# Overview

In a vehicle equipped with trailer brake module, this feature will allow the driver to toggle the status of trailer brakes, between electric only and electric over hydraulic. The driver can also select trailer brake controller effort (Low/Medium/High) .

# Architectural Design

## REQ-392665/A-Trlr Brake Client

Trailer Brake Client is the module that provides feature interface to the user. This documentation provides requirements for this module.

## REQ-392666/A-Trlr Brake Server

Trailer Brake Server is the module or modules that provide feature operation, such as various can signals or data that is used by the feature

## Logical Signal Mapping

The logical methods mentioned below shall refer to Can signal names. The logical names shall be mapped to their actual CAN signal names. Please use the table below to perform the mapping. The InfoCAN database file is the master file for the actual CAN signal names.

|  |  |
| --- | --- |
| **Logical Name** | **CAN Signal Name** |
| LTBrkMdeSt | TrlrBrkMde\_D\_Actl |
| LTBrkInSt | TrlBrkInitOut\_D\_Stat |
| LTBrkMdeRq | TrlrBrkMde\_D\_Rq |
| LTBrkInRq | TrlBrkInitOut\_D\_Rq |
| LignSt | Ignition\_Status |

## REQ-392667/A-Trlr Brake Client Tx

### REQ-392671/A-LTBrkMdeRq

LTBrkMdeRq: This signal is sent from the client to the server to indicate the driver selection for brake type.

|  |  |
| --- | --- |
| **Comments** | **State Encoded** |
| Electric mode selected | (0x0) |
| ElectricOverHydraulic mode selected | (0x1) |

### REQ-392672/A-LTBrkInRq

LTBrkInRq: This signal is sent form the client to the server. It indicates user selected brake magnitude.

|  |  |
| --- | --- |
| **Detail** | **State Encoded** |
| Null | (0x0) |
| Light mode selected | (0x1) |
| Medium mode selected | (0x2) |
| Heavy mode selected | (0x3) |

## REQ-392668/A-Trlr Brake Client Rx

### REQ-392669/A-LTBrkMdeSt

LTBrkMdeSt: This signal is sent from the server to the client to indicate the trailer brake type.

|  |  |
| --- | --- |
| **Comments** | **State Encoded** |
| Electric | (0x0) |
| Electric\_Over\_Hydraulic | (0x1) |

### REQ-392670/A-LTBrkInSt

LTBrkInSt: Is sent from the server to the client. It indicates the brake strength.

|  |  |
| --- | --- |
| **Detail** | **State Encoded** |
| Null | (0x0) |
| Light mode selected | (0x1) |
| Medium mode selected | (0x2) |
| Heavy mode selected | (0x3) |

### REQ-392673/A-LignSt

LignSt: This signal is received by the client. It provides vehicle power state.

|  |  |
| --- | --- |
| Signal Parameter | Parameter Description |
| 0x0 | Unknown |
| 0x1 | Off |
| 0x2 | Accessory |
| 0x4 | Run |
| 0x8 | Start |
| 0xF | Invalid |

# Functional Requirements

## FUN-REQ-392674/A-Trailer Brake Operation

### Requirements

#### REQ-392675/A-System Accuracy

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

#### REQ-392676/A-Power Mode Operation

The feature should be accessible for interaction to the user while signal IgnSt is 0x4 (Run) or 0x8 (Start).

#### REQ-392678/A-Feature Status

The client shall update the user with the information that server transmits through the signals LTBrkMdeSt and LTBrkInSt . The client shall display is user friendly readable format the contents of these signals.

#### REQ-392679/A-Feature Change Request

The client shall give the user the ability to modify content of the signals LTBrkMdeRq and LTBrkInRq. The user should be able to select any of the options that the signals provide except the Null state of the signal LTBrkInRq (0x0) .

#### REQ-392677/A-Send User Requested Data

Upon user requesting any changes in feature through the proper interface, the client shall transmit updated signal status to the server.

### Use Cases

#### UC-REQ-392680/A-Trailer Brake Mode Change

|  |  |
| --- | --- |
| **Actors** | User |
| **Pre-conditions** | Feature is working. One of the options of trailer brake mode is already displaying as active |
| **Scenario Description** | User selects the other available option of the brake type. |
| **Post-conditions** | Server changes the brake mode type and updates the client accordingly. |
| **List of Exception Use Cases** |  |
| **Interfaces** | Client HMI |

#### UC-REQ-392681/A-Trailer Brake Init Change

|  |  |
| --- | --- |
| **Actors** | User |
| **Pre-conditions** | Feature is working. Some brake magnitude is already selected and showing in client HMI. |
| **Scenario Description** | User changes the brake magnitude by selecting another value from the available options. |
| **Post-conditions** | Server changes the brake values and updates the client accordingly. |
| **List of Exception Use Cases** |  |
| **Interfaces** | Client HMI interface. |

# Appendix: Reference Documents

|  |  |
| --- | --- |
| 1 | Trailer Brake Mode Control Function - CGEA1.3 |
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