_Check\_18\_Status\_Flag | No Chime |
| M5219 | Rear Mirror | Backtrack\_Check\_19\_Status\_Flag | No Chime |

State Matrix for Backtrack\_Terminate\_X\_Status\_Flag

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Operational\_ Mode** | **Backtrack\_Cfg** | **Backtrack\_TerminatePopup** | **Backtrack\_TerminatePopup\_1\_Status\_Flag** | **Backtrack\_TerminatePopup\_2\_Status\_Flag** | **Backtrack\_TerminatePopup\_3\_Status\_Flag** | **Backtrack\_TerminatePopup\_4\_Status\_Flag** | **Backtrack\_TerminatePopup\_5\_Status\_Flag** | **Backtrack\_TerminatePopup\_6\_Status\_Flag** | **Backtrack\_TerminatePopup\_7\_Status\_Flag** | **Backtrack\_TerminatePopup\_8\_Status\_Flag** | **Backtrack\_TerminatePopup\_9\_Status\_Flag** | **Backtrack\_TerminatePopup\_10\_Status\_Flag** | **Backtrack\_TerminatePopup\_11\_Status\_Flag** | **Backtrack\_TerminatePopup\_12\_Status\_Flag** | **Backtrack\_TerminatePopup\_13\_Status\_Flag** | **Backtrack\_TerminatePopup\_14\_Status\_Flag** | **Backtrack\_TerminatePopup\_15\_Status\_Flag** | **Backtrack\_TerminatePopup\_16\_Status\_Flag** | **Backtrack\_TerminatePopup\_17\_Status\_Flag** | **Backtrack\_TerminatePopup\_18\_Status\_Flag** | **Backtrack\_TerminatePopup\_19\_Status\_Flag** | **Backtrack\_TerminatePopup\_20\_Status\_Flag** | **Backtrack\_TerminatePopup\_21\_Status\_Flag** | **Backtrack\_TerminatePopup\_22\_Status\_Flag** | **Backtrack\_TerminatePopup\_23\_Status\_Flag** | **Backtrack\_TerminatePopup\_24\_Status\_Flag** | **Backtrack\_TerminatePopup\_25\_Status\_Flag** | **Backtrack\_TerminatePopup\_26\_Status\_Flag** | **Backtrack\_TerminatePopup\_27\_Status\_Flag** | **Backtrack\_TerminatePopup\_28\_Status\_Flag** | **Backtrack\_TerminatePopup\_29\_Status\_Flag** |
| Normal | Enabled | 0x1 | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2 | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x3 | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x4 | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x5 | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x6 | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x7 | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x8 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
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| 0xA | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0xB | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
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| Other Cases | | | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |

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| **Operational\_ Mode** | **Backtrack\_Cfg** | **Backtrack\_TerminatePopup** | **Backtrack\_TerminatePopup\_30\_Status\_Flag** | **Backtrack\_TerminatePopup\_31\_Status\_Flag** | **Backtrack\_TerminatePopup\_32\_Status\_Flag** | **Backtrack\_TerminatePopup\_33\_Status\_Flag** | **Backtrack\_TerminatePopup\_34\_Status\_Flag** | **Backtrack\_TerminatePopup\_35\_Status\_Flag** | **Backtrack\_TerminatePopup\_36\_Status\_Flag** | **Backtrack\_TerminatePopup\_37\_Status\_Flag** | **Backtrack\_TerminatePopup\_38\_Status\_Flag** | **Backtrack\_TerminatePopup\_39\_Status\_Flag** | **Backtrack\_TerminatePopup\_40\_Status\_Flag** | **Backtrack\_TerminatePopup\_41\_Status\_Flag** | **Backtrack\_TerminatePopup\_42\_Status\_Flag** | **Backtrack\_TerminatePopup\_43\_Status\_Flag** | **Backtrack\_TerminatePopup\_44\_Status\_Flag** | **Backtrack\_TerminatePopup\_45\_Status\_Flag** | **Backtrack\_TerminatePopup\_46\_Status\_Flag** | **Backtrack\_TerminatePopup\_47\_Status\_Flag** | **Backtrack\_TerminatePopup\_48\_Status\_Flag** | **Backtrack\_TerminatePopup\_49\_Status\_Flag** | **Backtrack\_TerminatePopup\_50\_Status\_Flag** | **Backtrack\_TerminatePopup\_51\_Status\_Flag** | **Backtrack\_TerminatePopup\_52\_Status\_Flag** | **Backtrack\_TerminatePopup\_53\_Status\_Flag** | **Backtrack\_TerminatePopup\_54\_Status\_Flag** | **Backtrack\_TerminatePopup\_55\_Status\_Flag** | **Backtrack\_TerminatePopup\_56\_Status\_Flag** | **Backtrack\_TerminatePopup\_57\_Status\_Flag** | **Backtrack\_TerminatePopup\_58\_Status\_Flag** |
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| 0x1B | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x1C | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x1D | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x1E | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x1F | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x20 | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x21 | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x22 | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x23 | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x24 | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x25 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0X26 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x27 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x28 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x29 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2A | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2B | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2C | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2D | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2E | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x2F | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x30 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x31 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x32 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x33 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x34 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina | Ina |
| 0x35 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina | Ina |
| 0x36 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina | Ina |
| 0x37 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina | Ina |
| 0X38 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina | Ina |
| 0x39 | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** | Ina |
|  |  | 0x3A | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | **Act** |
| Other Cases | | | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina | Ina |

* **Backtrack Terminate popup MC Status Flags to MC Message and Active Chime**

|  |  |  |  |
| --- | --- | --- | --- |
| **Message ID** | **Description of TerminatePopup** | **Active MC\_Status\_Flag** | **Active Chime\_Status\_Flag** |
| TBD | Req\_Quit\_CarModeInvalid | Backtrack\_TerminatePopup\_1\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_OTA\_Active | Backtrack\_TerminatePopup\_2\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_ADAS | Backtrack\_TerminatePopup\_3\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_ABSActvie | Backtrack\_TerminatePopup\_4\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_TCSActive | Backtrack\_TerminatePopup\_5\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_ESCActive | Backtrack\_TerminatePopup\_6\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_eCALL | Backtrack\_TerminatePopup\_7\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_CameraBlockage | Backtrack\_TerminatePopup\_8\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_USS Blockage | Backtrack\_TerminatePopup\_9\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_SlopeTooLarge | Backtrack\_TerminatePopup\_10\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_SpeedHigh | Backtrack\_TerminatePopup\_11\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_TirePressureTooLow | Backtrack\_TerminatePopup\_12\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_RemoteStartForbid | Backtrack\_TerminatePopup\_13\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_PT\_Ready\_Failed | Backtrack\_TerminatePopup\_14\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_VehicleLowBattery | Backtrack\_TerminatePopup\_15\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_TrailerConnected | Backtrack\_TerminatePopup\_16\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_TractionControlSystemOff | Backtrack\_TerminatePopup\_17\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_PowerpackTorqueStatus ChangesToNotAvailable | Backtrack\_TerminatePopup\_18\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_PowerManagementFailure | Backtrack\_TerminatePopup\_19\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_LSC\_Error | Backtrack\_TerminatePopup\_20\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_EPAS\_Error | Backtrack\_TerminatePopup\_21\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_ABS\_Error | Backtrack\_TerminatePopup\_22\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_BCM\_Error | Backtrack\_TerminatePopup\_23\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_BLEM\_Failure | Backtrack\_TerminatePopup\_24\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_Remote\_Device\_Error | Backtrack\_TerminatePopup\_25\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_UnexpectedDeactivation\_Of\_LSC | Backtrack\_TerminatePopup\_26\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_Unexpected Deactivation\_Of\_ABS | Backtrack\_TerminatePopup\_27\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_UnexpectedDeactivation of EPAS | Backtrack\_TerminatePopup\_28\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_ExternalECUFailure | Backtrack\_TerminatePopup\_29\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_Sys\_Failure | Backtrack\_TerminatePopup\_30\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_CAN\_Communication\_Failure | Backtrack\_TerminatePopup\_31\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_FunctionOnCheckOvertime | Backtrack\_TerminatePopup\_32\_Status\_Flag | No Chime |
| TBD | Req\_Quit \_UserExitViaButtion/Voice | Backtrack\_TerminatePopup\_33\_Status\_Flag | No Chime |
| TBD | BrakeExceed\_2min | Backtrack\_TerminatePopup\_34\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_GearIntervention | Backtrack\_TerminatePopup\_35\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_EPB\_Apply | Backtrack\_TerminatePopup\_36\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_SteeringWheel\_Intervention | Backtrack\_TerminatePopup\_37\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_MirrorFold | Backtrack\_TerminatePopup\_38\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_Unsafe\_Behavior | Backtrack\_TerminatePopup\_39\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_Vehcle\_Charging | Backtrack\_TerminatePopup\_40\_Status\_Flag | No Chime |
| TBD | Req\_PowerOFF | Backtrack\_TerminatePopup\_41\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_InsurmountableObstacle Detected | Backtrack\_TerminatePopup\_42\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_TimingOvertime | Backtrack\_TerminatePopup\_43\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_MatimeOvertime\_10min | Backtrack\_TerminatePopup\_44\_Status\_Flag | No Chime |
| TBD | RecoveryTimeout | Backtrack\_TerminatePopup\_45\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_InterruptTimesOverflow | Backtrack\_TerminatePopup\_46\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_RemoteMoveDistanceOut\_Of Range | Backtrack\_TerminatePopup\_47\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_HandshakeFailed | Backtrack\_TerminatePopup\_48\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_SteeringAngle\_Out\_of\_Limit | Backtrack\_TerminatePopup\_49\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_Shift\_Operate\_Failed | Backtrack\_TerminatePopup\_50\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_TrajectoryDeviation | Backtrack\_TerminatePopup\_51\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_ChargeCover | Backtrack\_TerminatePopup\_52\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_SpaceLimit | Backtrack\_TerminatePopup\_53\_Status\_Flag | No Chime |
| TBD | ParkingSucceed | Backtrack\_TerminatePopup\_54\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_Searching\_Timeout | Backtrack\_TerminatePopup\_55\_Status\_Flag | No Chime |
| TBD | Req\_Quit\_Actuator feedback abnormal | Backtrack\_TerminatePopup\_56\_Status\_Flag | No Chime |
| TBD | Not used | Backtrack\_TerminatePopup\_57\_Status\_Flag | No Chime |
| TBD | Not used | Backtrack\_TerminatePopup\_58\_Status\_Flag | No Chime |

#### Error Handling

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.

If Backtrack\_Cfg is “Disabled”, the cluster shall never log a missing message DTC for this feature.

### Non-Functional Requirements

Operational Modes

|  |  |
| --- | --- |
| **Mode** | **Differentiating Vehicle Conditions** |
| Sleep Mode | Backtrack function and Information displaying Disabled |
| Limited Mode | Backtrack function and Information displaying Disabled |
| Normal Mode | Backtrack function and Information displaying Enabled / Disabled |
| Crank Mode | Backtrack function and Information displaying Disabled |

Function activation and button response

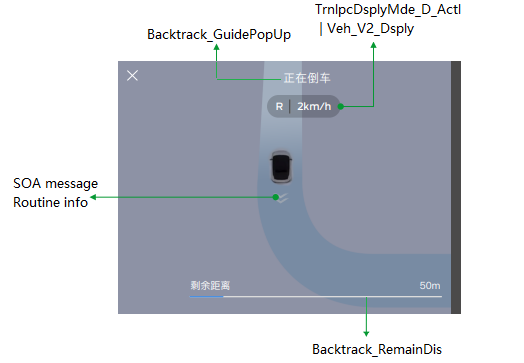
Users can activate Backtrack via voice control command (IVI\_Backtrack\_VoiceActivationButton) or buttons

(IVI\_Backtrack\_AVMButton or IVI\_Backtrack\_QuickPanel) in touchable screen of infotainment system.

When buttons clicked, IVI should send signals with value 0x01 for three times, then send value 0x0. All button

event for backtrack should comply this behavior.

Indicator Graphics / Display Format



**Backtrack Graphics**



**Backtrack Suspend & Termination popup Graphics**

These are only sample graphics, please refer HMI specifications for program specific details.

Memory Storage Table 1

|  |  |  |  |
| --- | --- | --- | --- |
| **Parameter Name** | **Description** | **Value at Battery Connect** | **Value at Module Wake-up** |
| Operational Mode | 4 state indicators for cluster operational mode | Limited | Limited or Normal or Crank |
| Backtrack\_Cfg | State indicator for feature presence controlled via CAN at EOL at VO plant. | Use Stored Value | Use Stored Value |
| Backtrack\_RemainDis | remaining valid distance of Backtrack feature in m | 0x0 | Do not init |
| Backtrack\_GuidePopUp | This signal indicates the guide prompt once Backtrack ON via SoftButton/MainButton/Voice, which is dispalyed on IVI screen. E,g remind the driver to shift to gear N so handshake among ECU will execute. | 0x0 | Do not init |
| Backtrack\_CheckPopUp | This signal indicates the pre-condition prompt ,which is not met displayed on IVI screen once Backtrack ON via SoftButton/MainButton/Voice,  E.g remind the driver to closed the door so the feature could be activated.  This signal is differ from Backtrack\_MainEntryPopUp. Once all the condition met in Backtrack\_MainEntry, driver has the right to resolve isse e.g safey belt or doors issue | 0x0 | Do not init |
| Backtrack \_ActiveType\_Indicate | This signal indicates the different activation ways of the Backtrack. | 0x0 | Do not init |
| Backtrack\_TerminatePopup | This signal indicates the terminated condition of Backtrack feature. The feature will be deactived in a safet manner and driver will receive a rootcause via PopUp window last for 3 seconds  .  E.g If the driver don't close the door within 30 second in pause phase, the feature will be terminated and a popup window with root case will be given to driver | 0x0 | Do not init |
| Backtrack\_SuspendPopup | This signal indicates the pause condition of Backtrack feature. Driver has the right to eliminate the issue within 30s so the feature could be resumed noramlly.  e.g once doors is open, Backtrack will help driver to stop the vehicle safely and the feature remind driver to close the door before resume. | 0x0 | Do not init |
| Prk\_ExitButton | This signal indicates parking feature request for IVI to have function ON, include APA/AVM/Backtrack/HAVP. | 0x0 | Do not init |
| Prk\_Resume\_Req | Interruption conditions are met, prompting the HMI cut user to confirm the recovery pop-up window. | 0x0 | Do not init |
| Backtrack\_Start\_Sta | This signal indicates driver the status, if backtrack is ready to control the vehilce and the buttion is highlighted. | 0x0 | Do not init |
| Backtrack\_PageDisplay | RA main page display req | 0x0 | Do not init |
| Backtrack\_StateMachine | This signal indicates the state machine defined for Backtrack feature in ACU. | 0x0 | Do not init |
| SOA message | Input message from Ethernet from IPMB for Backtrack routine information. | 0x0 | Do not init |
| Veh\_V2\_Dsply | Transmission mode for display on instrument cluster or center stack. CAN signal from PCM | 0x0 | Do not init |
| TrnlpcDsplyMde\_D\_Actl | Transmission mode for display on instrument cluster or center stack. CAN signal from PCM | 0x0 | Do not init |
| IVI\_Backtrack\_AVMSoftButton | This signal indicates the soft button of Backtrack on APIM screen (in AVM), if user click this button, APIM will sent pressed status to IPMB. | 0x0 | Do not init |
| IVI\_Backtrack\_QuickPanel | This signal indicates the button of quick panel. If user click this button, APIM will send pressed status to IPMB. | 0x0 | Do not init |
| IVI\_Backtrack\_SoftButton | This signal indicates the soft button of Backtrack on APIM screen, if user click this button, APIM will sent pressed status to IPMB. | 0x0 | Do not init |
| Backtrack\_ActButton | The driver needs to press the backtrack activation button once prep-condtion met (after driver press the Backtrack\_SoftButton/AVMButton/VoiceActivationButton) | 0x0 | Do not init |
| IVI\_Backtrack\_VoiceActivationButton | This signal indicates the voice activation of Backtrack, if user requests Backtrack ON by voice, APIM will sent this signal to IPMB. | 0x0 | Do not init |
| Prk\_DriverResume\_Req | User clicks the Resume button | 0x0 | Do not init |
| IVI\_Backtrack\_Act\_Flag | This signal indicates whether the IVI related precondition be satisfied so that ACU shall transit state of Backtrack from OFF to Standby. | 0x0 | Do not init |
| IVI\_Launcher\_SoftButton | This signal indicates the soft button of Backtrack on APIM launcher page, if user click this button, APIM will sent pressed status to IPMB. | 0x0 | Do not init |
| IVI\_Backtrack\_Launcher\_SoftButton | This signal indicates the soft button of Backtrack on APIM launcher page, if user click this button, APIM will sent pressed status to IPMB. | 0x0 | Do not init |
| IVI\_Prk\_DispStat | This signal indicates which parking feature is displayed on APIM, include APA/AVM/Backtrack/HAVP | 0x0 | Do not init |
| Prk\_InfobookButtonStat | This signal indicates the status of Infobook button, if parking feature actived, IPMB will request APIM to display the button in grey. | 0x0 | Do not init |
| Backtrack\_Check\_X\_Status\_Flag | State variable used by Message Arbitrator | inactive | inactive |
| Backtrack\_Guide\_X\_Status\_Flag | State variable used by Message Arbitrator | inactive | inactive |
| Backtrack\_suspend\_X\_Status\_Flag | State variable used by Message Arbitrator | inactive | inactive |
| Backtrack\_Terminate\_X\_Status\_Flag | State variable used by Message Arbitrator | inactive | inactive |

Memory Storage Table 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter Name** | **Description** | **Range** | **Units** | **Resolution** | **Init Value** |
| Check\_ popup\_display\_Timer | Variable used to set amount of time before Check\_popup message off | 0-20 | Seconds | 1 | 3 |

System Accuracy

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

Self Test

None

Engineering Test Mode

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

Part II Performance

See individual Chime STSS modules.

Supported Diagnostic Trouble Codes (DTCs)

|  |  |  |
| --- | --- | --- |
| **DTC** | **Description** | **When Logged** |
| Cxxxxx | Lost communication with IPMB | Message missing for more than 5 seconds |
| Cxxxxx | Invalid Data Received From IPMB | XX signal value |

DID DExx:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Block**  **Num** | **Block Description** | **Byte(s)** | **Bits** | **State: Description** | **"0"** | **"1"** | **Default** | **Comments / Information** |
|  | PACKETED BLOCKS |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| $xx | Option Content (B&A) | \* | \* | Backtrack | Disabled | Enabled | Disabled | Disabled means the feature is not presented in the vehicle |
|  |  |  |  |  |  |  |  |  |

### Functional Safety Requirements

*No Functional Safety Requirements specified.*

### Other Requirements

*No Other Requirements specified.*

#### Design Requirements

*No Design Requirements specified.*

### Non-Functional Requirements

Operational Modes

|  |  |
| --- | --- |
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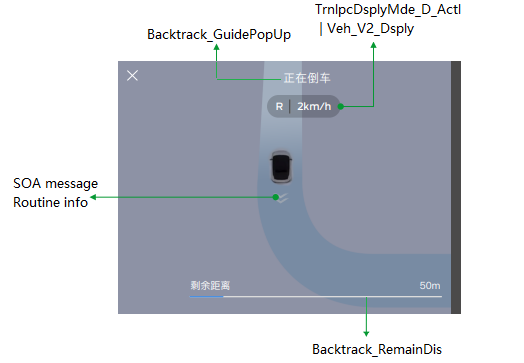
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**Backtrack Graphics**



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| Backtrack\_Cfg | State indicator for feature presence controlled via CAN at EOL at VO plant. | Use Stored Value | Use Stored Value |
| Backtrack\_RemainDis | remaining valid distance of Backtrack feature in m | 0x0 | Do not init |
| Backtrack\_GuidePopUp | This signal indicates the guide prompt once Backtrack ON via SoftButton/MainButton/Voice, which is dispalyed on IVI screen. E,g remind the driver to shift to gear N so handshake among ECU will execute. | 0x0 | Do not init |
| Backtrack\_CheckPopUp | This signal indicates the pre-condition prompt ,which is not met displayed on IVI screen once Backtrack ON via SoftButton/MainButton/Voice,  E.g remind the driver to closed the door so the feature could be activated.  This signal is differ from Backtrack\_MainEntryPopUp. Once all the condition met in Backtrack\_MainEntry, driver has the right to resolve isse e.g safey belt or doors issue | 0x0 | Do not init |
| Backtrack \_ActiveType\_Indicate | This signal indicates the different activation ways of the Backtrack. | 0x0 | Do not init |
| Backtrack\_TerminatePopup | This signal indicates the terminated condition of Backtrack feature. The feature will be deactived in a safet manner and driver will receive a rootcause via PopUp window last for 3 seconds  .  E.g If the driver don't close the door within 30 second in pause phase, the feature will be terminated and a popup window with root case will be given to driver | 0x0 | Do not init |
| Backtrack\_SuspendPopup | This signal indicates the pause condition of Backtrack feature. Driver has the right to eliminate the issue within 30s so the feature could be resumed noramlly.  e.g once doors is open, Backtrack will help driver to stop the vehicle safely and the feature remind driver to close the door before resume. | 0x0 | Do not init |
| Prk\_ExitButton | This signal indicates parking feature request for IVI to have function ON, include APA/AVM/Backtrack/HAVP. | 0x0 | Do not init |
| Prk\_Resume\_Req | Interruption conditions are met, prompting the HMI cut user to confirm the recovery pop-up window. | 0x0 | Do not init |
| Backtrack\_Start\_Sta | This signal indicates driver the status, if backtrack is ready to control the vehilce and the buttion is highlighted. | 0x0 | Do not init |
| Backtrack\_PageDisplay | RA main page display req | 0x0 | Do not init |
| Backtrack\_StateMachine | This signal indicates the state machine defined for Backtrack feature in ACU. | 0x0 | Do not init |
| SOA message | Input message from Ethernet from IPMB for Backtrack routine information. | 0x0 | Do not init |
| Veh\_V2\_Dsply | Transmission mode for display on instrument cluster or center stack. CAN signal from PCM | 0x0 | Do not init |
| TrnlpcDsplyMde\_D\_Actl | Transmission mode for display on instrument cluster or center stack. CAN signal from PCM | 0x0 | Do not init |
| IVI\_Backtrack\_AVMSoftButton | This signal indicates the soft button of Backtrack on APIM screen (in AVM), if user click this button, APIM will sent pressed status to IPMB. | 0x0 | Do not init |
| IVI\_Backtrack\_QuickPanel | This signal indicates the button of quick panel. If user click this button, APIM will send pressed status to IPMB. | 0x0 | Do not init |
| IVI\_Backtrack\_SoftButton | This signal indicates the soft button of Backtrack on APIM screen, if user click this button, APIM will sent pressed status to IPMB. | 0x0 | Do not init |
| Backtrack\_ActButton | The driver needs to press the backtrack activation button once prep-condtion met (after driver press the Backtrack\_SoftButton/AVMButton/VoiceActivationButton) | 0x0 | Do not init |
| IVI\_Backtrack\_VoiceActivationButton | This signal indicates the voice activation of Backtrack, if user requests Backtrack ON by voice, APIM will sent this signal to IPMB. | 0x0 | Do not init |
| Prk\_DriverResume\_Req | User clicks the Resume button | 0x0 | Do not init |
| IVI\_Backtrack\_Act\_Flag | This signal indicates whether the IVI related precondition be satisfied so that ACU shall transit state of Backtrack from OFF to Standby. | 0x0 | Do not init |
| IVI\_Launcher\_SoftButton | This signal indicates the soft button of Backtrack on APIM launcher page, if user click this button, APIM will sent pressed status to IPMB. | 0x0 | Do not init |
| IVI\_Backtrack\_Launcher\_SoftButton | This signal indicates the soft button of Backtrack on APIM launcher page, if user click this button, APIM will sent pressed status to IPMB. | 0x0 | Do not init |
| IVI\_Prk\_DispStat | This signal indicates which parking feature is displayed on APIM, include APA/AVM/Backtrack/HAVP | 0x0 | Do not init |
| Prk\_InfobookButtonStat | This signal indicates the status of Infobook button, if parking feature actived, IPMB will request APIM to display the button in grey. | 0x0 | Do not init |
| Backtrack\_Check\_X\_Status\_Flag | State variable used by Message Arbitrator | inactive | inactive |
| Backtrack\_Guide\_X\_Status\_Flag | State variable used by Message Arbitrator | inactive | inactive |
| Backtrack\_suspend\_X\_Status\_Flag | State variable used by Message Arbitrator | inactive | inactive |

Memory Storage Table 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Parameter Name** | **Description** | **Range** | **Units** | **Resolution** | **Init Value** |
| Check\_ popup\_display\_Timer | Variable used to set amount of time before Check\_popup message off | 0-20 | Seconds | 1 | 3 |

System Accuracy

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

Self Test

None

Engineering Test Mode

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

Part II Performance

See individual Chime STSS modules.

Supported Diagnostic Trouble Codes (DTCs)

|  |  |  |
| --- | --- | --- |
| **DTC** | **Description** | **When Logged** |
| Cxxxxx | Lost communication with IPMB | Message missing for more than 5 seconds |
| Cxxxxx | Invalid Data Received From IPMB | XX signal value |

DID DExx:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Block**  **Num** | **Block Description** | **Byte(s)** | **Bits** | **State: Description** | **"0"** | **"1"** | **Default** | **Comments / Information** |
|  | PACKETED BLOCKS |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| $xx | Option Content (B&A) | \* | \* | Backtrack | Disabled | Enabled | Disabled | Disabled means the feature is not presented in the vehicle |
|  |  |  |  |  |  |  |  |  |

### Functional Safety Requirements

*No Functional Safety Requirements specified.*

### Other Requirements

*No Other Requirements specified.*

#### Design Requirements

*No Design Requirements specified.*

# Open Concerns

*No Open Concerns (Ford Modeling Action Items) in the Magicdraw model.*

# Revision History

No Revision History found.

## Template Revisions

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Version | Rev. | Date | Description | Responsible |
| 1 | 0 | 2016-02-26 | Initial version, derived form FDS | Jbaden1 |
| 1 | 1 | 2016-02-26 | Word properties corrected | Jbaden1 |
| 1 | 2 | 2016-03-10 | Clean up of ocument meta data (Word properties) | Jbaden1 |
| 1 | 3 | 2016-03-22 | * Footer formating corrected (Issue 19) * “Constraints” chapter renamed to “Input Requirements” (Issue 20) | Jbaden1 |
| 1 | 4 | 2016-04-20 | * Broken Wiki links repaired | Jbaden1 |
| 2 | 0 | 2016-06-10 | * Document metadata adapted. Prepared for new macros * DTC table removed * HMI function added as a chapter (details still to be refined) * Signal / Parameter IDs column deleted interface tables | Jbaden1 |
| 2 | 1 | 2016-07-14 | * Converted to SysML diagrams * HMI section further elaborated * Template version added to footer * Dedicated Startup / Shutdown sections removed (only hints added) * Data Dictionary reworked and Signal / Parameter IDs column re-introduced | Jbaden1 |
| 2 | 2 | 2016-12-07 | * Minor formatting changes | Jbaden1 |
| 3 |  |  | Skipped to synchronize with Specification\_Macros.dotm |  |
| 4 |  |
| 5 | 0 | 2017-01-13 | * Meta data updated for specification macros, version 3.1 * SW Unit chapter removed for the time being * Green boxes added for user hints | Jbaden1 |
| 5 | 1 | 2017-01-18 | * Some additional hints. * Hyperlinks highlighted in hints | Jbaden1 |
| 6 | 0 | 2017-04-28 | * Editorial change. Hints added to chapter 4.1.4 * Chapter “Traceability Matrix” removed | Jbaden1 |
| 6 | 0 | 2018-04-28 | * CR69/63: New chapters added for Functional Safety (FTTI and Technical Safety Requirements) * CR53: New coversheet + additional meta-data * CR76: merge sections for configuration and for calibration parameters into one on Function Level | Jbaden1 |
| 6 | 0 | 2018-08-06 | * CR66: Fix version numbering in footer of Function Spec | Jbaden1 |
| 6 | 0 | 2018-09-28 | * Broken links to RE Wiki repaired | Jbaden1 |
| 6 | 0 | 2018-10-31 | * Minor corrections on cover sheet and in footer to be more GIS compliant and VSEM aligned * “Overview” and “Description” exchanged in headings (following common sense) | Jbaden1 |
| 6 | 0 | 2018-11-12 | * Explanatory text in Variants” section revised * Functional Safety modifications as agreed with FuSa core team (Baseline: November 2018 Dearborn On-Site) | Jbaden1 |
| 6 | 0b | 2019-01-02 | * Editorial changes (in “Variants” section) | Jbaden1 |
| 6 | 0b | 2019-01-21 | * Template Id set to 2 | Jbaden1 |
| 6 | 0b | 2019-03-22 | * Chapter “Decomposed FSRs” renamed to Functional Safety Requirements” A new chapter “ASIL Decomposition of of Functional Safety Requirements” added as a subsection to that chapter. | Jbaden1 |
| 6 | 0b | 2019-04-05 | * Some wording in ASIL decomposition table modified. Description of fields in that table improved. | Jbaden1 |
| 6 | 0b | 2019-04-05 | * ASIL decomposition table removed (ASIL decomposition only allowed on Feature Level or on Component Level in the FIS or ECU Functional Spec) | Jbaden1 |
| 6 | 0b | 2019-07-02 | * "Important" box added on cover sheet which points to the macros * Chapters “References” and “Glossary” moved back up to section “Introduction * Chapter “Inputs Requirements”” reworked | Jbaden1 |
| 6 | 0b | 2019-09-09 | * Function Spec derived from Function Group Spec, version 6.b by removing those sections, which make no sense when specifying a single function (driven by AV team request). * Chapter 2.4 has now one section per modeling technique again. This is to allow more intuitive tailoring of the section (driven by AV team request). | Jbaden1 |
| 6 | 0c | 2019-05-11 | * Copyright notice shortened and moved to cover sheet and added to footer (to be compliant [with Ford copyright guidelines](http://www.fgti.ford.com/client/NewFGTI/CopyrightNotice.html)) * Term “Disclaimer” no longer used for what is actually only a copyright notice | Jbaden1 |
| 6 | 0c | 2019-12-05 | * Upstream Documents section added to “Input Requirements/Documents” table * Custom style table formatting removed | Jbaden1 |
| 6 | 1a | 2019-12-10 | * Refinement of FSRs no longer supported by Function Specification (as requested by Functional Safety team). FSR chapter just forwards FSRs from the Feature Docs 1:1 to the Implemented Function(s). * Version number renamed from 6.0c to 6.1 due to Functional Safety changes | Jbaden1 |
| 6 | 1a | 2020-03-09 | * Missing document property “LatestSigMappingID” and “LatestAisInterfaceID” added * doc property “CopyrightDate” re-formatted to text and copyright date field in footer corrected * Version numbering re-initialized as 0.1 * Init value of version/revision date set to “yyyy/mm/dd” instead of “yyyy-mm-dd” to be in line with the “Edit Document Property” dialog * Copyright date field on cover sheet corrected | Jbaden1 |

# Appendix

## Data Dictionary

### Logical Signals

*No “Logical Interface Table” or “Logical Signals” tables found.*

### Logical Parameters

(No parameters have been defined)

### Encoding Types

Document ends here.