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**Vehicle Control**

**Document Owner**

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# 需求概述 / Requirements Overview

## 背景价值 / Background Value

在系统启动的前提下，允许用户对天窗、侧窗、座椅、氛围灯等各车辆模块进行控制，如打开天窗、设置氛围灯颜色、调节座椅温度等，以可视化的方式，提升用户体验。

When the system is at work, the user is allowed to control such vehicle modules as the sunroof, side window, seat and ambient light, for example, open the sunroof, set the color of ambient light and adjust the seat temperature, all which are presented in a visible manner to enhance the user experience.

本文档主要从功能层面上定义整车控制能力，用户可以通过触控或语音的方式进行车辆控制，具体操作方式以交互设计为准。关于系统支持的语音车辆控制指令及范围，参考PIS2030.

This Document mainly defines the vehicle control capability in terms of functions. The user is allowed to control the vehicle by means of touch or voice. The specific operation mode shall be subject to the interaction design. See PIS2030 for voice control commands of the vehicle and range supported by the system.

特别地，用户在离车情况下，通过App等方式设置空调、车窗等的操作属于远程车辆控制，不属于本文档的定义范围。这部分功能请参考T-Box模块的功能定义。

In particular, the operations performed by the user not in the car on air conditioner, window, etc. by App and other means fall within the range of remote vehicle control and are excluded from the range as defined herein. See T-Box Module for the function definition to this part of functions.

## 名词解释/ Glossary of Terms Used in this Document

以下的名词在本文档中被使用：

The following terms are used throughout this document:

* ICEI – Clea Family Infotainment Connectivity Electrical Interface Spec
* KPI – Key Performance Indicator
* VC – Virtual Control
* VAC – Voice Assistant Control
* SRC – Sunroof Control

## 车控总线信号说明/Signals Definition of Vehicle Control

本章节将说明车控信号的模板和信号的使用说明：

This section will explain the template of the vehicle control signal and the instructions for using the signal:

|  |  |
| --- | --- |
| **信号/Signals** | **使用说明/Description** |
| Configuration | 配置信息，VCU接收的信号，车控中使用该信号表示车辆是否配置支持娱乐系统控制的模块，通常为BLN型信号；当对应值为False时，娱乐系统中的控制项应隐藏；  Configuration information, signal received by VCU, which is used in vehicle control to indicate whether the vehicle is equipped with modules supporting entertainment system control, usually BLN type signal; When the corresponding value is False, the control items in the entertainment system should be hidden; |
| Available | 可控信息，VCU接收的信号，该信号表示当前时刻对应的模块是否可以被VCU控制，当对应模块被高优先级控制器占用或者模块故障，这个值为False；此时，娱乐系统的虚拟按键控制和语音助手控制均无效，需要以恰当的方式提示用户当前无法进行控制操作；  Controllable information, a signal received by the VCU, which indicates whether the corresponding module at the current time can be controlled by the VCU. When the corresponding module is occupied by a high-priority controller or the module fails, this value is False；; At this time, the virtual key control and voice assistant control of the entertainment system are invalid, and the user needs to be prompted in an appropriate way that the control operation cannot be carried out at present; |
| Request | 请求信号，VCU发送的信号，该信号用于VCU发送请求；  A request signal, a signal sent by the VCU, the signal being used by the VCU to send a request; |
| Remind/Indication | 提示信息，VCU接收的信号，该信号用于模块提示用户进行正确的操作；  Prompt information, the signal received by VCU, which is used by the module to prompt the user to carry out correct operation; |
| Status | 状态信息，VCU接收的信号，该信号用来表示对应模块的状态；  State information, a signal received by VCU, which is used to indicate the state of the corresponding module; |
| Validity | 状态有效性信息，VCU接收的信号，该信号用来表示模块反馈的信号的有效性；此时娱乐系统的可视化页面需要提示用户，当前状态信息无效。  Status validity information, a signal received by VCU, which is used to indicate the validity of the signal fed back by the module; At this time, the visual page of the entertainment system needs to prompt the user, and the currently status information is invalid. |

## 文档的适用范围/Scope of Application of Documents

本文档中提及的虚拟按键控制仅适用于CLEA车型和Global B-Buick中国区车型，对于文档中提及的语音助手控制的相关描述，同时适用于Global B中国区的所有车型。

The virtual key control mentioned in this document is only applicable to CLEA models and Global B-Buick models in China. The related description of voice assistant control mentioned in this document is also applicable to all models in Global B China.

## 数据库版本/Database Version

本文档当前版本对应的不同架构中的数据库版本为：

The database versions in different architecture corresponding to the current version of this document are:

* CLEA：~~23.40~~ 23.42
* Global-B：23.23.157

## 参考文档/Reference Documents

* FG.03.02.01 – Lighting Virtual Switches
* FG.03.02.02 – Chassis Virtual Switches
* FG.03.02.07 – Active Safety Virtual Switches

# 需求列表/ List of Requirements

需求列表详见Vehicle Control List，其中各个功能项在项目中的配置信息仅供参考，具体以实际标定为准。

Please refer to the Vehicle Control List for the List of requirements. The configuration information of each function item in the project is for reference only, and the actual calibration shall prevail.

表格中标注“Y”的功能项，均需要在对应项目中支持；标注“Reserved”的功能项，需要在对应项目中支持，仅做预留对用户不可见；其他标识不做需求输入。

Every function item marked with “Y” in the table shall be supported in the corresponding program; that marked with “Reserved” shall also be supported in the corresponding program, which, however, shall serve as reservation and be invisible to the user; other marks are exempted from input of requirements.

具体功能需求表述参考第3章需求表述章节。

See the Chapter 3 Requirement Description for specific definitions to functional requirements.



# 需求描述

本文档定义娱乐系统支持的整车控制功能全集。系统需要根据第2章节的需求列表针对不同车型需求实现相应功能。但由于各车型配置不同，支持的车辆控制功能也不完全相同，（例如：在某项目上车窗控制功能在高配车型上支持所有车窗控制，次高配配车型中仅支持前排车窗控制，系统需要在相应车型中隐藏后排车窗的控制功能。若有低配车型不支持车窗控制，系统需要在相应车型中隐藏车窗控制功能。）系统需要根据标定动态判断当前车辆需要显示的功能，该标定需要根据车型配置分别针对每一个车控功能模块进行标定。

This Document defines the complete set of vehicle control functions supported by the Infotainment System. The system, based on the List of Requirements as given in Chapter 2, shall implement the corresponding functions as required by different models. However, the supported vehicle control function varies with the configuration of different models: For example, on a certain program, the window control function supports the control of all windows in the model with high configuration; however, it supports the control of front-row windows only in the model with sub-high configuration so that the system shall hide the control function of rear-row windows in the corresponding model. When the model with low configuration does not support the window control, the system shall hide the window control function in the corresponding model. The system shall dynamically judge, based on the calibration, the function to be displayed for the current vehicle. This calibration needs to calibrate each vehicle control module according to vehicle configuration.

娱乐系统提供某项车辆控制功能，不代表该功能的实体物理按键（如开关车窗、座椅调温等硬按键）被取消。如果物理按键存在，对应的娱乐系统控制项可作为冗余的虚拟按键；如果物理按键不存在，对应的娱乐系统控制项则作为唯一的虚拟按键存在。

That the Infotainment System provides a vehicle control function does not mean removal of the physical key (such as hard keys of window On/Off and seat temperature adjustment) to such function. In the presence of a physical key, the corresponding control item of Infotainment System shall be taken as a redundant virtual key; in the absence of a physical key, the corresponding control item of Infotainment System shall be taken as the only virtual key.

系统不负责物理按键和虚拟按键之间的仲裁，其仲裁逻辑由各整车控制模块定义。通常情况下，当物理按键与虚拟按键同时被触发时，物理按键优先级最高。

The system does not take care of the arbitration between physical keys and virtual keys, and the arbitration logic for which is defined by the control module of each vehicle. Under normal circumstances, when a physical key is triggered simultaneously with a virtual key, the former shall enjoy the highest priority.

本文档中定义的功能涉及到的所有总线接口定义参考ICEI文档。当前控制模块状态均通过对应模块进行保存，娱乐系统需通过总线信号获取当前模块状态并正确显示。

See the ICEI document for all bus interface definitions and signal transmit-receive logics involved in the functions as defined herein. The current control module status is saved by the corresponding module while the Infotainment System shall acquire the current module status through the bus signal and display it correctly.

由于支持车辆控制的各个模块的工作条件不同，部分功能需要在发动机启动状态下工作，因此当娱乐系统启动时，若当前车辆控制模块不支持用户操作，系统需要对用户进行提示。

The operating conditions of various modules supporting the vehicle control are different and some functions are able to work properly only when the engine is running; therefore, when the Infotainment System is activated, provided that the current vehicle control module does not allow user operations, the system shall prompt the user.

## 天窗系统/Sunroof

支持控制的天窗主要分为两类：一片式天窗，两片式天窗。可分别参考示意图1，示意图2。

The control-supported sunroof is mainly divided into two categories, namely the one-piece sunroof and two-piece sunroof, as shown in the Schematic Diagram 1 and 2 respectively.

一片式天窗通常为一块电动玻璃，支持娱乐系统对其进行通风/打开/关闭的控制。

The one-piece sunroof is usually a piece of power-driven glass, supporting the Infotainment System to control its ventilation/opening/closing.

两片式天窗分为前天窗和后天窗，通常情况下前天窗为电动玻璃，支持娱乐系统对其进行通风/打开/关闭的控制，后天窗为固定玻璃，不支持控制功能。

The two-piece sunroof consists of a front sunroof and a rear sunroof; the front sunroof is usually a piece of power-driven glass, supporting the Infotainment System to control its ventilation/opening/closing; the rear sunroof is a piece of fixed glass and thus does not support the control function.



Figure 1 一片式天窗



Figure 2 两片式天窗

以上仅为天窗系统的介绍，具体天窗控制功能逻辑请参考以下章节。

The above only introduces the sunroof. See the following for the specific control function logics of sunroof.

需要通过标定P\_VEHICLE\_CONTROL\_SUNROOF\_CONFIGRATION确认车辆是否支持控制天窗的控制。

当标定值为0 "VC\_Sunroof\_None" 时，表示车辆的车窗不支持VCU控制；

当标定值为1 "VC\_Sunroof\_Comfort\_Control" 时，表示车辆的车窗支持VCU非百分比控制；

当标定值为2 "VC\_Sunroof\_Percentage\_Control" 时，表示车辆的车窗支持VCU百分比控制；

### 天窗系统控制/Sunroof Control

系统支持用户对天窗系统中配置电动天窗的部分进行通风/打开/关闭的操作。对于打开/关闭动作，系统支持用户通过操作使天窗运动至任意指定位置。其中通风状态是指天窗翘起时的状态，通常天窗从关闭到打开需要先经过通风状态。

The system allows the user to ventilate/open/close the power-driven sunroof configured in the sunroof system. For the operation of On/Off, the system supports the user to move, by operations, the sunroof to any desired position. Furthermore, the status of ventilation refers to that in which the sunroof is tilted up; usually, before being opened, the sunroof shall go through the status of ventilation first.

1. 具体操作方式以交互设计为准。/The specific operation mode shall be subject to the interaction design.
2. 系统支持天窗由关闭状态打开至任意位置（包括通风状态、部分开启和完全开启）。/The system supports the opening of sunroof from the OFF status to any position (including ventilation status, partial opening and full opening).
3. 系统支持天窗由通风状态打开至任意位置（包括关闭状态、部分开启和完全开启）。/The system supports the opening of sunroof from the ventilation status to any position (including the OFF status, partial opening and full opening).
4. 系统支持天窗由打开状态（包括部分开启和完全开启）移动至任意位置（包括通风、部分开启和完全开启）。/ The system supports the movement of sunroof from the ON status (including partial opening and full opening) to any position (including ventilation, partial opening and full opening).

#### 天窗控制支持的用户操作/Operations of Sunroof Control

天窗系统支持用户通过娱乐系统进行以下操作：

Operations of sunroof control as bellow:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开天窗/Open Sunroof | VC + VAC | VC + VAC |
| 关闭天窗/Close Sunroof | VC + VAC | VC + VAC |
| 移动天窗至通风位置/Move Sunroof to ventilation position | VC + VAC | VC + VAC |
| 百分比控制，步进值5% /Percentage Control, Step value 5% | VC + VAC | N/A |
| 百分比控制，步进值10% /Percentage Control, Step value 10% | N/A | VC + VAC |
| 停止/Stop | VC Only | N/A |

#### 天窗状态的可视化/Sunroof Visualization

天窗的状态可视化需要支持以下信息显示：

Sunroof Visualization Display support as bellow:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 天窗的具体位置/Sunroof Position | Yes | Yes |
| 天窗的运动状态/Motion State of Sunroof | Yes | Yes |

#### 天窗系统控制的功能安全要求/Functional Safety Requirements for Sunroof System Control

天窗的娱乐系统虚拟按键控制和语音助手控制的功能安全等级为：QM.

The functional safety levels of the virtual control and voice assistant control of the infotainment system of the sunroof control are as follows: QM.

#### 天窗系统控制的整车电源模式/Vehicle Power Mode of Sunroof Controls

天窗系统的虚拟按键控制和语音助手控制的整车电源模式为：

The power mode of virtual control and voice assistant control of the sunroof are as follows:

1. Power Mode ACC
2. Power Mode RUN
3. Power Mode RAP

#### 天窗系统控制性能要求/KPI for Sunroof Control

天窗系统控制需要满足以下要求：

Sunroof control shall meet the following requirements：

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN,  Power Mode RAP, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮  The user clicked the virtual button on the screen |
| 计时结束条件  The KPI timer stop condition | 天窗模块开始执行按钮对应的指令  The sunroof module starts to execute the command corresponding to the button |

**天窗状态的可视化性能要求：**

**Visual Performance Requirements for Sunroof State:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN,  Power Mode RAP, |
| 计时起始条件  The KPI timer start condition | 天窗模块开始运动  Sunroof module starts to move |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中的可视化天窗状态开始变化  The state of the visual sunroof in the infotainment system begins to change |

#### 天窗控制的信号/Signals for Sunroof Control

以下是天窗控制功能中使用到的信号列表：

Signals for sunroof control as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Sunroof Configuration | Infotainment Sunroof Motion Control Available |
| Available | Sunroof Control Available | Infotainment Sunroof Motion Control Allowed |
| Request | Sunroof Control Request | N/A |
| Sunroof Percentage control Request | HMI General Information 3 Protected : Infotainment Sunroof Position Request |
| Status | Sunroof position status | N/A |
| Sunroof Percentage Position Status | Sunroof Actual Position |
| Validity | Sunroof Percentage Position Status Validity | N/A |

##### 天窗控制CELA信号/CLEA Signal List

CLEA 使用的信号如下：

Signals for CLEA as Bellow:

###### 天窗的配置信息/Sunroof Configuration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Sunroof Configuration | 1 | BLN | N/A | $0=False; $1=True |

这个信号是由BCM发送给VCU的，用于提供天窗的配置信息。

This signal sent by BCM to VCU to provide the sunroof configuration information.

当***Sunroof Configuration*** =$0 False时，表示车辆没有天窗或者配置的天窗不支持娱乐系统控制；

When ***Sunroof Configuration*** =$0 False, no sunroof or do not support VCU control;

当***Sunroof Configuration*** =$1 True时，表示车辆配置的天窗支持娱乐系统进行控制；

When ***Sunroof Configuration*** =$1 True, support VCU control;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 天窗模块当前是否可被控制/ Availability of Sunroof Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Sunroof Control Available | 1 | BLN | N/A | $0=False; $1=True |

这个信号用于表示当前天窗是否可以被娱乐系统控制。

This signal is used to indicate whether the current sunroof can be controlled by the entertainment system.

当时***Sunroof Control Available***=$0 False，表示车辆的天窗不可以被娱乐系统控制；

When ***Sunroof Control Available***=$0 False, the vehicle sunroof unable be controlled;

当时***Sunroof Control Available***=$1 True，表示车辆的天窗可以被娱乐系统控制；

When ***Sunroof Control Available***=$1 True, vehicle sunroof can support sunroof control;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对天窗的控制请求/Control Request for Sunroof

**常规控制/Routine Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Sunroof Control Request | 3 | ENM | N/A | $0=No Action;  $1=Comfort Close;  $2=Comfort Open;  $3=Vent  $4=Stop |

当车辆的天窗不支持百分比控制的时候，娱乐系统需要发送信号***Sunroof Control Request***给BCM，BCM在收到信号***Sunroof Control Request***后，转发给SRC，这时候天窗会执行相应的指令。

When the sunroof does not equipped with percentage control, VCU shall send ***Sunroof Control Request*** to send instruction to BCM. After BCM received ***Sunroof Control Request*** and then transfer to sunroof SRC, the sunroof will do the relative process.

当***Sunroof Control Request*** =$0 No Action时，默认发送的值，表示没有请求；

When ***Sunroof Control Request*** =$0 No Action, Default value;

当***Sunroof Control Request*** =$1 Comfort Close时，请求天窗完全关闭；

When ***Sunroof Control Request*** =$1 Comfort Close, Let the sunroof fully close;

当***Sunroof Control Request*** =$2 Comfort Open时，请求天窗完全打开；

When ***Sunroof Control Request*** =$2 Comfort Open, Let the sunroof fully open;

当***Sunroof Control Request*** =$3 Vent时，请求天窗移动到通风模式的位置；

When ***Sunroof Control Request*** =$3 Vent, Let the sunroof move to vent position;

当***Sunroof Control Request*** =$4 Stop motion时，请求天窗停止移动；

When ***Sunroof Control Request*** =$4 Stop motion, Let sunroof stop motion;

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**百分比控制/Percentage Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Sunroof Percentage control Request | 5 | ENM | N/A | $00=No Request;  $01=0%;  $02=5%;  $03=10%;  ……  $15=100%;  $16~$1F Reserved |

当天窗支持百分比控制的时候，娱乐系统需要发送信号***Sunroof Percentage control Request***给BCM，BCM在收到信号***Sunroof Percentage control Request***后将其转发给SRC，天窗执行相应的动作。

When the sunroof equipped with percentage control, VCU shall send ***Sunroof Percentage control Request*** to send instruction to BCM. After BCM received ***Sunroof Percentage control Request*** and then transfer to sunroof SRC, the sunroof will do the relative process.

当***Sunroof Percentage control Request*** = $1, 0% 时，表示请求天窗完全关闭；

When ***Sunroof Percentage control Request*** = $1, 0%, the sunroof move to fully closed.

当***Sunroof Percentage control Request*** = $X, (X-1)\*5% 时，表示请求天窗移动到 (X-1)\*5%的位置。

When ***Sunroof Percentage control Request*** = $X, (X-1)\*5%, sunroof move to (X-1)\*5%.

当***Sunroof Percentage control Request*** = $15, 100%时，表示请求天窗完全打开。

When ***Sunroof Percentage control Request*** = $15, 100%, the sunroof move to fully open.

**备注：**对天窗的控制精度为5%，所以实质的控制值是0%，5%，10%...

**Note:** The minimum resolution is 5%, so the values X% is 0%, 5%, 10%...

当没有请求的时候，娱乐系统发送的信号***Sunroof Percentage control Request***的值应该为$0.

When there is no action taken, the value of ***Sunroof Percentage control Request*** from VCU is send by $0.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 天窗状态反馈/Sunroof State Feedback

**位置信息和运动状态/Position and Motion State**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Sunroof position status | 3 | ENM | N/A | $0=FULLY\_CLOSED;  $1=FULLY\_OPEN;  $2=VENT;  $3=COMFORT\_OPEN\_POSITION;  $4=Reserved;  $5=CLOSING;  $6=OPENING;  $7=PARTIALLY\_OPEN |

这个信号是BCM发送给娱乐系统的，它表示天窗的状态。

This signal sent by BCM to VCU. It shows the sunroof Status.

当***Sunroof Position Status*** =$0 FULLY\_CLOSED时，表示天窗是静止的，且天窗处于完全打开的状态；

When ***Sunroof Position Status*** =$0 FULLY\_CLOSED, The sunroof is not in motion. The sunroof position is fully close;

当***Sunroof Position Status*** =$1 FULLY\_OPEN时，表示天窗的是静止的，且天窗处于完全打开的状态；

When ***Sunroof Position Status*** =$1 FULLY\_OPEN, The sunroof is not in motion. The sunroof position is fully open;

当***Sunroof Position Status*** =$2 VENT时，表示天窗的是静止的，并且天窗处于通风位置；

When ***Sunroof Position Status*** =$2 VENT, The sunroof is not in motion. The sunroof position is vent;

当***Sunroof Position Status*** =$3 COMFORT\_OPEN\_POSITION时，信号预留；

When ***Sunroof Position Status*** =$3 COMFORT\_OPEN\_POSITION, Reserved;

当***Sunroof Position Status*** =$4 Reserved时，信号预留；

When ***Sunroof Position Status*** =$4 Reserved, Reserved;

当***Sunroof Position Status*** =$5 CLOSING时，表示天窗正在关闭；

When ***Sunroof Position Status*** =$5 CLOSING, The sunroof is closing;

当***Sunroof Position Status*** =$6 OPENING时，表示天窗正在打开；

When ***Sunroof Position Status*** =$6 OPENING, The sunroof is opening;

当***Sunroof Position Status*** =$7 PARTIALLY\_OPEN时，表示天窗的静止的，并且天窗处于部分开启的状态；

When ***Sunroof Position Status*** =$7 PARTIALLY\_OPEN, The sunroof is not in motion. The sunroof position is partially open;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**百分比位置/Percentage Position**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Sunroof Percentage Position Status | 7 | UNM | 0-100% | E=N\*1.0 |

当车辆配备支持百分比控制的天窗BCM反馈信号***Sunroof Percentage Position Status***给娱乐系统。

BCM will send back ***Sunroof Percentage Position status*** to VCU when sunroof equipped with percentage control.

当***Sunroof Percentage Position Status Validity*** = $0 valid,时，信号***Sunroof Percentage Position Status***可以用于表示天窗的百分比位置。

When ***Sunroof Percentage Position Status Validity*** = $0 valid, ***Sunroof Percentage Position Status*** will indicate the status of sunroof percentage position.

当***Sunroof Percentage Position Status*** = 0% 时，表示天窗完全关闭；

When ***Sunroof Percentage Position Status*** = 0%, the sunroof is fully closed.

当***Sunroof Percentage Position Status*** = n%, 时，表示天窗打开到n%的位置；

When ***Sunroof Percentage Position Status*** = n%, the sunroof is open to n%.

当***Sunroof Percentage Position Status*** = 100% 时，表示天窗完全打开；

When ***Sunroof Percentage Position Status*** = 100%, the sunroof is fully open.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**百分比位置信息有效性/Percentage Position Information Validity**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Sunroof Percentage Position Status Validity | 1 | ENM | N/A | $0 = Valid, $1 = Invalid |

基于信号***Sunroof Percentage Position Status Validity***的值，娱乐系统展示天窗对应的百分比位置。

Based on the value of ***Sunroof Percentage Position Status Validity***, VCU shows the related display of Sunroof Percentage position status.

当信号***Sunroof Percentage Position Status Validity*** = $0 valid时，表示信号***Sunroof Percentage Position Status***有效，娱乐系统会展示天窗的状态；

When ***Sunroof Percentage Position Status Validity*** = $0 valid，the value of ***Sunroof Percentage Position Status*** is invalid and VCU will display Sunroof’s status.

当信号***Sunroof Percentage Position Status Validity*** = $1 invalid时，表示信号***Sunroof Percentage Position*** ***Status***无效，娱乐系统需要展示天窗的默认状态。

When ***Sunroof Percentage Position Status Validity*** = $1 invalid，the value of ***Sunroof Percentage Position*** ***Status*** is valid and VCU will display default status of sunroof.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 天窗控制GB信号/Global B Signal List

###### 天窗的配置信息/Sunroof Configuration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Infotainment Sunroof Motion Control Available | 1 | ENM | N/A | $0 = Not Available; $1 = Available |

这个信号是由BCM发送给VCU的，用于提供天窗的配置信息。

当***Infotainment Sunroof Motion Control Available*** = $0 Not Available时，表示车辆没有天窗或天窗不支持娱乐系统控制；

当***Infotainment Sunroof Motion Control Available*** = $1 Available时，表示车辆配置天窗且支持娱乐系统控制。

###### 天窗模块当前是否可被控制/Availability of Sunroof Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Infotainment Sunroof Motion Control Allowed | 1 | BLN | N/A | $0=False; $1=True |

这个信号用于表示当前天窗是否可以被娱乐系统控制。

当时***Infotainment Sunroof Motion Control Allowed*** =$0 False，表示车辆的天窗不可以被娱乐系统控制；

当时***Infotainment Sunroof Motion Control Allowed*** =$1 True，表示车辆的天窗可以被娱乐系统控制；

###### 对天窗的控制请求/Control Request for Sunroof

**百分比控制/Percentage Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| HMI General Information 3 Protected : Infotainment Sunroof Position Request | 4 | ENM | N/A | $0 = No Request; $1 = 0%;  $2 = 10%; $3 = 20%;  $4 = 30%; $5 = 40%;  $6 = 50%; $7 = 60%;  $8 = 70%; $9 = 80%;  $A = 90%; $B = 100% |

当***HMI General Information 3 Protected : Infotainment Sunroof Position Request*** = $1, 0% 时，表示请求天窗完全关闭；

当***HMI General Information 3 Protected : Infotainment Sunroof Position Request*** = $X, (X-1)\*10% 时，表示请求天窗移动到 (X-1)\*10%的位置。

当***Sunroof Percentage control Request*** = $B, 100%时，表示请求天窗完全打开。

**备注：**对天窗的控制精度为10%，所以实质的控制值是0%，10%，20%...

当没有请求的时候，娱乐系统发送的信号***Sunroof Percentage control Request***的值应该为$0。

###### 天窗状态反馈/Sunroof State Feedback

**百分比位置/Percentage Position**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal Name** | **Len** | **Date Type** | **Range** | **Conversion** |
| Sunroof Actual Position | 4 | ENM | N/A | $0 = 0%; $1 = 10%;  $2 = 20%; $3 = 30%;  $4 = 40%; $5 = 50%;  $6 = 60%; $7 = 70%;  $8 = 80%; $9 = 90%;  $A = 100%; $B = Between Positions |

当***Sunroof Actual Position*** = $1, 0% 时，表示天窗处于完全关闭状态；

当***Sunroof Actual Position*** = $X, X\*10% 时，表示天窗移动到 X\*10%的位置；

当***Sunroof Actual Position*** = $B, Between Positions时，表示天窗被打断移动到非固定位置。

#### 天窗控制的特殊情况说明/Description of Special Conditions for Sunroof Control

天窗系统控制和可视化状态显示存在一些特殊情况需要关注，具体参考后续子章节。

There have some special situations that need to be paid attention to in sunroof control and visual state display. Please refer to the following subsections for details.

##### 天窗显示状态近似处理/Approximate Treatment of Sunroof Display Status

天窗控制的状态反馈和百分控制的信号不对应，状态反馈精度为 1%，控制请求的精度为5%，并且天窗运动过程中支持通过虚拟按键和物理按键进行打断。当天窗停在非5%倍数位置时，天窗的状态显示需要进行近似处理，推荐近似处理逻辑参考如下：

The state feedback of sunroof control does not correspond to the signal of percent control. The precision of state feedback is 1%, and the precision of control request is 5%. In addition, the sunroof movement process supports interruption by virtual keys and physical keys. When the sunroof stops at a position that is not a multiple of 5%, the skylight state display needs to be approximated. The recommended approximate processing logic is as follows:

|  |  |
| --- | --- |
| **天窗实际位置/Actual Position of Sunroof** | **状态显示的近似处理/Approximate Processing of Status Display** |
| 0% | Fully Closed |
| 1% - 5% | 5% |
| 6% - 10% | 10% |
| 11%-15% | 15% |
| 16%-20% | 20% |
| … | … |
| 86%-90% | 90% |
| 91%-99% | 95% |
| 100% | Fully Opened |

##### 天窗与遮阳帘联动/Linkage of Sunroof and Sunshade

对于电动天窗和电动遮阳帘重叠的车型，两者存在联动关系，天窗与遮阳帘的联动关系请参考<[3.2.1.7.2 遮阳帘与天窗联动关系/Linkage between Sunshade and Sunroof](#_遮阳帘与天窗联动关系/_Linkage_between) >。

For vehicles with overlapping power sunroof and power sunshade, there is a linkage relationship between the two. For the linkage relationship between sunroof and sunshade, please refer to <[3.2.1.7.2 遮阳帘与天窗联动关系/Linkage between Sunshade and Sunroof](#_遮阳帘与天窗联动关系/_Linkage_between) >.

#### 天窗控制的适用架构/Architectural Applicability of Sunroof Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

## 遮阳帘系统/Sunshade

遮阳帘按照安装位置和控制方式，可以分为，前遮阳帘、后遮阳帘，和电动遮阳帘、手动遮阳帘。

By the position assembled, sunshade mainly involves two categories: front sunshade and rear sunshade. By the way of control, sunshade mainly involves two categories: power driven sunshade and manually operated sunshade.

按照车型配置不同，前遮阳帘将代指：只配置一个遮阳帘的车型中的遮阳帘，和配置前后两个遮阳帘的车型中的前遮阳帘。而后遮阳帘仅代指：配置前后两个遮阳帘的车型中的后遮阳帘。

Per different vehicle trimming, front sunshade can mean either the sunshade when there’s only one sunshade, or the front sunshade when there’re two sunshades. While the rear sunshade means only the rear sunshade when there’re two sunshades.

电动遮阳帘支持娱乐系统对其进行控制操作，手动遮阳帘仅支持用户手动控制不支持通过娱乐系统做控制。本文档所描述的遮阳帘相关功能仅针对电动遮阳帘。

The power-driven sunshade supports the control operations by the Infotainment System while the manually-operated sunshade only supports the user’s manual control only and does not support control through the Infotainment System. The sunshade-related functions as described herein are targeted at the power-driven sunshade only.

以上仅为遮阳帘系统的介绍，具体遮阳帘控制功能逻辑请参考以下章节。

The above only introduces the sunshade. See the following for the specific control function logics of sunshade.

通过标定P\_VEHICLE\_CONTROL\_FRONT\_SUNSHADE\_CONFIGRATION确定车辆是否支持娱乐系统控制前遮阳帘。

标定值为0 "VC\_Front\_Sunshade\_None" 时，表示前遮阳帘不支持的控制；

标定值为1 "VC\_Front\_Sunshade\_Comfort\_Control" 时，表示仅配置不支持百分比控制的前遮阳帘；

标定值为2 "VC\_Front\_Sunshade\_Percentage\_Control" 时，表示配置了支持百分比控制的前遮阳帘；

通过标定P\_VEHICLE\_CONTROL\_REAR\_SUNSHADE\_CONFIGRATION确定车辆是否支持娱乐系统控制后遮阳帘。

标定值为0 "VC\_Rear\_Sunshade\_None" 时，表示不支持后遮阳帘的控制；

标定值为1 "VC\_Rear\_Sunshade\_Comfort\_Control" 时，表示仅配置不支持百分比控制的后遮阳帘；

标定值为2 "VC\_Rear\_Sunshade\_Percentage\_Control" 时，表示配置了支持百分比控制的后遮阳帘；

### 遮阳帘系统控制/Sunshade Control

系统支持用户对遮阳帘系统中配置电动遮阳帘的部分进行打开或关闭操作，且支持用户通过操作使遮阳帘运动至任意指定位置。具体操作描述如下，操作方式以交互设计为准。

The system allows the user to open/close the power-driven sunshade configured in the sunshade system and supports the user to move, by operations, the sunshade to any desired position. The specific operation is described as follows while the operation mode shall be subject to the interaction design.

1. 系统支持遮阳帘由关闭状态打开至任意位置。/The system supports the opening of sunshade from the OFF status to any position.
2. 系统支持遮阳帘由打开状态（包括完全开启和部分开启）移动至任意位置（包括关闭状态）。/The system supports the movement of sunshade from the ON status (including partial opening and full opening) to any position (including the OFF status).

特别地，当电动天窗同时配置电动遮阳帘时，天窗开启遮阳帘也会随之开启，具体逻辑由对应功能模块判断并将状态反馈给娱乐系统。

In particular, when the power-driven sunroof is simultaneously equipped with a power-driven sunshade, the opening of sunroof shall trigger that of sunshade; the specific logic shall be judged by the corresponding function module while the status shall be fed back to the Infotainment System.

#### 遮阳帘控制支持的用户操作/Operations of Sunshade Control

遮阳帘系统支持以下用户操作：

Operations of sunshade control as bellow:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开遮阳帘 / Open Sunshade | VC + VAC | VC + VAC |
| 关闭遮阳帘 / Close Sunshade | VC + VAC | VC + VAC |
| 百分比控制，步进值5% / Percentage control, Step value 5% | VC + VAC | N/A |
| 百分比控制，步进值10% / Percentage control, Step value 10% | N/A | VC + VAC |
| 停止/Stop | VC Only | N/A |

#### 遮阳帘状态可视化/Sunshade Visualization

遮阳帘状态的可视化需要支持显示以下信息：

Visualization of shade status needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 遮阳帘的具体位置/Sunshade Position | Yes | Yes |
| 遮阳帘的运动状态/Motion State of Sunshade | Yes | Yes |

#### 遮阳帘控制的功能安全要求/Functional Safety Requirements for Sunshade Control

遮阳帘的娱乐系统虚拟按键控制和语音助手控制的功能安全等级为：QM；

The functional safety levels of the virtual key control and voice assistant control of the entertainment system of the sunshade curtain are QM;

#### 遮阳帘控制对应的整车电源模式/Vehicle Power Mode of Sunshade Control

遮阳帘系统的虚拟按键控制和语音助手控制的整车电源模式为：

The power modes of the sunshade virtual control and voice assistant control are as follows:

a) Power Mode ACC

b) Power Mode RUN

c) Power Mode RAP

#### 遮阳帘系统控制性能要求/Control Performance Requirements of Sunshade

遮阳帘系统控制需要满足以下要求：

The control of shade system shall meet the following requirements:

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN,  Power Mode RAP, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮  The user clicked the virtual button on the screen |
| 计时结束条件  The KPI timer stop condition | 遮阳帘模块开始执行按钮对应的动作  The shade module starts to execute the action corresponding to the button; |

**遮阳帘状态的可视化性能要求：**

**Performance Requirements of Sunshade Visual Status:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN,  Power Mode RAP, |
| 计时起始条件  The KPI timer start condition | 遮阳帘模块开始运动;  The sunshade module starts to move; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中的遮阳帘可视化模型开始变化;  The visualization model of sunshade in entertainment system began to change; |

#### 遮阳帘控制的信号/Signals for Sunshade Control

以下是遮阳帘控制功能中使用到的信号列表：

Signals for sunshade control as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Front Sunshade Configuration | Infotainment Front Sunshade Motion Control Available |
| Rear Sunshade Configuration | N/A |
| Available | Front Sunshade Control Available | Infotainment Front Sunshade Motion Control Allowed |
| Rear Sunshade Control Available | N/A |
| Request | Front Sunshade Control Request | Infotainment Front Sunshade Motion Request |
| Front Sunshade Percentage control Request | N/A |
| Rear Sunshade Control Request | N/A |
| Rear Sunshade Percentage control Request | N/A |
| Status | Front Sunshade Position Status | Front Sunshade Position Status Information |
| Front Sunshade Percentage Position status | N/A |
| Rear Sunshade Position Status | N/A |
| Rear Sunshade Percentage Position status | N/A |
| Validity | Front Sunshade Percentage Position Status Validity | N/A |
| Rear Sunshade Percentage Position Status Validity | N/A |

##### 遮阳帘控制CELA信号/CLEA Signal List

以下是CELA架构中，遮阳帘控制使用的信号：

Signals of sunshade control for CLEA as bellows:

###### 遮阳帘的配置信息/Configuration Information of Sunshade

**前遮阳帘/Front Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Front Sunshade Configuration | 1 | BLN | N/A | $0=False; $1=True； |

这个信号是BCM发送给娱乐系统的，用于提供前遮阳帘的配置信息。

This signal sent by BCM to VCU to tell the configuration information of front sunshade.

当信号***Front Sunshade Configuration*** =$0 False时，表示车辆的前遮阳帘不支持娱乐系统控制；

When ***Front Sunshade Configuration*** =$0 False, Vehicle configuration does not support Front Sunshade control;

当信号***Front Sunshade Configuration*** =$1 True时，表示车辆的前遮阳帘支持娱乐系统进行控制。

When ***Front Sunshade Configuration*** =$1 True, the vehicle configures Rear Sunshade which can be controlled by Radio Head.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**后遮阳帘/Rear Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Rear Sunshade Configuration | 1 | BLN | N/A | $0=False; $1=True； |

这个信号是BCM发送给娱乐系统的，用于提供后遮阳帘的配置信息。

This signal sent by BCM to VCU to tell the configuration information of Rear sunshade.

当信号***Rear Sunshade Configuration*** =$0 False时，表示车辆的后遮阳帘不支持娱乐系统控制；

When ***Rear Sunshade Configuration*** =$0 False, Vehicle configuration does not support Rear Sunshade control;

当信号***Rear Sunshade Configuration*** =$1 True时，表示车辆的后遮阳帘支持娱乐系统进行控制；

When ***Rear Sunshade Configuration*** =$1 True, the vehicle configures Rear Sunshade which can be controlled by Radio Head.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 遮阳帘当前是否可被控/Availability of Sunshade Control

**前遮阳帘/Front Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Front Sunshade Control Available | 1 | BLN | N/A | $0=False; $1=True； |

这个信号是BCM发送给娱乐系统的，用于表示当前前遮阳帘是否可以被控制。

This signal sent by BCM to VCU to provide the Front Sunshade control availability.

当信号***Front Sunshade Control Available*** =$0 False时，表示当前时刻前遮阳帘不支持娱乐系统进行控制；

When ***Front Sunshade Control Available*** =$0 False, do not support VCU control;

当信号***Front Sunshade Control Available*** =$1 True时，表示当前时刻前遮阳帘支持娱乐系统进行控制；

When ***Front Sunshade Control Available*** =$1 True, support VCU control;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**后遮阳帘/Rear Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Rear Sunshade Control Available | 1 | BLN | N/A | $0=False; $1=True； |

这个信号是BCM发送给娱乐系统的，用于表示当前后遮阳帘是否可以被控制。

This signal sent by BCM to VCU to provide the Rear Sunshade control availability.

当信号***Rear Sunshade Control Available*** =$0 False时，表示当前时刻后遮阳帘不支持娱乐系统进行控制；

When ***Rear Sunshade Control Available*** =$0 False, do not support VCU control.

当信号***Rear Sunshade Control Available*** =$1 True时，表示当前时刻后遮阳帘支持娱乐系统进行控制；

When ***Rear Sunshade Control Available*** =$1 True, support VCU control.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对遮阳帘的控制请求/Control Request for Sunshade

**前遮阳帘的常规控制/Front Sunshade Routine Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Front Sunshade Control Request | 2 | ENM | N/A | $0=No Action;  $1=Comfort Close;  $2=Comfort Open;  $3=Stop |

这个信号是由娱乐系统发送给BCM的，当前遮阳帘不支持百分比控制时，娱乐系统将通过信号***Front Sunshade Control Request***请求BMC，BCM在收到信号***Front Sunshade Control Request***后，将信号转发给SRC，前遮阳帘将会执行相应的动作。

This signal is provide by VCU to BCM. When the Front sunshade does not equipped with percentage control, Radio Head shall send ***Front Sunshade Control Request*** to send instruction to BCM. After BCM received ***Front Sunshade Control Request*** and then transfer to Front sunshade SRC, the Front sunshade will do the relative process.

当信号***Front Sunshade Control Request*** =$0 No Action时，默认发送值，表示无请求；

When ***Front Sunshade Control Request*** =$0 No Action, Default value.

当信号***Front Sunshade Control Request*** =$1 Comfort Close时，表示请求前遮阳帘完全关闭；

When ***Front Sunshade Control Request*** =$1 Comfort Close, Let the sunshade fully close.

当信号***Front Sunshade Control Request*** =$2 Comfort Open时，表示请求前遮阳帘完全打开；

When ***Front Sunshade Control Request*** =$2 Comfort Open, Let the sunshade fully open.

当信号***Front Sunshade Control Request*** =$3 Stop motion时，表示请求遮阳帘停止运动；

When ***Front Sunshade Control Request*** =$3 Stop motion.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**前遮阳帘的百分比控制/Front Sunshade Percentage Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Front Sunshade Percentage control Request | 5 | ENM | N/A | $00=No Request;  $01=0%;  $02=5%;  $03=10%;  ……  $14=95%;  $15=100%;  $16~$1F, Reserved |

这个信号时由娱乐系统发送给BCM的，当前遮阳帘支持百分比控制，娱乐系统将会通过信号***Front Sunshade Percentage control Request*** 来发送请求给BCM，在BCM收到信号***Front Sunshade Percentage control Request***后，将其转发给SRC，遮阳帘会执行相应的动作。

This signal sent by VCU to BCM. When the Front sunshade equipped with percentage control, VCU shall send ***Front Sunshade Percentage control Request*** to send instruction to BCM. After BCM received ***Front Sunshade Percentage control Request*** and then transfer to sunshade SRC, the sunshade will do the relative process.

当信号***Front Sunshade Percentage control Request*** = $0时，默认发送值，表示无请求。

When ***Front Sunshade Percentage control Request*** = $0, No Action.

当信号***Front Sunshade Percentage control Request*** = $1, 0%时，表示请求遮阳帘完全关闭。

When ***Front Sunshade Percentage control Request*** = $1, 0%, the front sunshade move to fully closed.

当信号***Front Sunshade Percentage control Request*** = $X, (X-1)\*5% 时，表示请求遮阳帘移动到(X-1)\*5%的位置；

When ***Front Sunshade Percentage control Request*** = $X, (X-1)\*5% is for the percentage of the front sunshade position.

当信号***Front Sunshade Percentage control Request*** =$15, 100% 时，表示请求遮阳帘完全打开；

When ***Front Sunshade Percentage control Request*** =$15, 100%, the front sunshade move to fully open.

**备注：**遮阳帘的控制精度为5%，所以对遮阳帘的控制的值为 0%，5%，10%...

**Note:** The minimum resolution is 5%, so the values X% is 0%, 5%, 10%...

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**后遮阳帘的常规控制/Rear Sunshade Routine Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Rear Sunshade Control Request | 2 | ENM | N/A | $0=No Action;  $1=Comfort Close;  $2=Comfort Open;  $3=Stop |

这个信号是娱乐系统发送给BCM的，当后遮阳帘不支持百分比控制的时候，娱乐系统将通过信号***Rear sunshade Control Request***发送请求给BCM，在BCM收到信号***Rear sunshade Control Request***后，将其转发给SRC，后遮阳帘将会执行相应的动作。

This signal is provide by VCU to BCM. When the Rear sunshade does not equipped with percentage control, Radio Head shall send ***Rear sunshade Control Request*** to send instruction to BCM. After BCM received ***Rear sunshade Control Request*** and then transfer to Rear sunshade SRC, the Rear sunshade will do the relative process.

当信号***Rear sunshade Control Request*** =$0 No Action时，表示无请求，默认发送值；

When ***Rear sunshade Control Request*** =$0 No Action, Default value.

当信号***Rear sunshade Control Request*** =$1 Comfort Close时，请求后遮阳帘完全关闭；

When ***Rear sunshade Control Request*** =$1 Comfort Close, Let the rear sunshade fully close.

当信号***Rear sunshade Control Request*** =$2 Comfort Open时，请求后遮阳帘完全开启；

When ***Rear sunshade Control Request*** =$2 Comfort Open, Let the rear sunshade fully open.

当信号***Rear sunshade Control Request*** =$3 Stop motion时，请求后遮阳帘停止运动；

When ***Rear sunshade Control Request*** =$3 Stop motion.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**后遮阳帘的百分比控制/Rear Sunshade Percentage Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Rear Sunshade Percentage control Request | 5 | ENM | N/A | $00=No Request;  $01=0%;  $02=5%;  $03=10%;  $04=15%;  ……  $15=100%;  $16~$1F, Reserved |

这个信号时由娱乐系统发送给BCM的，当后遮阳帘支持百分比控制，娱乐系统将会通过信号Front ***Rear Sunshade Percentage control Request***来发送请求给BCM，在BCM收到信号***Rear Sunshade Percentage control Request*** 后，将其转发给SRC，后遮阳帘会执行相应的动作。

This signal sent by VCU to BCM. When the Rear sunshade equipped with percentage control, VCU shall send ***Rear Sunshade Percentage control Request*** to send instruction to BCM. After BCM received ***Rear Sunshade Percentage control Request*** and then transfer to sunshade SRC, the Rear sunshade will do the relative process.

当信号***Rear Sunshade Percentage control Request*** = $0 时，默认发送值，表示没有请求；

When ***Rear Sunshade Percentage control Request*** = $0, No Action;

当信号***Rear Sunshade Percentage control Request*** = $1, 0% 时，请求后遮阳帘完全关闭；

When ***Rear Sunshade Percentage control Request*** = $1, 0%, the rear sunshade move to fully closed.

当信号***Rear Sunshade Percentage control Request*** = $X, (X-1)\*5% 时，请求后遮阳帘移动到(X-1)\*5%的位置；

When ***Rear Sunshade Percentage control Request*** = $X, (X-1)\*5% is for the percentage of the rear sunshade position.

当信号***Rear Sunshade Percentage control Request*** =$15, 100% 时，请求后遮阳帘完全打开；

When ***Rear Sunshade Percentage control Request*** =$15, 100%, the rear sunshade move to fully open.

**备注：**控制精度为5%，所以对应的控制值为0%，5%，10%...

**Note:** The minimum resolution is 5%, so the values X% is 0%, 5%, 10%...

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 遮阳帘的状态反馈/State Feedback of Sunshade

**前遮阳帘常规位置和运动状态反馈/Regular Position and Motion State Feedback of Front Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Front Sunshade Position Status | 3 | ENM | N/A | $0=FULLY CLOSED;  $1=FULLY OPENED;  $2=Position A;  $3=Position B;  $4=Position C;  $5=CLOSING;  $6=OPENING;  $7=Not Used |

这个信号是由BCM发送给娱乐系统的，这个信号提供了前遮阳帘的状态信息。

This signal sent by BCM to VCU. It shows the Front sunshade status.

当信号***Front Sunshade Position Status*** = $0 FULLY\_CLOSED时，表示前遮阳帘是静止的，且处于完全打开的位置。

When ***Front Sunshade Position Status*** = $0 FULLY\_CLOSED, Front sunshade is not in motion, front sunshade position is fully close.

当信号***Front Sunshade Position Status*** = $1 FULLY\_OPEN时，表示前遮阳帘是静止的，且处于完全打开的位置。

When ***Front Sunshade Position Status*** = $1 FULLY\_OPEN, Front sunshade is not in motion, front sunshade position is fully open.

当信号***Front Sunshade Position Status*** = $2 Position A时，表示前遮阳帘是静止的，且处于Position A的区域内。

When ***Front Sunshade Position Status*** = $2 Position A, Front sunshade is partially opened, and not in motion. The sunshade is in the position A area.

当信号***Front Sunshade Position Status*** = $3 Position B,时，表示前遮阳帘是静止的，且处于Position B的区域内。

When ***Front Sunshade Position Status*** = $3 Position B, Front sunshade is partially opened and not in motion. The sunshade is in the position B area.

当信号***Front Sunshade Position Status*** = $4 Position C时，表示前遮阳帘是静止的，且处于Position C的区域内。

When ***Front Sunshade Position Status*** = $4 Position C, Front sunshade is partially opened and not in motion. The sunshade is in the position C area.

当信号***Front Sunshade Position Status*** = $5 CLOSING时，表示前遮阳帘正在关闭。

When ***Front Sunshade Position Status*** = $5 CLOSING, Front sunshade is closing.

当信号***Front Sunshade Position Status*** = $6 OPENING时，表示遮阳帘正在打开

When ***Front Sunshade Position Status*** = $6 OPENING, Front sunshade is opening.

当信号***Front Sunshade Position Status*** = $7 Not Used时，预留信号；

When ***Front Sunshade Position Status*** = $7 Not Used, Reserved.

**备注：**当遮阳帘对应的天窗是一个固定天窗，对于遮阳帘就没有区域A，B，C的区分，这种情况下信号***Front Sunshade Position Status*** =$7表示遮阳帘处于部分开启的状态。

**Note:** When sunroof is fixed glass, there is no Position A, B or C. In this case, sunshade status is partially open when ***Front Sunshade Position Status*** =$7.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**前遮阳帘的百分比位置/Percentage Position of Front Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Front Sunshade Percentage Position status | 7 | UNM | 0-100% | E=N\*1 |

该信号是BCM发送给娱乐系统的，它提供了前遮阳帘的百分比位置信息。当信号***Front Sunshade Percentage Position Status Validity***= $0 valid时，信号***Front Sunshade Percentage Position status***表示前天窗的百分比位置。

This signal sent by BCM to VCU. It shows the Front sunshade’s percentage position status. When ***Front Sunshade Percentage Position Status Validity*** = $0 valid, ***Front Sunshade Percentage Position status*** will response the percentage position of front sunshade.

当信号***Front Sunshade Percentage Position status*** = 0%时，表示前遮阳帘处于完全关闭的状态；

When ***Front Sunshade Percentage Position status*** = 0%, the Front sunshade is fully closed.

当信号***Front Sunshade Percentage Position status*** = 100%时，表示遮阳帘处于完全打开的状态；

When ***Front Sunshade Percentage Position status*** = 100%, the Front sunshade is fully open.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**前遮阳帘的百分比位置的有效性/Validity of Percentage Position of Front Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Front Sunshade Percentage Position Status Validity | 1 | ENM | N/A | $0=valid;$1=invalid |

基于信号***Front Sunshade Percentage Position Status Validity***的值，娱乐系统决定是否展示前遮阳帘的位置状态。

Based on the value of ***Front Sunshade Percentage Position Status Validity***, VCU shows the status of Front Sunshade percentage position.

当信号***Front Sunshade Percentage Position Status Validity*** = $0 valid时，信号的值是有效的，并且娱乐系统会展示前遮阳帘的状态；

When ***Front Sunshade Percentage Position Status Validity*** = $0 valid，the value of ***Front Sunshade Percentage Position status*** is valid and VCU will display Front sunshade status.

当信号***Front Sunshade Percentage Position Status Validity*** = $1 invalid时，信号的值时无效的，这时娱乐系统需要展示一个默认的天窗状态；

When ***Front Sunshade Percentage Position Status Validity*** = $1 invalid，the value of ***Front Sunshade Percentage Position status*** is invalid and VCU will display default status of Front sunshade.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**后遮阳帘的常规位置和运动状态/Regular Position and Motion State Feedback of Rear Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Rear Sunshade Position Status | 3 | ENM | N/A | $0=FULLY CLOSED;  $1=FULLY OPENED;  $2=Position A;  $3=Position B;  $4=Position C;  $5=CLOSING;  $6=OPENING;  $7=Not Used |

这个信号时BCM发送给娱乐系统的，用于提供后遮阳帘的状态。

This signal sent by BCM to VCU. It shows the Rear sunshade status.

当信号***Rear Sunshade Position Status*** = $0 FULLY\_CLOSED时，后遮阳帘处于静止状态，且处于完全关闭的状态；

When ***Rear Sunshade Position Status*** = $0 FULLY\_CLOSED, The rear sunshade is not in motion, the rear sunshade position is fully close.

当信号***Rear Sunshade Position Status*** = $1 FULLY\_OPEN时，后遮阳帘处于静止状态，且后遮阳帘处于完全打开的状态。

When ***Rear Sunshade Position Status*** = $1 FULLY\_OPEN, The rear sunshade is not in motion, the rear sunshade position is fully open.

当信号***Rear Sunshade Position Status*** = $2 Position A时，后遮阳帘处于部分打开的状态，静止并且处于Position A的区域。

When ***Rear Sunshade Position Status*** = $2 Position A, The rear sunshade is partially opened, and not in motion. The sunshade is in the position A area.

当信号***Rear Sunshade Position Status*** = $3 Position B时，后遮阳帘处于部分打开的状态，静止并且处于Position B的区域。

When ***Rear Sunshade Position Status*** = $3 Position B, The rear sunshade is partially opened and not in motion. The sunshade is in the position B area.

当信号***Rear Sunshade Position Status*** = $4 Position C时，后遮阳帘处于部分打开的状态，静止并且处于Position C的区域。

When ***Rear Sunshade Position Status*** = $4 Position C, The rear sunshade is partially opened and not in motion. The sunshade is in the position C area.

当信号***Rear Sunshade Position Status*** = $5 CLOSING时，表示后遮阳帘正在关闭。

When ***Rear Sunshade Position Status*** = $5 CLOSING, The rear sunshade is closing.

当信号***Rear Sunshade Position Status*** = $6 OPENING时，表示后遮阳帘正在打开。

When ***Rear Sunshade Position Status*** = $6 OPENING, The rear sunshade is opening.

当信号***Rear Sunshade Position Status*** = $7 Not Used时，信号预留

When ***Rear Sunshade Position Status*** = $7 Not Used, Reserved.

**备注：**当遮阳帘对应的天窗是一个固定天窗，对于遮阳帘就没有区域A，B，C的区分，这种情况下信号***Rear Sunshade Position Status*** =$7表示遮阳帘处于部分开启的状态。

**Note:** When sunroof is fixed glass, there is no Position A, B or C. In this case, sunshade status is partially open when ***Rear Sunshade Position Status*** =$7.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**后遮阳帘的百分比位置/Percentage Position of Rear Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Rear Sunshade Percentage Position status | 7 | UNM | 0-100% | E=N\*1 |

这个信号是由BCM发送给娱乐系统的，用于提供后遮阳帘的百分比位置。

This signal sent by BCM to VCU. It shows the Rear sunshade’s percentage position status.

当信号***Rear Sunshade Percentage Position status*** = 0% 时，表示后遮阳帘完全关闭；

When ***Rear Sunshade Percentage Position status*** = 0%, the Rear sunshade is fully closed.

当信号***Rear Sunshade Percentage Position status*** = 100% 时，表示后遮阳帘完全打开；

When ***Rear Sunshade Percentage Position status*** = 100%, the Rear sunshade is fully open.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**后遮阳帘的百分比位置的有效性/Validity of Percentage Position of Rear Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Rear Sunshade Percentage Position Status Validity | 1 | ENM | N/A | $0=valid;$1=invalid |

基于信号***Rear Sunshade Percentage Position Status Validity***，决定信娱乐系统是否展示信号***Rear Sunshade Percentage position status***对应的状态。

Based on the value of ***Rear Sunshade Percentage Position Status Validity***, VCU shows the related display of ***Rear Sunshade Percentage position status***.

当信号***Rear Sunshade Percentage Position Status Validity*** = $0 valid时，表示信号***Rear Sunshade Percentage Position status***是有效的，并且娱乐系统会展示后遮阳帘的状态；

When ***Rear Sunshade Percentage Position Status Validity*** = $0 valid，the value of ***Rear Sunshade Percentage Position status*** is valid and VCU will display Rear sunshade status.

当信号***Rear Sunshade Percentage Position Status Validity*** = $1 invalid时，表示信号***Rear Sunshade Percentage Position status***是无效的，此时娱乐系统只会展示一个默认的状态；

When ***Rear Sunshade Percentage Position Status Validity*** = $1 invalid，the value of ***Rear Sunshade Percentage Position status*** is invalid and VCU will display default status of Rear sunshade.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 遮阳帘控制GB信号/Global B Signals List

以下是GB架构中，遮阳帘控制使用的信号：

###### 遮阳帘的配置信息/ Configuration Information of Sunshade

**前遮阳帘/Front Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Infotainment Front Sunshade Motion Control Available | 1 | ENM | N/A | $0 = Not Available; $1 = Available |

这个信号是BCM发送给娱乐系统的，用于提供前遮阳帘的配置信息。

当信号***Infotainment Front Sunshade Motion Control Available*** =$0 False时，表示车辆的前遮阳帘不支持娱乐系统控制；

当信号***Infotainment Front Sunshade Motion Control Available*** =$1 True时，表示车辆的前遮阳帘支持娱乐系统进行控制。

**后遮阳帘/Rear Sunshade**

GB架构下后遮阳帘不支持娱乐系统控制。

###### 遮阳帘当前是否可被控/Availability of Sunshade Control

**前遮阳帘/Front Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Infotainment Front Sunshade Motion Control Allowed | 1 | BLN | N/A | $0=False; $1=True； |

这个信号是BCM发送给娱乐系统的，用于表示当前前遮阳帘是否可以被控制。

当信号***Infotainment Front Sunshade Motion Control Allowed*** =$0 False时，表示当前时刻前遮阳帘不支持娱乐系统进行控制；

当信号***Infotainment Front Sunshade Motion Control Allowed*** =$1 True时，表示当前时刻前遮阳帘支持娱乐系统进行控制；

**后遮阳帘/Rear Sunshade**

GB架构下后遮阳帘不支持娱乐系统控制。

###### 对遮阳帘的控制请求/Control Request for Sunshade

**前遮阳帘的常规控制/Front Sunshade Routine Control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Infotainment Front Sunshade Motion Request | 2 | ENM | N/A | $0 = No Request;  $1 = Open;  $2 = Close |

这个信号是由娱乐系统发送给BCM的，娱乐系统将通过信号***Infotainment Front Sunshade Motion Request***请求BMC，BCM在收到信号***Infotainment Front Sunshade Motion Request***后，将信号转发给SRC，前遮阳帘将会执行相应的动作。

当信号***Front Sunshade Control Request*** =$0 No Request时，默认发送值，表示无请求；

当信号***Front Sunshade Control Request*** =$1 Open时，表示请求前遮阳帘完全打开；

当信号***Front Sunshade Control Request*** =$2 Close时，表示请求前遮阳帘完全关闭；

**后遮阳帘/Rear Sunshade**

GB架构下后遮阳帘不支持娱乐系统控制。

###### 遮阳帘的状态反馈/State Feedback of Sunshade

**前遮阳帘常规位置和运动状态反馈/Regular Position and Motion State Feedback of Front Sunshade**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Signal** | **Length** | **Data Type** | **Range** | **Conversion** |
| Front Sunshade Position Status Information | 2 | ENM | N/A | $0 = Fully Closed;  $1 = Partially Open;  $2 = Fully Open;  $3 = Comfort Open |

这个信号是由BCM发送给娱乐系统的，这个信号提供了前遮阳帘的状态信息。

当信号***Front Sunshade Position Status Information*** = $0 Fully Closed时，表示前遮阳帘是静止的，且处于完全关闭的位置。

当信号***Front Sunshade Position Status Information*** = $1 Partially Open时，表示前遮阳帘是静止的，且处于部分打开的位置。

当信号***Front Sunshade Position Status Information*** = $2 Fully Open时，表示前遮阳帘时静止的，且处于完全打开的位置。

当信号***Front Sunshade Position Status Information*** = $3 Comfort Open时，表示前遮阳帘是静止的，且处于通风的位置。

#### 遮阳帘控制的特殊情况说明/Explanation of Special Conditions for Sunshade Control

遮阳帘系统的控制和状态显示存在一些特殊情况，具体参考后续子章节。

There are some special situations in the control and status display of the shade system. Please refer to the following subsections for details.

##### 遮阳帘显示状态近似处理/ Approximate Treatment of Display Status of Sunshade

遮阳帘控制的状态反馈和百分控制的信号不对应，状态反馈精度为 1%，控制请求的精度为5%，并且天窗运动过程中支持通过虚拟按键和物理按键进行打断。当天窗停在非5%倍数位置时，天窗的状态显示需要进行近似处理，推荐近似处理逻辑参考如下：

The state feedback of sunshade control does not correspond to the signal of percent control. The precision of state feedback is 1%, and the precision of control request is 5%. In addition, the sunshade movement process supports interruption by virtual keys and physical keys. When the sunshade stops at a position that is not a multiple of 5%, the skylight state display needs to be approximated. The recommended approximate processing logic is as follows:

|  |  |
| --- | --- |
| **天窗实际位置/Actual Position of Sunshade** | **状态显示的近似处理/** **Approximate Processing of Status Display** |
| 0% | Fully Closed |
| 1% - 5% | 5% |
| 6% - 10% | 10% |
| 11%-15% | 15% |
| 16%-20% | 20% |
| … | … |
| 86%-90% | 90% |
| 91%-99% | 95% |
| 100% | Fully Opened |

##### 遮阳帘与天窗联动关系/ Linkage between Sunshade and Sunroof

当可控的电动天窗和电动遮阳帘重叠时，两者的运动存在关联关系，具体的关联关系参考如下：

When the controllable electric sunroof and the electric sunshade curtain overlap, there is a correlation between their movements. For specific correlation, please refer to the following:

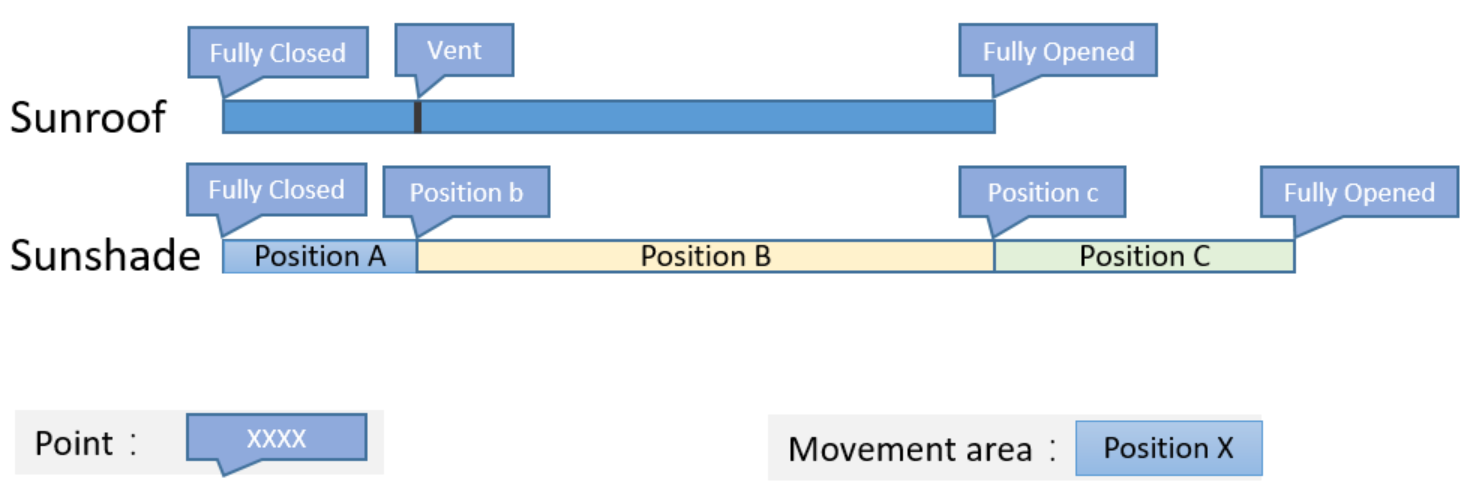


Figure 3 天窗/遮阳帘示意图

目前多数车型的Position b 和Position c是同一个点，也就是说，区域Position A和区域Position B指的是同一个区域。

Position b and Position c of most vehicle are the same point at present, that is to say, area Position A and area Position B refer to the same area.

起始状态为天窗全关，遮阳帘全关：

The starting state is that the Sunroof is fully closed and the sunshade is fully closed:

1. 天窗全关，遮阳帘可以在 Position A + Position B + Position C 区域内移动/ The sunroof is fully closed, and the sunshade can move in the area of Position A + Position B + Position C；
2. 天窗开启，且位置在Fully Closed和Vent (包含Vent点) 之间时，遮阳帘会联动移动至Position b，且可移动区域缩小为 Position B + Position C/ When the sunroof is open and the position is between Fully Closed and Vent (including Vent point), the sunshade will move to Position b and the movable area will be reduced to Position B + Position C；
3. 天窗开启，且位置在Vent 和 Fully Opened之间，遮阳帘会联动移动至Position c, 且可移动区域缩小为Position C / When the sunroof is opened and the position is between Vent and Fully Opened, the sunshade will move to Position c in linkage and the movable area will be reduced to Position C；
4. 遮阳帘开启不会影响到天窗，遮阳帘的关闭，只允许在限定范围内移动，也不会导致天窗的联动/ The opening of the sunshade will not affect the sunroof, and the closing of the sunshade is only allowed to move within a limited range and will not lead to linkage of the sunroof；

#### 遮阳帘控制的适用架构/Architectural Applicability of Sunshade Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

## 车窗系统/Windows

### 车窗系统控制/ Control of Windows

系统支持对车窗（主驾、副驾、左后、右后）分别做打开/关闭至任意指定位置的操作。具体操作描述如下，操作方式以交互设计为准。

The system supports the opening/closing of window (driver seat/front passenger seat/left rear/right rear) to any desired position. The specific operation is described as follows while the operation mode shall be subject to the interaction design.

1. 系统支持车窗由关闭状态打开至任意位置。/The system supports the opening of window from the OFF status to any position.
2. 系统支持车窗由打开状态（包括完全开启和部分开启）移动至任意位置（包括关闭状态）。/The system supports the movement of window from the ON status (including partial opening and full opening) to any position (including the OFF status).

若部分车型不支持娱乐系统对车窗进行控制，系统需根据总线接口获取支持控制的车窗，对于不支持系统控制的车窗需要根据交互设计要求做隐藏或置为不可操作状态。

When some models do not allow the Infotainment System to control the window, the system shall locate the control-supported window through the bus interface; the window not supporting the system control shall be hidden or set to be inoperable as required by the interaction design.

系统通过标定P\_VEHICLE\_CONTROL\_WINDOW\_CONFIGURATION确认车窗是否支持娱乐系统的控制；

当标定值为0 "VC\_Window\_None" 时，表示不支持娱乐系统控制车窗；

当标定值为1 "VC\_Window\_Comfort\_Control" 时，表示支持娱乐系统控制车窗，非百分比控制；

当标定值为2 "VC\_Window\_Percentage\_Control" 时，表示支持娱乐系统控制车窗，百分比控制；

#### 车窗系统控制支持的用户操作/Operation of Windows Control

车辆的车窗系统控制支持以下操作(XX 可以是主驾、副驾、左后、右后)：

The windows control of the vehicle supports the following operations (XX can be the driver, Passenger, left rear and right rear):

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开XX车窗（全开）/Open XX window (Fully Open) | VC + VAC | VC + VAC |
| 关闭XX车窗（全关）/Close XX window(Fully Close) | VC + VAC | VC + VAC |
| 车窗百分比控制，步进值1%/Window percentage control, step value 1% | VC + VAC | N/A |
| 一键通风（四个车窗开启至25%）/One-click ventilation (four windows open to 25%) | VC + VAC | VC + VAC |
| 一键关窗（四个车窗关闭至0）/One-click window closing (four windows closed to 0) | VC + VAC | VC + VAC |
| 一键散热（四个车窗开启至100%）/One-click heat dissipation (four windows open to 100%) | VC + VAC | VC + VAC |
| 控制XX车窗停止/Control XX window stop | VC Only | VC Only |

#### 车窗系统状态可视化/Windows Visualization

车辆的车窗系统状态可视化需要支持显示以下信息：

The visualization of vehicle window system status needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 车窗的具体位置/the actual position of windows | Yes | Yes |
| 车窗的运动状态/motion state of windows | Yes | Yes |
| 车窗未初始化提示/ prompt of window not normalized | Yes | Yes |
| 侧边遮阳帘具体位置/ the actual position of side sunblind | Yes | N/A |
| 侧边遮阳帘的运动状态/ motion state of side sunblind | Yes | N/A |
| 遮阳帘未初始化提示/prompt of side sunblind not normalized | Yes | N/A |
| 禁窗锁状态/status of window lockout | Yes | Yes |

#### 车窗系统控制的功能安全要求/Functional Safety Requirements for Window Control

通过娱乐系统实现对车窗的虚拟按键控制和语音控制的功能安全要求为：QM。

The functional safety requirements for realizing the virtual key control and voice control of the window through the entertainment system is QM.

#### 车窗系统控制对应的整车电源模式/Vehicle Power Mode of Windows Control

车窗系统支持虚拟按键控制和语音助手控制的整车电源模式为：

The power supply modes of the whole vehicle that the window system supports virtual control and voice assistant control are as bellow:

1. Power Mode ~~Off~~ ACC
2. Power Mode RUN
3. Power Mode RAP

#### 车窗系统控制的性能要求/Performance Requirements for Window Control

车窗系统控制需要满足以下要求：

The window control shall meet the following requirements:

**用户操作到模块响应的性能要求**：

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key performance | 延时小于250ms  Latency less than 250ms |
| 测试条件  Precondition | Power Mode ACC,  Power Mode RUN,  Power Mode RAP, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮  The user clicked the virtual button on the screen |
| 计时结束条件  The KPI timer stop condition | 车窗或者侧边遮阳帘模块开始执行按钮对应的指令  Window or side sunblind module starts to execute the command corresponding to the button； |

**~~天窗或者遮阳帘~~车窗状态的可视化性能要求：**

**Visual performance requirements for sunroof or sunshade curtain status:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN,  Power Mode RAP, |
| 计时起始条件  The KPI timer start condition | 车窗或者侧边遮阳帘开始运动  Window or Side sunblind begins to move |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中的可视化模型开始变化  The visual model in the entertainment system began to change |

#### 车窗系统控制的信号/Signals for Windows Control

以下是车窗系统控制中使用到的信号：

The following signals are used in the window system control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **GB** |
| Configuration | Driver Window Configuration | Infotainment Window Motion Control Left Front Available |
| Passenger Window Configuration | Infotainment Window Motion Control Right Front Available |
| Rear Left Window Configuration | Infotainment Window Motion Control Left Rear Available |
| Rear Right Window Configuration | Infotainment Window Motion Control Right Rear Available |
| Availability | Driver Window Available | Infotainment Window Motion Control Left Front Allowed |
| Passenger Window Available | Infotainment Window Motion Control Right Front Allowed |
| Rear Left Window Available | Infotainment Window Motion Control Left Rear Allowed |
| Rear Right Window Available | Infotainment Window Motion Control Right Rear Allowed |
| Request(Comfort Request) | Window Control Request Signal Group : Driver Window Infotainment Comfort Request | HMI General Information 3 Protected : Infotainment Window Motion Left Front Request |
| Window Control Request Signal Group : Passenger Window Infotainment Comfort Request | HMI General Information 3 Protected : Infotainment Window Motion Left Rear Request |
| Window Control Request Signal Group : Rear Left Window Infotainment Comfort Request | HMI General Information 3 Protected : Infotainment Window Motion Right Front Request |
| Window Control Request Signal Group : Rear Right Window Infotainment Comfort Request | HMI General Information 3 Protected : Infotainment Window Motion Right Rear Request |
| Request(Percentage Control) | Percentage Window control : Driver Window Control Position Request Enable | N/A |
| Percentage Window control : Driver Window Control Position Request | N/A |
| Percentage Window control : Passenger Control Position Request Enable | N/A |
| Percentage Window control : Passenger Window Control Position Request | N/A |
| Percentage Window control : Rear Left Control Position Request Enable | N/A |
| Percentage Window control : Rear Left Window Control Position Request | N/A |
| Percentage Window control : Rear Right Control Position Request Enable | N/A |
| Percentage Window control : Rear Right Window Control Position Request | N/A |
| Status(Position) | Driver Window Position Status | Window Position Status Left Front |
| Passenger Window Position Status | Window Position Status Right Front |
| Left Rear Window Position Status Right | Window Position Status Left Rear |
| Rear Window Position Status | Window Position Status Right Rear |
| Status(Motion Status) | Driver Window Motion Status | N/A |
| Passenger Window Motion Status | N/A |
| Rear Left Window Motion Status | N/A |
| Rear Right Window Motion Status | N/A |
| Status(Percentage Position) | Driver Window Percentage Position Status | N/A |
| Passenger Window Percentage Position Status | N/A |
| Rear Left Window Percentage Position Status | N/A |
| Rear Right Window Percentage Position Status | N/A |
| Validity(for percentage position) | Driver Window Percentage Position Status Validity | N/A |
| Passenger Window Percentage Position Status Validity | N/A |
| Rear Left Window Percentage Position Status Validity | N/A |
| Rear Right Window Percentage Position Status Validity | N/A |
| Remind(not normalize) | Rear Right Window Not Normalized Indication On | N/A |
| Rear Left Window Not Normalized Indication On | N/A |
| Driver Window Not Normalized Indication On | N/A |
| Passenger Window Not Normalized Indication On | N/A |

##### 车窗系统控制的CLEA信号/CLEA Signal List of Windows Control

本章节描述的是CELA架构中，车窗控制使用的信号。

This section describes the signals used for window control in CELA architecture.

###### 车窗的配置信息/Windows Configuration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Window Configuration | 1 | BLN | N/A | $0=False; $1=True |

XXX可以是 Driver, Passenger, Rear Left 和 Rear Right，该信号表示车辆是否配置了支持娱乐系统虚拟按键控制和语音控制的车窗系统。

XXX can be Driver, Passenger, Rear Left and Rear Right. This signal indicates whether the vehicle is equipped with a window system that supports virtual control and voice control of the entertainment system.

当信号$0= False时，表示XXX窗户不支持被娱乐系统控制；

When $0= False, XXX window is unable controlled by VCU.

当信号$1= True时，表示XXX窗户支持被娱乐系统控制；

When $1= True, XXX window is support virtual control or VR control by VCU.

信号收发/ TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 车窗模块当前是否可被控/Availability of Windows Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Window Available | 1 | BLN | N/A | $0=False; $1=True |

XXX可以是 Driver, Passenger, Rear Left 和 Rear Right，该信号表示车辆的天窗在当前时刻是否可以被娱乐系统的虚拟按键控制和语音控制。

XXX can be Driver, Passenger, Rear Left and Rear Right. This signal indicates whether the sunroof of the vehicle can be controlled by the virtual control and voice control of the entertainment system at the current moment.

当信号$0 = False时，表示XXX窗户当前时刻不可以被娱乐系统控制；

When $0 = False, indicate that XXX window unable controlled by VCU at current time.

当信号$1 = True时，表示XXX窗户当前时刻可以被娱乐系统控制；

When $1 = True, indicate that XXX window enable controlled by VCU at current time.

信号收发/ TX and RX：BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对车窗的控制请求/Control Requests for Windows

本章节描述的是娱乐系统对车窗系统的控制请求信号，对于配置了电动侧边遮阳帘的车辆，车窗和侧边遮阳帘的联动控制关系请参考《3.3.1.7.1 车窗与侧边遮阳帘的联动关系》。

This section describes the control request signal of the entertainment system to the window system. For vehicles equipped with power side sunshades, please refer to XXXX for the linkage control relationship between the window and side sunshades.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Window Control Request Signal Group : XXX Window Infotainment Comfort Request | 2 | ENM | N/A | $0=No Action; $1=Comfort Close; $2=Comfort Open;  $3=Stop |

XXX可以是 Driver, Passenger, Rear Left 和 Rear Right，该信号用于娱乐系统控制车窗的开启、关闭和停止。

XXX can be Driver, Passenger, Rear Left and Rear Right, and this signal is used for the entertainment system to control the opening, closing and stopping of windows.

当信号$0=No Action时，表示没有车窗控制的请求，默认发送值；

When $0=No Action, There is not request from VCU;

当信号 $1=Comfort Close时， 用于娱乐系统请求BCM完全关闭XXX车窗；  
When $1=Comfort Close, VCU request BCM to move XXX window to fully close;

当信号$2=Comfort Open时，用于娱乐系统请求BCM完全打开XXX车窗；

When $2=Comfort Open, VCU request BCM to move XXX window to fully open;

当信号$3=Stop，用于娱乐系统请求BCM控制XXX车窗停止运动；

When $3=Stop, VCU request BCM to stop moving of XXX window.

信号收发/TX and RX：VCU 🡪 BCM

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Percentage Window control : XXX Window Control Position Request Enable | 1 | BLN | N/A | $0=False; $1=True |
| Percentage Window control : XXX Window Control Position Request | 7 | UNM | 0 - 100 % | E=N\*1 |

XXX可以是Driver, Passenger, Rear Left 和 Rear Right，这两个信号需要配合使用，用于车窗控制的百分比控制，控制精度为5% ~~1%~~.

XXX can be Driver, Passenger, Rear Left and Rear Right. These two signals need to be used together for percentage control of window control, and the control accuracy is 5% ~~1%~~.

当 ***Percentage Window control : XXX Window Control Position Request Enable*** = $0 False, 表示当前无车窗百分比控制的请求。

When ***Percentage Window control : XXX Window Control Position Request Enable*** = $0 False, it means that there is no window percentage control request at present.

当 ***Percentage Window control : XXX Window Control Position Request Enable*** = $1 True, and ***Percentage Window control : XXX Window Control Position Request*** = n, 表示请求BCM控制天窗移动至 n%的位置，n=0时表示请求关闭车窗，n=100时表示请求车窗全部打开。

When ***Percentage Window control : XXX Window Control Position Request Enable*** = $1 True, and ***Percentage Window control : XXX Window Control Position Request*** = n. It indicates that BCM is requested to control the sunroof to move to the position of n%, when n=0, it indicates that the window is requested to be closed, and when n=100, it indicates that the window is requested to be fully opened.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 车窗状态反馈/State Feedback of Window

**车窗位置状态/Window Position:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Window Position Status | 3 | ENM | 0.0 - 7.0 | $0=Window at Fully Closed Position; $1=Window Open less then A;  $2=position A;  $3=position B;  $4=position C;  $5=Window Open more then C;  $6=Window Fully Opened Position;  $7=Not used |

XXX可以是 Driver, Passenger, Rear Left 和 Rear Right，这个信号用于表示车窗的位置状态。枚举值与天窗状态的对应关系如下(其中Position A,B,C 均表示区域，而不是具体的点)：

XXX can be Driver, Passenger, Rear Left and Rear Right. This signal is used to indicate the position state of the window. The corresponding relationship between enumerated values and skylight status is as follows (where Position A,B,C b and c all represent areas, not specific points):

|  |  |
| --- | --- |
| **Window Status** | **Schematic** |
| $0=window at fully closed position |  |
| $1=window open less than A |
| $2=Position A |
| $3=Position B |
| $4=Position C |
| $5=Window open more than C |
| $6=window Fully Opened Position |
| $7=Not used | Reserved |

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

**车窗运动状态/Window Motion State:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Window Motion Status | 2 | ENM | N/A | $0=No Action;  $1=Opening; $2=Closing; $3= Unknown |

XXX可以是 Driver, Passenger, Rear Left 和 Rear Right，这个信号用于表示车窗的运动状态。

XXX can be Driver, Passenger, Rear Left and Rear Right. This signal is used to indicate the motion state of the window.

当信号$0=No Action时，表示XXX车窗目前是静止的；

When $0=No Action, XXX window stopped;

当信号$1=Opening时，表示XXX车窗正在打开；  
When $1=Opening, XXX window is opening;

当信号$2=Closing时，表示XXX车窗正在关闭；  
When $2=Closing, XXX window is closing;

当信号$3= Unknown时，表示XXX的状态未知；  
When $3= Unknown, XXX window’s motion status unknown.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

**车窗百分比位置及有效性/Percentage Position and Validity of Windows**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** |  | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Window Percentage Position Status |  | 7 | UNM | 0-100% | E=N\*1 |

XXX可以是 Driver, Passenger, Rear Left 和 Rear Right，这个信号用于表示天窗的百分比位置，精度为1%.

XXX can be Driver, Passenger, Rear Left and Rear Right. This signal is used to indicate the percentage position of sunroof with an accuracy of 1%.

当***XXX Window Percentage Position Status*** = 0，表示XXX车窗完全关闭；

When ***XXX Window Percentage Position Status*** = 0, XXX window is fully closed;

当***XXX Window Percentage Position Status*** = 100%，表示XXX车窗完全开启；

When ***XXX Window Percentage Position Status*** = 100%, XXX window is fully open.

信号收发/TX and RX:BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Window Percentage Position Status Validity | 1 | ENM | N/A | $0 = valid; $1 = invalid |

XXX可以是 Driver, Passenger, Rear Left 和 Rear Right，这个信号用于表示天窗百分比信号 (***XXX Window Percentage Position Status***) 的有效性。

XXX can be Driver, Passenger, Rear Left and Rear Right. This signal is used to indicate the validity of ***XXX window Percentage Position Status***.

当信号***XXX Window Percentage Position Status Validity*** =$0 valid时，表示信号***XXX Window Percentage Position Status***是有效的；

When ***XXX Window Percentage Position Status Validity*** =$0 valid, ***XXX Window Percentage Position Status*** is valid.

当信号***XXX Window Percentage Position Status Validity*** =$1 invalid时，表示信号***XXX Window Percentage Position Status***是无效的

When ***XXX Window Percentage Position Status Validity*** =$1 invalid, ***XXX Window Percentage Position Status*** is invalid, VCU will ignore this message.

信号收发/TX and RX:BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 车窗未初始化提示/Prompt That the Window is Not Initialized

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Window Not Normalized Indication On | 1 | BLN | N/A | $0=False; $1=True |

XXX可以是 Driver, Passenger, Rear Left 和 Rear Right，这个信号用于表示XXX车窗未初始化的提示，在车窗未初始化的状态下，不允许VCS对车窗进行控制，VCS需要引导用户进行车窗初始化操作。

XXX can be Driver, Passenger, Rear Left and Rear Right. This signal is used to indicate that XXX window is not initialized. VCS is not allowed to control the window when the window is not initialized. VCS needs to guide the user to initialize the window.

当***XXX Window Not Normalized Indication On*** = $0 False 时，表示不需要提示用户；

When ***XXX Window Not Normalized Indication On*** = $0 False, no remind.

当***XXX Window Not Normalized Indication On*** = $1 True时，表示车窗未完成初始化，需要提示用户XXX车窗未完成初始化

When ***XXX Window Not Normalized Indication On*** = $1 True, reminding user to normalize XXX window.

信号收发/TX and RX:BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 车窗系统控制的GB信号/GB Signal of Window Control

本章节描述的是GB架构中，车窗控制所使用的信号。

###### 车窗的配置信息/Window Configuration

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Infotainment Window Motion Control XXX Available | 1 | BLN | N/A | $0 = Not Available; $1 = Available |

XXX可以是Left Front, Right Front, Left Rear和Right Rear，该信号表示车辆是否配置了支持娱乐系统虚拟按键控制和语音控制的车窗系统。

当信号$0= Not Available时，表示XXX窗户不支持被娱乐系统控制；

当信号$1= Available时，表示XXX窗户支持被娱乐系统控制；

###### 车窗模块当前是否可被控制/Availability of Windows Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Infotainment Window Motion Control XXX Allowed | 1 | BLN | N/A | $0=False; $1=True |

XXX可以是Left Front, Right Front, Left Rear和Right Rear，该信号表示车辆的车窗在当前时刻是否可以被娱乐系统的虚拟按键控制和语音控制。

当信号$0= False时，表示XXX窗户当前时刻不可以被娱乐系统控制；

当信号$1= True时，表示XXX窗户当前时刻可以被娱乐系统控制；

###### 对车窗的控制请求/Control Requests for Windows

本章节描述的是娱乐系统对车窗系统的控制请求信号。

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| HMI General Information 3 Protected : Infotainment Window Motion XXX Request | 2 | ENM | N/A | $0=No Request;  $1=Move Fully Up;  $2=Move Fully Down;  $3=Vent |

XXX可以是Left Front, Right Front, Left Rear和Right Rear，这个信号用于表示XXX车窗未初始化的提示，在车窗未初始化的状态下，不允许VCS对车窗进行控制，VCS需要引导用户进行车窗初始化操作。

当信号$0=No Request时，表示没有车窗控制的请求，默认发送值；

当信号 $1= Move Fully Up时， 用于娱乐系统请求BCM完全关闭XXX车窗；

当信号$2= Move Fully Down时，用于娱乐系统请求BCM完全打开XXX车窗；

当信号$3=Vent，用于娱乐系统请求BCM控制XXX车窗运动至通风位置；

###### 车窗状态反馈/State Feedback of Window

**车窗位置状态/Window Position:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Window Position Status XXX | 3 | ENM | N/A | $0 = Denormalized;  $1 = Fully Closed;  $2 = Less Than Position A;  $3 = Position A;  $4 = Greater Than A but less than Position C;  $5 = Position C;  $6 = Greater than Position C but less than Fully open;  $7 = Fully Open |

XXX可以是 Left Front, Right Front, Left Rear和Right Rear，这个信号用于表示车窗的位置状态。枚举值与天窗状态的对应关系如下(其中Position A,B,C 均表示区域，而不是具体的点)：

|  |  |
| --- | --- |
| **Window Status** | **Schematic** |
| $1= Fully Closed |  |
| $2= Less Than Position A |
| $3=Position A |
| $4= Greater Than A but less than Position C |
| $5=Position C |
| $6= Greater than Position C but less than Fully open |
| $7= Fully Open |
| $0= Denormalized | 车窗未初始化 |

#### 车窗系统控制的特殊情况说明/Special Case Description of Window Control

车窗控制、遮阳帘控制以及禁窗锁控制存在一下特殊情况，请参考以下章节的描述。

There are some special situations in window control, side sunblind control and window lock control, please refer to the description in the following sections.

##### 车窗与侧边遮阳帘的联动关系/Linkage Relationship Between Window and Side Sunblind

在同时配置了电动侧边遮阳帘和电动车窗的车型中，如果两者都支持娱乐系统控制，他们存在以下两点关系：

In a vehicle equipped with both power side sunblind and power window, if both support entertainment system control, they have the following two relationships:

当车窗和侧边遮阳帘都处于关闭的情况下：

When the window and side sunblind are closed:

1. 用户打开车窗至任意位置，BCM会先控制侧边遮阳帘全部打开，再移动车窗至指定位置/When the user is try to open window to any position, BCM will control the side sunblind to be fully opened before moving the window to the designated position;
2. 用户打开侧边遮阳帘，车窗不受影响/When the user try to open the side sunblind, the window is not affected

当车窗处于非关闭状态，遮阳帘全部打开的情况下：

When the window is not closed and the side sunblind is fully open:

1. 控制车窗全关闭，遮阳帘不受影响/Control the windows to be fully closed, without affecting the side sunblind;
2. 控制关闭遮阳帘，BCM会先控制关闭车窗，然后再关闭遮阳帘/When user control to close the side sunblind. BCM will control to close the window first and then close the side sunblind;

#### 车窗控制的适用架构/Architectural Applicability of Window Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global – Buick

### 全车窗控制/Control of All Windows

当前车辆四扇车窗全部支持系统控制时，系统提供对全部车窗一键打开或关闭的能力。该功能支持的打开和关闭操作指的是完全开启和完全关闭。特别地，车辆仅支持部分车窗控制时，系统不支持一键开关全车窗功能。

When all the four windows of the current vehicle support the system control, the system shall have the one-touch up/down function to open or close all windows. The operations of opening and closing supported by this function means the full opening and closing. In particular, when the vehicle supports separate window control only, the system shall not have the one-touch up/down function to open/close all windows.

用户对全车窗进行打开/关闭操作时，系统需同时向全部车窗发送打开/关闭的总线消息。

When the user performs the operation of opening/closing all windows, the system shall send the On/Off bus message to all windows at the same time.

#### 全车窗控制的适用架构/Architectural Applicability of All Windows Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global – B

### 禁窗锁/Power Window Lock-Out

系统支持用户对禁窗锁进行开关操作。禁窗锁开启状态下，侧边遮阳帘也不支持用户通过后排车门上的物理按键控制。

The system allows the user to lock/unlock the Power Window Lock-Out.

需要通过标定P\_VEHICLE\_CONTROL\_POWER\_WINDOW\_LOCKOUT\_ENABLE确认车辆的禁窗锁是否支持娱乐系统控制。

#### 禁窗锁控制支持的用户操作/User Operations Supported by Power Window Lock-Out

禁窗锁控制支持以下用户操作：

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 禁窗锁开启/Turn on power window lock-out | VC Only | VC Only |
| 禁窗锁关闭/Turn off power window lock-out | VC Only | VC Only |

#### 禁窗锁状态可视化/Power Window Lock-Out Visualization

车辆的禁窗锁控制可视化需要支持显示以下信息：

The visualization of power window lock-out control needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 禁窗锁的开关状态/Status of power window lock-out | Yes | Yes |

#### 禁窗锁控制的功能安全要求/Functional Safety Requirements for Power Window Lock-Out Control

通过娱乐系统实现对车窗禁窗锁的虚拟按键控制的功能安全要求为：QM。

The functional safety requirements for virtual control of power window lock-out through entertainment system are: QM.

#### 禁窗锁控制支持的整车电源模式/Vehicle Power Mode of Power Window Lock-Out Control

车窗禁窗锁支持虚拟按键控制的整车电源模式为：

The power mode of virtual control and voice assistant control of power window lock-out are as follows:

a) Power Mode ACC

b) Power Mode RUN

c) Power Mode RAP

d) Power Mode OFF [GB only]

需要注意的是，Global B车型禁窗锁功能需要在整车电源模式为OFF的时候也能够支持，以便在没有车钥匙时也能够操作。

The Virtual Power Window Lockout Control shall be active in all power modes for Global B vehicles, in particular, including the Off power mode since the Virtual Power Window Lockout Control must be available to the user without the vehicle key.

#### 禁窗锁控制的性能要求/KPI for Power Window Lock-Out Control

车窗禁窗锁控制需要满足以下要求：

Window lock control shall meet the following requirements:

**用户操作到模块响应的性能要求：**

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode ACC  Power Mode RUN  Power Mode RAP  Power Mode OFF [GB only] |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮;  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 禁窗锁开始执行按钮对应的指令  Power window lock-out start to execution |

**车窗禁窗锁的可视化性能要求：**

**Visual performance requirements of window lock-out:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode ACC  Power Mode RUN  Power Mode RAP  Power Mode OFF [GB only] |
| 计时起始条件  The KPI timer start condition | 用户通过物理按键改变禁窗锁的状态;  The user changes the state of the power window lock-out through physical button; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的车窗禁窗锁状态  The entertainment system displays the corresponding power window lock-out status |

#### 禁窗锁控制的信号/Signals of Power Window Lock-Out Control

本章节描述的是禁窗锁控制中使用到的CAN信号。

This section describes the CAN signal used in the control of window lock-out.

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA Signal Name** | **GB Signal Name** |
| Configuration | N/A | N/A |
| Available | Virtual Control Power Window Lockout Status : Control Available | Virtual Control Power Window Lockout Status : Control Available |
| Status | Virtual Control Power Window Lockout Status : Current Selection Value | Virtual Control Power Window Lockout Status : Current Selection Value |
| Request | Virtual Control Power Window Lockout Request | Virtual Control Power Window Lockout Request |

##### 禁窗锁控制的CLEA信号/CLEA Signal List of Power Window Lock-Out Control

本章节描述的是CLEA机构中使用的禁窗锁控制信号。

This section describes the control signal of window lock-out used in CLEA mechanism.

###### 禁窗锁的配置信息/Power Window Lock-Out Configuration

N/A

###### 禁窗锁当前是否可被控制/Availability of Power Window Lock-Out Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Virtual Control Power Window Lockout Status : Control Available | 1 | BLN | N/A | $0=False; $1=True |

这个信号用于表示禁窗锁当前状态下是否可以被娱乐系统控制，当禁窗锁被高优先级控制器占用或者模块损坏时会导致模块无法被娱乐系统控制。

This signal is used to indicate whether the window lock-out can be controlled by the entertainment system in the current state. When the window lock-out is occupied by a high priority controller or the module is damaged, the module cannot be controlled by the entertainment system.

当信号$0 = False时，表示当前时刻，禁窗锁不支持娱乐系统进行控制。

When $0 = False, window lockout does not support controlled by VCU at current time.

当信号$1 = True时，表示当前时刻，禁窗锁支持娱乐系统进行控制。

When $1 = True, window lockout can be controlled by VCU at current time.

信号交互/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对禁窗锁的控制请求/Control Request for Power Window Lock-Out

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Virtual Control Power Window Lockout Request | 2 | ENM | N/A | $0 = No Action $1 = On $2 = Off |

这个信号用于娱乐系统请求BCM打开和关闭禁窗锁。

This signal is used by the entertainment system to request BCM to turn on and turn off the power window lock-out.

当信号$0=No action时，表示娱乐系统没有请求；

When $0=No action, there is no VCU request;

当信号$1=On时，表示娱乐系统请求开启禁窗锁；

When $1=On, VCU is request BCM to turn on the window lockout;

当信号$2=Off时，表示娱乐系统请求关闭禁窗锁；

When $2=Off, VCU is request BCM to turn off window lockout;

信号交互/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 禁窗锁状态反馈/State Feedback of Power Window Lock-Out

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Virtual Control Power Window Lockout Status : Current Selection Value | 2 | ENM | N/A | $0 = Unknow $1 = On $2 = Off |

这个信号用于获取禁窗锁当前的状态。

This signal is used to obtain the current status of the power window lock-out.

当信号$0 = Unknown时，表示禁窗锁的状态未知；

When $0 = Unknown, there is no VCU request;

当信号$1=On时，表示禁窗锁当前处于开启的状态；

When $1=On, Indicates that the window lock-out is currently open；

当信号When $2=Off时，表示禁窗锁当前处于关闭的状态；

When $2=Off, Indicates that the window lock-out is currently close;

信号交互/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 禁窗锁控制的GB信号/ GB Signal of Power Window Lock-Out Control

本章节描述的是GB架构中使用的禁窗锁控制的CAN信号。

This section describes the CAN signal of window lock-out control used in GB architecture.

Global B车型的控制信号请参考 FG.03.02.03 - Closures Virtual Switches（2020年7月10日打印版本）的第2章节。



#### 禁窗锁控制的特殊情况说明/Special Case Description of Power Window Lock-Out Control

N/A

#### 禁窗锁控制的适用架构/Architectural Applicability of Power Window Lock-out

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B

### 侧边遮阳帘/Sind Sunblind Control

娱乐系统支持通过虚拟按键和语音助手控制车辆的电动侧边遮阳帘。

The entertainment system supports controlling the electric side sunshade of the vehicle through virtual buttons and voice assistants.

系统通过标定P\_VEHICLE\_CONTROL\_SIDE\_SUNBLIND\_CONFIGURATION确认车辆的侧边遮阳帘是否支持娱乐系统控制。

当标定值为0 "VC\_Side\_Sunblind\_None"时，表示侧边遮阳帘不支持娱乐系统的控制；

当标定值为 1 "VC\_Side\_Sunblind\_Comfort\_Control" 时，表示侧边遮阳帘支持娱乐系统控制，非百分比控制；

当标定值为2 "VC\_Side\_Sunblind\_Percentage\_Control" 时，表示侧边遮阳帘支持娱乐系统控制，百分比控制；

#### 侧边遮阳帘控制支持的用户操作/User Operation Supported by Side Sunblind Control

车辆的侧边遮阳帘控制支持以下操作：

The side sunshade control of the vehicle supports the following operations:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开左后或者右后的侧窗遮阳帘/Open the left or right rear side sunblind | VC + VAC | N/A |
| 关闭左后或者右后的侧窗遮阳帘/ Close the left or right rear side sunblind | VC + VAC | N/A |

#### 侧边遮阳帘状态可视化/Side Sunblind Visualization

车辆侧边遮阳帘的状态可视化需要支持显示以下信息：

The visualization of the status of the side sunshade of the vehicle needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 侧边遮阳帘具体位置/Position of Side Sunblind | Yes | N/A |
| 侧边遮阳帘的运动状态/Motion State of Side sunblind | Yes | N/A |
| 遮阳帘未初始化提示/Not Normalization Remind | Yes | N/A |

#### 侧边遮阳帘控制的功能安全要求/Functional Safety Requirements for Side Sunblind Control

娱乐系统对车辆的侧边遮阳帘的虚拟按键控制和语音控制的功能安全等级为：QM；

The functional safety level of virtual key control and voice control of the side sunblind of the vehicle by the entertainment system is QM.

#### 侧边遮阳帘控制支持的整车电源模式/Vehicle Power Mode of Side Sunblind Control

侧边遮阳帘支持娱乐系统的虚拟按键控制和语音控制的整车电源模式为：

The side sunblind supports the virtual control and voice control of the entertainment system, and the vehicle power modes are as bellow:

1. Power Mode ACC,
2. Power Mode RUN,
3. Power Mode RAP,

#### 侧边遮阳帘控制的性能要求/KPI for Side Sunblind Control

侧边遮阳帘控制需要满足以下要求：

The control of side sunblind curtain needs to meet the following requirements:

**用户操作到模块响应的性能要求：**

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于120ms  Latency less than 120ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN  Power Mode RAP, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮;  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 侧边遮阳帘开始执行按钮对应的指令  The side sunblind curtain starts to execute the instruction corresponding to the button |

**侧边遮阳帘的可视化性能要求：**

**Visual performance requirements of side sunshade curtain:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于120ms  Latency less than 120ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN,  Power Mode RAP, |
| 计时起始条件  The KPI timer start condition | 用户通过物理按键改变侧边遮阳帘的状态  The user changes the state of the side sunblind through physical keys |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的车窗禁窗锁状态  The entertainment system displays the corresponding window lock prohibition status |

#### 侧边遮阳帘控制的信号/Signal of Side Sunblind Control

以下是侧边遮阳控制使用的CAN信号：

The following CAN signals are used for side sunblind control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA Signal Name** | **GB Signal Name** |
| Configuration | Rear Left Side Sunblind Configuration | N/A |
| Rear Right Side Sunblind Configuration | N/A |
| Available | Rear Right Side Sunblind Available | N/A |
| Rear Right Side Sunblind Available | N/A |
| Request | Rear Left Side Sunblind Infotainment Comfort Request | N/A |
| Rear Right Side Sunblind Infotainment Comfort Request | N/A |
| Status | Rear Left Side Sunblind Position Status | N/A |
| Rear Right Side Sunblind Position Status | N/A |
| Remind(Not Normalization) | Rear Left Side Sunblind Normalization Required Indication On | N/A |
| Rear Right Side Sunblind Normalization Required Indication On | N/A |

##### 侧边遮阳帘控制的CLEA信号/CLEA Signal of Side Sunshade Control

本章节描述的是CLEA架构车型中侧边遮阳帘控制使用的CAN信号。

This section describes the CAN signal used for side sunblind control in CLEA architecture.

###### 侧边遮阳帘的配置信息/Configuration of Side Sunblind

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Side Sunblind Configuration | 1 | BLN | N/A | $0=False; $1=True |

XXX可以是Rear Left 和 Rear Right，这个信号代表车辆是否配置了可被娱乐系统控制的侧边遮阳帘。

XXX can be Rear Left and Rear Right. This signal represents whether the vehicle is equipped with side sunshade that can be controlled by entertainment system.

当信号***XXX Side Sunblind Configuration*** =$0 False时，表示没有支持娱乐系统控制的侧边遮阳帘；

When ***XXX Side Sunblind Configuration*** =$0 False, there is no side sunblind that can be controlled by VCU.

当信号***XXX Side Sunblind Configuration*** =$1 True时，表示有支持娱乐控制的侧边遮阳帘；

When ***XXX Side Sunblind Configuration*** =$1 True, there have side sunblind that can be controlled by VCU.

信号收发/TX and RX：BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 侧边遮阳帘当前是否可以被控制/Availability of Side Sunblind Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Side Sunblind Available | 1 | BLN | N/A | $0=False; $1=True |

XXX可以是Rear Left 和 Rear Right，这个信号代表车辆的侧边遮阳帘系统当前时刻是否可以被娱乐系统控制，当侧边遮阳帘被高优先级控制器占用，或者模块损坏时会导致其不可以被娱乐系统控制。

XXX can be Rear Left and Rear Right. This signal represents whether the side sunblind system of the vehicle can be controlled by the entertainment system at present time. When the side sunblind system is occupied by the high priority controller or the module is damaged, it can not be controlled by the entertainment system.

当信号***XXX Side Sunblind Available*** =$0 False时，表示XXX侧边遮阳帘当前时刻不支持娱乐系统的控制；

When ***XXX Side Sunblind Available*** =$0 False, XXX side sunblind does not support control by VCU at current time.

当信号***XXX Side Sunblind Available*** =$1 True时，表示XXX侧边遮阳帘当前时刻支持娱乐系统的控制；

When ***XXX Side Sunblind Available*** =$1 True, XXX Side Sunblind which can be controlled by VCU at current time.

信号收发/TX and RX：BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 对侧边遮阳帘的控制请求/Control Request of Side Sunblind

本章节描述的是侧边遮阳帘控制请求的信号，对于侧边遮阳帘控制和车窗控制的联动关系请参考<>。

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Side Sunblind Infotainment Comfort Request | 1 | 2 | ENM | $0=No action;  $1=Comfort Close;  $2=Comfort Open; |

XXX可以是Rear Left 和 Rear Right，这个信号用于娱乐系统请求BCM控制侧边遮阳帘的开关。

XXX can be Rear Left and Rear Right. This signal is used for entertainment system to request BCM to control the switch of side sunblind.

当信号$0=No action时，表示娱乐系统没有请求；

When $0=No action, there is no VCU request;

当信号$1=Comfort Close时，表示娱乐系统请求BCM关闭XXX的侧边遮阳帘；

When $1=Comfort Close, VCU is request BCM to control XXX side sunblind to close;

当信号$2=Comfort Open时，表示娱乐系统请求BCM打开XXX的侧边遮阳帘；

When $2=Comfort Open, VCU is request BCM to control XXX side sunblind to open;

信号收发/TX and RX：VCU 🡪 BCM

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 侧边遮阳帘状态反馈/State Feedback of Side Sunblind

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Side Sunblind Position Status | 3 | ENM | N/A | $0=Unknown;  $1=fully closed;  $2=fully open;  $3=Opening;  $4=Closing; |

XXX可以是Rear Left 和 Rear Right，这个信号用于反馈侧边遮阳帘的位置状态和运动状态。

XXX can be Rear Left and Rear Right, and this signal is used to feed back the position state and motion state of the side sunblind.

当信号$0 = Unknown时，表示BCM无法获取当前侧边遮阳帘的状态；

When $0 = Unknown, BCM cannot send XXX Side Sunblind’s motion status exactly.

当信号$1 = fully closed时，表示XXX车窗的侧边遮阳帘当前是完全关闭的；

When $1 = fully closed, XXX Side Sunblind is fully closed.

当信号$2 = fully open时，表示XXX车窗的侧边遮阳帘当前是完全打开的；

When $2 = fully open, XXX Side Sunblind is fully open.

当信号$3 = OPENING时，表示XXX车窗的侧边遮阳帘当前处于正在打开的状态；

When $3 = OPENING, XXX Side Sunblind is opening.

当信号$4 = CLOSING时，表示XXX车窗的侧边遮阳帘当前处于正在关闭的状态；

When $4 = CLOSING, XXX Side Sunblind is closing.

信号交互/TX and RX： BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 侧边遮阳帘未初始化提示/Prompt That the Side Sunblind is Not Initialized

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Side Sunblind Normalization Required Indication On | 1 | BLN | N/A | $0=False; $1=True |

XXX可以是Rear Left 和 Rear Right，这个信号用于反馈侧边遮阳量的未初始化信息，娱乐系统在侧边遮阳帘未初始化时，需要以恰当的方式提示和引导用户。

XXX can be Rear Left and Rear Right. This signal is used to feed back the uninitialized information of the side sunblind. When the side sunblind is uninitialized, the entertainment system needs to prompt and guide the user in an appropriate way.

当信号***XXX Side Sunblind Normalization Required Indication On*** =$0 False时，表示XXX侧边遮阳帘已经完成初始化；

When ***XXX Side Sunblind Normalization Required Indication On*** =$0 False, XXX Side Sunblind has normalized.

当信号***XXX Side Sunblind Normalization Required Indication*** On =$1 True时，表示XXX侧边遮阳帘未完成初始化，IPC/IVI应该提示驾驶员去初始化XXX侧边遮阳帘。

When ***XXX Side Sunblind Normalization Required Indication*** On =$1 True, XXX Side Sunblind is not normalized, IPC/IVI shall indicate the driver to normalize XXX Side Sunblind by certain steps.

信号交互/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

##### 侧边遮阳帘控制的GB信号/GB Signal of Side Sunblind Control [Delete]

#### 侧边遮阳帘控制的特殊情况说明/Special Case Description of Side Sunblind Control

电动侧边遮阳帘系统在支持被娱乐系统控制的情况下，其必然是与电动车窗存在联动关系。

When the power side sunblind is supported to be controlled by the entertainment system, it must have a linkage relationship with the power window.

##### 侧边遮阳帘与车窗的联动关系/Linkage Relationship Between Side Sunblind and Window

侧边遮阳帘与车窗的联动关系请参考< [3.3.1.7.1 车窗与侧边遮阳帘的联动关系/Linkage Relationship Between Window and Side Sunblind](#_车窗与侧边遮阳帘的联动关系/Linkage_Relationship_)>.

Please refer to < [3.3.1.7.1 车窗与侧边遮阳帘的联动关系/Linkage Relationship Between Window and Side Sunblind](#_车窗与侧边遮阳帘的联动关系/Linkage_Relationship_)> for the linkage relationship between side sunblind and window.

#### 侧边遮阳帘控制的适用架构/Architectural Applicability of Side Sunblind Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

## 座椅系统/Seats

本章节描述的是座椅系统支持的虚拟化按键控制和语音助手控制。

通过标定P\_VEHICLE\_CONTROL\_FIRST\_ROW\_SEAT\_VENTED\_ENABLE确认车子前排的座椅是否支持座椅通风模式的娱乐系统控制；

通过标定P\_VEHICLE\_CONTROL\_FIRST\_ROW\_SEAT\_BACK\_AND\_CUSHION\_HEATED\_ENABLE确认前排座椅的坐垫+靠背加热是否支持娱乐系统控制；

通过标定P\_VEHICLE\_CONTROL\_FIRST\_ROW\_SEAT\_BACK\_HEATED\_ENABLE确认前排座椅的仅靠背加热是否支持娱乐系统控制。功能暂不支持，预留标定，未特殊注明则使用False值；

通过标定P\_VEHICLE\_CONTROL\_SECOND\_ROW\_SEAT\_VENTED\_ENABLE确认二排座椅的通风模式是否支持娱乐系统控制；

通过标定P\_VEHICLE\_CONTROL\_SECOND\_ROW\_SEAT\_BACK\_AND\_CUSHION\_HEATED\_ENABLE确认二排座椅的靠背+坐垫加热是否支持娱乐系统控制；

通过标定P\_VEHICLE\_CONTROL\_SECOND\_ROW\_SEAT\_BACK\_HEATED\_ENABLE确认二排座椅的仅靠背加热是否支持娱乐系统控制。功能暂不支持，预留标定，未特殊注明则使用False值；

通过标定P\_VEHICLE\_CONTROL\_THIRD\_ROW\_SEAT\_VENTED\_ENABLE确认三排座椅的座椅通风模式是否仅支持娱乐系统控制；

通过标定P\_VEHICLE\_CONTROL\_THIRD\_ROW\_SEAT\_BACK\_AND\_CUSHION\_HEATED\_ENABLE确认三排座椅的座椅靠背+坐垫加热是否支持娱乐系统控制；

通过标定 P\_VEHICLE\_CONTROL\_THIRD\_ROW\_SEAT\_BACK\_HEATED\_ENABLE 确认三排座椅的仅靠背~~家人~~加热是否支持娱乐系统控制。功能暂不支持，预留标定，未特殊注明则使用False值；

### 座椅加热通风/Heat & Vent Seat

系统支持用户分别对每一个座椅进行单独控制。整车最多支持6个控制单元，用户能够对每个控制单元的加热和通风两个功能分别进行控制。每个座椅控制单元可单独配置加热或通风，系统需要根据相关总线信号获取当前车辆配置信息。由于加热、通风两个功能的控制逻辑类似，下文将对两个功能进行统一的功能描述。

The system allows the user to control each seat separately. A vehicle contains 6 control units at most, and the user is allowed to control the heating and ventilation functions of each control unit separately. Each seat control unit is allowed to be configured with heating or ventilation separately while the system shall acquire the configuration information of current vehicle based on the related bus signals. For the similarity in control logic of the two functions, namely heating and ventilation, the following is to give a unified functional description for two functions.

座椅加热/通风功能均支持高、中、低三档调节以及关闭操作。座椅加热/通风控制项的默认调节顺序为：关闭->高档->中档->低档->关闭。系统需要支持用户将座椅加热/通风功能调节至任意挡位。

The seat heating/venting function supports three-level adjustment (high, medium and low) and shutdown operation. The default adjustment sequence for seat heating/ventilation control item is: Shutdown -> High Level -> Medium Level -> Low Level -> Shutdown. The system shall support the user to adjust the seat heating/ventilation function to any level.

系统需要根据相关总线信号反馈显示当前座椅状态，通常情况下，座椅加热功能与座椅通风功能无法同时开启。若用户打开座椅加热后，又同时打开了座椅通风，则座椅加热会自动关闭。

The system shall display the current seat status based on the related bus signal feedback. Under normal circumstances, the heating function and ventilation function of seat are not allowed to be activated at the same time. After the user has enabled the seat heating function and further turns on the seat ventilation function, the seat heating function shall be shut down automatically.

系统需要根据相关总线信号判断当前车辆座椅加热/通风的具体配置。若车辆部分座椅不支持加热，或不支持通风功能，本系统无法对该座椅不支持的功能进行控制。例如：某些车型第三排座椅不支持 “自动座椅通风” ，那么在界面上第三排座椅的 “自动座椅通风”操作入口需要根据交互设计要求做隐藏或置为不可操作状态。

The system shall acquire the specific configuration of current vehicle to undergo seat heating/ventilation based on the related bus signal. In case some of the vehicle seats do not support heating or ventilation, the system shall be unable to control the function that is not supported by the seats. For example, in some models, the third-row seats do not support “automatic seat ventilation”; in this case, the operation entry of “automatic seat ventilation” for the third-row seats on the interface shall be hidden or set to be inoperable as required by the interaction design.

#### 座椅加热通风支持的用户操作/User Operation Supported by Seat Heated and Vented Control

本章节描述的是座椅加热通风支持的用户操作（XX可以是驾驶员、乘客、二排左侧、二排右侧、三排左侧[CLEA Only]、三排右侧[CLEA Only]）：

This chapter describes the user operation of seat heated and vented support (XX can be driver, passenger, left side of second row, right side of second row, left side of third row, right side of third row):

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| XX座椅加热/通风模式调节，支持的模式有~~最多支持三种模式调节(靠背加热、椅垫和靠背加热、椅垫和靠背通风)~~：   * CLEA：靠背和坐垫、腿托（如有）一体化加热及挡位调节 * CLEA：靠背和坐垫、腿托（如有）一体化通风及挡位调节 * GB-Buick：靠背和坐垫加热及挡位调节 * GB-Buick：靠背和坐垫通风及挡位调节 * GB-Buick：仅靠背加热及挡位调节 | VC + VAC | VC + VAC |
| ~~XX座椅的靠背加热挡位调节~~ | ~~VC + VAC~~ | ~~VC + VAC~~ |
| ~~XX座椅的椅垫和靠背加热挡位调节~~ | ~~VC + VAC~~ | ~~VC + VAC~~ |
| ~~XX椅垫和靠背通风挡位调节~~ | ~~VC + VAC~~ | ~~VC + VAC~~ |

备注：GB 车型不支持三排左侧和三排右侧的座椅加热通风的控制。

Note: Global B vehicle unsupported third row left and right seat vented and cooled control.

#### 座椅加热通风状态可视化/Heated and Vented Seat Visualization

车辆座椅加热通风的状态可视化需要支持显示以下信息（XX可以是驾驶员、乘客、二排左侧、二排右侧、三排左侧[CLEA Only]、三排右侧[CLEA Only]）：

The visualization of vehicle seat heated and vented state needs to support the display of the following information (XX can be driver, passenger, left side of the second row, right side of the second row, left side of the third row, right side of the third row):

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| ~~XX座椅的座椅加热通风模式，最多支持三种模式状态显示~~ | ~~Yes~~ | ~~Yes~~ |
| XX座椅的靠背加热挡位状态(仅GB) | No ~~Yes~~ | Yes |
| XX座椅的椅垫和靠背的加热挡位状态 | Yes | Yes |
| XX座椅的椅垫和靠背通风挡位状态 | Yes | Yes |
| XX座椅的颈枕加热挡位调节(仅458四座) | Yes | No |
| XX座椅的腿托加热挡位调节(仅458四座) | Yes | No |

备注：GB 车型不支持三排左侧和三排右侧的座椅加热通风状态显示。

Note: Global B vehicle unsupported third row left and right seat vented and cooled status display.

备注2：信号支持如本节所述，具体HMI显示规则参考UE文档《PIS-3046 Vehicle Control》第5章节。

#### 座椅加热通风控制的功能安全要求/Functional Safety Requirements for Heat and Vent Seat Control

车辆的座椅加热通风对的娱乐系统虚拟按键控制和语音控制的功能安全等级为：QM。

The functional safety level of virtual control and voice control of entertainment system of vehicle seat heated and vented control is QM

#### 座椅加热通风控制的整车电源模式/Vehicle Power Mode of Heat and Vent Seat Control

座椅加热通风支持娱乐系统虚拟按键控制和语音控制的整车电源模式为：

The power mode of virtual control and voice assistant control of the seat heated and vented are as follows:

1. Power Mode ACC [GB only]
2. Power Mode RUN
3. Power Mode RAP [GB only]

#### 座椅加热通风控制的性能要求/ KPI for Sunroof Control

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮  The user clicked the virtual button on the screen |
| 计时结束条件  The KPI timer stop condition | 座椅模块开始执行按钮对应的指令  The seat module starts to execute the command corresponding to the button |

**座椅加热通风的可视化性能要求：**

**Visual performance requirements of seat heated and ventied:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户通过物理按键改变座椅加热通风的状态  The user changes the state of seat heated and vented through physical buttons |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的座椅加热通风的状态  The corresponding seat heated and vented status is displayed in the entertainment system |

#### 座椅加热通风的信号/ Signal of Seat Heated and Vented

如下信号适用于自CLEA 23.42起的数据库。

|  |  |
| --- | --- |
| **Type** | **CLEA** |
| Configuration | XXX Seat Heated Area XX Configuration |
| XXX Seat Vented Area XX Configuration |
| Availability | XXX Heated Seat Area XX Available |
| XXX Vented Seat Area XX Available |
| Request | HMI XXX Seat Heated Area XX Request |
| HMI XXX Seat Vented Area XX Request |
| Status | XXX Seat Heated Area XX Indication: Indication Request |
| XXX Seat Heated Area XX Indication: Level X |
| XXX Seat Vented Area XX Indication: Indication Request |
| XX Seat Vented Area XX Indication: Level X |

其中，XXX代表座椅位置，可以是Driver，Passenger，Rear Left，Rear Right，Third Row Left或Third Row Right。

XX代表座椅区域，可以是1（cushion&back），2（leg）或3（neck）。

X代表加热/通风等级，可以是1（low level），2（mid level）或3（high level）。

如下信号适用于GB 23.23.157起的数据库。

|  |  |
| --- | --- |
| **Type** | **GB** |
| Configuration | Virtual Front Heated and Vented Seat Control Available |
| Virtual Rear Heated and Vented Seat Control Available |
| Availability | Front Seat Heat Back Available |
| Rear Seat Heat Back Available |
| Front Seat Heat Cushion and Back Available |
| Rear Seat Heat Cushion and Back Available |
| Front Seat Ventilation or Cooled Available |
| Rear Seat Ventilation or Cooled Available |
| Request | Request XXX Seat Heat Back Level |
| Request XXX Seat Heat Cushion and Back Level |
| Request XXX Seat Ventilation or Cooled Level |
| Status | Indication Heated Vented Seat XXX : XX Level 1 |
| Indication Heated Vented Seat XXX : XX Level 2 |
| Indication Heated Vented Seat XXX : XX Level 3 |
| Indication Heated Vented Seat XXX : XX Auto |
| Indication Heated Vented Seat XXX : XX Mode |

其中，XXX代表座椅位置，可以是Front Left，Front Right，Rear Left或Rear right。

XX代表座椅加热或通风的区域，可以是Heated Cushion and Back，Heated Back或Vented。

~~以下是座椅加热通风控制功能中使用到的信号列表” Signal List for Seat Vented Heated\_0.0.2.xlsx”：~~

~~Signals List “Signal List for Seat Vented Heated\_0.0. 2.xlsx” for seat vented cooled control as bellow:~~

~~~~

##### 座椅加热通风的CLEA信号/CLEA Signal of Seat Heated and Vented

本章节描述的是CLEA架构中座椅加热通风使用的CLEA信号。

This section describes CLEA signals used for seat heated and vented in CLEA architecture.

###### 座椅加热通风的配置信息/Configuration of Heated and vented Seat

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Seat Heated Area XX Configuration  ~~XXX Heated Seat Configuration~~ | 1 | BLN | N/A | $0=False; $1=True |
| XXX Seat Vented Area XX Configuration  ~~XXX Vent Seat Configuration~~ | 1 | BLN | N/A | $0=False; $1=True |

~~XXX可以是Driver, Passenger, Rear Left, Rear Right, Third Row Left 和Third Row Right，这个信号代表车辆是否配置了可被娱乐系统控制的座椅加热和座椅通风功能。~~

~~XXX can be Driver, Passenger, Rear Left, Rear Right, Third Row Left and Third Row Right. This signal indicates whether the vehicle is equipped with seat heated and seated functions that can be controlled by the entertainment system.~~

当信号***XXX Seat Heated Area XX Configuration ~~XXX Heated Seat Configuration~~*** =$0 False时，表示不支持娱乐系统进行XXX座椅的XX区域的加热控制；

当信号***XXX Seat Heated Area XX Configuration ~~XXX Heated Seat Configuration~~*** =$1 True时，表示支持娱乐系统进行XXX座椅的XX区域的加热控制；

当信号***XXX Seat Vented Area XX Configuration ~~XXX Vent Seat Configuration~~*** =$0 False时，表示不支持娱乐系统进行XXX座椅的XX区域的通风控制；

当信号***XXX Seat Vented Area XX Configuration ~~XXX Vent Seat Configuration~~*** =$1 True时，表示支持娱乐系统进行XXX座椅的XX区域的通风控制；

信号收发/TX and RX：BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 座椅加热通风当前是否可以被控制/Availability of Vented Heated Seat Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Heated Seat Area XX Available | 1 | BLN | N/A | $0=False; $1=True |
| XXX Vented Seat Area XX Available | 1 | BLN | N/A | $0=False; $1=True |
| ~~Driver Heated Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Passenger Heated Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Rear Left Heated Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Rear Right Heated Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Third Row Left Heated Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Third Row Right Heated Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Driver Vent Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Passenger Vent Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Rear Left Vent Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Rear Right Vent Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Third Row Left Vent Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~Third Row Right Vent Seat Available~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |

***~~XXX Heated Seat Available~~*** ~~XXX可以是Driver，Passenger，Rear Left，Rear Right，Third Row Left，Third Row Right.~~

当信号***XXX Heated Seat Area XX Available ~~XXX Heated Seat Available~~*** = $1 True时，表示XXX座椅的XX区域加热当前时刻支持娱乐系统控制；

当信号***XXX Heated Seat Area XX Available ~~XXX Heated Seat Available~~*** = $0 False时，表示XXX座椅的XX区域的加热当前时刻不支持娱乐系统控制；

信号收发/TX and RX：BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

***~~XXX Vent Seat Available~~*** ~~XXX可以是Driver，Passenger，Rear Left，Rear Right，Third Row Left，Third Row Right.~~

当信号***XXX Vented Seat Area XX Available ~~XXX Vent Seat Available~~*** = $1 True时，表示XXX座椅的XX区域通风当前时刻支持娱乐系统控制；

当信号***XXX Vented Seat Area XX Available ~~XXX Vent Seat Available~~*** = $0 False时，表示XXX座椅的XX区域通风当前时刻不支持娱乐系统控制；

信号收发/TX and RX：BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对座椅加热通风的控制请求/Control Request for Seat Heated and Vented

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| HMI XXX Seat Heated Area XX Request | 3 | ENM | 0-4 | $0=No Action;  $1=Level 1;  $2=Level 2;  $3=Level 3;  $4=Off |

当信号HMI XXX Seat Heated Area XX Request = $0 No Action时，表示对XXX座椅的XX区域无座椅加热请求；

当信号HMI XXX Seat Heated Area XX Request = $1 Level 1时，表示对XXX座椅的XX区域发出座椅加热请求，调节到Level 1；

当信号HMI XXX Seat Heated Area XX Request = $2 Level 2时，表示对XXX座椅的XX区域发出座椅加热请求，调节到Level 2；

当信号HMI XXX Seat Heated Area XX Request = $3 Level 3时，表示对XXX座椅的XX区域发出座椅加热请求，调节到Level 3；

当信号HMI XXX Seat Heated Area XX Request = $4 Off时，表示对XXX座椅的XX区域发出关闭座椅加热请求。

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| HMI XXX Seat Vented Area XX Request | 3 | ENM | 0-4 | $0=No Action;  $1=Level 1;  $2=Level 2;  $3=Level 3;  $4=Off |

当信号HMI XXX Seat Vented Area XX Request = $0 No Action时，表示对XXX座椅的XX区域无座椅加热请求；

当信号HMI XXX Seat Vented Area XX Request = $1 Level 1时，表示对XXX座椅的XX区域发出座椅加热请求，调节到Level 1；

当信号HMI XXX Seat Vented Area XX Request = $2 Level 2时，表示对XXX座椅的XX区域发出座椅加热请求，调节到Level 2；

当信号HMI XXX Seat Vented Area XX Request = $3 Level 3时，表示对XXX座椅的XX区域发出座椅加热请求，调节到Level 3；

当信号HMI XXX Seat Vented Area XX Request = $4 Off时，表示对XXX座椅的XX区域发出关闭座椅加热请求。

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

~~座椅加热通风控制使用的是三组信号，详细如下：~~

~~Seat Heated and Vented control uses three sets of signals as follows:~~

**~~座椅椅垫和靠背通风挡位控制/Seat cushion and back vented level control~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~HMI XXX Heated/Cooled Seat Switch #3 Active~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |

~~该信号由VCU提供，虚拟开关的控制逻辑与面板中的物理开关相同。XXX是座椅的位置，可以是驾驶员、乘客、右后/左、第三排左/右。~~

~~This signal is providing by VCU, the control logic of the virtual switch is same with physical switch in faceplate. XXX is the seat’s position, can be driver, passenger, Rear Right/Left, Third Row Left/Right.~~

~~当信号~~***~~HMI XXX Heated/Cooled Seat Switch #3 Active~~*** ~~= $1 True时，通风的档位会按照下面的逻辑变化一次：~~

~~When~~ ***~~HMI XXX Heated/Cooled Seat Switch #3 Active~~*** ~~= $1 True, the Vented Level will be changed once in the following order:~~

**~~Off – High Level – Medium Level – Low Level – Off~~**

~~信号收发/TX and RX: VCU 🡪 BCM~~

~~更新时间/Update Time: 100ms~~

~~信号周期/Periodic Interval: 1000ms~~

**~~座椅靠背加热挡位控制/Seat back heated level control~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~HMI XXX Heated/Cooled Seat Switch #2 Active~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |

~~他的信号由VCU提供，虚拟开关的控制逻辑与面板中的物理开关相同。XXX是座椅的位置，可以是驾驶员、乘客、右后/左、第三排左/右。~~

~~This signal is providing by VCU, the control logic of the virtual switch is same with physical switch in faceplate. XXX is the seat’s position, can be driver, passenger, Rear Right/Left, Third Row Left/Right.~~

~~当信号~~***~~HMI XXX Heated/Cooled Seat Switch #2 Active~~*** ~~= $1 True时，座椅靠背加热的等级会按照下面的逻辑变化一次：~~

~~When~~ ***~~HMI XXX Heated/Cooled Seat Switch #2 Active~~*** ~~= $1 True, the heated back level will be changed once in the following order:~~

**~~Off – High Level – Medium Level – Low Level – Off~~**

~~信号收发/TX and RX: VCU 🡪 BCM~~

~~更新时间/Update Time: 100ms~~

~~信号周期/Periodic Interval: 1000ms~~

**~~座椅靠背和坐垫加热挡位控制/Seat back and cushion heated level control~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~HMI XXX Heated/Cooled Seat Switch #1 Active~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |

~~该信号由VCU提供，虚拟开关的控制逻辑与面板中的物理开关相同。XXX是座椅的位置，可以是驾驶员、乘客、右后/左、第三排左/右。~~

~~This signal is providing by VCU, the control logic of the virtual switch is same with physical switch in faceplate. XXX is the seat’s position, can be driver, passenger, Rear Right/Left, Third Row Left/Right.~~

~~当信号~~***~~HMI XXX Heated/Cooled Seat Switch #1 Active~~*** ~~= $1 True时，座椅的椅垫和靠背加热的等级会按照下面的逻辑进行一次变换：~~

~~When~~ ***~~HMI XXX Heated/Cooled Seat Switch #1 Active~~*** ~~= $1 True, the heated cushion and back level will be changed once in the following order:~~

**~~Off – High Level – Medium Level – Low Level – Off~~**

~~信号收发/TX and RX: VCU 🡪 BCM~~

~~更新时间/Update Time: 100ms~~

~~信号周期/Periodic Interval: 1000ms~~

###### 座椅加热通风状态反馈/Seat Heated and Vented Status Feedback

座椅的加热通风状态反馈通过以下四~~三~~种信号：

The heated and vented state feedback of the seat through the following four ~~three~~ groups of signals:

**座椅加热状态/Seat heated status**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Heated Seat Area XX Indication : Indication Request | 1 | BLN | 0 - 1 | $0=False; $1=True |
| XXX Heated Seat Area XX Indication : Heated Level 1 | 1 | BLN | 0 - 1 | $0=False; $1=True |
| XXX Heated Seat Area XX Indication : Heated Level 2 | 1 | BLN | 0 - 1 | $0=False; $1=True |
| XXX Heated Seat Area XX Indication : Heated Level 3 | 1 | BLN | 0 - 1 | $0=False; $1=True |

上述四组信号共同决定了XXX座椅的XX区域的加热状态。其组合关系如下：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Vented Level**  **Signals** | **High** | **Mid** | **Low** | **Off** |
| XXX Heated Seat Area XX Indication : Indication Request | $1 True | $1 True | $1 True | $0 False |
| XXX Heated Seat Area XX Indication : Heated Level 1 | $0 False | $0 False | $1 True | $0 False |
| XXX Heated Seat Area XX Indication : Heated Level 2 | $0 False | $1 True | $0 False | $0 False |
| XXX Heated Seat Area XX Indication : Heated Level 3 | $1 True | $0 False | $0 False | $0 False |

**座椅通风状态/Seat vented status**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Vented Seat Area XX Indication : Indication Request | 1 | BLN | 0 - 1 | $0=False; $1=True |
| XXX Vented Seat Area XX Indication : Heated Level 1 | 1 | BLN | 0 - 1 | $0=False; $1=True |
| XXX Vented Seat Area XX Indication : Heated Level 2 | 1 | BLN | 0 - 1 | $0=False; $1=True |
| XXX Vented Seat Area XX Indication : Heated Level 3 | 1 | BLN | 0 - 1 | $0=False; $1=True |

上述四组信号共同决定了XXX座椅的XX区域的通风状态。其组合关系如下：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Vented Level**  **Signals** | **High** | **Mid** | **Low** | **Off** |
| XXX Vented Seat Area XX Indication : Indication Request | $1 True | $1 True | $1 True | $0 False |
| XXX Vented Seat Area XX Indication : Vented Level 1 | $0 False | $0 False | $1 True | $0 False |
| XXX Vented Seat Area XX Indication : Vented Level 2 | $0 False | $1 True | $0 False | $0 False |
| XXX Vented Seat Area XX Indication : Vented Level 3 | $1 True | $0 False | $0 False | $0 False |

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**~~座椅通风状态/Seat vented status~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 3~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 1~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 2~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 3~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |

***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 3~~***

~~该信号由BCM提供，XXX是座椅的位置，可以是驾驶员、乘客、右后、左后、左三排和右三排。~~

~~This signal is providing by BCM, XXX is the seat’s position, can be Driver, Passenger, Rear Right, Rear Left, Third Row Left and Third Row Right.~~

~~当信号~~***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 3~~***~~= $1 True时，表示XXX座椅的通风模式开启；~~

~~When~~ ***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 3~~***~~= $1 True, the XXX seat is turn on vented mode.~~

~~当信号~~***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 3~~***~~= $0 False时，表示XXX座椅的通风模式关闭；~~

~~When~~ ***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 3~~***~~= $0 False, the XXX seat is turn off vented mode.~~

~~信号~~***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~***~~和信号~~***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~***~~是预留信号；~~

***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~*** ~~and~~ ***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~*** ~~are reserved.~~

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Vented Level~~**  **~~Signals~~** | **~~High~~** | **~~Medium~~** | **~~Low~~** | **~~Off~~** |
| ~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 3~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 1~~ | ~~$1 True~~ | ~~$0 False~~ | ~~$0 False~~ | ~~$0 False~~  ~~N/A~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 2~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~ | ~~$0 False~~  ~~N/A~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 3~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~  ~~N/A~~ |

**~~座椅靠背加热状态/Seat back heated status~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 2~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 1~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 2~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 3~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |

***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 2~~***

~~该信号由BCM提供，XXX是座椅的位置，可以是驾驶员、乘客、右后、左后、左三排和右三排。~~

~~This signal is providing by BCM, XXX is the seat’s position, can be Driver, Passenger, Rear Right, Rear Left, Third Row Left and Third Row Right.~~

~~当信号~~***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 2~~***~~= $1 True时，表示XXX座椅的靠背加热是开启的；~~

~~When~~ ***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 2~~***~~= $1 True, the XXX seat is turn on heated back mode.~~

~~当信号~~***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 2~~***~~= $0 False时，表示XXX座椅的靠背加热是关闭的；~~

~~When~~ ***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 2~~***~~= $0 False, the XXX seat is turn off heated back mode.~~

~~信号~~***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~***~~和信号~~***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~***~~是预留信号；~~

***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~*** ~~and~~ ***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~*** ~~are reserved.~~

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Heated Back Level~~**  **~~Signals~~** | **~~High~~** | **~~Medium~~** | **~~Low~~** | **~~Off~~** |
| ~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 2~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 1~~ | ~~$1 True~~ | ~~$0 False~~ | ~~$0 False~~ | ~~$0 False~~  ~~N/A~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 2~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~ | ~~$0 False~~  ~~N/A~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 3~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~  ~~N/A~~ |

**~~座椅靠背和坐垫加热状态/Seat back and cushion heated status~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 1~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 1~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 2~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 3~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0=False; $1=True~~ |

***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 1~~***

~~该信号由BCM提供，XXX是座椅的位置，可以是驾驶员、乘客、右后、左后、左三排和右三排。~~

~~This signal is providing by BCM, XXX is the seat’s position, can be Driver, Passenger, Rear Right, Rear Left, Third Row Left and Third Row Right.~~

~~当信号时，表示XXX座椅的靠背和椅垫加热开启；~~

~~When~~ ***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 1~~***~~= $1 True, the XXX seat is turning on heated back and cushion mode.~~

~~当信号时，表示XXX座椅的靠背和座椅加热关闭；~~

~~When~~ ***~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 1~~***~~= $0 False, the XXX seat is turning off heated back and cushion mode.~~

~~信号~~***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~***~~和信号~~***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~***~~是预留信号；~~

***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 4~~*** ~~and~~ ***~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 5~~*** ~~are reserved.~~

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Heated Back and Cushion Level~~**  **~~Signals~~** | **~~High~~** | **~~Medium~~** | **~~Low~~** | **~~Off~~** |
| ~~XXX Heated/Cooled Seat Mode Indication Control : Seat Mode Indication 1~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 1~~ | ~~$1 True~~ | ~~$0 False~~ | ~~$0 False~~ | ~~$0 False~~  ~~N/A~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 2~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~ | ~~$0 False~~  ~~N/A~~ |
| ~~XXX Heated/Cooled Seat Level Indication Control : Seat Level 3~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$1 True~~ | ~~$0 False~~  ~~N/A~~ |

~~信号收发/TX and RX: BCM 🡪 VCU~~

~~更新时间/Update Time: 100ms~~

~~信号周期/Periodic Interval: 1000ms~~

##### 座椅加热通风的GB信号/GB Signal of Seat Heated and Vented

Global B车型的座椅加热通风的信号接口说明请参考 FG.03.02.08 - HVAC Virtual Switches（2020年7月17日打印版本）。



#### 座椅加热通风控制的特殊情况说明/Special Case Description of Seat Heated and Vented Control

N/A

#### 座椅控制的适用架构/Architectural Applicability of Seat Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B

### 座椅位置记忆 Memory Seat [MY TBD]

用户可以通过系统对座椅及后视镜位置进行保存，以方便用户使用该记忆位置。具体参考PIS-2008.

### 座舱模式调节/Passenger Compartment Mode Adjustment(CLEA Only)

座舱模式调节指的是车辆系统具备座舱模式，用户可以通过娱乐系统对座舱的模式进行调节控制。

系统通过标定P\_VEHICLE\_CONTROL\_SEAT\_PESSENGER\_COMPARTMENT\_MODE\_ENBALE确定车辆是否可以通过娱乐系统调节座舱模式。

座舱模式调节的特殊情况说明：

除VCU可以对座舱模式进行调节外，顶衬还设置了座舱模式调节旋钮，用户可以通过旋转并拍下旋钮，选中指定的模式。对于VCU来说，当用户在通过旋钮就行模式选择时，需要实时显示正在选择的模式，当模式被选中，也应当正确地提示用户。

值得注意的是，当前旋钮共有“3+1”四个挡位可供用户选择，其中三个为固定的模式：Easy Entry、VIP全和Luggage全；另一个为可选模式，将从Easy Exit、亲密模式和照看模式右中选择。用户可以通过VCU对可选模式进行三选一的操作，VCU将正确提示用户操作结果。

#### 座舱模式调节支持的用户操作/User Operation Supported by Passenger Compartment Mode Adjustment

本章节描述的是车辆的座舱模式调节支持的用户操作（XX代表Mode 1-32）：

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 控制车辆座椅进入XX模式 | VC+VAC | N/A |
| 中断车辆座椅进入XX模式 | VC+VAC | N/A |
| 控制roof console旋钮的个性化设置 | VC | N/A |

当前座舱模式可支持VCU控制或自定义的模式如下：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **VCU控制** | | | **VCU定义旋钮个性化设置**  **（仅6/7座）** |
| **6座** | **7座** | **4座** |
| Easy Entry | Y | Y | N | Y |
| VIP全 | Y | Y | N | Y |
| Luggage全 | Y | Y | N | Y |
| Easy Exit | Y | Y | N | Optional |
| 亲密模式 | Y | Y | N | Optional |
| 照看模式右 | Y | Y | N | Optional |
| Luggage左 | Y | Y | N | N |
| Luggage右 | Y | Y | N | N |
| VIP左复位 | N | N | Y | N |
| VIP右复位 | N | N | Y | N |

座舱模式和枚举值的映射关系如下：

|  |  |
| --- | --- |
| **Mode XX** | **Mode Name** |
| Mode 1 | Easy Entry Mode |
| Mode 2 | VIP Mode (All) |
| Mode 3 | Luggage Mode (All) |
| Mode 4 | Easy Exit Mode |
| Mode 5 | Intimacy Mode |
| Mode 6 | Family Mode (2R) |
| Mode 7 | Family Mode (2L) |
| Mode 8 | Luggage Mode (3L) |
| Mode 9 | Luggage Mode (3R) |
| Mode 10 | VIP Mode (2L) |
| Mode 11 | Recovery Mode (2L) |
| Mode 12 | VIP Mode (2R) |
| Mode 13 | Recovery Mode (2R) |
| Mode 14 | Lying mode (2L) |
| Mode 15 | Lying mode (2R) |
| Mode 16~32 | Reserved |

~~本章节描述的是车辆的座舱模式调节支持的用户操作：~~

~~This section describes the user operation of the Passenger Compartment Mode adjustment support of the vehicle:~~

|  |  |  |
| --- | --- | --- |
| **~~Operation Description~~** | **~~CLEA~~** | **~~GB~~** |
| ~~控制车辆座椅进入舒适进入模式/Request the vehicle seat to enter the easy entry mode~~ | ~~VC+VAC~~ | ~~N/A~~ |
| ~~控制车辆座椅进入舒适退出模式/Request the vehicle seat enter the easy exist mode [MY TBD]~~ | ~~VC+VAC~~ | ~~N/A~~ |
| ~~控制车辆座椅进入VIP模式（左侧、右侧和全部）/Request the vehicle seat enter the VIP mode(Left, Right and All) [MY TBD]~~ | ~~VC+VAC~~ | ~~N/A~~ |
| ~~控制车辆座椅进入行李仓模式（左侧、右侧和全部）/Request the vehicle seat enter the luggage mode(Left, Right and All)~~ | ~~VC+VAC~~ | ~~N/A~~ |
| ~~在模式运行过程中，允许用户打断/ Interruption is allowed during the movements toward a certain mode~~ | ~~VC+VAC~~ | ~~N/A~~ |

##### Easy Entry模式

二排座椅移动，方便乘客进入第三排。

~~用户可以通过系统开启二排座椅的舒适进入模式。由于舒适进入模式的使用会导致座椅移动，座椅的移动与乘客安全关系密切，系统需要避免用户误触导致的功能启用。当用户开启二排Easy Entry功能后，系统需要支持用户随时打断座椅动作。~~

~~Users can switch on the comfort mode of the second row of seats through the system. Since the use of comfortable EZE mode will lead to seat movement, which is closely related to passengers' safety, the system needs to avoid functions enabled by users' wrong touch. When the user opens the second Easy Entry function, the system supports the user to interrupt the seat action at any time.~~

##### VIP模式 ~~舒适下车模式/Easy Exist [MY TBD]~~

二排座椅腿托和靠背动作，便于二排乘客休息。

VIP左/右/全分别为，左座椅/右座椅/左右座椅同时进入VIP模式。

VIP复位为，二排座椅腿托和靠背从VIP模式回复到正常状态。

~~用户可以通过娱乐系统开启二排座椅的舒适下车模式，由于舒适进入模式的使用会导致座椅移动，座椅的移动与乘客安全关系密切，系统需要避免用户误触导致的功能启用。当用户开启二排Easy Entry功能后，系统需要支持用户随时打断座椅动作。~~

##### 行李箱模式/Luggage Mode ~~VIP模式/VIP Mode[MY TBD]~~

二排座椅位置不动，三排座椅折叠，前移到最大位置，便于存放行李箱。

Luggage左/右/全分别为，左座椅/右座椅/左右座椅同时进入Luggage模式。

##### Easy Exit模式 ~~行李舱模式/Luggage Mode~~

二排座椅移动，方便三排乘客下车。

~~行李舱模式是指为了车辆后备箱有更大的空间放置物品。当用户一键开启行李舱模式后，后排座椅以固定的轨迹进行移动，给后备箱腾出更大的空间。~~

~~The luggage mode means that there is more room for items in the trunk of the vehicle. When the user opens the luggage compartment mode with one click, the rear seat moves in a fixed path to make more room in the trunk.~~

~~车辆后排座椅支持左/右侧分别移动，系统共支持三种行李舱模式的开启，分别为后排座椅的左侧/右侧/全部移动。由于行李舱模式的使用会导致座椅移动，座椅的移动与乘客安全关系密切，系统需要避免用户误触导致的功能启用。系统需要支持用户开启行李舱模式，并可以随时停止或取消行李舱模式。~~

~~The rear seat of the vehicle supports left/right movement respectively, and the system supports the opening of three modes of luggage mode, respectively the left/right/all movement of the rear seat. Since the use of the luggage mode will lead to seat movement, which is closely related to passenger safety, the system needs to avoid functions enabled by the user's wrong touch. The system needs to support the user to open the luggage mode, and can stop or cancel the luggage mode at any time.~~

##### 亲密模式/Intimacy Mode

二排座椅靠近以拉近二排乘客座位距离。

##### 照看模式/Family Mode

二排座椅移动，使二排乘客能同时照看三排乘员。

#### 座舱模式调节状态可视化/Visualization of Passenger Compartment Mode Adjustment State

座舱模式调节支持娱乐系统进行以下状态可视化显示（XX代表Mode 1-32）~~(XX可以是Easy Entry, Easy Exist 和 Luggage)~~：

~~This section describes the status display of Passenger Compartment Mode control support (XX can be Easy Entry, Easy Exist and Luggage):~~

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 座椅XX模式调节成功提示/ Prompt XX mode adjustment success | Yes | N/A |
| 座椅XX模式调节中的状态提示/Prompt XX mode is in adjusting | Yes | N/A |
| 座椅XX模式调节失败提示/Prompt XX mode adjustment failure | Yes | N/A |
| 座椅XX模式虚拟状态显示/XX mode virtual status display | Yes | N/A |
| Roof console旋钮调节座舱模式时的提示/ Display for adjusting passenger compartment mode with roof console | Yes | N/A |

#### 座舱模式控制的功能安全要求/Functional Safety Requirements for Passenger Compartment Mode Control

娱乐系统对车辆的座椅模式的虚拟按键控制的功能安全要求为：QM。

The functional safety requirements of entertainment system for virtual control of vehicle Passenger Compartment Mode are: QM.

#### 座舱模式控制的整车电源模式/Vehicle Power Mode of Passenger Compartment Mode Control

座椅模式的虚拟按键控制支持的整车电源模式为：

The vehicle power modes supported by virtual control in Passenger Compartment Mode are as bellow:

1. Power Mode RUN
2. Power Mode ACC
3. Power Mode OFF
4. Power Mode RAP

#### 座舱模式控制的性能要求/KPI of Passenger Compartment Mode Control

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮  The user clicked the virtual button on the screen |
| 计时结束条件  The KPI timer stop condition | 车内的座椅按照按钮对应的模式进行移动  The seats in the vehicle moves to the mode according to the button |

**座椅模式的可视化性能要求：**

**Visual performance requirements of Passenger Compartment Mode:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 车内的座椅开始进行座舱模式调节  The seats in the vehicle starts to adjust the Passenger Compartment Mode |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中的可视化座舱状态开始变化  The visual Passenger Compartment Mode status in the entertainment system begins to change |

#### 座舱模式控制的信号/Signal of Passenger Compartment Mode Control

以下是座舱模式调节控制使用的CAN信号：

The following CAN signals are used for Passenger Compartment Mode adjustment control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA Signal Name** | **GB Signal Name** |
| Configuration | Seat Passenger Compartment Mode XX Configuration (XX refers to Mode 1-32)  ~~Seat Passenger Compartment Mode Configuration~~ | N/A |
| Available | Seat Passenger Compartment Mode XX Control Available (XX refers to Mode 1-32)  ~~Seat Passenger Compartment Mode Control Available~~ | N/A |
| Available | Seat Passenger Compartment Mode Roof Control Switch Customization Setting Available | N/A |
| Request | Seat Passenger Compartment Mode HMI Request | N/A |
| Request | Seat Passenger Compartment Mode Customized Roof Control Switch Position XX Request (XX refers to Position 1-10) | N/A |
| Command  ~~Status~~ | Seat Passenger Compartment Mode Notification HMI Display Command | N/A |
| Status | Seat Passenger Compartment Mode XX Recall Response Status (XX refers to Mode 1-32)  ~~Seat Passenger Compartment Mode Recall Response Status~~ | N/A |
| Status | Seat Passenger Compartment Mode Roof Control Switch Selected Status | N/A |
| Stauts | Seat Passenger Compartment Mode XX Current Status (XX refers to Mode 1-32)  ~~Seat Passenger Compartment Mode Current Mode Status~~ | N/A |
| Status | Seat Passenger Compartment Mode Roof Control Switch Recall Response Status | N/A |
| Status | Seat Passenger Compartment Mode Customization Roof Control Switch Position XX Status (XX refers to Position 1-10) | N/A |
| ~~Status~~ | ~~Driver Seat Memory Recall Status~~ | ~~N/A~~ |
| ~~Remind(Not Normalization)~~ | ~~N/A~~ | ~~N/A~~ |

##### 座舱模式控制的CLEA信号/CLEA Signal of Passenger Compartment Mode Control

本章节描述的是CLEA架构中座舱模式控制使用的CAN信号。

This section describes the CAN signal used for Passenger Compartment Mode control in CLEA architecture.

###### 座舱模式控制的配置信号/Configuration of Passenger Compartment Mode

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode XX Configuration  ~~Seat Passenger Compartment Mode Configuration~~ | 1 | BLN | N/A | $0=False; $1=True |

该信号表示车辆是否配置了Mode XX的模式调节虚拟按键。

当信号为$0=False时，表示车辆不配备支持虚拟按键控制的Mode XX模式调节；

当信号为$1=True时，表示车辆配备了支持虚拟按键控制的Mode XX模式调节；

~~该信号用于表示车辆是否配置了座舱模式调节虚拟按键控制的功能。~~

~~This signal is used to indicate whether the vehicle is configured with the function of virtual control for cabin mode adjustment.~~

~~当信号为$0=False时，表示车辆不配备支持虚拟按键控制的座舱模式调节；~~

~~When $0=False, There are no seats equipped for Passenger Compartment Mode.~~

~~当信号为$1=True时，表示车辆配备了支持虚拟按键控制的座舱模式调节；~~

~~When $1=True, There have seats equipped for Passenger Compartment Mode~~

信号交互/TX and RX：MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000ms

###### 座舱模式调节当前时刻是否可以被控制/Availability of Passenger Compartment Mode Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode XX Control Available  ~~Seat Passenger Compartment Mode Control Available~~ | 1 | BLN | N/A | $0=False; $1=True |

该信号表示配置了Mode XX模式调节进屏控制的车辆，当前是否能够被虚拟按键控制。

当信号为$0=False时，表示Mode XX模式调节当前时刻不可被娱乐系统所控制；

当信号为$1=True时，表示Mode XX模式调节当前时刻可以被娱乐系统所控制；

信号收发/TX and RX: MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000 ms

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode Roof Control Switch Customization Setting Available | 1 | BLN | N/A | $0=False; $1=True |

该信号表示当前VCU是否能对roof console的旋钮进行个性化设置。

当信号为$0=False时，不支持VCU对roof console的旋钮进行个性化设置，相关设置项不显示；

当信号为$1=True时，支持VCU对roof console的旋钮进行个性化设置；

信号收发/TX and RX: MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000 ms

~~该信号用于表示当前时刻座舱模式调节是否可以被娱乐系统可控制。~~

~~This signal is used to indicate whether the passenger compartment mode adjustment can be controlled by the entertainment system at the current time.~~

~~当信号为$0=False时，表示座舱模式调节当前时刻不可被娱乐系统所控制；~~

~~When $0=False, This indicates that the Passenger Compartment Mode is unable be controlled at the current moment.~~

~~当信号为$1=True时，表示座舱模式调节当前时刻可以被娱乐系统所控制；~~

~~When $1=True, This indicates that the Passenger Compartment Mode is unable be controlled at the current moment.~~

~~信号收发/TX and RX: MSM\_2L 🡪 VCU~~

~~更新时间/Update Time: 50ms~~

~~信号周期/Periodic Interval: 1000ms~~

###### 对座舱模式调节的控制请求/Control Request of Passenger Compartment Mode

**HMI对座舱模式调节的控制请求：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode HMI Request | 4 | ENM | N/A | $0=No Action;  $1-E=Mode 1-14;  $F=Stop;  ~~$0= No Action~~  ~~$1=Access Mode Easy Entry~~  ~~$2=Access Mode Easy Exit [reserved]~~  ~~$3=Luggage Mode\_L;~~  ~~$4=Luggage Mode\_R;~~  ~~$5=Luggage Mode\_All;~~  ~~$6=Stop;~~  ~~$7=Cancel [reserved];~~ |

这个信号是用于娱乐系统对座椅模块发起座椅模式调节的请求。

当信号为$0=No Action时，表示没有请求；

当信号为$1-E=Mode 1-14时，表示请求进入Mode 1-14，具体映射关系见《3.4.3.1 座舱模式调节支持的用户操作》章节；

当信号为$F=Stop时，表示用户中断当前座舱模式调节。

~~这个信号是用于娱乐系统对座椅模块发起座椅模式调节的请求。~~

~~This signal is a request for the entertainment system to request passenger compartment mode adjustment to the seat module.~~

~~当信号为$0=No Action时，表示没有请求；~~

~~When $0=No Action, No Action;~~

~~当信号为$1=Access Mode Easy Entry时，表示请求座舱进入易进模式；~~

~~When $1=Access Mode Easy Entry, MSM\_2L will control the seats move to Easy Entry Mode;~~

~~当信号为$2=Access Mode Easy Exit（预留）时，表示请求座舱进入易出模式；~~

~~When $2=Access Mode Easy Exit[reserved];, MSM\_2L will control the seats move to Easy Exit Mode~~

~~当信号为$3=Luggage Mode\_L时，表示请求左侧座舱进入行李舱模式；~~

~~When $3=Luggage Mode\_L,~~ ~~MSM\_2L will control the seats move to Luggage\_L Mode;~~

~~当信号为$4=Luggage Mode\_R时，表示请求右侧座舱进入行李舱模式；~~

~~When $4=Luggage Mode\_R, MSM\_2L will control the seats move to Luggage\_R Mode;~~

~~当信号为$5=Luggage Mode\_All时，表示请求左右侧座舱都进入行李舱模式；~~

~~When~~ ~~$5=Luggage Mode\_All, MSM\_2L will control the seats move to Luggage\_All Mode ;~~

~~当信号为$6=Stop时，当娱乐系统得知座椅正在进行模式调节时，可以通过这个信号打断运动；~~

~~When $6=Stop, when infotaimant get the moving status of passenger compartment mode, infotaimant can using this signal to stop the moving.~~

~~当信号为$7=Cancel时（预留），表示娱乐系统请求退出当前的模式，当前为预留信号，如果后续正式确认使用，需要与座椅确认退出的逻辑；~~

~~When the signal is $7=Cancel [reserved], it means that the infotaimant system requests to exit the current mode, and it is currently a reserved signal. If the use is officially confirmed later, it is necessary to confirm the exit logic with the seat’s Featue Owner;~~

信号收发/TX and RX: VCU 🡪 MSM\_2L

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000ms

**HMI对roof console旋钮个性化设置的控制请求：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode Customized Roof Control Switch Position XX Request (XX refers to Position 1-10) | 6 | ENM | 0~63 | $0=No Action;  $1-$20=Mode 1-Mode 32;  $21=No Mode; |

这个信号用于娱乐系统对roof console旋钮可以被个性化的位置进行设置控制。

当信号为$0=No Action时，表示娱乐系统没有对roof console旋钮进行个性化设置的控制请求；

当信号为$1-$20=Mode 1-Mode 32时，表示娱乐系统将roof console的XX个性化设置位设置成Mode 1-32，具体映射关系见《3.4.3.1 座舱模式调节支持的用户操作》章节；

当信号为$21=No Mode时，表示当前roof console的XX个性化设置位没有被设置成任何模式。

信号收发/TX and RX: VCU 🡪 MSM\_2L

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000ms

###### 座舱模式调节的状态反馈/Passenger Compartment Mode Status Feedback

**异常提示：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode Notification HMI Display Command | 3 | ENM | N/A | $0=No Action;  $1=Load Shed Exceed Indication;  $2=Indication 2(Reserved);  $3=Indication 3(Reserved);  $4=Indication 4(Reserved);  $5=Indication 5(Reserved);  $6=Indication 6(Reserved);  $7=Indication 7(Reserved); |

这个信号由MSM模块提供，这意味着在座椅位置记忆模块监控预定义条件满足后，友好地通知客户座椅乘客舱模式将快速消耗电池电量。

This signal is providing by MSM. Which means to kindly notify customer that seat passenger compartment mode will quickly cosume batter power after MSM monitor predefined conditions met.

当信号为$0=No Action，表示没有请求，不需要VCU提示用户；

When $0=No Action; It means that there is no requirement to ask VCU to indicate customer.

当信号为$1= Load Shed Exceed Indication，需要VCU提示用户座舱模式调节将要耗尽电池的电量；

When $1= Load Shed Exceed Indication; VCU shall indicate customer that seat passenger compartment mode will quickly cosume batter power.

当信号为$2= Indication 2，预留；

When $2= Indication 2; Currently Reserved.

当信号为$3= Indication 3，预留；

When $3= Indication 3; Currently Reserved.

当信号为$4= Indication 4，预留；

When $4= Indication 4; Currently Reserved.

当信号为$5= Indication 5，预留；

When $5= Indication 5; Currently Reserved.

当信号为$6= Indication 6，预留；

When $6= Indication 6; Currently Reserved.

当信号为$7= Indication 7，预留；

When $7= Indication 6; Currently Reserved.

信号收发/TX and RX: MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000ms

**座舱模式的实时状态反馈：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode XX Current Status (XX refers to 1-32) | 3 | ENM | 0-7 | $0=Not Mode Status;  $1=Mode Position;  $2=Mode Ongoing;  $3=Mode Exiting;  $4=Mode Halt;  $5=Mode Status Extended 1\_Reserved;  $6=Mode Status Extended 2\_Reserved;  $7=Mode Status Extended 3\_Reserved; |

这个信号由MSM模块提供，用于告知VCU任意时刻的座舱模式状态。

当信号为$0= Not Mode Status时，表示当前座椅没有处在任何特定模式下；

当信号为$1= Mode Position时，表示当前座椅处在该信号所代表的目标模式下，具体映射关系见《3.4.3.1 座舱模式调节支持的用户操作》章节；

当信号为$2= Mode Ongoing时，表示当前座椅正在向该信号所代表的目标模式移动，具体映射关系见《3.4.3.1 座舱模式调节支持的用户操作》章节；

当信号为$3=Mode Exiting时，表示当前座椅正在退出该信号所代表的目标模式，具体映射关系见《3.4.3.1 座舱模式调节支持的用户操作》章节；

当信号为$4=Mode Halt时，表示座椅移动由于点火或其它干预，而被打断；

当信号为$5=Mode Status Extended 1\_Reserved; $6=Mode Status Extended 2\_Reserved; $7=Mode Status Extended 3\_Reserved时，预留。

信号收发/TX and RX: MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000 ms

**VCU~~顶衬旋钮~~控制请求反馈/Seat Passenger Compartment Mode Recall Response Status：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode XX Recall Response Status (XX refers to Mode 1-32)  ~~Seat Passenger Compartment Mode Recall Response Status~~ | 4 | ENM | 0-15 | $0=No Status to Report;  $1=Recall Successfully;  $2=Recall Unsuccessfully\_Local Interrupt;  $3=Recall Unsuccessfully\_Error;  $4=Recall Ongoing;  $5=Target Position Already;  $6=Recall Status Extended 1\_Reserved;  $7=Recall Status Extended 2\_Reserved  ~~$0=No Status to Report;~~  ~~$1=Stored Successfully;~~  ~~$2=Stored UnSuccessfully;~~  ~~$3=VCU Recall Successfully;~~  ~~$4=VCU Recall UnSuccessfully\_ Local Interrupt;~~  ~~$5=VCU Recall UnSuccessfully\_ Error;~~  ~~$6=Roof Console Switch Recall Successfully;~~  ~~$7=Roof Console Switch Recall UnSuccessfully\_ Local Interrupt;~~  ~~$8=Roof Console Switch Recall UnSuccessfully\_ Error~~ |

这个信号由MSM模块提供，在用户通过VCU请求控制时，这个信号用于告知用户请求的结果。

当信号为$0=No Status to Report时，表示没有状态提示；

当信号为$1=Recall Successfully时，表示座椅已成功移动到目标模式位置；

当信号为$2=Recall Unsuccessfully\_Local Interrupt时，表示座椅没有成功移动到目标模式位置，原因是被二排控制打断；

当信号为$3=Recall Unsuccessfully\_Error时，表示座椅没有成功移动到目标模式位置，原因是出现其他错误；

当信号为$4=Recall Ongoing时，表示座椅正在往目标模式位置移动；

当信号为$5=Target Position Already时，表示座椅已在目标模式位置；

当信号为$6=Recall Status Extended 1\_Reserved; $7=Recall Status Extended 2\_Reserved时，预留。

~~这个信号由MSM模块提供，在用户通过VCU或者顶衬的控制旋钮请求控制时，这个信号用于告知用户请求的结果。~~

~~This signal is providing by MSM. Which means to notify customer that seat passenger compartment mode recall result after customer activate the corresponding mode button from VCU or rotary type~~ ~~roof console switch which located in roof console.~~

~~当信号为$0=No Status to Report时，意味着没有状态提示；~~

~~When $0=No Status to Report; It means there is no request from VCU .~~

~~当信号为$1= Stored Successfully，预留；~~

~~When $1= Stored Successfully; reserved~~

~~当信号为$2= Stored UnSuccessfully，预留；~~

~~When $2= Stored UnSuccessfully; reserved~~

~~当信号为$3= VCU Recall Successfully时，意味着座椅已经成功移动到目标模式，仅对应VCU发起的请求；~~

~~When $3= VCU Recall Successfully; It means that seat has moved into target mode activiated via VCU corresponding mode button.~~

~~当信号为$4= VCU Recall UnSuccessfully\_ Local Interrupt时，在用户通过VCU请求调节某个模式的过程中，如果由用户通过其他物理按钮打断模式的运行，VCU会收到这条信号并提醒用户模式请求被打断。~~

~~When $4= VCU Recall UnSuccessfully\_ Local Interrupt; It means that seat has not moved into target mode activiated via VCU corresponding mode button due to local mode switch interrupt.~~

~~当信号为$5= VCU Recall UnSuccessfully\_ Error时，在用户通过VCU请求调节座舱进入某个模式的过程中，由于座椅系统异常，模式进入失败，VCU会接收这条信号并提示用户。~~

~~When $5= VCU Recall UnSuccessfully\_ Error; It means that seat has not moved into target mode activiated via VCU corresponding mode button due to seat system error.~~

~~当信号为$6= Roof Console Switch Recall Successfully时，表示用户通过顶衬控制旋钮调节座舱模式成功；~~

~~When $6= Roof Console Switch Recall Successfully; It means that seat has moved into target mode activiated via Roof Console switch.~~

~~当信号为$7= Roof Console Switch Recall UnSuccessfully\_ Local Interrupt时，表示由于其他控制请求的打断，顶衬控制旋钮的控制请求被打断。~~

~~When $7= Roof Console Switch Recall UnSuccessfully\_ Local Interrupt; It means that seat has not moved into target mode activiated via Roof Console switch due to local mode switch interrupt.~~

~~当信号为$8= Roof Console Switch Recall UnSuccessfully\_ Error时，在用户通过顶衬旋钮请求调节座舱进入某个模式的过程中，由于座椅系统异常，模式进入失败，VCU会接收这条信号并提示用户。~~

~~When $8= Roof Console Switch Recall UnSuccessfully\_ Error; It means that seat has not moved into target mode activiated via Roof Console switch due to seat system error.~~

信号收发/TX and RX: MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000 ms

**Roof console旋钮选中状态显示/ Seat Passenger Compartment Mode Roof Control Switch Selected Status：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode Roof Control Switch Selected Status | 4 | ENM | 0-15 | $0=No Switch Mode Selected Indicator On;  $1- $F=Mode 1 Selected Indicator On-  Mode 15 Selected Indicator On  ~~$0=No Mode Indicator On;~~  ~~$1=Easy Entry Mode Indicator On;~~  ~~$2=Easy Exit Mode Indicator On;~~  ~~$3=VIP Mode Left Indicator On;~~  ~~$4=VIP Mode Right Indicator On;~~  ~~$5=VIP Mode Indicator On;~~  ~~$6=Luggage Mode Left Indicator On;~~  ~~$7=Luggage Mode Right Indicator On;~~  ~~$8=Luggage Mode All Indicator On~~ |

这个信号由MSM模块提供，当用户通过roof console旋钮选择座舱模式时，这个信号用于在VCU上展示旋钮的实时选中结果。

当信号为$0 = No Switch Mode Selected Indicator On时，表示当前旋钮没有在进行模式选择;

当信号为$1- $F=Mode 1 Selected Indicator On-Mode 15 Selected Indicator On时，表示旋钮选中了Mode 1-15，具体映射关系见《3.4.3.1 座舱模式调节支持的用户操作》章节；

~~这个信号由MSM模块提供，在用户通过顶衬的控制旋钮请求控制时，这个信号用于在VCU上展示顶衬控制旋钮的实时选中结果。~~

~~当信号为$0=No Mode Indicator On时，表示旋钮没有选中任何座舱模式;~~

~~当信号为$1=Easy Entry Mode Indicator On时，表示旋钮选中舒适进入模式;~~

~~当信号为$2=Easy Exit Mode Indicator On时，表示旋钮选中舒适下车模式;~~

~~当信号为$3=VIP Mode Left Indicator On时，表示旋钮选中左侧VIP模式;~~

~~当信号为$4=VIP Mode Right Indicator On时，表示旋钮选中右侧VIP模式;~~

~~当信号为$5=VIP Mode Indicator On时，表示旋钮选中全VIP模式;~~

~~当信号为$6=Luggage Mode Left Indicator On时，表示旋钮选中左侧行李舱模式;~~

~~当信号为$7=Luggage Mode Right Indicator On时，表示旋钮选中右侧行李舱模式;~~

~~当信号为$8=Luggage Mode All Indicator On时，表示旋钮选中全行李舱模式。~~

信号收发/TX and RX: MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000 ms

**Roof console旋钮控制请求反馈：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode Roof Control Switch Recall Response Status | 4 | ENM | 0-15 | $0=No Status to Report;  $1=Recall Successfully;  $2=Recall Unsuccessfully\_ Local Interrupt;  $3=Recall Unsuccessfully\_ Error;  $4=Recall Ongoing;  $5=Target Position Already;  $6=Recall Status Extended 1\_Reserved;  $7=Recall Status Extended 2\_Reserved |

这个信号由MSM模块提供，在用户通过roof console的旋钮请求控制时，这个信号用于告知用户请求的结果。

当信号为$0=No Status to Report时，表示没有状态提示；

当信号为$1=Recall Successfully时，表示座椅已成功移动到目标模式位置；

当信号为$2=Recall Unsuccessfully\_Local Interrupt时，表示座椅没有成功移动到目标模式位置，原因是被二排控制打断；

当信号为$3=Recall Unsuccessfully\_Error时，表示座椅没有成功移动到目标模式位置，原因是出现其他错误；

当信号为$4=Recall Ongoing时，表示座椅正在往目标模式位置移动；

当信号为$5=Target Position Already，表示座椅已经在目标模式位置了；

$6=Recall Status Extended 1\_Reserved; $7=Recall Status Extended 2\_Reserved，预留。

信号收发/TX and RX: MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000 ms

**Roof console旋钮个性化设置结果反馈：**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Seat Passenger Compartment Mode Customization Roof Control Switch Position XX Status(XX refers to Position 1-10) | 6 | ENM | 0-63 | $0=No Mode Set;  $1-$20=Mode 1-32 Set ; |

这个信号由MSM模块提供，在用户通过VCU控制roof console旋钮的个性化设置时，这个信号用于告知用户设置的结果。

当信号为$0=No Mode Set时，表示当前旋钮没有进行个性化设置；

当信号为$1-20=Mode 1-32 Set时，表示当前旋钮的个性化设置位选中的是Mode 1-32。

信号收发/TX and RX: MSM\_2L 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000 ms

**~~座舱模式状态/~~****~~Seat Passenger Compartment Mode Current Mode Status：~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~Seat Passenger Compartment Mode Current Mode Status~~ | ~~5~~ | ~~ENM~~ | ~~0-31~~ | ~~$0=Not Mode Status;~~  ~~$1=Easy Entry Mode Position;~~  ~~$2=Easy Exit Mode Position;~~  ~~$3=Luggage Mode Left Position;~~  ~~$4=Luggage Mode Right Position;~~  ~~$5=Luggage Mode All Position;~~  ~~$6=Easy Entry Mode Ongoing;~~  ~~$7=Easy Exit Mode Ongoing;~~  ~~$8=Luggage Mode Left Ongoing;~~  ~~$9=Luggage Mode Right Ongoing;~~  ~~$10=Luggage Mode All Ongoing;~~  ~~$11=Easy Entry Mode Exiting;~~  ~~$12=Easy Exit Mode Exiting;~~  ~~$13=Luggage Mode Left Exiting;~~  ~~$14=Luggage Mode Right Exiting;~~  ~~$15=Luggage Mode All Exiting~~ |

~~当信号为$0= Not Mode Status时，表示当前座舱没有处于任何模式；~~

~~When $0= Not Mode Status; It means there is no seat in any target mode position.~~

~~当信号为$1= Easy Entry Mode Position时，表示座舱处于舒适进入模式；~~

~~When $1= Easy Entry Mode Position; It means that seat in the corresponding mode position.~~

~~当信号为$2= Easy Exit Mode Position时，表示座舱处于舒适下车模式；~~

~~When $2= Easy Exit Mode Position; It means that seat in the corresponding mode position.~~

~~当信号为$3= VIP Mode Left Position时，表示座舱处于左侧VIP模式；~~

~~When $3= VIP Mode Left Position; It means that seat in the corresponding mode position.~~

~~当信号为$4= VIP Mode Right Position时，表示座舱处于右侧VIP模式；~~

~~When $4= VIP Mode Right Position; It means that seat in the corresponding mode position.~~

~~当信号为$5= VIP Mode Dual Position时，表示座舱处于两侧都进入VIP的模式；~~

~~When $5= VIP Mode Dual Position; It means that both seats in the corresponding mode position.~~

~~当信号为$6=Luggage Mode Left Position时，表示座舱进入左侧行李舱模式；~~

~~When $6=Luggage Mode Left Position; It means that seat in the corresponding mode position.~~

~~当信号为$7=Luggage Mode Right Position时，表示座舱进入右侧行李舱模式；~~

~~When $7=Luggage Mode Right Position; It means that seat in the corresponding mode position.~~

~~当信号为$8=Luggage Mode All Position时，表示座舱进入全行李舱模式；~~

~~When $8=Luggage Mode All Position; It means that both seats in the corresponding mode position.~~

~~当信号为$9=Easy Entry Mode Ongoing时，表示座舱正在进入舒适进入模式；~~

~~When $9=Easy Entry Mode Ongoing; It means that seat is moving to the corresponding mode position.~~

~~当信号为$10=Easy Exit Mode Ongoing时，表示座舱正在进入舒适下车模式；~~

~~When $10=Easy Exit Mode Ongoing; It means that seat is moving to the corresponding mode position.~~

~~当信号为$11=VIP Mode Left Ongoing时，表示座舱正在进入左侧VIP模式；~~

~~When $11=VIP Mode Left Ongoing; It means that seat is moving to the corresponding mode position.~~

~~当信号为$12=VIP Mode Right Ongoing时，表示座舱正在进入右侧VIP模式；~~

~~When $12=VIP Mode Right Ongoing; It means that seat is moving to the corresponding mode position.~~

~~当信号为$13=VIP Mode Ongoing时，表示座舱正在进入全VIP模式；~~

~~When $13=VIP Mode Ongoing; It means that both seats is moving to the corresponding mode position.~~

~~当信号为$14=Luggage Mode Left Ongoing时，表示座舱正在进入左侧的行李舱模式；~~

~~When $14=Luggage Mode Left Ongoing; It means that seat is moving to the corresponding mode position.~~

~~当信号为$15=Luggage Mode Right Ongoing时，表示座舱正在进入右侧的行李舱模式；~~

~~When $15=Luggage Mode Right Ongoing; It means that seat is moving to the corresponding mode position.~~

~~当信号为$16=Luggage Mode All Ongoing时，表示座舱正在进入全行李舱模式；~~

~~When $16=Luggage Mode All Ongoing; It means that all seats is moving to the corresponding mode position.~~

~~当信号为$17= Mode Exiting时，表示座舱正在退出模式，预留，用于退出到一个标准模式，标准模式目前没有定义；~~

~~When $17= Mode Exiting; Reserved. N/A.~~

~~信号收发/TX and RX: MSM\_2L 🡪 VCU~~

~~更新时间/Update Time: 50ms~~

~~信号周期/Periodic Interval: 1000 ms~~

**~~驾驶员座椅记忆状态的调节反馈/Driver Seat Memory Recall Status：~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~Driver Seat Memory Recall Status~~ | ~~3~~ | ~~ENM~~ | ~~0-7~~ | ~~$0=No Status to Report;~~  ~~$1=Stored Successfully;~~  ~~$2=Stored UnSuccessfully;~~  ~~$3=Recall Successfully;~~  ~~$4=Recall UnSuccessfully\_ Local Interrupt;~~  ~~$5=Recall UnSuccessfully\_ Error;~~  ~~$6=Target Position Already~~ |

~~这个信号由MSM模块提供，用于表示调用驾驶员座椅记忆状态的控制结果。~~

~~当信号为$0=No Status to Report时，表示没有调用任何记忆座舱模式；~~

~~当信号为$1=Stored Successfully时，预留；~~

~~当信号为$2=Stored UnSuccessfully时，预留；~~

~~当信号为$3=Recall Successfully时，表示成功将驾驶员座椅调节到记忆状态；~~

~~当信号为$4=Recall UnSuccessfully\_ Local Interrupt，表示由于硬按键的打断，未能成功将驾驶员座椅调节到记忆状态；~~

~~当信号为$5=Recall UnSuccessfully\_ Error时，表示由于故障等原因，未能成功将驾驶员座椅调节到记忆状态；~~

~~当信号为$6=Target Position Already时，表示当前已经处于目标的驾驶员座椅记忆状态。~~

~~信号收发/TX and RX: MSM\_2L 🡪 VCU~~

~~更新时间/Update Time: 50ms~~

~~信号周期/Periodic Interval: 1000 ms~~

##### 座舱模式控制的GB信号/GB Signal of Passenger Compartment Mode Control [Delete]

#### 座舱模式控制的特殊情况说明/Special Case Description of Passenger Compartment Mode Control

N/A

#### 座舱模式的适用架构/Architectural Applicability of Passenger Compartment Mode

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

## 氛围灯/ Ambient Light

用户可以通过本系统分别对车辆氛围灯的颜色和亮度进行调节。安装在不同位置的氛围灯，颜色和亮度都将时刻保持一致。娱乐系统不支持对不同位置的氛围灯单独设置颜色，只能统一设置。

The user is able to adjust the color and brightness of the ambient light through the system. The ambient lights installed in different positions shall always be kept consistent in color and brightness. The Infotainment System does not support separate color setting for ambient lights in different positions but allows the unified setting only.

系统需要根据车型配置提供氛围灯控制，不支持氛围灯控制的车型不显示该界面。

The system shall provide the ambient light control according to the model configuration, while the system shall not display this interface for the model not supporting the ambient light control.

氛围灯相关请参考PIS-2090\_AmbientLightControl。

## 灯光系统/Vehicle Light

针对本章节定义的车辆控制功能，系统需要通过总线接口获取相应内/外饰灯的故障信息，系统有能力将该故障信息呈现给用户。具体是否显示故障信息以交互设计为准。

For the vehicle control functions as defined in this section, the system shall acquire, through the bus interface, the breakdown information of the corresponding interior/exterior light and then present such breakdown information to the user. Whether the breakdown information shall be displayed depends on the interaction design.

### Headlamps/Park Lamps

系统支持用户对外饰近光灯及位置灯进行如下四种操作：

The system supports the user to perform the following four operations on the exterior headlamps and park lamps:

1. 开启前照灯/Turn on the headlamps.
2. 开启位置灯/Turn on the park lamps.
3. 关闭所有灯光/Turn off all lamps.
4. 开启自动灯光模式/Turn on the automatic lighting mode.

如上四种灯光控制无法同时工作，只能选择其中一项。

When the above four lighting controls are unable to work simultaneously, select one of them at a time.

大灯在车辆重新启动时会默认恢复到自动灯光模式。

Main Light will return to automatic lighting mode by default when the vehicle restarts.

通过标定P\_VEHICLE\_CONTROL\_HEADLAMPS\_ENABLE确认车辆的大灯灯组是否支持娱乐系统的控制。

#### 大灯控制支持的用户操作/User Operation Supported by Main Light Control

大灯控制支持的娱乐系统的用户操作如下：

User operation of entertainment system supported by main light control is as follows:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 开启近光灯/Turn on head lamp | VC | VC |
| 开启位置灯/Turn on park lamp | VC | VC |
| 关闭灯光/Turn off main light | VC | VC |
| 开启自动灯光模式/Turn on main light auto mode | VC | VC |

#### 大灯控制的状态可视化/Visualization of Main Light Control

娱乐系统对大灯的虚拟控制需要支持显示以下信息：

The virtual control of main Lighty by entertainment system needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 大灯灯组的工作状态/Main Light Status | Yes | Yes |

#### 大灯控制的功能安全要求/Functional Safety Requirements for Main Light Control

大灯的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为：ASIL B.

The functional safety requirements for virtual control and voice assistant control of the entertainment system of main light are ASIL B.

#### 大灯控制的整车电源模式/Vehicle Power Mode of Main Light Control

娱乐系统对大灯的虚拟按键控制和语音助手控制的仅在以下整车电源模式中支持：

The virtual control and voice assistant control of mian light by entertainment system are only supported in the following vehicle power modes:

1. Power Mode ACC
2. Power Mode RUN
3. Power Mode RAP
4. Power Mode OFF

#### 大灯控制的性能要求/KPI of Main Light Control

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 大灯模块开始执行按钮对应的指令；  The main light starts to execute the instruction corresponding to the button; |

**大灯控制的可视化性能要求：**

**Visual performance requirements of main light control:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 大灯真实状态变化；  Main Light status change; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的大灯模式的状态；  Display the state of the corresponding main light in the entertainment system; |

#### 大灯控制的信号/Signal of Main Light Control

本章节描述的是大灯控制的CAN信号：

This section describes the CAN signal of main light control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Main Light Switch VCU Control Configuration | N/A |
| Available | Headlamp Control Available | Serial Data 6 Protected : Virtual Control Head and Park Lamps Available Authenticated[TBD] |
| Request | Main Light Switch VCU Request | HMI General Information 3 Protected : Virtual Control Head and Park Lamps Request Authenticated |
| Status | Main Light Switch | Serial Data 6 Protected : Head and Park Lamps Current Selection Value Authenticated |
| Remind | Headlamp Control Reminder | N/A |

##### 大灯控制的CLEA信号/CLEA Signal of Main Light Control

本章节描述的是大灯控制的CLEA信号。

This section describes the CLEA signal of headlight control.

###### 大灯控制的配置信息/Configuration of Main Light Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Main Light Switch VCU Control Configuration | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示车辆是否配置了支持娱乐系统进行虚拟按键控制和语音助手控制的大灯。

This signal is used to indicate whether the vehicle is equipped with main light that support the entertainment system for virtual control and voice assistant control.

当信号***Main Light Switch VCU Control Configuration*** = $0 False时，表示车辆没有配置支持娱乐系统控制的大灯；

When ***Main Light Switch VCU Control Configuration*** = $0 False, There is no main light that can be controlled by VCU in vehicle.

当信号***Main Light Switch VCU Control Configuration*** =$1 True时，表示车辆配置了支持娱乐系统控制的大灯；

When ***Main Light Switch VCU Control Configuration*** =$1 True, There have main light that can be controlled by VCU in vehicle.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 大灯调节当前是否可被控制/Availability of Main Light Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Headlamp Control Available | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示大灯当前时刻是否支持娱乐系统控制。

This signal is used to indicate whether the main light supports entertainment system control at the current time.

当信号***Headlamp Control Available*** = $0 False时，表示当前时刻，大灯不支持被娱乐系统控制；

When ***Headlamp Control Available*** = $0 False, indicates that the main light are not be controlled at the current moment.

当信号***Headlamp Control Available*** = $1 True时，表示当前时刻，大灯支持被娱乐系统控制；

When ***Headlamp Control Available*** = $1 True, indicates that the main light can be controlled at the current moment.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对大灯调节的控制请求/Control Request of Main Light

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Main Light Switch VCU Request | 3 | ENM | N/A | $0=No Action $1=AUTO $2=OFF $3=PARKLAMP $4=HEADLAMP |

该信号用于娱乐系统对大灯控制的请求。

This signal is used for the request of the entertainment system for main light control.

当信号***Main Light Switch VCU Request*** =$0 No Action时，表示娱乐系统没有请求；

When ***Main Light Switch VCU Request*** =$0 No Action

当信号***Main Light Switch VCU Request*** = $1 AUTO时，表示娱乐系统请求大灯调节到自动模式；  
When ***Main Light Switch VCU Request*** = $1 AUTO, Switching the main Light to Auto Mode.

当信号***Main Light Switch VCU Request*** = $2 OFF时，表示娱乐系统请求大灯调节到关闭的状态；  
When ***Main Light Switch VCU Request*** = $2 OFF, Switching the main Light to OFF.

当信号***Main Light Switch VCU Request*** = $3 PARKLAMP时，表示娱乐系统请求大灯调节到示廓灯开启的状态；

When ***Main Light Switch VCU Request*** = $3 PARKLAMP, Switching the main Light to Park lamp.

当信号***Main Light Switch VCU Request*** = $4 HEADLAMP时，表示娱乐系统请求大灯调剂到近光灯开启的状态；

When ***Main Light Switch VCU Request*** = $4 HEADLAMP, Switching the main Light to Headlamp.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

注意，基于功能功能安全ASIL B的要求，该信号需要增加Alive Rolling Count (ARC)和MAC保护。

Please notice that based on ASIL B requirements from function security team, additional Alive Rolling Count (ARC) and MAC protection is needed when using this signal.

###### 大灯状态反馈/ Mian Light Status Feedback

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Main Light Switch | 2 | ENM | N/A | $0=AUTO  $1=OFF  $2=PARKLAMP  $3=HEADLAMP |

该信号用于反馈大灯的当前状态。

This signal is used to feed back the current state of the main light.

当信号***Main Light Switch*** = $0 AUTO时，表示大灯处于自动大灯的状态；

When ***Main Light Switch*** = $0 AUTO, main Light is in Auto Mode.

当信号***Main Light Switch*** = $1 OFF时，表示大灯处于关闭的状态；  
When ***Main Light Switch*** = $1 OFF, main Light is in OFF.

当信号***Main Light Switch*** =$2 PARKLAMP时，表示大灯处于示廓灯开启的状态；  
When ***Main Light Switch*** =$2 PARKLAMP, main Light is in Park lamp.

当信号***Main Light Switch*** = $3 HEADLAMP时，表示大灯处于近光灯开启的状态；  
When ***Main Light Switch*** = $3 HEADLAMP, main Light is in Headlamp.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 大灯控制提示/Remind of Main Light Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Headlamp Control Reminder | 3 | ENM | N/A | $0=No Fault;  $1=”Headlamp Fault”  $2=”Power Mode”  $3=”PLEASE MLS=AUTO”  $4=”No Operation in Night” |

该信号是BCM提供给娱乐系统，用于对用户进行提示和引导。

This signal is provided by BCM to entertainment system for prompting and guiding users.

当信号***Headlamp Control Reminder*** = $0 No Fault时，表示没有提示；

When ***Headlamp Control Reminder*** = $0 No Fault, no remind.

当信号***Headlamp Control Reminder*** = $1 ”Headlamp Fault”,时，提示用户大灯故障；

When ***Headlamp Control Reminder*** = $1 ”Headlamp Fault”, reminding user that main light was fault.

当信号***Headlamp Control Reminder*** = $2 ”Power Mode”,时，提示用户启动车辆；

When ***Headlamp Control Reminder*** = $2 ”Power Mode”, reminding user to turn on the Power Mode.

当信号***Headlamp Control Reminder*** = $3 ”PLEASE MLS=AUTO”时，提示用户将大灯调节至Auto模式；

When ***Headlamp Control Reminder*** = $3 ”PLEASE MLS=AUTO”, reminding user to switch main light in Auto mode.

当信号***Headlamp Control Reminder*** = $4 ”No Operation in Night”时，提示用户不要在夜间进行该操作；

When ***Headlamp Control Reminder*** = $4 ”No Operation in Night”, reminding user that do not operate in night.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 大灯控制的GB信号/GB Signal of Main Light Control

Global B 车型的大灯控制的信号接口说明请参考FG.03.02.01 - Lighting Virtual Switches （2020年7月10日打印版本）第2章节。

需要注意的是，大灯控制需要支持smart control智能控制，使用***Head Lamp Smart Control Prompt Requested***信号，参考《PIS-2099 Smart Control》（MY TBD）。



#### 大灯控制的特殊情况说明/Special Case Description of Main Light Control

大灯的虚拟按键控制在部分场景下需要进行二次确认等。

The virtual control of headlights needs to be confirmed twice in some scenes.

为满足大灯虚拟控制的安全要求（ASIL B），需要娱乐系统满足以下要求：

1. 大灯控制的虚拟按键在显示屏上的位置需要不被任何其它元素遮挡；
2. 大灯控制的虚拟按键需要被描绘在QNX系统上。

以上两条要求的具体内容可分别参考《SFS-083 System Safety RTM Version 2.0-Virtual Cockpit System CLEAMY23》和《SFS-110 VCS Functional Safety Display Architecture》第2.2.1.2节中的定义。该需求由功能安全提供及解释。

##### 夜间状态下关闭大灯的二次确认/Second Confirmation of Turning off Mian Light at Night

当娱乐系统监测到车辆处于夜间环境时，如果用户尝试关闭大灯，既切换大灯至OFF，娱乐系统需要用户进行二次确认。

When the entertainment system monitor that, the vehicle is in the night environment, if the user tries to turn OFF the main light, the entertainment system needs the user to make a second confirmation.

##### 大灯虚拟控制安全要求的信号/Signals of Functional Safety Requirements for Main Lignt Control

###### 大灯虚拟控制安全要求的CLEA信号/ CLEA Signals of Functional Safety Requirements for Main Light Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| ***Freeform Display Fault Indication On*** | 1 | BLN | N/A | $0=False; $1=True |

这个信号用于表示娱乐系统诊断到当前屏幕不能正确显示，或触摸功能有故障时，会发送该信号向对娱乐系统提了功能安全需求的系统报告当前状态，受影响的系统应当自己进入安全状态。

当信号***Freeform Display Fault Indication On*** =$0时，表示娱乐系统及屏幕显示正常；

Consumers shall interpret ***Freeform Display Fault Indication On*** =$0 to mean that the virtual switch is accessible or usable to the user.

当信号***Freeform Display Fault Indication On*** =$1时，表示娱乐系统及屏幕显示异常；

Consumers shall interpret ***Freeform Display Fault Indication On*** =$1 to mean that the virtual switch is accessible or usable to the user.

信号收发/TX and RX: VCU 🡪 EBCM/OPS/ECM/ESCL/ADAS/ETRS/ELS

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

注意，基于功能功能安全ASIL B的要求，该信号需要增加Alive Rolling Count (ARC)和MAC保护。

Please notice that based on ASIL B requirements from function security team, additional Alive Rolling Count (ARC) and MAC protection is needed when using this signal.

###### 大灯虚拟控制安全要求的Global B信号/ Global B Signals of Functional Safety Requirements for Main Light Control

Global B 车型的大灯虚拟控制的安全要求请参考FG.03.02.01 - Lighting Virtual Switches（2020年7月10日打印版本） 第2.5.1章节。

GB spec原文链接参见第3.6.1.6.2章节。

#### 大灯控制的适用架构/Architectural Applicability of Main Light Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B

### 雾灯Fog Lamps (Front & Rear)

系统支持用户对前雾灯进行开关操作。

The system supports the user to turn on/off the front fog lamps.

系统支持用户对后雾灯进行开关操作。

The system supports the user to turn on/off the rear fog lamps.

通过标定P\_VEHICLE\_CONTROL\_FRONT\_FOG\_LAMPS\_ENABLE确定车辆的前雾灯是否支持娱乐系统控制。

通过标定P\_VEHICLE\_CONTROL\_REAR\_FOG\_LAMPS\_ENABLE确认车辆的后雾灯是否支持娱乐系统控制。

#### 雾灯控制支持的用户操作/User Operation Supported by Fog Lamp Control

雾灯控制支持用户通过娱乐系统进行以下操作：

The entertainment system needs to support the following user operations for virtual control and voice assistant control of fog lamps:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 开启前雾灯/Turn on front fog lamp | VC | VC |
| 关闭前雾灯/Turn off front fog lamp | VC | VC |
| 开启后雾灯/Turn on rear fog lamp | VC | VC |
| 关闭后雾灯/Turn off rear fog lamp | VC | VC |

#### 雾灯控制的状态可视化/Visualization of Fog Lamps Control

雾灯控制支持娱乐系统进行如下可视化显示：

The entertainment system needs to support the following information display for virtual control and voice assistant control of fog lamps:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 前雾灯的开关状态/Front fog lamp status | Yes | Yes |
| 后雾灯的开关状态/Rear fog lamp status | Yes | Yes |

#### 雾灯控制的功能安全要求/Functional Safety Requirements for Fog Lamp Control

娱乐系统对雾灯的虚拟按键控制和语音助手控制的功能安全要求为：QM。

The functional safety requirements for virtual control and voice assistant control of fog lamps in entertainment system are QM.

#### 雾灯控制的整车电源模式/Vehicle Power Mode of Fog Lamp Control

娱乐系统对雾灯的虚拟按键控制和语音助手控制仅在以下整车电源模式支持：

The virtual control and voice assistant control of fog lamps by entertainment system are only supported in the following vehicle power modes:

1. Power Mode ACC [GB only]
2. Power Mode RUN
3. Power Mode RAP [GB only]

#### 雾灯控制的性能要求/KPI of Fog Lamps Control

**用户操作到模块响应的性能要求：**

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 大灯模块开始执行按钮对应的指令；  The fog lamp starts to execute the instruction corresponding to the button; |

**雾灯控制的可视化性能要求：**

**Visual performance requirements of fog lamp control:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 雾灯真实状态变化；  Fog lamp status change; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的雾灯的状态；  Display the state of the corresponding fog lamp in the entertainment system; |

#### 雾灯控制的信号/Signals of Fog Lamps Control

本章节描述的是雾灯控制的CAN信号：

This section describes the CAN signal of fog lamp control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Front Fog VCU Control Configuration | Virtual Control Fog Lamps Front Status : Control Available |
| Rear Fog VCU Control Configuration | Virtual Control Fog Lamps Rear Status : Control Available |
| Available | Front Fog Control Available | Virtual Control Fog Lamps Front Status : User Control Allowed |
| Rear Fog Control Available | Virtual Control Fog Lamps Rear Status : User Control Allowed |
| Request | Front Fog VCU Request | Virtual Control Fog Lamps Front Request |
| Rear Fog VCU Request | Virtual Control Fog Lamps Rear Request |
| Status | Front Fog Lamps Active | Virtual Control Fog Lamps Front Status : Current Selection Value |
| Rear Fog Lamps Active | Virtual Control Fog Lamps Rear Status : Current Selection Value |
| Remind | Front Fog Control Reminder | N/A |
| Rear Fog Control Reminder | N/A |

##### 雾灯控制的CLEA信号/CLEA Signal of Fog Lamp Control

本章节描述的是CLEA架构中使用的CAN信号：

This section describes the CAN signal used in CLEA architecture:

###### 雾灯控制的配置信息/Configuration of Fog Lamp Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Fog VCU Control Configuration | 1 | BLN | N/A | $0=False;$1=True |

XXX 可以是Front和Rear，该信号用于表示雾灯的配置信息。

XXX can be Front and Rear, and this signal is used to indicate the configuration information of fog lamps.

当信号***XXX Fog VCU Control Configuration*** = $0 False时，表示该车没有配置支持娱乐系统控制的前后雾灯；

When ***XXX Fog VCU Control Configuration*** = $0 False, There is without Front/Rear lamps that can be controlled by VCU in vehicle.

当信号***XXX Fog VCU Control Configuration*** = $1 True时，表示该车配置了支持娱乐系统控制的前后雾灯；

When ***XXX Fog VCU Control Configuration*** = $1 True, There have front/Rear lamps that can be controlled by VCU in vehicle.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 雾灯当前是否可以被控制/ Availability of Fog Lamp Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Fog Control Available | 1 | BLN | N/A | $0=False;$1=True |

XXX 可以是Front和Rear，该信号用于表示当前时刻，XXX雾灯是否支持用户通过娱乐系统进行控制。

XXX can be Front and Rear, this signalindicates whether the XXX fog lamps can be controlled at the current moment or not.

当信号***XXX Fog Control Available*** = $0 False时，表示前后雾灯当前时刻不可以被娱乐系统控制；

When ***XXX Fog Control Available*** = $0 False, indicates that front/rear fog lamps are not be controlled at the current moment.

当信号***XXX Fog Control Available*** = $1 True时，表示前后雾灯当前时刻可以被娱乐系统控制；

When ***XXX Fog Control Available*** = $1 True, indicates that front/rear fog lamps can be controlled at the current moment.

信号收发/TX and RX: BCM🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对雾灯的控制请求/Control Request of Fog Lamp

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Fog VCU Request | 2 | ENM | N/A | $0 = No Action$1 = On$2 = Off |

XXX可以是Front和Rear，该信号用于娱乐系统请求对雾灯的控制。

XXX can be Front and Rear, this signal is used by the entertainment system to request control of fog lamps.

当信号***XXX Fog VCU Request*** = $0 No Action时，表示没有请求；

When ***XXX Fog VCU Request*** = $0 No Action. No request;

当信号***XXX Fog VCU Request*** = $1 OFF时，表示请求关闭前/后雾灯；

When ***XXX Fog VCU Request*** = $1 OFF, Request to turn off the front/rear fog lamps;

当信号***XXX Fog VCU Request*** = $2 ON时，表示请求开启前/后雾灯；

When ***XXX Fog VCU Request*** = $2 ON. Request to turn on the front/rear fog lamps,

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 雾灯的状态反馈/Status Feedback of Fog Lamp

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Fog Lamps Active | 1 | BLN | N/A | $0=False;$1=True |

XXX可以是Front和Rear，该信号用于BCM反馈雾灯的状态。

XXX can be Front and Rear, and this signal is used for BCM to feedback the status of fog lamps.

当信号***XXX Fog Lamps Active*** = $0 False时，表示前、后雾灯是关闭的；

When ***XXX Fog Lamps Active*** = $0 False, Front/rear fog lamps is turning off.

当信号***XXX Fog Lamps Active*** =$1 True时，表示前、后雾灯是开启的；

When ***XXX Fog Lamps Active*** =$1 True, Front/rear fog lamps is turning on.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

###### 雾灯控制提示/Remind of Fog Lamp Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| XXX Fog Control Reminder |  |  |  |  |

XXX可以是Front和Rear，该信号由BCM提供，用于娱乐系统提示用户和引导用户进行雾灯控制。

XXX can be Front and Rear, and this signal is provided by BCM, which is used by entertainment system to prompt users and guide users to control fog lamps.

当信号***XXX Fog Control Reminder*** = $0 No Fault时，表示没有提示信息；

When ***XXX Fog Control Reminder*** = $0 No Fault, No remind;

当信号***XXX Fog Control Reminder*** = $1 ”Power Mode”时，需要提示用户启动车辆；

When ***XXX Fog Control Reminder*** = $1 ”Power Mode”, reminding user to turn on the Power Mode.

当信号***XXX Fog Control Reminder*** = $2 ”OPEN LB”时，提示用户需要打开近光灯；

When ***XXX Fog Control Reminder*** = $2 ”OPEN LB”, reminding user to open Low Beam.

当信号***XXX Fog Control Reminder*** = $3 ”CLOSE LB”时，提示用户关闭近光灯；

When ***XXX Fog Control Reminder*** = $3 ”CLOSE LB”, reminding user to close Low Beam.

当信号***XXX Fog Control Reminder*** = $4 ”CLOSE HB”时，提示用户关闭远光灯；

When ***XXX Fog Control Reminder*** = $4 ”CLOSE HB”, reminding user to close High Beam.

当信号***XXX Fog Control Reminder*** = $5 ”FOG FAULT”时，提示用户雾灯故障；

When ***XXX Fog Control Reminder*** = $5 ”FOG FAULT”, reminding user that the front fog lamp is fault.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 雾灯控制的GB信号/GB Signal of Fog Lamp Control

Global B 车型的前/后雾灯控制的信号接口说明请参考FG.03.02.01 - Lighting Virtual Switches （2020年7月10日打印版本）第4，5章节。

GB spec原文链接参见第3.6.1.6.2章节。

#### 雾灯控制的特殊情况说明/Special Case Descriptions of Fog Lamp Control

N/A

#### 雾灯控制的适用架构/Architectural Applicability of Fog Lamps Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B

### 自动远光灯Auto High Beam

自动远光灯系统可以通过前置的摄像头等传感器判断对向是否有车辆，以此控制车辆的远光灯，避免自身车辆的远光灯影响对向车辆。娱乐系统支持用户通过屏幕开启和关闭自动远光灯功能。

The automatic high beam system can judge whether there is a vehicle in the opposite direction through sensors such as the front camera, so as to control the high beam of the vehicle and prevent the high beam of its own vehicle from affecting the opposite vehicle. The entertainment system supports the user to turn on and off the automatic high beam function through the screen.

通过标定P\_VEHICLE\_CONTROL\_AHBA\_ENABLE确认车辆的自动远光灯是否支持娱乐系统控制。

#### 自动远光灯控制支持的用户操作/User Operation Supported by AHBA Control

自动远光灯控制支持用户通过娱乐系统进行以下操作：

The virtual control and voice assistant control of the AHBA of the entertainment system need to support the following user operations:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开自动远光灯/Turn on AHBA | N/A | VC |
| 关闭自动远光灯/Turn off AHBA | N/A | VC |

#### 自动远光灯控制的状态可视化/Visualization of AHBA Control

自动远光灯支持娱乐系统进行如下可视化显示：

The virtual control of the AHBA by the entertainment system needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 自动远光灯的开关状态/ On-off status of AHBA | No | Yes |

#### 自动远光灯控制的功能安全要求/Functional Safety Requirements of AHBA Control

自动远光灯控制的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为： ASIL A.

The functional safety requirements of virtual key control and voice assistant control of entertainment system controlled by automatic high beam are: ASIL A.

#### 自动远光灯控制的整车电源模式/Vehicle Power Mode of AHBA

娱乐系统对自动远光灯控制的虚拟按键控制和语音助手控制的仅在以下整车电源模式中支持：

The virtual control and voice assistant control of the entertainment system for AHBA control are only supported in the following vehicle power modes:

1. Power Mode ACC
2. Power Mode RUN
3. Power Mode RAP

#### 自动远光灯控制的性能要求/KPI of AHBA Control

**用户操作到模块响应的性能要求：**

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 自动远光灯模块开始执行按钮对应的指令；  The AHBA starts to execute the instruction corresponding to the button; |

**自动远光灯开关控制的可视化性能要求：**

**Visual performance requirements of AHBA control;**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 自动远光灯模块的状态发生变化  The status of the AHBA module changes |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的自动远光灯的开关状态  Display the status of the AHBA in the entertainment system |

#### 自动远光灯控制的信号/Signal of AHBA Control

以下是自动远光灯控制功能中使用到的信号列表：

Signals for AHBA control as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA [Delete]** | **Global B** |
| Configuration | ~~AHBA VCU Control Configuration~~ | Virtual Control Auto High Beam Status : Control Available |
| Available | ~~AHBA Control Available~~ | Virtual Control Auto High Beam Status : User Control Allowed |
| Request | ~~AHBA VCU Request~~ | Virtual Control Auto High Beam Request |
| Status | ~~Auto High Beam Control Indication On~~ | Virtual Control Auto High Beam Status : Current Selection Value |
| Remind | ~~AHBA Control Reminder~~ | N/A |

##### 自动远光灯控制的CLEA信号/CLEA Signal of AHBA Control [Delete]

本章节描述的是CLEA架构中自动远光灯开关的信号。

This section describes the signal of AHBA in CLEA architecture.

###### 自动远光灯开关控制的配置信息/Configuration of AHBA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| AHBA VCU Control Configuration | 1 | BLN | N/A | $0=False; $1=True |

这个信号用于表示车辆是否配备了支持娱乐系统控制开启和关闭的自动远光灯。

This signal is used to indicate whether the vehicle is equipped with an AHBA that supports the entertainment system to control on and off.

当信号***AHBA VCU Control Configuration*** = $0 False时，表示车辆没有配置支持娱乐系统控制自动远光灯；

When ***AHBA VCU Control Configuration*** = $0 False, There is without AHBA that can be controlled by VCU in vehicle.

当信号***AHBA VCU Control Configuration*** = $1 True时，表示车辆配置了支持娱乐系统控制的自动远光灯；

When ***AHBA VCU Control Configuration*** = $1 True, There have AHBA that can be controlled by VCU in vehicle.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 自动远光灯当前是否可以被控制/Availability of AHBA Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| AHBA Control Available | 1 | BLN | N/A | $0=False; $1=True |

这个信号用于表示当前时刻，自动远光灯的开启和关闭是否支持娱乐系统控制。

This signalindicates whether the AHBA can be controlled at the current moment or not.

当信号***AHBA Control Available*** = $0 False时，表示自动远光灯当前时刻不支持娱乐系统控制；

When ***AHBA Control Available*** = $0 False, indicates that AHBA is not be controlled at the current moment.

当信号***AHBA Control Available*** = $1 True时，表示自动远光灯当前时刻支持娱乐系统控制；

When ***AHBA Control Available*** = $1 True, indicates that AHBA can be controlled at the current moment.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对自动远光灯的控制请求/Control Request of AHBA Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| AHBA VCU Request | 2 | ENM | N/A | $0=No Action  $1=OFF  $2=ON |

这个信号用于娱乐系统请求BCM控制自动远光灯的开启和关闭。

This signal is transmitting by VCU to BCM for turning AHBA on/off.

当信号***AHBA VCU Request*** = $0 No Action时，表示没有请求；

When ***AHBA VCU Request*** = $0 No Action. No request;

当信号***AHBA VCU Request*** = $1 OFF时，表示请求关闭AHBA；

When ***AHBA VCU Request*** = $1 OFF, Request to turn off AHBA;

当信号***AHBA VCU Request*** = $2 ON时，表示请求开启AHBA；

When ***AHBA VCU Request*** = $2 ON. Request to turn on AHBA;

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 自动远光灯开关的状态反馈/ Status Feedback of AHBA Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Auto High Beam Control Indication On | 1 | BLN | N/A | $0=False; $1=True |

这个信号用于表示自动远光灯功能的开启和关闭状态。

当信号***Auto High Beam Control Indication On*** = $0 False时，表示自动远光灯关闭；

当信号***Auto High Beam Control Indication On*** = $1 True时，表示自动远光灯开启；

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### 自动远光灯控制提示/Remind of AHBA Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| AHBA Control Reminder | 4 | ENM | N/A | $0= No Fault  $1=”PRZ Enable”  $2=”Power Mode”  $3=”PLEASE MLS = AUTO”  $4=”OPEN LB”  $5=”CLOSE HB MANUALLY”  $6=”Reverse Position”  $7=”CLOSE FOG LAMP”  $8=”AHBA Feature Fault” |

当用户尝试通过娱乐系统对自动远光灯进行开关操作时，该信号用于引导用户进行相关操作。

When user is trying to turn on/off AHBA, based on some conditions, it may not work, then system will provide guidance.

当信号***AHBA Control Reminder*** = $0 No Fault时，表示没有提示；

When ***AHBA Control Reminder*** = $0 No Fault, no remind.

当信号***AHBA Control Reminder*** = $1 ”PRZ Enable”时，提示用户在个性化设置中开启AHBA；

When ***AHBA Control Reminder*** = $1 ”PRZ Enable”, reminding user that turning on AHBA in customization.

当信号***AHBA Control Reminder*** =$2 ”Power Mode”时，提示用户当前电源模式不支持开启自动远光灯；

When ***AHBA Control Reminder*** =$2 ”Power Mode”, reminding user that the power mode is not support.

当信号***AHBA Control Reminder*** = $3 ”PLEASE MLS = AUTO”时，提示用户将大灯调节至自动挡；

When ***AHBA Control Reminder*** = $3 ”PLEASE MLS = AUTO”, reminding user to switch the main light in auto mode.

当信号***AHBA Control Reminder*** = $4 ”OPEN LB”时，提示用户打开近光灯；

When ***AHBA Control Reminder*** = $4 ”OPEN LB”, reminding user open low beam.

当信号***AHBA Control Reminder*** = $5 ”CLOSE HB MANUALLY”时，提示用户关闭手动远光灯；

When ***AHBA Control Reminder*** = $5 ”CLOSE HB MANUALLY”, reminding user to turn off manual high beam.

当信号***AHBA Control Reminder*** = $6 ”Reverse Position”时，提示用户要退出R挡；

When ***AHBA Control Reminder*** = $6 ”Reverse Position”, reminding user to shift out reverse gear.

当信号***AHBA Control Reminder*** = $7 ”CLOSE FOG LAMP”时，提示用户关闭雾灯；

When ***AHBA Control Reminder*** = $7 ”CLOSE FOG LAMP”, reminding user to turn off fog lamps.

当信号***AHBA Control Reminder*** = $8 ”AHBA Feature Fault”时，提示用户自动远光灯故障；

When ***AHBA Control Reminder*** = $8 ”AHBA Feature Fault”, AHBA feature is out of service.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 自动远光灯控制的GB信号/GB Signal of AHBA

Global B 车型的自动远光灯控制的信号接口说明请参考FG.03.02.01 - Lighting Virtual Switches（2020年7月10日打印版本） 第3章节。

GB spec原文链接参见第3.6.1.6.2章节。

#### 自动远光灯控制的特殊情况说明/Special Case Descriptions of AHBA

N/A

#### 自动远光灯控制的适用架构/Architectural Applicability of AHBA Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* Global-B

### 顶灯Dome Lamp

系统支持用户对内饰顶灯进行如下操作：

The system supports the user to perform the following operations on the interior dome lamp:

1. 顶灯开启/关闭/Turn on/off the dome lamp.
2. 设置顶灯是否随门开启/Control the dome defeat.

通过标定P\_VEHICLE\_CONTROL\_DOME\_LIGHT\_ENABLE确认车辆的内饰顶灯是否支持娱乐系统控制。

#### 顶灯控制支持的用户操作/ User Operation Supported by Dome Light Control

顶灯控制支持用户通过娱乐系统进行以下操作：

The entertainment system needs to support the following user operations for virtual control and voice assistant control of dome lights:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开顶灯/Turn on dome light | VC | VC |
| 关闭顶灯/Turn off dome light | VC | VC |
| 开启顶灯随门开启的功能/Turn off the dome defeat | VC Only | VC Only |
| 关闭顶灯随门开启的功能/Turn on the dome defeat | VC Only | VC Only |

#### 顶灯控制的状态可视化/ Visualization of Dome Light Control

顶灯支持娱乐系统进行如下可视化显示：

The virtual control of dome lights by entertainment system needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 顶灯的开启和关闭状态/ On-off state of dome light | Yes | Yes |
| 顶灯随门开启功能的开关状态/Dome light defeat status | Yes | Yes |

#### 顶灯控制的功能安全要求/Functional Safety Requirements of Dome Light Control

顶灯的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为：QM.

The functional safety requirements for virtual control and voice assistant control of the entertainment system of dome lights are QM.

#### 顶灯控制的整车电源模式/Vehicle Power Mode of Dome Light Control

娱乐系统对顶灯的虚拟按键控制和语音助手控制的仅在以下整车电源模式中支持：

The virtual control and voice assistant control of dome lights in the entertainment system are only supported in the following vehicle power modes:

a) Power Mode OFF

b) Power Mode ACC

c) Power Mode RUN

d) Power Mode RAP

#### 顶灯控制的性能要求/KPI of Dome Light Control

**用户操作到模块响应的性能要求：**

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode OFF,  Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 顶灯模块开始执行按钮对应的指令；  The dome light starts to execute the instruction corresponding to the button; |

**顶灯控制的可视化性能要求：**

**Visual performance requirements of dome light control;**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode OFF,  Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 顶灯的状态发生变化  Dome light status change; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的顶灯的状态；  Display the state of the dome light in the entertainment system; |

#### 顶灯控制的信号/Signal of Dome Light Control

以下是顶灯控制功能中使用到的信号列表：

Signals for dome light control as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Dome\_light\_ON\_OFF\_Configuration | Virtual Control Dome Light Status : Dome Light Available |
| Dome\_light\_Defeat\_Configuration | Virtual Control Dome Light Status : Dome Defeat Available |
| Available | N/A | N/A |
| Request | Dome\_light\_ON\_request | Virtual Control Dome Light Request : Dome Light |
| Dome\_light\_OFF\_request |
| Dome\_light\_Defeat\_request | Virtual Control Dome Light Request : Dome Defeat |
| Status | Dome\_light\_ON\_OFF\_status | Virtual Control Dome Light Status : Dome Light Current Selection Value |
| Dome\_light\_Defeat\_active | Virtual Control Dome Light Status : Dome Defeat Current Selection Value |
| Validity | N/A | N/A |

##### 顶灯控制的CLEA信号/CLEA Signal of Dome Light Control

本章节描述的是CLEA架构中对顶灯控制所使用的信号。

###### 顶灯控制的配置信息/Congfiguration of Dome Light

**顶灯的开关/Turn on-off dome light**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Dome\_light\_ON\_OFF\_Configuration | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示车辆是否配备了支持娱乐系统进行开启关闭控制的顶灯。

This signal is used to indicate whether the vehicle is equipped with a dome light that supports the entertainment system to turn on and off.

当信号***Dome\_light\_ON\_OFF\_Configuration*** = $0 False时，表示车辆没有配置支持娱乐系统控制的顶灯；

When ***Dome\_light\_ON\_OFF\_Configuration*** = $0 False, dome light not support VCU control.

当信号***Dome\_light\_ON\_OFF\_Configuration*** = $1 True时，表示车辆配置了支持娱乐系统控制的顶灯；

When ***Dome\_light\_ON\_OFF\_Configuration*** = $1 True, dome light support VCU control.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 500ms

**顶灯随门开启功能/Dome Light Defeat**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Dome\_light\_Defeat\_Configuration | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示车辆是否配备了支持娱乐系统控制顶灯随门开启功能。

This signal is used to indicate whether the vehicle is equipped with the function of supporting the entertainment system to control the dome light defeat.

当信号时，表示顶灯随门开启功能不支持娱乐系统控制；

When ***Dome\_light\_Defeat\_Configuration*** = $0 False, dome light defeat not support VCU control.

当信号时，表示顶灯随门开启功能支持娱乐系统进行控制；

When ***Dome\_light\_Defeat\_Configuration*** = $1 True, dome light defeat support VCU control.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 500ms

###### 顶灯当前是否可以被控制/ Availability of Dome Light Control

N/A

###### 对顶灯的控制请求/Control Request of Dome Light

**顶灯的开关控制/Turn on-off dome light**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Dome\_light\_ON\_request | 1 | ENM | N/A | $0=No action;$1=ON |
| Dome\_light\_OFF\_request | 1 | ENM | N/A | $0=No action;$1=OFF |

以上两个信号用于娱乐系统对顶灯的控制，信号***Dome\_light\_ON\_request***用于控制顶灯的开启，***Dome\_light\_OFF\_request***用于控制顶灯的关闭。

当信号***Dome\_light\_ON\_request*** =$0 No Action时，表示没有请求；

When ***Dome\_light\_ON\_request*** =$0 No Action,

当信号***Dome\_light\_ON\_request*** =$1 ON时，表示请求打开顶灯；

When ***Dome\_light\_ON\_request*** =$1 ON, VCU request BCM to turn on dome light.

当信号***Dome\_light\_OFF\_request*** =$0 No Action时，表示没有请求；

When ***Dome\_light\_OFF\_request*** =$0 No Action

当信号***Dome\_light\_OFF\_request*** =$1 OFF时，表示请求关闭顶灯；

When ***Dome\_light\_OFF\_request*** =$1 OFF, VCU request BCM to turn off dome light.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 20ms

信号周期/Periodic Interval: 1000ms

**顶灯随门开启功能控制/Dome light defeat control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Dome\_light\_Defeat\_request | 2 | ENM | N/A | $0=No action;$1=Auto;$2=Defeat |

该信号用于娱乐系统控制顶灯随门开启功能的开启和关闭。

This signal is used by the entertainment system to control the turn on-off the dome light defeat .

当信号***Dome\_light\_Defeat\_request*** = $0 No action时，表示没有请求；

When ***Dome\_light\_Defeat\_request*** = $0 No action;

当信号***Dome\_light\_Defeat\_request*** = $1 Auto时，表示请求BCM允许顶灯随门开启；

When ***Dome\_light\_Defeat\_request*** = $1 Auto, VCU request BCM to disable dome light defeat.

当信号***Dome\_light\_Defeat\_request*** = $2 Defeat时，表示请求BCM关闭顶灯随门开启；

When ***Dome\_light\_Defeat\_request*** = $2 Defeat, VCU request BCM to active dome light defeat.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 20ms

信号周期/Periodic Interval: 1000ms

###### 顶灯的状态反馈/Status Feedback of Dome Light

**顶灯的开关状态/Turn on-off dome light**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Dome\_light\_ON\_OFF\_status | 2 | ENM | N/A | $0=Unknown;$1=OFF;$2=ON |

该信号用于表示顶灯的开关状态。

This signal is used to indicate the on-off state of the dome light.

当信号***Dome\_light\_ON\_OFF\_status*** = $0 Unknown时，表示状态未知；

When ***Dome\_light\_ON\_OFF\_status*** = $0 Unknown;

当信号***Dome\_light\_ON\_OFF\_status*** = $1 OFF时，表示顶灯关闭；

When ***Dome\_light\_ON\_OFF\_status*** = $1 OFF; dome light off;

当信号***Dome\_light\_ON\_OFF\_status*** = $2 O时，表示顶灯开启；

When ***Dome\_light\_ON\_OFF\_status*** = $2 ON; dome light on;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 500ms

**顶灯随门开启功能的开关状态/Dome light defeat control**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Dome\_light\_Defeat\_active | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示顶灯随门开启功能的开关状态。

This signal is used to indicate the on-off status of the dome light defeart.

当信号***Dome\_light\_Defeat\_activ***e = $0 False时，表示顶灯随门开启功能开启，顶灯会随着车门打开而开启；

When ***Dome\_light\_Defeat\_activ***e = $0 False, dome light Defeat off, the light will turn on when the door open.

当信号***Dome\_light\_Defeat\_activ***e = $1 True时，表示顶灯随门开启功能关闭，顶灯不会随着车门打开而开启；

When ***Dome\_light\_Defeat\_activ***e = $1 True, dome light defeat on, the light will not turn on when the door open.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 500ms

##### 顶灯控制的GB信号/GB Signal of Dome Light Control

Global B 车型的顶灯控制的信号接口说明请参考FG.03.02.01 - Lighting Virtual Switches （2020年7月10日打印版本）第11，12章节。

需要注意的是，顶灯控制需要支持smart control智能控制，使用***Courtesy Light Smart Icon Requested***信号，参考《PIS-2099 Smart Control》（MY TBD）。

GB spec原文链接参见第3.6.1.6.2章节。

#### 顶灯控制的特殊情况说明/Special Case Descriptions of Dome Light Control

##### 顶灯无法控制情况说明/Explanation of Uncontrollable Dome Lights

当车辆发生事故，车辆进入Emergency状态时，车辆的顶灯会自动亮起，且不受物理按键和娱乐系统控制。

When a vehicle has an accident and enters an Emergency state, the dome lights of the vehicle will automatically light up and are not controlled by the physical buttens and entertainment system.

#### 顶灯控制的适用架构/Architectural Applicability of Dome Lamp Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B

### Flash To Pass/FTP

系统支持用户对FTP进行开关操作。

The system supports the user to perform the following operations on FTP:

通过标定P\_VEHICLE\_CONTROL\_FTP\_ENABLE确定车辆的FTP是否支持娱乐系统控制。

#### FTP支持的用户操作/ User Operation Supported by FTP Control

FTP支持用户通过娱乐系统进行以下操作：

The entertainment system needs to support the following user operations for virtual control and voice assistant control of FTP:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开FTP/Turn on FTP | VAC Only | N/A |
| 关闭FTP/Turn off FTP | VAC Only | N/A |

#### FTP控制的状态可视化/Visualization of FTP Control

FTP支持娱乐系统进行如下可视化显示：

The entertainment system needs to support the following information display for virtual control and voice assistant control of FTP:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| FTP的开关状态/FTP status | No | N/A |

#### FTP控制的功能安全要求/Functional Safety Requirements for FTP Control

娱乐系统对FTP的虚拟按键控制和语音助手控制的功能安全要求为：QM。

The functional safety requirements for virtual control and voice assistant control of FTP in entertainment system are QM.

#### FTP控制的整车电源模式/Vehicle Power Mode of FTP Control

娱乐系统对FTP的虚拟按键控制和语音助手控制仅在以下整车电源模式支持：

The virtual control and voice assistant control of FTP by entertainment system are only supported in the following vehicle power modes:

1. Power Mode ACC
2. Power Mode OFF
3. Power Mode RUN

#### FTP控制的性能要求/KPI of FTP Control

**用户操作到模块响应的性能要求：**

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode OFF,  Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 大灯模块开始执行按钮对应的指令；  The fog lamp starts to execute the instruction corresponding to the button; |

**FTP控制的可视化性能要求：**

**Visual performance requirements of FTP control:**

N/A

#### FTP控制的信号/Signals of FTP Control

本章节描述的是FTP控制的CAN信号：

This section describes the CAN signal of FTP control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Vehicle Theft Notification Signal Group : FTP VCU Control Configuration | N/A |
| Available | Vehicle Theft Notification Signal Group : FTP Control Available | N/A |
| Request | VCU Exterior Lamp Switch Request Signal Group : FTP VCU Request | N/A |

##### FTP控制的CLEA信号/CLEA Signal of FTP Control

本章节描述的是CLEA架构中使用的CAN信号：

This section describes the CAN signal used in CLEA architecture:

###### FTP控制的配置信息/Configuration of FTP Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Vehicle Theft Notification Signal Group : FTP VCU Control Configuration | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示FTP的配置信息。

This signal is used to indicate the configuration information of FTP.

当信号***Vehicle Theft Notification Signal Group : FTP VCU Control Configuration*** = $0 False时，表示该车没有配置支持娱乐系统控制的FTP；

When ***Vehicle Theft Notification Signal Group : FTP VCU Control Configuration*** = $0 False, There is no FTP that can be controlled by VCU in vehicle.

当信号***Vehicle Theft Notification Signal Group : FTP VCU Control Configuration*** = $1 True时，表示该车配置了支持娱乐系统控制的FTP；

When ***Vehicle Theft Notification Signal Group : FTP VCU Control Configuration*** = $1 True, There is FTO that can be controlled by VCU in vehicle.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### FTP当前是否可以被控制/ Availability of FTP Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Vehicle Theft Notification Signal Group : FTP Control Available | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示当前时刻，FTP是否支持用户通过娱乐系统进行控制。

This signalindicates whether the hazard lamp can be controlled at the current moment or not.

当信号***Vehicle Theft Notification Signal Group : FTP Control Available*** = $0 False时，表示FTP当前时刻不可以被娱乐系统控制；

When ***Vehicle Theft Notification Signal Group : FTP Control Available*** = $0 False, indicates that FTP can not be controlled at the current moment.

当信号***Vehicle Theft Notification Signal Group : FTP Control Available*** = $1 True时，表示FTP当前时刻可以被娱乐系统控制；

When ***Vehicle Theft Notification Signal Group : FTP Control Available*** = $1 True, indicates that FTP can be controlled at the current moment.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对FTP的控制请求/Control Request of FTP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| VCU Exterior Lamp Switch Request Signal Group : FTP VCU Request | 1 | ENM | N/A | $0=No Action; $1=ON |

该信号用于娱乐系统请求对FTP的控制。

This signal is used by the entertainment system to request control of FTP.

当信号***VCU Exterior Lamp Switch Request Signal Group : FTP VCU Request*** = $0 No Action时，表示没有请求；

When ***VCU Exterior Lamp Switch Request Signal Group : FTP VCU Request*** = $0 No Action. No request;

当信号***VCU Exterior Lamp Switch Request Signal Group : FTP VCU Request*** = $1 ~~2~~ ON时，表示请求开启FTP；

When ***VCU Exterior Lamp Switch Request Signal Group : FTP VCU Request*** = $1 ~~2~~ ON. Request to turn on FPT,

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### FTP控制的GB信号/GB Signal of FTP Control

N/A

#### FTP控制的特殊情况说明/Special Case Descriptions of FTP Control

N/A

#### FTP的适用架构/Architectural Applicability of FTP

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

### 双跳灯Hazard Lamp

系统支持用户对双跳灯进行开关操作。

The system supports the user to perform the following operations on the interior dome lamp:

通过标定P\_VEHICLE\_CONTROL\_HAZARD\_LAMP\_ENABLE确定车辆的双跳灯是否支持娱乐系统控制。

#### 双跳灯支持的用户操作/ User Operation Supported by Hazard Lamp Control

双跳灯控制支持用户通过娱乐系统进行以下操作：

The entertainment system needs to support the following user operations for virtual control and voice assistant control of hazard light:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开双跳灯/Turn on hazard lamp | VAC Only | N/A |
| 关闭双跳灯/Turn off hazard lamp | VAC Only | N/A |

#### 双跳灯控制的状态可视化/Visualization of Hazard Lamp Control

双跳灯支持娱乐系统进行如下可视化显示：

The entertainment system needs to support the following information display for virtual control and voice assistant control of hazard lamp:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 双跳灯的开关状态/Hazard lamp status | No | N/A |

#### 双跳灯控制的功能安全要求/Functional Safety Requirements for Hazard Lamp Control

娱乐系统对双跳灯的虚拟按键控制和语音助手控制的功能安全要求为：QM。

The functional safety requirements for virtual control and voice assistant control of hazard lamp in entertainment system are QM.

#### 双跳灯控制的整车电源模式/Vehicle Power Mode of Hazard Lamp Control

娱乐系统对双跳灯的虚拟按键控制和语音助手控制仅在以下整车电源模式支持：

The virtual control and voice assistant control of hazard lamp by entertainment system are only supported in the following vehicle power modes:

1. Power Mode ACC
2. Power Mode OFF
3. Power Mode RUN

#### 双跳灯控制的性能要求/KPI of Hazard Lamp Control

**用户操作到模块响应的性能要求：**

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode OFF,  Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 大灯模块开始执行按钮对应的指令；  The fog lamp starts to execute the instruction corresponding to the button; |

**双跳灯控制的可视化性能要求：**

**Visual performance requirements of hazard lamp control:**

N/A

#### 双跳灯控制的信号/Signals of Hazard Lamp Control

本章节描述的是双跳灯控制的CAN信号：

This section describes the CAN signal of hazard lamp control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Vehicle Theft Notification Signal Group : Hazard Lamp VCU Control Configuration | N/A |
| Available | Vehicle Theft Notification Signal Group : Hazard Lamp Control Available | N/A |
| Request | VCU Exterior Lamp Switch Request Signal Group : Hazard Lamp VCU Request | N/A |
| Status | Hazard Switch Active | N/A |

##### 双跳灯控制的CLEA信号/CLEA Signal of Hazard Lamp Control

本章节描述的是CLEA架构中使用的CAN信号：

This section describes the CAN signal used in CLEA architecture:

###### 双跳灯控制的配置信息/Configuration of Hazard Lamp Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Vehicle Theft Notification Signal Group : Hazard Lamp VCU Control Configuration | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示双跳灯的配置信息。

This signal is used to indicate the configuration information of hazard lamp.

当信号***Vehicle Theft Notification Signal Group : Hazard Lamp VCU Control Configuration*** = $0 False时，表示该车没有配置支持娱乐系统控制的双跳灯；

When ***Vehicle Theft Notification Signal Group : Hazard Lamp VCU Control Configuration*** = $0 False, There is no hazard lam that can be controlled by VCU in vehicle.

当信号***Vehicle Theft Notification Signal Group : Hazard Lamp VCU Control Configuration*** = $1 True时，表示该车配置了支持娱乐系统控制的双跳灯；

When ***Vehicle Theft Notification Signal Group : Hazard Lamp VCU Control Configuration*** = $1 True, There is hazard lamp that can be controlled by VCU in vehicle.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 双跳灯当前是否可以被控制/ Availability of Fog Lamp Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hazard Lamp Control Available | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示当前时刻，双跳灯是否支持用户通过娱乐系统进行控制。

This signalindicates whether the hazard lamp can be controlled at the current moment or not.

当信号***Hazard Lamp Control Available*** = $0 False时，表示双跳灯当前时刻不可以被娱乐系统控制；

When ***Hazard Lamp Control Available*** = $0 False, indicates that hazard lamp can not be controlled at the current moment.

当信号***Hazard Lamp Control Available*** = $1 True时，表示双跳灯当前时刻可以被娱乐系统控制；

When ***Hazard Lamp Control Available*** = $1 True, indicates that hazard lamp can be controlled at the current moment.

信号收发/TX and RX: BCM🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 对双跳灯的控制请求/Control Request of Hazard Lamp

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| VCU Exterior Lamp Switch Request Signal Group : Hazard Lamp VCU Request | 2 | ENM | N/A | $0 = No Action$1 = On$2 = Off |

该信号用于娱乐系统请求对双跳灯的控制。

This signal is used by the entertainment system to request control of hazard lamp.

当信号***VCU Exterior Lamp Switch Request Signal Group : Hazard Lamp VCU Request*** = $0 No Action时，表示没有请求；

When ***VCU Exterior Lamp Switch Request Signal Group : Hazard Lamp VCU Request*** = $0 No Action. No request;

当信号***VCU Exterior Lamp Switch Request Signal Group : Hazard Lamp VCU Request*** = $1 OFF时，表示请求关闭双跳灯；

When ***VCU Exterior Lamp Switch Request Signal Group : Hazard Lamp VCU Request*** = $1 OFF, Request to turn off the hazard lamp;

当信号***VCU Exterior Lamp Switch Request Signal Group : Hazard Lamp VCU Request*** = $2 ON时，表示请求开启双跳灯；

When ***VCU Exterior Lamp Switch Request Signal Group : Hazard Lamp VCU Request*** = $2 ON. Request to turn on the hazard lamp,

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

###### 双跳灯的状态反馈/Status Feedback of Hazard Lamp

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hazard Switch Active | 1 | BLN | N/A | $0=False;$1=True |

该信号用于BCM反馈雾灯的状态。

This signal is used for BCM to feedback the status of hazard lamp.

当信号***Hazard Switch Active*** = $0 False时，表示双跳灯是关闭的；

When ***Hazard Switch Active*** = $0 False, hazard lamp is turning off.

当信号***XXX Fog Lamps Active*** =$1 True时，表示双跳灯是开启的；

When ***XXX Fog Lamps Active*** =$1 True, hazard lamp is turning on.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 1000ms

##### 双跳灯控制的GB信号/GB Signal of Hazard Lamp Control [Delete]

#### 双跳灯控制的特殊情况说明/Special Case Descriptions of Hazard Lamp Control

N/A

#### 双跳灯控制的适用架构/Architectural Applicability of Hazard Lamp

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

## 电动尾门系统 [Delete]

## 底盘电子系统功能开关/ Chassis Electronic System Function Switch

针对本章节定义的车辆控制功能，系统需要通过总线接口获取相应控制模块的故障信息，系统有能力将该故障信息呈现给用户。具体是否显示故障信息以交互设计为准。

For the vehicle control functions as defined in this section, the system shall acquire, through the bus interface, the breakdown information of the corresponding control module and then present such breakdown information to the user. Whether the breakdown information shall be displayed depends on the interaction design.

### UPA功能的开关控制/UPA On-Off Control

UPA（Universal Park Assist）指泊车辅助功能。

UPA (Universal Park Assist) refers to the parking assist function.

用户能够通过系统对UPA功能进行关闭/打开操作。系统需通过发送总线信号告知对应模块当前用户操作。系统通过接收对应模块发出的信号显示当前UPA状态。若当前系统接收不到UPA状态信号则该车辆不支持UPA功能，界面不做显示。

The user is able to turn off/on the UPA function through the system. The system shall send a bus signal to inform the corresponding module of the user’s current operation. The system shall then display the current UPA status through the signal received from the corresponding module. In case the current system fails to receive the UPA status signal, it shall be interpreted as that the vehicle does not support the UPA function, which thus is not displayed on the interface.

当UPA故障时，UPA模块会发出OFF信号，此时系统界面显示UPA关闭，用户无法打开UPA功能。

When the UPA malfunctions, the UPA module shall send an OFF signal. At this time, the system interface shall display the UPA OFF, indicating that the user is unable to activate the UPA function.

用户点击屏幕对UPA进行开关控制，到娱乐系统发出总线信号的时间不超过100ms。

The time taken from the user’s clicking of the screen to turn on/off the UPA to the Infotainment System’s sending of bus signal shall exceed not 100ms.

车辆的UPA功能是默认开启的，如果用户在当前点火周期内关闭了UPA功能，该功能将在下一个点火周期内重新启动。

The UPA function of the vehicle is turned on by default. If the user turns off the UPA function in the current ignition cycle, the function will be turn on in the next ignition cycle.

通过标定P\_VEHICLE\_CONTROL\_UPA\_ENABLE确认车辆的UPA是否支持娱乐系统进行控制。

#### UPA功能的开关支持的用户操作/User Operation Supported by UPA Control

娱乐系统对UPA的控制需要支持以下用户操作：

The entertainment system needs to support the following user operations of UPA control:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 支持用户开启UPA功能/Turn on UPA | VC Only | N/A |
| 支持用户关闭关闭UPA功能/Turn off UPA | VC Only | N/A |

#### UPA控制的状态可视化/Visualization of UPA Control

UPA控制需要支持显示以下信息：

UPA control needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| UPA功能的开关状态/Status of UPA | Yes | N/A |

#### UPA 控制的功能安全要求/Funcational Safety Requirements of UPA Control

UPA的娱乐系统虚拟按键控制的功能安全要求为：QM；

The functional safety requirements of virtual key control of entertainment system of UPA are QM;

#### UPA控制的整车电源模式/Vehicle Power Mode of UPA Control

娱乐系统对UPA的虚拟按键控制仅在以下整车电源模式中支持：

The virtual control of UPA by entertainment system is only supported in the following vehicle power modes:

1. Power Mode RUN

#### UPA控制的性能要求/KPI of UPA Control

用户操作到模块响应的性能要求：

Performance requirements from user operation to module response:

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统收到反馈信号并显示UPA的状态；  The entertainment system receives the feedback signal and displays the state of UPA; |

#### UPA控制使用的信号/Signal of UPA Control

本章节定义的是UPA控制使用的信号：

This section defines the signals used by UPA control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | N/A | N/A |
| Available | N/A | N/A |
| Request | Park Assist Soft Button Selected State Raw | N/A |
| Status | Park Assist Soft Button Request | N/A |
| Validity | N/A | N/A |

##### UPA控制的CLEA信号/CLEA Signal of UPA Control

本章节描述的是在CLEA架构中，UPA控制的CLEA信号。

This chapter describes the CLEA signal used by UPA control in CLEA architecture.

###### UPA控制的配置信息/Configuration of UPA Control

N/A

###### UPA当前是否可以被控/Availability of UPA Control

N/A

###### 对UPA的控制请求/Control Request of UPA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Park Assist Soft Button Selected State Raw | 2 | ENM | N/A | $0=Not\_Pressed;  $1=Pressed;  $2=Reserved2;  $3=Reserved3 |

这个信号是由娱乐系统发送给UPA模块的，用于请求切换UPA改变状态。

This signal is sent by the entertainment system to the UPA module for requesting to switch the UPA to change the state.

当信号***Park Assist Soft Button Selected State Raw*** = $0 Not\_Pressed时，表示没有请求；

When ***Park Assist Soft Button Selected State Raw*** = $0 Not\_Pressed, Default and no request。

当信号***Park Assist Soft Button Request*** = $2 ENABLED时，并且信号为***Park Assist Soft Button Selected State Raw*** = $1 Pressed时，UPA会从关闭状态切换为开启状态；

When ***Park Assist Soft Button Request*** = $2 ENABLED, and ***Park Assist Soft Button Selected State Raw*** = $1 Pressed; UPA will change the status from OFF to ON.

为了规避一些信号丢失的异常情况，娱乐系统在发送请求信号时，需要连续发送三帧。

In order to avoid some abnormal situations of signal loss, the entertainment system needs to send three frames continuously when sending the request signal.

信号收发/TX and RX：VCU 🡪 UPA

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 100ms

###### UPA的开关状态反馈/Status Feedback of UPA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Park Assist Soft Button Request | 2 | ENM | N/A | $0=HIDDEN;  $1=DISABLED;  $2=ENABLED;  $3=HIGHLIGHTED |

这个信号由UPA发送给娱乐系统的，用于告知娱乐系统当前UPA的状态。这个信号中包含了三种类型的信息（配置，是否可用，工作状态）。

This signal is sent by UPA to the entertainment system to inform the entertainment system of the current UPA status. This signal contains three types of information (configuration, availability and working status).

当信号 ***Park Assist Soft Button Request*** = $0 HIDDEN，表示该车辆不配置UPA，UPA控制的页面需要进行隐藏

When ***Park Assist Soft Button Request*** = $0 HIDDEN, indicates that the vehicle is not configured with UPA, and pages controlled by UPA need to be hidden.

当信号***Park Assist Soft Button Request*** = $1 DISABLED, 表示车辆配置UPA，但是目前UPA不可用；

When ***Park Assist Soft Button Request*** = $1 DISABLED, Indicates that the vehicle is configured with UPA, but UPA is not currently available.

当信号***Park Assist Soft Button Request*** = $2 ENABLE时，表示车辆配置UPA，当前状态为可用，并且UPA处于关闭状态

When ***Park Assist Soft Button Request*** = $2 ENABLE, Indicates that the vehicle is configured with UPA, the current state is available, and UPA is in a closed state.

当信号***Park Assist Soft Button Request*** = $3 HIGHLIGHTED时，表示车辆配置UPA，当前状态为可用，并且UPA处于开启的状态

When ***Park Assist Soft Button Request*** = $3 HIGHLIGHTED, Indicates that the vehicle is configured with UPA, the current state is available, and UPA is in the open state.

信号收发/TX and RX: UPA 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000ms

##### UPA控制的GB信号/GB Signal of UPA Control

TBD

#### UPA控制的特殊情况说明/Special Case Descriptions of UPA Control

N/A

#### UPA控制的适用架构/Architectural Applicability of UPA

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B [TBD]

### TCS/ESC功能的开关控制/TCS/ESC Control

ESC（Electrical Stability Control）指电子稳定性控制系统，TCS（ Traction Control System ）指牵引力控制系统。

The ESC (Electrical Stability Control) refers to the electrical stability control system and the TCS (Traction Control System) refers to the traction control system.

用户能够通过系统发送总线信号对TCS/ESC进行关闭/打开操作。

The user is able to turn off/on the TCS/ESC by sending a bus signal through the system.

系统支持三种控制模式的选择，这三个选项分别为：电子稳定和牵引力控制开启，电子稳定和牵引力控制关闭，牵引力控制关闭。系统仅支持在三个功能中选择启用其中之一。

The system supports the choice of three control modes: electronic stability and traction control on, electronic stability and traction control off, and traction control off. Only one of the three functions is supported.

车辆是否支持ESC功能取决于具体配置，系统通过接收对应信号判断当前车型配置信息。部分车型只支持TCS功能，此时TCS可以单独开启或关闭。

Whether the vehicle supports the ESC or not depends on specific configuration and the system shall acquire the configuration information of current model through the corresponding signal received. Some models support the TCS only; in this case, the TCS is allowed to be turned on/off separately.

系统通过接收对应模块发出的信号实时显示当前TCS/ESC系统开关状态。当车机熄火后再次启动时，系统需通过接收TCS/ESC相关信号获取当前TCS/ESC系统状态。通常情况下，车机熄火后重新启动时，ESC和TCS会默认开启。

The system shall display the current On/Off status of the TCS/ESC system in real time through the signal received from the corresponding module. When the Infotainment System is turned on again after being turned off, the system shall acquire the current status of the TCS/ESC system by receiving the TCS/ESC-related signal. Under normal circumstances, when the Infotainment System is turned on again after being turned off, the ESC and TCS shall be turned on by default.

用户点击屏幕对TCS/ESC进行开关控制，到娱乐系统发出总线信号的时间不超过100ms。

The time taken from the user’s clicking of the screen to turn on/off the TCS/ESC to the Infotainment System’s sending of bus signal shall not exceed 100ms.

通过标定P\_VEHICLE\_CONTROL\_TCS/ESC\_CONFIGURATION确认车辆的TCS/ESC是否支持娱乐系统控制。

当标定值为0 "VC\_TCS\_ESC\_None"时，表示车辆的TCS/ESC不支持娱乐系统控制；

当标定值为 1 "VC\_TCS\_Only"时，表示车辆的仅TCS支持娱乐系统控制；

当标定值为 2 "VC\_TCS\_ESC"时，表示车辆的TCS/ESC同时支持娱乐系统进行控制。

#### TCS/ESC控制支持的用户操作/User Operation Supported by TCS/ESC Control

TCS/ESC控制支持用户通过娱乐系统进行以下操作：

The entertainment system needs to support the following user operations for virtual control and voice assistant control of TCS/ESC control:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 开启TCS和开启ESC/ Turn on TCS and turn on ESC | VC Only | VC Only |
| 关闭TCS和开启ESC/Turn off TCS and turn on ESC | VC Only | VC Only |
| 关闭TCS和关闭ESC/Turn off TCS and turn off ESC | VC Only | VC Only |

#### TCS/ESC控制的状态可视化/Visualization of TCS/ESC Control

TCS/ESC支持娱乐系统进行如下可视化显示：

The virtual control of TCS/ESC control by entertainment system needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| TCS/ESC的开关状态/On-off status of TCS/ESC | Yes | Yes |
| 无法选择“开启TCS和开启ESC”提示/ Prompt of unable to select "turn on TCS and turn on ESC" | Yes | TBD |
| 无法选择“关闭TCS和开启ESC”提示/ Prompt of unable to select "turn off TCS and turn on ESC" | Yes | TBD |
| 无法选择“关闭TCS和关闭ESC”提示/ Prompt of unable to select "turn off TCS and turn off ESC" | Yes | TBD |

#### TCS/ESC控制的功能安全要求/Functional Safety Requirements of TCS/ESC Control

TCS/ESC控制的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为：QM.

The functional safety requirements of virtual control and voice assistant control of entertainment system controlled by TCS/ESC are QM.

#### TCS/ESC控制的整车电源模式/Vehicle Power Mode of TCS/ESC Control

娱乐系统对TCS/ESC的虚拟按键控制和语音助手控制的仅在以下整车电源模式中支持：

The entertainment system supports virtual control and voice assistant control of TCS/ESC only in the following vehicle power modes:

1. Power Mode OFF
2. Power Mode ACC
3. Power Mode RUN

#### TCS/ESC控制的性能要求/KPI of TCS/ESC Control

**用户操作到模块响应的性能要求：**

**Performance requirements from user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于400ms  Latency less than 400ms |
| 测试的前置条件  Precondition | Power Mode OFF,  Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统收到反馈信号并显示TCS/ESC的状态；  The entertainment system receives the feedback signal and displays the state of TCS/ESC; |

#### TCS/ESC控制的信号/Singal of TCS/ESC Control

以下是TCS/ESC控制功能中使用到的信号列表：

Signals for TCS/ESC control as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Traction and stability system screen configuration | TBD |
| Available | Traction control system disable availability | TBD |
| Vehicle stability enhancement disable and traction control system disable availability | TBD |
| Vehicle stability enhancement enable and traction control system enable availability | TBD |
| Request | Traction and stability system driver request | TBD |
| Status | Traction and stability system current status | TBD |
| Vehicle Stability Enhancement Status | TBD |

##### TCS/ESC控制的CLEA信号/CLEA Signal of TCS/ESC Control

本章节描述的是CLEA架构中，TCS/ESC控制的信号。

This chapter describes the TCS/ESC control signals in CLEA architecture.

###### TSC/ESC控制的配置信息/Configuration of TCS/ESC

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Traction and stability system screen configuration | 2 | ENM | N/A | $0=None  $1=TCS Only  $2=TCS and ESC  $3= TCS ESC and Comp |

该信号用于表示车辆TCS/ESC支持娱乐系统控制的配置情况。

This signal is used to indicate the configuration of vehicle TCS/ESC which supporting entertainment system control.

当信号***Traction and stability system screen configuration*** = $0 None时，表示没有配置支持娱乐系统控制的TCS/ESC系统；

When ***Traction and stability system screen configuration*** = $0 None, there don’t have ECS or TCS that support Virtual control;

当信号***Traction and stability system screen configuration*** = $1 TCS Only时，表示车辆仅配置了支持娱乐系统控制TCS；

When ***Traction and stability system screen configuration*** = $1 TCS Only, Reserved, there only have TCS that support virtual control;

当信号***Traction and stability system screen configuration*** = $2 TCS and ESC时，表示车辆配置了支持娱乐系统控制TCS和ESC；

When ***Traction and stability system screen configuration*** = $2 TCS and ESC, there have TCS and ESC that support virtual control;

当信号***Traction and stability system screen configuration*** = $3 TCS ESC and Comp时，表示车辆配置了支持TCS ESC and Comp, 预留信号，表示有支持虚拟控制的牵引力控制系统、电子稳定控制系统，此外车辆支持竞争性系统，允许延迟干预和更大的车辆动力性。

When ***Traction and stability system screen configuration*** = $3 TCS ESC and Comp, Reserved, There have TCS, ESC that support virtual control, in addition vehicle support competitive which allow delayed intervention and greater vehicle dynamics.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### TCS/ESC当前是否可以被控制/Availability of TCS/ESC Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Traction control system disable availability | 1 | BLN | N/A | $0=False; $1=True |
| Vehicle stability enhancement disable and traction control system disable availability | 1 | BLN | N/A | $0=False; $1=True |
| Vehicle stability enhancement enable and traction control system enable availability | 1 | BLN | N/A | $0=False; $1=True |

以上三个信号用于表示当前TCS/ESC三个用户选项是否支持用户通过娱乐系统进行控制。

The above three signals are used to indicate whether the current TCS/ESC three user options support the user to control through the entertainment system.

***Traction control system disable availability***

EBAM提供了该信号给VCU，用于告知当前时刻用户是否可以选择“ESC enable and TCS disable”；

EBCM provide this signal to VCU for indicate that whether the control of disable TCS is allowed.

当信号***Traction control system disable availability*** = $0 False时，表示用户无法选择“ESC enable and TCS disable”；

When ***Traction control system disable availability*** = $0 False, the option of “ESC enable and TCS disable” is unavailable.

当信号***Traction control system disable availability*** = $1 True时，表示用户可以选择“ESC enable and TCS disable”

When ***Traction control system disable availability*** = $1 True, the option of “ESC enable and TCS disable” is available.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

***Vehicle stability enhancement disable and traction control system disable availability***

EBAM提供了该信号给VCU，用于告知当前时刻用户是否可以选择“ESC disable and TCS disable”

EBCM provide this signal to VCU for indicate that whether the control of disable TCS and disable ESC is allowed.

当信号***Vehicle stability enhancement disable and traction control system disable availability*** = $0 False时，表示用户不可以选择“ESC disable and TCS disable”；

When ***Vehicle stability enhancement disable and traction control system disable availability*** = $0 False, the option of “ESC disable and TCS disable” is unavailable.

当信号***Vehicle stability enhancement disable and traction control system disable availability*** = $1 True时，表示当前用户可以选择“ESC disable and TCS disable”；

When ***Vehicle stability enhancement disable and traction control system disable availability*** = $1 True, the option of “ESC disable and TCS disable” is available.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

***Vehicle stability enhancement enable and traction control system enable availability***

EBAM提供了该信号给VCU，用于告知当前时刻用户是否可以选择“ESC enable and TCS enable”

EBCM provide this signal to VCU for indicate that whether the control of enable TCS and enable ESC is allowed.

当信号***Vehicle stability enhancement enable and traction control system enable availability*** = $0 False时，表示当前时刻，用户不可以选择“ESC enable and TCS enable”；

When ***Vehicle stability enhancement enable and traction control system enable availability*** = $0 False, the option of “ESC enable and TCS enable” is unavailable.

当信号***Vehicle stability enhancement enable and traction control system enable availability*** = $1 True时，表示当前时刻，用户可以选择“ESC enable and TCS enable”；

When ***Vehicle stability enhancement enable and traction control system enable availability*** = $1 True, the option of “ESC enable and TCS enable” is available.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### 对TCS/ESC的控制请求/Control Request for TCS/ESC

**对TCS/ESC系统的控制请求/Control Request for TCS/ESC**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Traction and stability system driver request | 2 | ENM | N/A | $0=no action  $1=Vehicle stability enhancement enable and traction control system enable;  $2=Vehicle stability enhancement disable and traction control system disable;  $3=Vehicle stability enhancement enable and traction control system disable |

娱乐系统用该信号请求EBCM控制TCS/ESC开启和关闭。

VCU will use this signal to request EBCM enable/disable TCS/ESC.

当信号***Traction and stability system driver request*** = $0 no action时，表示没有请求；

When ***Traction and stability system driver request*** = $0 no action;

当信号***Traction and stability system driver request*** = $1 Vehicle stability enhancement enable and traction control system enable时，表示请求同时开启ESC和TCS；

When ***Traction and stability system driver request*** = $1 Vehicle stability enhancement enable and traction control system enable; ESC enable and TCS enable;

当信号***Traction and stability system driver request*** = $2 Vehicle stability enhancement disable and traction control system disable时，表示请求同时关闭TCS和ESC；

When ***Traction and stability system driver request*** = $2 Vehicle stability enhancement disable and traction control system disable; ESC disable and TCS disable;

当信号When ***Traction and stability system driver request*** = $3 Vehicle stability enhancement enable and traction control system disable时，表示仅关闭TCS，ESC保持开启；

When ***Traction and stability system driver request*** = $3 Vehicle stability enhancement enable and traction control system disable, ESC enable and TCS disable;

需要注意的是，为了规避一些信号丢失的异常情况，娱乐系统在发送请求信号时，需要连续发送三帧。

信号收发/TX and RX: VCU 🡪 EBCM

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### TCS/ESC的状态反馈/Status Feedback of TCS/ESC

**TCS/ESC工作模式状态反馈/TCS/ESC working status feedback**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Traction and stability system current status | 2 | ENM | N/A | $0=Vehicle stability enhancement enabled and traction control system enabled;  $1=Vehicle stability enhancement disabled and traction control system disabled;  $2=Vehicle stability enhancement enabled and traction control system disabled |

该信号用于表示TCS/ESC系统当前的工作状态。

This signal is provided by EBCM to indicate currently status of traction and stability system.

当信号***Traction and stability system current status*** = $0 Vehicle stability enhancement enabled and traction control system enabled时，表示TCS enable and ESC enable；

When ***Traction and stability system current status*** = $0 Vehicle stability enhancement enabled and traction control system enabled, TCS enable and ESC enable;

当信号***Traction and stability system current status*** = $1 Vehicle stability enhancement disabled and traction control system disabled时，表示TCS disable and ESC disable；

When ***Traction and stability system current status*** = $1 Vehicle stability enhancement disabled and traction control system disabled, TCS disable and ESC disable;

当信号***Traction and stability system current status*** = $2 Vehicle stability enhancement enabled and traction control system disabled时，表示TCS disable and ESC enable；

When ***Traction and stability system current status*** = $2 Vehicle stability enhancement enabled and traction control system disabled, TCS disable and ESC enable;

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**TCS/ESC系统异常提示/TCS/ESC system abnormal prompt**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Vehicle Stability Enhancement Status | 3 | ENM | N/A | $0=Inactive  $1=Active;  $2=Fault  $3=Warming Up  $4=Not Ready |

该信号用于表示TCS/ESC系统的异常状态，娱乐系统只需要关注系统异常的状态。

This signal is provided by EBCM to indicate the status of vehicle stability enhancement system.

当信号***Vehicle Stability Enhancement Status*** = $0 Inactive时，娱乐系统不响应该状态；

When ***Vehicle Stability Enhancement Status*** = $0 Inactive, not using for enhancement system;

当信号***Vehicle Stability Enhancement Status*** = $1 Active时，娱乐系统不响应该状态；

When ***Vehicle Stability Enhancement Status*** = $1 Active, not using for enhancement system;

当信号***Vehicle Stability Enhancement Status*** = $2 Fault时，娱乐系统将会提供用户当前系统故障，请用户阅读用户手册；

When ***Vehicle Stability Enhancement Status*** = $2 Fault, Will remind user that system fault and remind user to read user manual;

当信号***Vehicle Stability Enhancement Status*** = $3 Warming Up时，娱乐系统不响应该状态

When ***Vehicle Stability Enhancement Status*** = $3 Warming Up, not using for enhancement system;

当信号***Vehicle Stability Enhancement Status*** = $4 Not Ready时，娱乐系统不响应该状态；

When ***Vehicle Stability Enhancement Status*** = $4 Not Ready, not using for enhancement system;

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

##### TCS/ESC控制的GB信号/GB Signal of TCS/ESC Control

TBD

#### TCS/ESC控制的特殊情况说明/Special Case Descriptions of TCS/ESC Control

N/A

#### TCS/ESC控制的适用架构/Architectural Applicability of TCS/ESC

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B [TBD]

### 陡坡缓降/Hill Descent Control

HDC(Hill Descent Control)是指陡坡缓降。系统支持对陡坡缓降功能进行开关控制。

The system supports the user to turn on/off the Hill Descent Control (HDC) function.

系统需通过发送总线信号告知对应模块当前用户操作。

The system shall send a bus signal to inform the corresponding module of the user’s current operation.

系统通过接收对应模块发出的信号实时显示当前陡坡缓降开关状态。当车机熄火后再次启动时，系统需通过接收相关信号获取当前系统状态。通常情况下，车机熄火后重新启动时，陡坡缓降功能会默认开启。

The system shall display the On/Off status of current HDC in real time through the signal received from the corresponding module. When the Infotainment System is turned on again after being turned off, the system shall acquire the current system status by receiving the related signal. Under normal circumstances, when the Infotainment System is turned on again after being turned off, the HDC function shall be turned on by default.

通过标定P\_VEHICLE\_CONTROL\_HDC\_ENABLE确认车辆是否支持娱乐系统控制陡坡缓降功能的开关。

P\_VEHICLE\_CONTROL\_HDC\_ENABLE is used to determine whether HDC can be controlled virtually by VCU.

#### HDC控制支持的用户操作/User Operation Supported by HDC Control

HDC控制支持用户通过娱乐系统进行以下操作：

The entertainment system needs to support the following user operations for the virtual control and voice assistant control of HDC control:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 打开陡坡缓降功能/Enable HDC | VC Only | VC Only |
| 关闭陡坡缓降功能/Disable HDC | VC Only | VC Only |

#### HDC控制的状态可视化/Visualization of HDC Control

HDC控制支持娱乐系统进行如下可视化显示：

The virtual control of HDC control by entertainment system needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 陡坡缓降功能的开关状态/Status of HDC | Yes | Yes |
| 降低车速以使能陡坡缓降功能提示/ Remind of reduce speed to enable HDC | Yes | Yes |
| 陡坡缓降系统失效提示/Remind of HDC failure | Yes | TBD |

#### HDC控制的功能安全要求/Functional Safety Requirement of HDC Control

HDC的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为：QM.

The functional safety requirements of virtual key control and voice assistant control of entertainment system of HDC are QM.

#### HDC控制的整车电源模式/Vehicle Power Mode of HDC Control

娱乐系统对HDC控制的虚拟按键控制和语音助手控制的仅在以下整车电源模式中支持：

The entertainment system's virtual control and voice assistant control for HDC control are only supported in the following vehicle power modes

1. Power Mode ACC
2. Power Mode RUN
3. Power Mode RAP

#### HDC控制的性能要求/KPI of HDC Control

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于400ms  Latency less than 400ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the screen; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统收到反馈信号并显示HDC的状态；  The entertainment system receives the feedback signal and displays the state of HDC; |

#### HDC控制的信号/Signals of HDC Control

以下是HDC功能中使用到的信号列表：

Signals for HDC control as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Hill Descent Control Screen Configuration | Hill Descent Control Virtual Switch Available |
| Available | Hill Descent Control configuration availability | N/A |
| Request | Hill Descent Control Mode Switch Status Virtual Button | Hill Descent Control Current State Request |
| Status | Hill Descent Control System Status | Hill Descent Control System Status |
| Remind | Hill Descent Control Reduce Vehicle Speed to enable Indication On | N/A |

##### HDC控制的CLEA信号/CLEA Signal of HDC Control

本章节描述的CLEA架构中，HDC虚拟按键控制使用的CLEA信号。

This section describes the signals used for HDC control function in CLEA architecture.

###### HDC控制的配置信息/Configuration Information of HDC Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hill Descent Control Screen Configuration | 1 | ENM | N/A | $0=None; $1=HDC |

该信号用于表示本车是否配置了支持娱乐系统控制的陡坡缓降系统（HDC）。

This signal is used to indicate whether the vehicle is equipped with HDC that supports entertainment system control.

当信号为***Hill Descent Control Screen Configuration*** = $0 False时，表示车辆没有配备支持娱乐系统控制的HDC；

When ***Hill Descent Control Screen Configuration*** = $0 False, There is no HDC which be able controlled by VCU.

当信号为***Hill Descent Control Screen Configuration*** = $1 True时，表示车辆配置了支持娱乐系统控制的HDC；

When ***Hill Descent Control Screen Configuration*** = $1 True, HDC support virtual control by VCU.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### HDC当前是否可以被控制/Availability of HDC Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hill Descent Control configuration availability | 1 | BLN | N/A | $0=False; $1=True |

该信号用于表示当前时刻车辆的HDC模块是否支持用户通过娱乐系统进行控制。

This signal is using to indicate that whether the HDC be able controlled by VCU at current time or not.

当信号***Hill Descent Control configuration availability*** = $0 False时，表示HDC当前时刻不支持被娱乐系统控制；

When ***Hill Descent Control configuration availability*** = $0 False, indicate that HDC unable controlled by VCU at current time.

当信号***Hill Descent Control configuration availability*** = $1 True时，表示HDC当前时刻支持被娱乐系统控制；

When ***Hill Descent Control configuration availability*** = $1 True, indicate that HDC enable controlled by VCU at current time.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### 对HDC的控制请求/Status Feedback of HDC Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hill Descent Control Mode Switch Status Virtual Button | 1 | ENM | N/A | $0=Inactive; $1=Active |

该信号用于娱乐系统请求EBCM控制HDC功能的开启和关闭。

VCU will use this signal to request EBCM enable/disable HDC.

当HDC处于关闭状态时，娱乐系统会发送信号***Hill Descent Control Mode Switch Status Virtual Button*** = $1 Active请求EBCM将HDC的状态调整为开启；

When the status of HDC is Disable, VCU will sent ***Hill Descent Control Mode Switch Status Virtual Button*** = $1 Active to EBCM and request EBCM switch the HDC’s status to enable.

当HDC处于开启的状态时，娱乐系统会发送信号sent ***Hill Descent Control Mode Switch Status Virtual Button***= $1 Active请求EBCM将HDC状态调整为关闭；

When the status of HDC is Enable or Active, VCU sent ***Hill Descent Control Mode Switch Status Virtual Button*** = $1 Active to EBCM and request EBCM switch the HDC’s status to disable.

信号收发/TX and RX: VCU 🡪 EBCM

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### HDC的状态反馈/Status Feedback of HDC

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hill Descent Control System Status | 3 | ENM | N/A | $0=Normal;  $1=Enabled;  $2=Active;  $3=Failed;  $4=Temporarily Inhibited |

该信号用于反馈陡坡缓降系统的开启和关闭状态。

This signal is used to feed back the on off status of HDC.

当信号***Hill Descent Control System Status*** = $0 Normal时，表示HDC处于关闭状态；

When ***Hill Descent Control System Status*** = $0 Normal, HDC is disable.

当信号***Hill Descent Control System Status*** = $1 Enabled时，表示HDC处于开启但未激活的状态；

When ***Hill Descent Control System Status*** = $1 Enabled, HDC enable;

当信号***Hill Descent Control System Status*** = $2 Active时，表示HDC处于激活的状态；

When ***Hill Descent Control System Status*** = $2 Active, HDC active;

当信号***Hill Descent Control System Status*** = $3 Failed时，表示HDC处于失效状态；

When ***Hill Descent Control System Status*** = $3 Failed, HDC system failed.

当信号***Hill Descent Control System Status*** = $4 Temporarily Inhibited时，信号预留；

When ***Hill Descent Control System Status*** = $4 Temporarily Inhibited, Reserved.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### HDC控制的提示/Remind of HDC Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hill Descent Control Reduce Vehicle Speed to enable Indication On | 1 | BLN | N/A | $0=False; $1=True |

该信号用于在娱乐系统中提示用户降低车速以使能陡坡缓降系统。

This signal is providing by EBCM to remind user reduce vehicle speed to enable HDC.

当信号***Hill Descent Control Reduce Vehicle Speed to enable Indication On*** = $0 False时，表示不需要提醒；

When ***Hill Descent Control Reduce Vehicle Speed to enable Indication On*** = $0 False, no remind.

当信号***Hill Descent Control Reduce Vehicle Speed to enable Indication On*** = $1 True时，表示需要提示用户降低车速以开启HDC；

When ***Hill Descent Control Reduce Vehicle Speed to enable Indication On*** = $1 True, reminding user to reduce speed.

通过标定P\_VEHICLE\_CONTROL\_HDC\_ENABLE\_SPEED\_LIMIT\_INDICATION确认车辆的陡坡缓降功能enable对应的车速信息。

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

##### HDC控制的GB信号/GB Signal of HDC Control

Global B车型的HDC控制的接口请参考 FG.03.02.02 - Chassis Virtual Switches（2020年7月17日打印版本）的第2章节。



#### HDC控制的特殊情况说明/Special Case Description of HDC Control

N/A

#### HDC控制的适用架构/Architectural Applicability of HDC

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B

### 自动驻车/Auto Hold Control [Model Year TBD]

系统支持对自动驻车功能进行开关控制。

The system supports the user to turn on/off the Auto Hold Control (AHC) function.

系统需通过发送总线信号告知对应模块当前用户操作。

The system shall send a bus signal to inform the corresponding module of the user’s current operation.

系统通过接收对应模块发出的信号实时显示当前自动驻车的开关状态。当车机熄火后再次启动时，系统需通过接收相关信号获取当前系统状态。通常情况下，车机熄火后重新启动时，自动驻车功能会默认关闭。

The system shall display the On/Off status of current AHC in real time through the signal received from the corresponding module. When the Infotainment System is turned on again after being turned off, the system shall acquire the current system status by receiving the related signal. Under normal circumstances, when the Infotainment System is turned on again after being turned off, the AHC function shall be turned off by default.

通过标定P\_VEHICLE\_CONTROL\_AVH\_ENABLE确认车辆是否支持娱乐系统控制AVH的开启和关闭。

#### AVH控制支持的用户操作/User Operation Supported by AVH Control

AVH控制支持娱乐系统进行如下可视化显示：

The entertainment system needs to support the following user operations for virtual control of AVH:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 用户打开AVH/ Enable AVH | VC Only | N/A |
| 用户关闭AVH/Disable AVH | VC Only | N/A |

#### AVH控制的状态可视化/Visualization of AVH

娱乐系统对AVH的虚拟控制需要支持显示以下信息：

The virtual control of AVH by entertainment system needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| AVH的开关状态/AVH status | Yes | N/A |
| 驾驶员侧门未关导致AVH无法开启提示/Prompt that AVH cannot be enable because the driver's door is not closed | Yes | N/A |
| 驾驶员安全带未系导致AVH无法开启提示/Prompt that AVH cannot be enable because the driver's seat belt is not fastened | Yes | N/A |

#### AVH控制的功能安全要/Functional Safety Requirements for AVH Control

AVH的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为： QM.

The functional safety requirements of AVH's entertainment system virtual control and voice assistant control is QM.

#### AVH控制的整车电源模式/Vehicle Power Mode of AVH Control

娱乐系统对AVH的虚拟按键控制和语音助手控制的仅在以下整车电源模式中支持：

The virtual control and voice assistant control of AVH by the entertainment system are only supported in the following vehicle power modes:

a) Power Mode RUN

#### AVH控制的性能要求/KPI of AVH Control

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于400ms  Latency less than 400ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the screen; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统收到反馈信号并显示AVH的状态；  The entertainment system receives the feedback signal and displays the state of AVH; |

#### AVH控制的信号/Signal of AVH Control

以下是AVH功能中使用到的信号列表：

Signals for AVHcontrol as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Auto Vehicle Hold Screen Configuration | N/A |
| Available | Auto Vehicle Hold configuration availability | N/A |
| Request | Auto Vehicle Hold Switch Virtual Button | N/A |
| Status | Auto Hold Enabled | N/A |
| Remind | Auto Hold Disabled Door Open Indication On | N/A |
| Auto Hold Disabled Seatbelt Indication On | N/A |

##### AVH控制的CLEA信号/CLEA Signal of AVH Control

本章节描述的是CLEA架构中对AVH控制功能使用的信号。

This section describes the signals used for AVH control function in CLEA architecture.

###### AVH控制的配置信息/Configuration of AVH Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Auto Vehicle Hold Screen Configuration | 1 | ENM | N/A | $0=None; $1=AVH |

该信号用于表示车辆是否配置了支持娱乐系统控制的AVH功能。

This signal is used to indicate whether the vehicle is configured with AVH function supporting entertainment system control.

当信号***Auto Vehicle Hold Screen Configuration*** = $0 False时，表示车辆没有配置支持娱乐系统控制的AVH；

When ***Auto Vehicle Hold Screen Configuration*** = $0 False, There is no AVH which be able controlled by VCU.

当信号***Auto Vehicle Hold Screen Configuration*** = $1 True时，表示车辆配置了支持娱乐系统控制的AVH；

When ***Auto Vehicle Hold Screen Configuration*** = $1 True, AVH support virtual control by VCU.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### AVH当前是否可以被控制/Availability of AVH Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Auto Vehicle Hold configuration availability | 1 | BLN | N/A | $0=False;$1=True |

该信号用于表示当前时刻AVH是否可以被娱乐系统控制。

This signal is using to indicate that whether the AVH be able controlled by VCU at current time or not.

当信号***Auto Vehicle Hold configuration availability*** = $0 False时，表示当前时刻AVH不可以被娱乐系统控制；

When ***Auto Vehicle Hold configuration availability*** = $0 False, indicate that AVH unable controlled by VCU at current time.

当信号***Auto Vehicle Hold configuration availability*** = $1 True时，表示当前时刻AVH可以被娱乐系统控制；

When ***Auto Vehicle Hold configuration availability*** = $1 True, indicate that AVH enable controlled by VCU at current time.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### 对AVH的控制请求/Control Request for AVH

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Auto Vehicle Hold Switch Virtual Button | 1 | ENM | N/A | $0=Inactive; $1=Active |

该信号用于娱乐系统控制AVH开启和关闭的。

VCU will use this signal to request EBCM enable/disable AVH.

当AVH关闭的时候，娱乐系统会发送信号***Auto Vehicle Hold Switch Virtual Button*** = $1 Active给EBCM请求EBCM切换AVH的状态为开启。

When the status of AVH is Disable, VCU will sent ***Auto Vehicle Hold Switch Virtual Button*** = $1 Active to EBCM and request EBCM switch the AVH’s status to enable.

当AVH处于使能的状态时，娱乐系统会发送信号***Auto Vehicle Hold Switch Virtual Button*** = $1 Active去请求EBCM切换AVH的状态为关闭；

When the status of AVH is Enable or Active, VCU sent ***Auto Vehicle Hold Switch Virtual Button*** = $1 Active to EBCM and request EBCM switch the AVH’s status to disable.

信号收发/TX and RX: VCU 🡪 EBCM

信号更新/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### AVH的状态反馈/Status Feedback of AVH

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Auto Hold Enabled | 1 | BLN | N/A | $0=False; $1=True |

该信号用于反馈AVH的开启和关闭状态。

This signal is providing by EBCM, which is used to indicater the status of AVH.

当信号***Auto Hold Enabled*** = $0 False时，表示AVH功能关闭；

When ***Auto Hold Enabled*** = $0 False, AVH is disable.

当信号***Auto Hold Enabled*** = $1 True时，表示AVH功能开启；

When ***Auto Hold Enabled*** = $1 True, AVH is enable;

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

###### AVH控制提示/Remind of AVH Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Auto Hold Disabled Door Open Indication On | 1 | BLN | N/A | $0=False; $1=True |
| Auto Hold Disabled Seatbelt Indication On | 1 | BLN | N/A | $0=False; $1=True |

以上两个信号用于引导用户关闭主驾车门和系上安全带以使能AVH功能。

Those two signals are used to guide the user to close the driver door and fasten the seat belt to enable AVH function.

***Auto Hold Disabled Door Open Indication On***

这个信号是EBCM提供的，用于提示用户当前AVH因为主驾门未关闭而无法开启；

This signal is providing by EBCM to remind user that AVH is disable due to door was open.

当信号为***Auto Hold Disabled Door Open Indication On*** = $0 False时，表示不需要提示；

When ***Auto Hold Disabled Door Open Indication On*** = $0 False, no remind.

当信号***Auto Hold Disabled Door Open Indication On*** = $1 True时，提示用户关闭主驾门以使能AVH；

When ***Auto Hold Disabled Door Open Indication On*** = $1 True, reminding user that AVH is disable due to door was open.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

***Auto Hold Disabled Seatbelt Indication On***

这个信号时EBCM提供的，用于提示用户当前AVH因为安全带未系而无法开启；

This signal is providing by EBCM to remind user that AVH is disable due to seatbelt was unfastened.

当信号***Auto Hold Disabled Seatbelt Indication On*** = $0 False时，表示不需要提示；

When ***Auto Hold Disabled Seatbelt Indication On*** = $0 False, no remind.

当信号***Auto Hold Disabled Seatbelt Indication On*** =$1 True时，提示用户系安全带以使能AVH功能；

When ***Auto Hold Disabled Seatbelt Indication On*** =$1 True, reminding user that AVH is disable due to seatbelt was unfastened.

信号收发/TX and RX: EBCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

##### AVH控制的GB信号/GB Signals of AVH Control [Delete]

#### AVH控制的适用架构/Architectural Applicability of AVH

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

#### AVH控制的特殊情况说明/Special Case Discription of AVH Control

N/A

### APA

APA(Auto Parking Assist)是指自动泊车功能。系统支持对APA功能进行开启和取消操作。

APA (Auto Parking Assist) refers to the automatic parking function. The system supports the user to turn on/off the APA function.

系统需通过发送总线信号告知对应模块当前用户操作。

The system shall send a bus signal to inform the corresponding module of the user’s current operation.

系统通过接收对应模块发出的信号实时显示当前APA开关状态。

The system shall display the On/Off status of current APA in real time through the signal received from the corresponding module.

具体功能逻辑参考PIS2048

See PIS2048 for the specific functional logics

### 车道偏离辅助系统/Lane Keep Assist

LKA(Lane Keep Assist)是指车道偏离辅助系统。娱乐系统支持对LKA进行开启和取消操作。

娱乐系统通过发送总线信号告知对应模块当前用户操作。

娱乐系统通过接收对应模块发出的信号实时显示当前LKA开关状态。

通过P\_VEHICLE\_CONTROL\_LKA\_ENABLE确认车辆是否支持娱乐系统控制LKA的开启和关闭。

#### LKA支持的用户操作

LKA控制支持用户通过娱乐系统进行以下操作：

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 开启LKA / Turn on LKA | VC Only | VC Only |
| 关闭LKA/ Turn off LKA | VC Only | VC Only |

CLEA架构上，LKA控制所支持的用户操作请参考PIS-2051\_Vehicle Setting。

#### LKA控制的状态可视化/Visulization of LKA

LKA控制支持娱乐系统进行如下可视化显示：

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| LKA的开关状态/On-off status of LKA | Yes | Yes |
| 无法选择“开启LKA”提示/ Prompt of unable to select "turn on LKA" | Yes | Yes |

#### LKA控制的功能安全要求/Functional Safety Requirement of LKA Control

LKA的娱乐系统虚拟按键控制的功能安全要求为：QM；

The functional safety requirements of virtual key control of entertainment system of LKA are QM;

#### LKA控制的整车电源模式/Vehicle Power Mode of LKA Control

娱乐系统对LKA的虚拟按键控制仅在以下整车电源模式中支持：

The virtual control of UPA by entertainment system is only supported in the following vehicle power modes:

* 1. Power Mode ACC
  2. Power Mode RUN
  3. Power Mode RAP

#### LKA控制的性能要求/KPI of LKA

用户操作到模块响应的性能要求：

Performance requirements from user operation to module response:

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode OFF,  Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统收到反馈信号并显示LKA的状态；  The entertainment system receives the feedback signal and displays the state of LKA; |

#### LKA控制使用的信号/Signal of LKA Control

本章节定义的是LKA控制使用的信号：

This section defines the signals used by LKA control:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | N/A | N/A |
| Available | N/A | Virtual Lane Keep Assist Control Available |
| Request | Lane Detection Warning and Control Soft Button Status | Virtual Lane Keep Assist Selected Request |
| Status | Lane Detection Warning and Control Soft Button Request | Lane Detection Warning and Control Feature State |
| Validity | N/A | N/A |
|  |  | Virtual Lane Keep Assist Long Press Deactivation Time |

##### LKA控制的CLEA信号/CLEA Signal of LKA Control

本章节描述的是在CLEA架构中，LKA控制的CLEA信号。

This chapter describes the CLEA signal used by LKA control in CLEA architecture.

###### LKA控制的配置信息/Configuration of LKA Control

N/A

###### LKA当前是否可以被控/Availability of LKA Control

N/A

###### 对LKA的控制请求/Control Request of LKA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| ***Lane Detection Warning and Control Soft Button Status*** | 2 | ENM | N/A | $0=Not\_Pressed;  $1=Pressed; |

这个信号是由娱乐系统发送给LKA模块的，用于请求切换LKA改变状态。

This signal is sent by the entertainment system to the LKA module for requesting to switch the LKA to change the state.

当信号***Lane Detection Warning and Control Soft Button Status*** = $0 Not\_Pressed时，表示没有请求；

When ***Lane Detection Warning and Control Soft Button Status*** = $0 Not\_Pressed, Default and no request。

当信号***Lane Detection Warning and Control Soft Button Request*** = $2 ENABLED时，并且信号为***Lane Detection Warning and Control Soft Button Status*** = $1 Pressed时，LKA会从关闭状态切换为开启状态；

When ***Lane Detection Warning and Control Soft Button Request*** = $2 ENABLED, and ***Lane Detection Warning and Control Soft Button Status*** = $1 Pressed; LKA will change the status from OFF to ON.

信号收发/TX and RX：VCU 🡪 IDCM\_PB, FCM\_PB

更新时间/Update Time: 10ms

信号周期/Periodic Interval: 100ms

###### LKA的开关状态反馈/Status Feedback of UPA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| ***Lane Detection Warning and Control Soft Button Request*** | 2 | ENM | N/A | $0=HIDDEN;  $1=DISABLED;  $2=ENABLED;  $3=HIGHLIGHTED |

这个信号由LKA发送给娱乐系统的，用于告知娱乐系统当前LKA的状态。这个信号中包含了三种类型的信息（配置，是否可用，工作状态）。

This signal is sent by LKA to the entertainment system to inform the entertainment system of the current LKA status. This signal contains three types of information (configuration, availability and working status).

当信号 ***Lane Detection Warning and Control Soft Button Request*** = $0 HIDDEN，表示该车辆不配置LKA，LKA控制的页面需要进行隐藏

When ***Lane Detection Warning and Control Soft Button Request*** = $0 HIDDEN, indicates that the vehicle is not configured with LKA, and pages controlled by LKA need to be hidden.

当信号***Lane Detection Warning and Control Soft Button Request*** = $1 DISABLED, 表示车辆配置LKA，但是目前LKA不可用；

When ***Lane Detection Warning and Control Soft Button Request*** = $1 DISABLED, Indicates that the vehicle is configured with LKA, but LKA is not currently available.

当信号***Lane Detection Warning and Control Soft Button Request*** = $2 ENABLE时，表示车辆配置LKA，当前状态为可用，并且LKA处于关闭状态

When ***Lane Detection Warning and Control Soft Button Request*** = $2 ENABLE, Indicates that the vehicle is configured with LKA, the current state is available, and LKA is in a closed state.

当信号***Lane Detection Warning and Control Soft Button Request*** = $3 HIGHLIGHTED时，表示车辆配置LKA，当前状态为可用，并且LKA处于开启的状态

When ***Lane Detection Warning and Control Soft Button Request*** = $3 HIGHLIGHTED, Indicates that the vehicle is configured with LKA, the current state is available, and LKA is in the open state.

信号收发/TX and RX: IDCM\_PB, FCM\_PB 🡪 VCU

更新时间/Update Time: 50ms

信号周期/Periodic Interval: 1000ms

##### LKA控制的GB信号/GB Signal of LKA Control [MY24]

###### LKA当前是否可以被控制/Availability of LKA Control

###### 对LKA调节的控制请求/Control Requeat of LKA

##### LKA控制的特殊情况说明/Special Case Description of LKA

N/A

#### LKA控制的适用架构/Architectural Applicability of LKA

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B [MY 24]

## 智能灯光秀（适用于458项目）/ Intelligent Light Show (for Program 458) [Delete]

后续灯光秀需求将在《PIS-2051 Vehicle Setting》上规定。

## 方向盘加热/ Heated Steering Wheel

用户可以通过本系统开关方向盘加热功能。

The user is able to turn on/off the Heated Wheel function through the system.

通过标定P\_VEHICLE\_CONTROL\_HEATED\_STEERING\_WHEEL\_AUTO\_ENABLE确认车辆的方向盘加热是否支持Auto挡位。

通过标定P\_VEHICLE\_CONTROL\_HEATED\_STEERING\_WHEEL\_Level确认车辆的方向盘~~家人~~加热是否支持通过娱乐系统进行调节：

标定值为0 "VC\_HSWL\_None" 时，表示不支持通过娱乐系统进行调节；

标定值为1 "VC\_HSWL\_One" 时，表示支持通过娱乐系统进行调节，挡位为1挡；

标定值为2 "VC\_HSWL\_Two" 时，表示支持通过娱乐系统进行调节，挡位为2挡；

标定值为3 "VC\_HSWL\_Three" 时，表示支持通过娱乐系统进行调节，挡位为3挡；

### 方向盘加热控制支持的用户操作/User Operation Supported by Steering Wheel Heating Control

方向盘加热控制支持用户通过娱乐系统进行以下操作：

The virtual control and voice assistant control of the entertainment system for steering wheel heating need to support the following user operations:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 支持用户开启方向盘加热/Support users to turn on steering wheel heating | VC+VAC | VC+VAC |
| 支持用户关闭方向盘加热/Support users to turn off steering wheel heating | VC+VAC | VC+VAC |
| 支持用户对方向盘加热挡位进行调节/Support users to adjust the steering wheel heating level | VC+VAC | VC+VAC |

### 方向盘加热控制的状态可视化/State Visualization of Steering Wheel Heating Control

方向盘加热控制支持娱乐系统进行如下可视化显示：

The virtual control of steering wheel heating by entertainment system needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 方向盘加热的开关状态/Status of heated steering wheel | Yes | Yes |
| 方向盘加热的挡位状态/Heated Level of steering wheel | Yes | Yes |

### 方向盘加热控制的功能安全要求/ Functional Safety Requirements for Steering Wheel Heating Control

方向盘加热的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为： QM.

The functional safety requirements for steering wheel heating entertainment system virtual key control and voice assistant control are QM.

### 方向盘加热控制的整车电源模式/Vehicle Power Mode of Heated Steering Wheel Control

娱乐系统对方向盘加热的虚拟按键控制和语音助手控制的仅在以下整车电源模式中支持：

The virtual control and voice assistant control of the entertainment system for steering wheel heating are only supported in the following vehicle power modes:

1. Power Mode RUN

### 方向盘加热控制的性能要求/KPI of Heated Steering Wheel

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于400ms  Latency less than 400ms |
| 测试的前置条件  Precondition | Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the screen; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统收到反馈信号并显示方向盘加热的状态；  The entertainment system receives the feedback signal and displays the state of heated steering wheel; |

### 方向盘加热控制的信号/Signal of Heated Steering Wheel

以下是方向盘加热功能中使用到的信号列表：

Signals for heated Steering wheel control as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | Heated Steering Wheel Configuration | Heated Steering Wheel Levels Available [TBD] |
| Available | Heated Steering Wheel Levels Available | N/A |
| Request | Infotainment Heated Steering Wheel Level Request | Infotainment Heated Steering Wheel Level Request |
| Status | Heated Steering Wheel Indication | [TBD] |
| Validity | N/A | N/A |

#### 方向盘加热控制的CLEA信号/CLEA Signal of Hetaed Steering Wheel Control

本章节描述的是CLEA架构中对方向盘加热控制的信号。

This chapter describes the signals of steering wheel heated control in CLEA architecture.

##### 方向盘加热控制的配置信息/Configuration of Heated Steering Wheel Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Heated Steering Wheel Configuration | 1 | BLN | N/A | $0=False; $1=True |

该信号用于表示车辆是否配置了支持娱乐系统控制的方向盘加热。

This signal provide by BCM that shows whether the vehicle has heated steering wheel control or not.

当信号***Heated Steering Wheel Configuration*** = $0 False时，表示车辆没有配备支持娱乐系统控制的方向盘加热；

When ***Heated Steering Wheel Configuration*** = $0 False, There is no heated steering wheel that can be controlled by VCU in vehicle.

当信号***Heated Steering Wheel Configuration*** = $1 True时，表示车辆配备了支持娱乐系统控制的方向盘加热；

When ***Heated Steering Wheel Configuration*** = $1 True, There have heated steering wheel that can be controlled by VCU in vehicle.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 1000ms

##### 方向盘加热当前是否可以被控制/Availability of Heated Steering Wheel Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Heated Steering Wheel Levels Available | 2 | ENM | N/A | $0 = Not Available  $1 = Two Levels Available  $2 = Three Levels Available  $3 = Four Levels Available |

该信号用于表示当前时刻，方向盘加热是否支持用户通过娱乐系统进行控制。

This signal is used to indicate whether the steering wheel heating supports the user's control through the entertainment system at the current moment.

当信号时，表示方向盘加热不支持被控制；

When $0 = Not Available, The heated steering wheel level control is unable control in that moment.

当信号时，表示方向盘加热支持两挡调节，就是关闭和高挡位；

When $1 = Two Levels Available, Only support OFF and High Level.

当信号时，表示方向盘加热支持三挡调节，就是关闭，高挡位和中挡位；

When $2 = Three Levels Available, support OFF, High Level and Medium Level.

当信号时，表示方向盘加热支持四档调节，包含关闭，高挡位，中挡位和低挡位；

When $3 = Four Levels Available, Support OFF, High Level, Medium Level and Low Level.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 对方向盘加热的控制请求/Control Request of Heated Steering Wheel

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Infotainment Heated Steering Wheel Level Request | 3 | ENM | N/A | $0 = No Action  $1 = Off  $2 = Auto  $3 = Low  $4 = Medium  $5 = High |

该信号用于娱乐系统请求BCM控制方向盘加热。

This signal is providing by VCU to request BCM turn on/off heated Steering Wheel.

当信号***Infotainment Heated Steering Wheel Level Request*** = $0 No Action时，表示娱乐系统没有控制请求；

When ***Infotainment Heated Steering Wheel Level Request*** = $0 No Action, there is no request from VCU.

当信号***Infotainment Heated Steering Wheel Level Request*** = $1 Off时，表示娱乐系统请求关闭方向盘加热；

When ***Infotainment Heated Steering Wheel Level Request*** = $1 Off, VCU request BCM to turn off the heated steering wheel

当信号***Infotainment Heated Steering Wheel Level Request*** = $2 Auto时，表示娱乐系统请求开启方向盘加热的Auto模式；

When ***Infotainment Heated Steering Wheel Level Request*** = $2 Auto, VCU request BCM to turn the heated steering wheel in Auto mode.

当信号***Infotainment Heated Steering Wheel Level Request*** = $3 Low时，表示娱乐系统请求方向盘加热调节至低挡位；

When ***Infotainment Heated Steering Wheel Level Request*** = $3 Low, VCU request BCM to turn the heated steering wheel in Low level.

当信号***Infotainment Heated Steering Wheel Level Request*** = $4 Medium时，表示娱乐系统请求方向盘加热调节至中挡位；

When ***Infotainment Heated Steering Wheel Level Request*** = $4 Medium, VCU request BCM to turn the heated steering wheel in Medium Level.

当信号***Infotainment Heated Steering Wheel Level Request*** = $5 High时，表示娱乐系统请求方向盘加热调节至高挡位；

When ***Infotainment Heated Steering Wheel Level Request*** = $5 High, VCU request BCM to turn the heated steering wheel in High Level

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 方向盘加热的状态反馈/Status Feedback of Heated Steering Wheel

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Heated Steering Wheel Indication | 2 | ENM | N/A | $0=Off;  $1=Low;  $2=Med;  $3=High |

该信号用于表示当前方向盘加热的工作状态。

This signal is used to indicater the status of heated steeling wheel.

当信号***Heated Steering Wheel Indication*** = $0 Off时，表示方向方加热当前处于关闭状态；

When ***Heated Steering Wheel Indication*** = $0 Off, indicate that the heated steering wheel is Off.

当信号***Heated Steering Wheel Indication*** = $1 Low时，表示方向盘加热当前处于低档位状态；

When ***Heated Steering Wheel Indication*** = $1 Low, Indicate that the heated steering wheel is in Low level;

当信号***Heated Steering Wheel Indication*** = $2 Med时，表示方向盘加热当前处于中档位状态；

When ***Heated Steering Wheel Indication*** = $2 Med, indicate that the heated steering wheel is in Medium Level;

当信号***Heated Steering Wheel Indication*** =$3 High时，表示方向盘加热当前处于高档位状态；

When ***Heated Steering Wheel Indication*** =$3 High, indicate that the heated steering wheel is in High Level;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

#### 方向盘加热控制的GB信号/GB Signal of Heated Steeling Wheel

TBD

### 方向盘加热控制的特殊情况说明/Description of Special Conditions for Heated Steering Wheel

N/A

### 方向盘加热控制的适用架构/Architectural Applicability of Steering Wheel Heating Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B

## 车辆控制功能性能要求/ Performance Requirements on Vehicle Control Function

当用户同时使用虚拟按键和硬件开关对同一控制项进行控制，硬件开关的优先级高于虚拟按键。 系统应当根据当前车辆控制模块的状态来正确显示当前控制项状态，若用户在操控硬按键的同时，娱乐系统停留在对应控制界面，则该界面状态也要保持与当前控件实际状态同步。

When the user applies simultaneously virtual key and hardware key to operate the same control item, the hardware key shall enjoy a higher priority than the virtual one. The system shall correctly display the status of current control item according to that of current vehicle control module; when the user is operating the hard key and the Infotainment System stays at the corresponding control interface, the status of such interface shall be kept synchronized with the actual status of current control item.

系统从底层接收信号到对应界面状态相应的时间不得超过100ms。

The time taken from the system’s receipt of the signal from the bottom layer to the display of corresponding interface status shall not exceed 100ms.

由于车辆控制功能要求用户能够及时地通过系统对相应模块进行操作，因此要求从娱乐系统上电到车控功能可用的时间不得超过15s。

Since the vehicle control function requires the user to be able to operate the corresponding module through the system in a timely manner, it is required that the time from power on the entertainment system to the vehicle control function should not exceed 15s.

## 雨刮系统控制/Wiper Control

部分车型的雨刮系统支持用户通过娱乐系统进行控制，具体参考后续章节。

The wiper system of model V supports users to control through entertainment system. Please refer to the following chapters for details.

通过标定P\_VEHICLE\_CONTROL\_WIPER\_SERVICE\_UP\_ENABLE确认车辆是否支持通过娱乐系统控制雨刮到维修模式。

通过标定P\_VEHICLE\_CONTROL\_WIPER\_MIST\_ENABLE确认车辆的雨刮摆动一次是否支持娱乐系统控制。

### 雨刮系统支持的用户操作/User Operation Supported by Wiper Control

雨刮系统控制支持用户通过娱乐系统进行以下操作：

The entertainment system needs to support the following user operations for wiper’s virtual control and voice assistant control:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 开启雨刮的维修模式/Turn on wiper’s service up mode | VC+VAC | N/A |
| 关闭雨刮的维修模式/turn off wiper’s service up mode | VC+VAC | N/A |
| 雨刮运动一次/Wiper mist | VAC Only | N/A |

#### 雨刮开启至维修位置/ Open The Wiper To Service Position

系统支持用户一键将雨刮开启至维修位置。特别说明，娱乐系统需要根据总线接口获取当前雨刮状态，从而判断当前是否能够支持雨刮开启至维修位置。若当前无法使用该功能，则对应开关需通过界面告知用户该功能当前不可用（例如按键置灰）。

The system supports the user to open the wiper to the maintenance position with one key. In particular, the entertainment system needs to obtain the current wiper status according to the bus interface, to determine whether the current wiper can be enabled to the maintenance position. If the function cannot be used at present, the corresponding switch shall inform the user that the function is not available at present through the interface (for example, the key ash).

### 雨刮系统控制的状态可视化/Status Visualization of Wiper System Control

娱乐系统对雨刮的虚拟控制需要支持显示以下信息：

The entertainment system's virtual control of rain scraping needs to support the display of the following information:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 雨刮维修模式开启状态/ Wiper service up mode on | Yes | N/A |

### 雨刮系统控制的功能安全要求/ Functional safety requirements for wiper system control

雨刮系统的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为： QM.

The functional safety requirements for virtual key control and voice assistant control of entertainment system of wiper system are QM.

### 雨刮系统控制的整车电源模式/Vehicle Power Mode of Wiper Control

娱乐系统对雨刮的虚拟按键控制和语音助手控制仅在以下整车电源模式中支持：

The virtual key control and voice assistant control of the entertainment system for wiper are only supported in the following vehicle power modes:

1. Power Mode ACC
2. Power Mode RUN

### 雨刮系统控制的性能要求/ Performance Requirements for Wiper System Control

雨刮的控制需要满足以下要求：

Wiper control shall meet the following requirements:

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于400ms  Latency less than 400ms |
| 测试的前置条件  Precondition | Power Mode RUN,  Power Mode ACC, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the screen; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统收到反馈信号并显示雨刮系统的状态；  The entertainment system receives the feedback signal and displays the state of wiper; |

### 雨刮系统控制的信号/Signal of Wiper Control

以下是雨刮控制功能中使用到的信号列表：

Signals for wiper control as bellow:

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | N/A | N/A |
| Available | HMI Wiper Control Available | N/A |
| Wiper Mist Control Available | N/A |
| Request | Service Up Parking Request | N/A |
| Wiper Mist Request | N/A |
| Status | Wiper Service Up Parking Status | N/A |
| Wiper Status | N/A |
| Validity | N/A | N/A |

#### 雨刮系统控制的CLEA信号/CLEA Signals for

本章节描述的是CLEA架构中雨刮系统控制的信号。

This section describes the signals controlled by the wiper system in CLEA architecture.

##### 雨刮系统控制的配置信息/Configuration of Wiper

N/A

##### 雨刮系统当前是否可以被控制/Availability of Wiper Control

**雨刮开启至维修位置/Wiper Service Up Mode**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| HMI Wiper Control Available | 1 | BLN | N/A | $0=False; $1=True |

该信号用于表示当前时刻，是否支持用户通过娱乐系统控制雨刮开启至维修位置。

The signal ***HMI wiper Control Available*** represents whether the service up function can be controlled or not.

当信号***HMI wiper Control Available*** =$0 False时，表示不能控制，虚拟按键应该置灰或者用户不可点击；

When ***HMI wiper Control Available*** =$0 False, Unavailable; the soft button of HMI is set to gray (the user can't click to trigger);

当信号***HMI wiper Control Available*** = $1 True时，表示雨刮维修模式当前时刻可以被娱乐系统控制；

When ***HMI wiper Control Available*** = $1 True, it indicates that the current moment of wiper service up mode can be controlled.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**雨刮摆动一次/Wiper Mist (VAC Only)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Wiper Mist Control Available | 1 | BLN | N/A | $0=False; $1=True |

该信号用于表示当前时刻，雨刮摆动一次的娱乐系统控制是否支持。

This signal is used to indicate whether the entertainment system control that the wiper mist is supported at the current moment.

当信号***Wiper Mist Control Available*** = $1 True时，表示当前时刻支持娱乐系统控制雨刮运动一次；

When ***Wiper Mist Control Available*** = $1 True, Radio Head can send out Wiper Request to BCM to control wiper;

当信号***Wiper Mist Control Available*** = $0 False时，表示当前时刻，雨刮不支持娱乐系统控制刮动一次；

When ***Wiper Mist Control Available*** = $0 False, Radio Head could not send out Wiper Request to BCM to control Wiper.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 对雨刮系统的控制请求/Control Request of Wiper

**雨刮开启至维修位置/Wiper Service Up Mode**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Service Up Parking Request | 1 | BLN | N/A | $0=False; $1=True |

该信号用于娱乐系统请求BCM控制雨刮移动至维修位置。

This signal is used to request BCM move the wiper to service up mode.

当信号***Service Up Parking Request*** = $0 False时，表示没有请求；

When ***Service Up Parking Request*** = $0 False, no trigger;

当信号***Service Up Parking Request*** =$1 True时，表示请求改变雨刮的状态一次；

When ***Service Up Parking Request*** =$1 True, trigger;

当状态信号***Wiper*** ***Service Up Parking Status***=$1 True时，娱乐系统通过信号***Service Up Parking Request*** = $1 True请求一次状态变化，雨刮的状态***Wiper Service Up Parking Status***会变为$0 False。

When ***Wiper*** ***Service Up Parking Status***=$1 True, and VCU request once ***Service Up Parking Request*** = $1 True, the ***Wiper Service Up Parking Status*** will switch to $0 False.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**雨刮摆动一次/ Wiper Mist (VAC Only)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Wiper Mist Request | 1 | ENM | N/A | $0=No Action; $1=Trigger |

该信号用于娱乐系统请求BCM控制雨刮摆动一次。

This signal is used to request BCM move wiper once.

当信号***Wiper Mist Request*** =$0(No Action)时，表示没有请求，BCM不做任何事情；

When ***Wiper Mist Request*** =$0(No Action), BCM shall do nothing;

当信号***Wiper Mist Request*** =$1(Trigger)时，BCM需要控制雨刮运动一次；

When ***Wiper Mist Request*** =$1(Trigger), BCM shall go to front wiper Low and MIST mode.

信号收发/TX and RX: VCU 🡪 BCM

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

##### 雨刮系统的状态反馈/Status Feedback of Wiper

**雨刮开启至维修位置的状态/Status of Wiper’s Service Up Mode**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Wiper Service Up Parking Status | 1 | BLN | N/A | $0=False; $1=True |

该信号用于表示雨刮是否开启至维修位置。

This signal is used to indicate whether the wiper is turned on to the service up mode.

当信号$0=False时，表示雨刮不处于维修未知，娱乐系统需要显示维修模式关闭；

When $0=False, not in service up position; radio head shall display ‘OFF’ Status.

当信号$1=True时，表示雨刮处于维修位置，娱乐系统需要显示维修模式开启；

When $1=True, in service up position; radio head shall display ‘ON’ Status.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

**雨刮当前的运动状态/The Current Motion of the Wiper**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Wiper Status | 2 | ENM | N/A | $0=OFF;  $1=Intermittent;  $2=Low Speed;  $3=High Speed |

该信号用于反馈雨刮当前的运动状态。

This Signal is used to feed back wiper status.

当信号$0=OFF时，默认发送值，表示当前雨刮处于关闭的状态；

When $0=OFF, default value;

当信号$1=Intermittent时，表示当前雨刮处于间歇挡位；

When $1=Intermittent, the wiper is in intermittent mode;

当信号$2=Low Speed时，表示当前雨刮处于低速状态；

When $2=Low Speed, the wiper is in low speed mode;

当信号$3=High Speed,时，表示当前雨刮处于高速状态；

When $3=High Speed, the wiper is in hight speed mode.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 100ms

信号周期/Periodic Interval: 1000ms

#### 雨刮系统控制的GB信号/GB Signal of Wiper Control [Delete]

### 雨刮系统控制的特殊情况说明/Special Case Description of Wiper Control

当用户通过拨杆对雨刮进行控制，使雨刮处于工作状态。雨刮的虚拟按键控制和语音控制都是无效的。

When the user controls the wiper through the signal lever, the wiper is in a working state. The virtual key control and voice control of wiper are invalid.

### 雨刮控制的适用架构/Architectural Applicability of Wiper Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

## 车门状态可视化/Visualization of Door State

娱乐系统支持通过车门的状态信号来显示车辆的车门和发动机舱盖以及后备箱盖的状态。

The entertainment system supports displaying the status of the vehicle's doors, engine compartment and rear closure through the status signal of the vehicle doors.

### 车门状态可视化支持的用户操作/User Operations Supported by Visualization of Door Status

车门不支持用户通过HMI进行控制，只支持显示。

The door does not support the user to control through entertainment, only supports display.

### 车门的状态可视化/Visualization of Door State

娱乐系统支持显示以下车门的可视化信息：

The entertainment system supports visualization of the following doors:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 主驾车门是否关闭的状态/The status of driver door | Yes | Yes |
| 副驾车门是否关闭的状态/The status of passenger door | Yes | Yes |
| 后排左侧车门是否关闭的状态/The status of rear left door | Yes | Yes |
| 后排右侧车门是否关闭的状态/The status of rear right door | Yes | Yes |
| 前舱盖是否关闭的状态/The status of engine compartment | Yes | Yes |
| 后备箱/尾门是否关闭的状态/The status of rear closure | Yes | Yes |

### 车门状态可视化的功能安全要求/Functional Safety Requirements for Visualization of Door State

N/A

### 车门状态可视化的整车电源模式/Vehicle Power Supply Mode with Visual Door Status

娱乐系统对车门状态的可视化仅在以下整车电源模式中支持：

Visualization of door status by entertainment system is only supported in the following vehicle power modes:

1. Power Mode OFF
2. Power Mode ACC
3. Power Mode RUN

### 车门状态可视化的性能要求/Performance Requirements for Visualization of Door State

车门状态可视化需要满足以下要求：

The vehicle doors’ state visualization shall meet the following requirements:

**车门状态可视化性能要求：**

**Requirements for Visual Performance of Door State:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode OFF,  Power Mode ACC,  Power Mode RUN |
| 计时起始条件  The KPI timer start condition | 车门的状态发生变化  The status of the doors module changes |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的车门的开关状态  Display the status of the doors in the entertainment system |

### 车门状态可视化的信号/Signals for Visualization of Door State

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Configuration | N/A | N/A |
| Available | N/A | N/A |
| Request | N/A | N/A |
| Status | Hood Status | N/A ~~Front Compartment Ajar Warning Indication On Authenticated~~ |
| Validity | Hood Status Validity | N/A |
| Status | Driver Door Ajar Switch Active | Driver Door Ajar Status |
| Validity | Driver Door Ajar Switch Active Mask | Driver Door Ajar Status Invalid |
| Status | Passenger Door Ajar Switch Active | Co-Driver Door Ajar Status |
| Validity | N/A | Co-Driver Door Ajar Status Invalid |
| Status | Rear Left Door Ajar Switch Active | Left Rear Door Ajar Status |
| Validity | N/A | Left Rear Door Ajar Status Invalid |
| Status | Rear Right Door Ajar Switch Active | Right Rear Door Ajar Status |
| Validity | N/A | Right Rear Door Ajar Status Invalid |
| Status | Rear Closure Ajar Switch Active | Rear Closure Ajar Status |
| Validity | N/A | Rear Closure Ajar Status Invalid |

#### 车门状态可视化的CLEA信号/CLEA Signal for Visualization of Door State

本章节描述的是CLEA架构中，车门状态可视化使用的信号。

This section describes the signals used for visualization of door status in CLEA architecture.

##### 车门状态显示的配置信息/Configuration Information for Door Status Display

N/A

##### 车门当前是否可以被控制/Is the Vehicle Door Currently Controllable

N/A

##### 车门状态显示的控制请求/Control Request for Door Status Display

N/A

##### 车门状态的反馈信号/Feedback Signal of Door Status

**引擎盖的状态信号/Status signal for hood**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hood Status | 2 | ENM | N/A | $0=Closed; $1=Ajar; $2=Open |

当信号***Hood Status Validity*** = $0 valid，信号***Hood Status*** = $0 False用于表示引擎盖处于关闭的状态，信号***Hood Status*** = $1 True用于表示引擎盖处于微开的状态，信号***Hood Status*** = $2 Open表示引擎盖处于打开状态。

When ***Hood Status Validity*** = $0 valid, then signals of ***Hood Status*** = $0 False is the closed status, ***Hood Status*** = $1 True is the ajar status, and ***Hood Status*** = $2 Open is the open status. Otherwise, the signals of ***Hood Status*** is invalid.

对于娱乐系统，***Hood Status*** = $1 Ajar和***Hood Status*** = $2 Open是一样的，都表示引擎盖未关闭。

For VCU, ***Hood Status*** = $1 Ajar and ***Hood Status*** = $2 Open are the same, which means the status is “not closed”.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**引擎盖的状态信号有效性信息/Status signal validity information of engine hood**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Hood Status Validity | 1 | ENM | N/A | $0=Valid; $1=Invalid |

信号***Hood Status Validity***用于表示信号***Hood Status***是否有效。

***Hood Status Validity*** is used for indicate the validity of ***Hood Status***.

当信号***Hood Status Validity*** = $0 Valid，表示信号***Hood Status***是有效的；

When ***Hood Status Validity*** = $0 Valid, the signal ***Hood Status*** is valid;

当信号***Hood Status Validity*** = $1 invalid，表示信号***Hood Status***是无效的；

When ***Hood Status Validity*** = $1 invalid, the signal ***Hood Status*** is invalid;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**主驾门的状态信号/Status signal for driver door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Driver Door Ajar Switch Active | 1 | BLN | N/A | $0=False; $1=True |

当信号***Driver Door Ajar Switch Active*** = $1 Use Data，信号***Driver Door Ajar Switch Active***用于表示主驾车门的开关状态。

When ***Driver Door Ajar Switch Active*** = $1 Use Data, ***Driver Door Ajar Switch Active*** is used to indicate the opened and closed status of the driver door.

当信号为***Driver Door Ajar Switch Active*** = $0 False，表示车门处于关闭的状态；

When ***Driver Door Ajar Switch Active*** = $0 False, represent the closed status;

当信号为 ***Driver Door Ajar Switch Active*** = $1 True，表示车门未关闭；

When ***Driver Door Ajar Switch Active*** = $1 True, represent the ajar status;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**主驾门的状态信号有效性信息/Status signal validity information of main driving door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Driver Door Ajar Switch Active Mask | 1 | ENM |  | $0=Don't Use Data; $1=Use Data |

这个信号用于表示车门状态信号的有效性。

This signal is used to indicate the validity of the door status signal.

当信号为***Driver Door Ajar Switch Active Mask*** = $0 Don't Use Data，表示信号***Driver Door Ajar Switch Active***是无效的；

When ***Driver Door Ajar Switch Active Mask*** = $0 Don't Use Data, the signal ***Driver Door Ajar Switch Active*** is invalid;

当信号为 ***Driver Door Ajar Switch Active Mask*** = $1 Use Data，表示信号***Driver Door Ajar Switch Active***是有效的；

When ***Driver Door Ajar Switch Active Mask*** = $1 Use Data, the signal ***Driver Door Ajar Switch Active*** is valid;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**副驾门的状态信号/Status signal of passenger door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Passenger Door Ajar Switch Active | 1 | BLN | N/A | $0=False; $1=True |

当信号为***Passenger Door Ajar Switch Active*** = $0 False，表示副驾车门处于关闭的状态；

When ***Passenger Door Ajar Switch Active*** = $0 False, represent the passenger door is in closed status;

当信号为 ***Passenger Door Ajar Switch Active*** = $1 True，表示副驾车门未关闭；

When ***Passenger Door Ajar Switch Active*** = $1 True, represent the passenger door is in ajar status;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**副驾门的状态信号的有效性信息/The validity information of the status signal of the passenger door**

N/A

**左后门的状态信号/Status signal for left rear door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Rear Left Door Ajar Switch Active | 1 | BLN | N/A | $0=False; $1=True |

当信号为***Rear Left Door Ajar Switch Active*** = $0 False，表示左后车门处于关闭的状态；

When ***Rear Left Door Ajar Switch Active*** = $0 False, represent the rear right door is in closed status;

当信号为 ***Rear Left Door Ajar Switch Active*** = $1 True，表示左后车门未关闭；

When ***Rear Left Door Ajar Switch Active*** = $1 True, represent the rear right door is in ajar status;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**左后门的状态信号的有效性信息/Validity information of status signal of left rear door**

N/A

**右后门的状态信号/Status signal for right rear door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Rear Right Door Ajar Switch Active | 1 | BLN | N/A | $0=False; $1=True |

当信号为***Rear Right Door Ajar Switch Active***= $0 False，表示右后车门处于关闭的状态；

When ***Rear Right Door Ajar Switch Active*** = $0 False, represent the rear right door is in closed status;

当信号为 ***Rear Right Door Ajar Switch Active*** = $1 True，表示右后车门未关闭；

When ***Rear Right Door Ajar Switch Active*** = $1 True, represent the rear right door is in ajar status;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**右后门的状态信号的有效性信息/Validity information of status signal of right rear door**

N/A

**后盖的状态信号/Status signal for rear closure**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Rear Closure Ajar Switch Active | 1 | BLN | N/A | $0=False; $1=True |

当信号为***Rear Closure Ajar Switch Active*** = $0 False，表示后备箱/尾门处于关闭的状态；

When ***Rear Closure Ajar Switch Active*** = $0 False, represent the rear closure is in closed status;

当信号为 ***Rear Closure Ajar Switch Active*** = $1 True，表示后备箱/尾门未关闭；

When ***Rear Closure Ajar Switch Active*** = $1 True, represent the rear closure is in ajar status;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: 0ms

信号周期/Periodic Interval: 100ms

**后盖的状态信号的有效性信息/Validity information of status signal of rear closure**

N/A

#### 车门状态可视化的GB信号/GB Signal for Visualization of Door State

本章节描述的是Global B架构中，车门状态显示使用的信号。

This section describes the signals used for visualization of door status in Global B architecture.

##### 车门状态显示的配置信息/Configuration Information for Door Status Display

N/A

##### 车门当前是否可以被控制/Is the Vehicle Door Currently Controllable

N/A

##### 车门状态显示的控制请求/Control Request for Door Status Display

N/A

##### 车门状态的反馈信号/ Feedback Signal of Door Status

**~~引擎盖的状态信号/Status signal for hood~~**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **~~Name~~** | **~~Len~~** | **~~Data type~~** | **~~Range~~** | **~~Conversation~~** |
| ~~Front Compartment Ajar Warning Indication On Authenticated~~ | ~~1~~ | ~~BLN~~ | ~~N/A~~ | ~~$0 = FALSE; $1 = TRUE~~ |

~~当~~***~~Front Compartment Ajar Warning Indication On Authenticated~~*** ~~= $0 FALSE时，表示引擎盖处于关闭状态；~~

~~When~~ ***~~Front Compartment Ajar Warning Indication On Authenticated~~*** ~~= $0 FALSE, it response that the engine compartment is closed;~~

~~当~~***~~Front Compartment Ajar Warning Indication On Authenticated~~*** ~~= $1 TRUE时，表示引擎盖处于未关闭状态；~~

~~When~~ ***~~Front Compartment Ajar Warning Indication On Authenticated~~*** ~~= $1 TRUE, it response that the engine compartment is unclosed.~~

~~信号收发/TX and RX: BCM 🡪 VCU~~

~~更新时间/Update Time: 50ms~~

~~信号周期/Periodic Interval: 1000ms~~

**主驾门的状态信号/Status signal for driver door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Driver Door Ajar Status | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

当信号***Driver Door Ajar Status Invalid*** = $0 FALSE，信号***Driver Door Ajar Status***用于表示主驾门的开关状态。

When ***Driver Door Ajar Status Invalid*** = $0 FALSE, ***Driver Door Ajar Status*** is used to indicate the status of driver door.

当***Driver Door Ajar Status*** = $0 FALSE时，表示主驾门处于关闭状态；

When ***Driver Door Ajar Status*** = $0 FALSE, it response that the driver door is closed;

当***Driver Door Ajar Status*** = $1 TRUE时，表示主驾门处于未关闭状态；

When ***Driver Door Ajar Status*** = $1 TRUE, it response that the driver door is unclosed.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**主驾门的状态信号有效性信息/Status signal validity information of main driving door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Driver Door Ajar Status Invalid | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

信号***Driver Door Ajar Status Invalid***用于表示信号***Driver Door Ajar Status***的有效性。

***Driver Door Ajar Status Invalid*** is used to indicate the validity of ***Driver Door Ajar Status***.

当信号***Driver Door Ajar Status Invalid*** = $0 FALSE，表示信号***Driver Door Ajar Status***有效；

When ***Driver Door Ajar Status Invalid*** = $0 FALSE, it is response that ***Driver Door Ajar Status*** is valid;

当信号***Driver Door Ajar Status Invalid*** = $1 TRUE，*表示信号****Driver Door Ajar Status***无效；

When ***Driver Door Ajar Status Invalid*** = $1 TRUE, it is response that ***Driver Door Ajar Status*** isinvalid;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**副驾门的状态信号/Status signal of passenger door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Co-Driver Door Ajar Status | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

当信号***Co-Driver Door Ajar Status Invalid*** = $0 FALSE，信号***Co-Driver Door Ajar Status***用于表示引擎盖的开关状态。

When ***Co-Driver Door Ajar Status Invalid*** = $0 FALSE, ***Co-Driver Door Ajar Status*** is used to indicate the status of co-driver door.

当***Co-Driver Door Ajar Status***= $0 FALSE时，表示副驾门处于关闭状态；

When ***Co-Driver Door Ajar Status*** = $0 FALSE, it response that the co-driver door is closed;

当***Co-Driver Door Ajar Status*** = $1 TRUE时，表示副驾门处于未关闭状态；

When ***Co-Driver Door Ajar Status*** = $1 TRUE, it response that the co-driver door is unclosed.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**副驾门的状态信号的有效性信息/The validity information of the status signal of the passenger door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Co-Driver Door Ajar Status Invalid | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

信号***Co-Driver Door Ajar Status Invalid***用于表示信号***Co-Driver Door Ajar Status***的有效性。

***Co-Driver Door Ajar Status Invalid*** is used to indicate the validity of ***Co-Driver Door Ajar Status***.

当信号***Co-Driver Door Ajar Status Invalid*** = $0 FALSE，表示信号***Co-Driver Door Ajar Status***有效；

When ***Co-Driver Door Ajar Status Invalid*** = $0 FALSE, it is response that ***Co-Driver Door Ajar Status*** is valid;

当信号***Co-Driver Door Ajar Status Invalid*** = $1 TRUE，*表示信号****Co-Driver Door Ajar Status***无效；

When ***Co-Driver Door Ajar Status Invalid*** = $1 TRUE, it is response that ***Co-Driver Door Ajar Status*** is invalid;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**左后门的状态信号/Status signal for left rear door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Left Rear Door Ajar Status | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

当信号***Left Rear Door Ajar Status Invalid*** = $0 FALSE，信号***Left Rear Door Ajar Status***用于表示左后门的开关状态。

When ***Left Rear Door Ajar Status Invalid*** = $0 FALSE, ***Left Rear Door Ajar Status*** is used to indicate the status of left rear door.

当***Left Rear Door Ajar Status*** = $0 FALSE时，表示左后门处于关闭状态；

When ***Left Rear Door Ajar Status*** = $0 FALSE, it response that the left rear door is closed;

当***Left Rear Door Ajar Status*** = $1 TRUE时，表示左后门于未关闭状态；

When ***Left Rear Door Ajar Status*** = $1 TRUE, it response that the left rear door is unclosed.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**左后门的状态信号的有效性信息/Validity information of status signal of left rear door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Left Rear Door Ajar Status Invalid | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

信号***Left Rear Door Ajar Status Invalid***用于表示信号***Left Rear Door Ajar Status***的有效性。

***Left Rear Door Ajar Status Invalid*** is used to indicate the validity of ***Left Rear Door Ajar Status***.

当信号***Left Rear Door Ajar Status Invalid*** = $0 FALSE，表示信号***Left Rear Door Ajar Status***有效；

When ***Left Rear Door Ajar Status Invalid*** = = $0 FALSE, it is response that ***Left Rear Door Ajar Status*** is valid;

当信号***Left Rear Door Ajar Status Invalid*** = = $1 TRUE，*表示信号****Left Rear Door Ajar Status***无效；

When ***Left Rear Door Ajar Status Invalid*** = = $1 TRUE, it is response that ***Left Rear Door Ajar Status*** is invalid;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**右后门的状态信号/Status signal for right rear door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Right Rear Door Ajar Status | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

当信号***Right Rear Door Ajar Status Invalid*** = $0 FALSE时，信号***Right Rear Door Ajar Status***用于表示右后门的开关状态。

When ***Right Rear Door Ajar Status Invalid*** = $0 FALSE, ***Right Rear Door Ajar Status*** is used to indicate the status of right rear door.

当***Right Rear Door Ajar Status*** = $0 FALSE时，表示右后门处于关闭状态；

When ***Right Rear Door Ajar Status*** = $0 FALSE, it response that the right rear door is closed;

当***Right Rear Door Ajar Status*** = $1 TRUE时，表示右后门处于未关闭状态；

When ***Engine Compartment Ajar*** = $1 TRUE, it response that the right rear door is unclosed.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**右后门的状态信号的有效性信息/Validity information of status signal of right rear door**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Right Rear Door Ajar Status Invalid | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

信号***Right Rear Door Ajar Status Invalid***用于表示信号***Right Rear Door Ajar Status***的有效性。

***Right Rear Door Ajar Status Invalid*** is used to indicate the validity of ***Right Rear Door Ajar Status***.

当信号***Right Rear Door Ajar Status Invalid*** = $0 FALSE，表示信号***Right Rear Door Ajar Status***有效；

When ***Right Rear Door Ajar Status Invalid*** = $0 FALSE, it is response that ***Right Rear Door Ajar Status*** is valid;

当信号***Right Rear Door Ajar Status Invalid*** = $1 TRUE，*表示信号****Right Rear Door Ajar Status***无效；

When ***Right Rear Door Ajar Status Invalid*** = $1 TRUE, it is response that ***Right Rear Door Ajar Status*** is invalid;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**后盖的状态信号/Status signal for rear closure**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Rear Closure Ajar Status | 1 | BLN | N/A | $0 = FALSE; $1 = TRUE |

当信号***Engine Compartment Ajar Invalid*** = $0 FALSE，信号***Rear Closure Ajar Status***用于表示后备箱/尾门的开关状态。

When ***Engine Compartment Ajar Invalid*** = $0 FALSE, ***Rear Closure Ajar Status*** is used to indicate the status of rear closure.

当***Rear Closure Ajar Status*** = $0 FALSE时，表示后备箱/尾门处于关闭状态；

When ***Rear Closure Ajar Status*** = $0 FALSE, it response that the rear closure is closed;

当***Rear Closure Ajar Status*** = $1 TRUE时，表示后备箱/尾门处于未关闭状态；

When ***Rear Closure Ajar Status*** = $1 TRUE, it response that the rear closure is unclosed.

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

**后盖的状态信号的有效性信息/Validity information of status signal of rear closure**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Rear Closure Ajar Status Invalid | 1 | BLN | N/A | $0 = FALSE$1 = TRUE |

信号***Rear Closure Ajar Status Invalid***用于表示信号***Rear Closure Ajar Status***的有效性。

***Rear Closure Ajar Status Invalid*** is used to indicate the validity of ***Rear Closure Ajar Status***.

当信号***Rear Closure Ajar Status Invalid*** = $0 FALSE，表示信号***Rear Closure Ajar Status***有效；

When ***Rear Closure Ajar Status Invalid*** = $0 FALSE, it is response that ***Rear Closure Ajar Status*** is valid;

当信号***Rear Closure Ajar Status Invalid*** = $1 TRUE，*表示信号****Rear Closure Ajar Status***无效；

When ***Rear Closure Ajar Status Invalid*** = $1 TRUE, it is response that ***Rear Closure Ajar Status*** is invalid;

信号收发/TX and RX: BCM 🡪 VCU

更新时间/Update Time: TBD

信号周期/Periodic Interval: TBD

### 车门状态可视化的适用架构/Architectural Applicability of Visualization of Door State

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA
* Global-B

## 车辆模式控制/Vehicle Mode Control

车辆模式是一键操作多个子系统运动到某个模式的功能，会关联一些车上的子系统，包括侧窗遮阳帘、氛围灯和座椅等，娱乐系统端可以对车辆模式进行控制。对子系统的控制由VSM完成。

The Vehicle Mode can realize the linkage of some subsystems in the vehicle, including Sunshade, Ambient Light and Seat. VCU can control the Vehicle Mode. Subsystems are control by VSM.

通过标定P\_VEHICLE\_CONTROL\_PESSENGER\_CONFORT\_MODE\_ENABLE确认车辆休息模式是否支持VCU控制。

当标定值为0”FALSE”时，表示车辆休息模式不支持VCU控制。

当标定值为1”TRUE”时，表示车辆休息模式支持VCU控制。

### 车辆模式支持的用户操作/ User Operations Supported by Vehicle Mode Control

车辆模式控制支持用户通过娱乐系统进行以下操作：

The entertainment system needs to support the following user operations for vehicle comfort mode virtual control and voice assistant control:

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 支持用户进入休息模式 | VC + VAC | N/A |
| 支持用户退出休息模式 | VC + VAC | N/A |

### 车辆模式的状态可视化/Visualization of Vehicle Comfort Mode Control

娱乐系统支持显示以下的可视化信息：

The entertainment system supports visualization of the following:

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| 处于某个模式的状态指示 | Yes | N/A |
| 正在运行到某个模式的提示 | Yes | N/A |
| 模式进入成功提示 | Yes | N/A |
| 进入/退出模式失败提示 | Yes | N/A |

### 车辆模式的状态可视化的功能安全要求/Functional Safety Requirements for Vehicle Mode Control

车辆模式的娱乐系统虚拟按键控制和语音助手控制的功能安全要求为： QM.

The functional safety requirements for Vehicle Mode Control and voice assistant control of entertainment system of wiper system are QM.

### 车辆模式的状态可视化的整车电源模式/Vehicle Power Supply Mode with Vehicle Comfort Mode

娱乐系统对车辆模式的可视化仅在以下整车电源模式中支持：

Visualization of vehicle comfort mode by entertainment system is only supported in the following vehicle power modes:

1. Power Mode ACC
2. Power Mode RUN

### 车辆模式可视化的性能要求/Performance Requirements for Visualization of Vehicle Mode

**用户操作到模块响应的性能要求：**

**Performance requirements for user operation to module response:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于250ms  Latency less than 250ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 用户点击了屏幕的虚拟按钮；  User touch the virtual button in the Screen; |
| 计时结束条件  The KPI timer stop condition | 车辆模式开始执行按钮对应的指令；  The vehicle comfort mode to execute the instruction corresponding to the button; |

**车辆休息模式的可视化性能要求：**

**Visual performance requirements of vehicle comfort mode control:**

|  |  |
| --- | --- |
| 性能要求  Key Performance Indicator | 延时小于200ms  Latency less than 200ms |
| 测试的前置条件  Precondition | Power Mode ACC,  Power Mode RUN, |
| 计时起始条件  The KPI timer start condition | 车辆模式状态变化；  Vehicle comfort mode status change; |
| 计时结束条件  The KPI timer stop condition | 娱乐系统中显示对应的车辆模式的状态；  Display the state of the corresponding vehicle comfort mode status in the entertainment system; |

### 车辆模式可视化的信号/Signals for Visualization of Vehicle Mode

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Request | Second Row Right Comfort Mode Request\_ Info | N/A |
| Second Row Left Comfort Mode Request\_ Info | N/A |
| Request(From VSM) | Second Row Comfort Mode Mute Request\_ Info | N/A |
| Availability | Second Row Left Comfort Mode Available | N/A |
| Second Row Right Comfort Mode Available | N/A |
| Second Row Comfort Mode1 Flag | N/A |
| Second Row Comfort Mode2 Flag | N/A |
| Second Row Comfort Mode3 Flag | N/A |
| Second Row Comfort Mode4 Flag | N/A |
| Status | Second Row Left Comfort Motion Status | N/A |
| Second Row Right Comfort Motion Status | N/A |
| Second Row Left Current Mode | N/A |
| Second Row Right Current Mode | N/A |
| Remind | Second Row Left Comfort Mode Remind\_ Info | N/A |
| Second Row Right Comfort Mode Remind\_Info | N/A |

#### 车辆模式控制可视化的CLEA信号/CLEA Signal for Visualization of Vehicle Mode Control

本章节描述的是CLEA架构中，车辆休息模式控制可视化使用的信号。

This section describes the signals used for visualization of door status in CLEA architecture.

##### 车辆模式的配置信息/Configuration Information for Vehicel ~~Comfort~~ Mode Control

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Second Row Comfort Mode1 Flag | 1 | BLN | N/A | $0=False; $1=True |
| Second Row Comfort Mode2 Flag | 1 | BLN | N/A | $0=False; $1=True |
| Second Row Comfort Mode3 Flag | 1 | BLN | N/A | $0=False; $1=True |
| Second Row Comfort Mode4 Flag | 1 | BLN | N/A | $0=False; $1=True |

架构设计时，支持最多四种车辆模式，目前仅支持一种（休息模式），当信号***Second Row Comfort Mode X Flag*** = $1 True，表示支持模式X（X可以是1，2，3，4），其中X=1时对应休息模式，当前X=2/3/4作为预留。

At the time of architecture design, it supports up to four vehicle comfort modes, and only one (cabin VIP mode) is supported at present. When the signal ***Second Row Comfort Mode X Flag*** = $1 true, it indicates that mode X is supported (X can be 1, 2, 3, 4). When X=1, it indicates cabin VIP mode; X=2/3/4 are reserved for future use.

##### 车辆模式是否可以被控制/Is the Vehicle Mode Currently Controllable

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Second Row Left Comfort Mode Available | 1 | BLN | N/A | $0=False; $1=True |
| Second Row Right Comfort Mode Available | 1 | BLN | N/A | $0=False; $1=True |

这两个信号分别用于标识座舱左侧/右侧的当前模式是否支持用户控制。当信号 ***Second Row X Comfort Mode Available*** = $1 True时（X可以是Left或者Right），表示当前情况下，当前左/右侧的模式支持用户通过娱乐系统进行控制。

These two signals are used to identify whether the left/right comfort mode of the cabin supports user control. When the signal ***Second Row X Comfort Mode Available*** = $1 True (X can be Left or Right), it means that the left/right cabin comfort mode supports the user to control through the entertainment system.

##### 车辆模式的控制请求/Control Request for Vehicle Mode

**车辆模式的控制请求/Request of Vehicle Comfort Mode**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Second Row Right Comfort Mode Request\_ Info | 3 | ENM | N/A | $0=No action;  $1=Mode1;  $2=Mode2; $3=Mode3;  $4=Mode4; $5=Exit;  $6-7=Reserved; |
| Second Row Left Comfort Mode Request\_ Info | 3 | ENM | N/A | $0=No action;  $1=Mode1;  $2=Mode2; $3=Mode3;  $4=Mode4; $5=Exit;  $6-7=Reserved; |

信号***Second Row X Comfort Mode Request\_ Info***（X可以是Left 或者 Right）是用于娱乐系统发送控制请求的，信号枚举值对应的含义如下：

***Second Row X Comfort Mode Request\_Info*** (X can be Left or Right) is used for the entertainment system to send control requests, and the corresponding meanings of signal enumeration values are as follows:

当信号值为$0(No Action)时，表示没有控制请求；

When value=$0(No Action), VSM shall do nothing;

当信号为$1(Mode1),时，表示请求VSM调节座舱进入车辆模式1；

When value=$1(Mode1), VSM shall go to Vehicle Mode1.

当信号为时$2(Mode2)，表示请求VSM调节座舱进入车辆模式2；

When value=$2(Mode2), VSM shall go to Vehicle Mode2.

当信号为时$3(Mode3)，表示请求VSM调节座舱进入车辆模式3；

When value=$3(Mode3), VSM shall go to Vehicle Mode3.

当信号为时$4(Mode4)，表示请求VSM调节座舱进入车辆模式4；

When value=$4(Mode4), VSM shall go to Vehicle Mode4.

当信号为时$5(Exit)，表示请求VSM调节座舱退出车辆模式；

When value=$5(Exit), VSM shall exit current Vehicle Mode.

信号收发/TX and RX: VCU 🡪 VSM

更新时间/Update Time : 100 ms

信号周期/Periodic Interval : 1000 ms

**请求娱乐系统进入静音模式/Request Entertainment System Mute**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Second Row Comfort Mode Mute Request\_ Info | 2 | ENM | N/A | $0=No Action;  $1=Off;  $2=On |

这个信号是由VSM发送给娱乐系统，用于VSM请求娱乐系统Mute；

This signal is transmit by VSM and received by Radio Head, will using for request Entertainment system mute.

当信号值为$0(No Action)时，没有请求；

When value=$0(No Action), Radio Head shall do nothing;

当信号值为$1(OFF)时，请求娱乐系统Unmute;

When value=$1(OFF), Radio Head shall return to voice.

当信号值为$2(ON)时，请求娱乐系统Mute；

When value=$2(ON), Radio Head shall mute voice.

信号收发/TX and RX：VSM 🡪 VCU

更新时间/Update Time : 100 ms

信号周期/Periodic Interval : 1000 ms

##### 车辆模式的反馈信号/Feedback Signal of Vehicle Mode

**车辆模式的状态/Status of Vehicle Mode:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Second Row Left Comfort Motion Status | 2 | ENM | N/A | $0=Exit;  $1=Entering; $2=InMode;  $3=Exiting; |
| Second Row Left Current Mode | 3 | ENM | N/A | $0=NoMode;  $1=Mode1; $2=Mode2;  $3=Mode3; $4=Mode4;  $5-7=Reserved; |
| Second Row Left Comfort Mode Remind\_ Info | 2 | ENM | N/A | $0=Normal;  $1=Mode Enter Fault; $2=Mode Exit Fault |
| Second Row Right Comfort Motion Status | 2 | ENM | N/A | $0=Exit;  $1=Entering; $2=InMode;  $3=Exiting |
| Second Row Right Current Mode | 3 | ENM | N/A | $0=NoMode;  $1=Mode1; $2=Mode2;  $3=Mode3; $4=Mode4;  $5-7=Reserved |
| Second Row Right Comfort Mode Remind\_Info | 2 | ENM | N/A | $0=Normal;  $1=Mode Enter Fault; $2=Mode Exit Fault; |

信号***Second Row X Comfort Motion Status*** 将会配合***Second Row X Current Mode***，表示座舱正处于某个模式，退出某个模式，或者正在进入某个模式。

***Second Row X Comfort Motion Status*** will be matched with Second Row X Current Mode, indicating that the cockpit is in a certain mode, exiting a certain mode or entering a certain mode.

当信号***Second Row X Current Mode*** = $1 NoMode时，表示不处于任何模式；

When the signal ***Second Row X Current Mode*** = $1 NoMode, it means that it is not in any mode;

当信号***Second Row X Current Mode*** = $1 ModeY时（X可以是Left或者Right，Y可以是1，2，3，4），信号***Second Row X Comfort Motion Status***对应信号的枚举值含义如下：

When the Second Row X Current Mode = $1 ModeY (X can be Left or Right, and Y can be 1, 2, 3, 4), the enumeration value of the signal corresponding to the Second Row X Comfort Motion Status has the following meanings:

当信号***Second Row X Comfort Motion Status***= $0 Exit，表示X侧已经退出模式Y；

When the signal ***Second Row X Comfort Motion Status***= $0 exit, it means that mode Y has been exited;

当信号***Second Row X Comfort Motion Status***=$1 Entering，表示X侧正在进入模式Y；

When the signal ***Second Row X Comfort Motion Status***= $1 entering, it means entering mode Y;  
当信号***Second Row X Comfort Motion Status***=$2 InMode，表示X侧正处于模式Y；

When the signal ***Second Row X Comfort Motion Status***= $2 inmode, it indicates that it is in mode Y;

当信号***Second Row X Comfort Motion Status***=$3 Exiting，表示X侧正处于模式Y；

When the signal ***Second Row X Comfort Motion Status***= $3 exiting, it indicates that it is in mode Y;

当信号***Second Row X Current Mode*** = $1 ModeY时（X可以是Left或者Right，Y可以是1，2，3，4），信号***Second Row X Comfort Mode Remind\_ Info***对应信号的枚举值含义如下：

当信号***Second Row X Comfort Mode Remind\_ Info*** = $0 Normal时，表示X侧没有异常；

当信号***Second Row X Comfort Mode Remind\_ Info*** =$1 Mode Enter Fault时，表示X侧进入模式Y异常；

当信号***Second Row X Comfort Mode Remind\_ Info*** =$2 Mode Exit Fault时，表示X侧退出模式Y异常；

信号收发/TX and RX：VSM 🡪 VCU

更新时间/Update Time : 100 ms

信号周期/Periodic Interval : 1000 ms

#### 车辆模式控制可视化的GB信号/GB Signal for Visualization of Vehicle Mode Control

N/A

### 车辆模式控制的适用架构/Architectural Applicability of Vehicle Mode Control

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* CLEA

## Motion Sensor [MY TBD]

Motion Sensor是在车挂入Park挡位后，该功能可以感知后排座椅上的运动情况，从而识别被遗留在后排上的小孩或宠物。

This feature is used when you shut the car off and exit. If there is a person or a pet in the rear seat, this will sense motion in the rear seat and set off an alarm.

### Motion Sensor支持的用户操作/User Operation Supported by Motion Sensor

Motion Sensor支持用户通过娱乐系统进行以下操作：

|  |  |  |
| --- | --- | --- |
| **Operation Description** | **CLEA** | **GB** |
| 开启Motion Sensor | N/A | VC |
| 关闭Motion Sensor | N/A | VC |

### Motion Sensor控制的状态可视化/Visualization of Motion Sensor Control

Motion Sensor控制需要支持显示以下信息：

|  |  |  |
| --- | --- | --- |
| **Visualization** | **CLEA** | **GB** |
| Motion Sensor功能的开关状态 | N/A | Yes |

### Motion Sensor 控制的功能安全要求/Funcational Safety Requirements of Motion Sensor

Motion Sensor的娱乐系统虚拟按键控制的功能安全要求为：QM；

### Motion Sensor控制的整车电源模式/Vehicle Power Mode of Motion Sensor

娱乐系统对Motion Sensor的虚拟按键控制仅在以下整车电源模式中支持：

1. Power Mode ACC
2. Power Mode RUN
3. Power Mode RAP
4. Power Mode OFF

### Motion Sensor控制的信号/Signal of Motion Sensor

以下是Motion Sensor控制功能中使用到的信号列表：

|  |  |  |
| --- | --- | --- |
| **Type** | **CLEA** | **Global B** |
| Available | N/A | Virtual Control Auxiliary Alarm Sensor Control Available |
| Request | N/A | HMI General Information 3 Protected : Virtual Control Auxiliary Alarm Sensor Request Authenticated |
| Status | N/A | Auxiliary Alarm Sensor Current Selection Value |

#### Motion Sensor控制的CLEA信号/CLEA Signal of Motion Sensor

N/A

#### Motion Sensor控制的GB信号/GB Signal of Motion Sensor

##### Motion Sensor当前是否可以被控制/Availability of Motion Sensor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Virtual Control Auxiliary Alarm Sensor Control Available | 1 | ENM | N/A | $0 = Not Available;  $1 = Available |

上述信号表示当前Motion Sensor是否支持用户通过娱乐系统对其进行控制。

##### 对Motion Sensor的控制请求/Control Request for Motion Sensor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| HMI General Information 3 Protected : Virtual Control Auxiliary Alarm Sensor Request Authenticated | 2 | ENM | N/A | $0 = No Action; $1 = On; $2 = Off |

娱乐系统用该信号控制对Motion Sensor的开启和关闭。

当信号***HMI General Information 3 Protected : Virtual Control Auxiliary Alarm Sensor Request Authenticated*** = $0 no action时，表示没有请求；

当信号***HMI General Information 3 Protected : Virtual Control Auxiliary Alarm Sensor Request Authenticated*** = $1 On时，表示请求开启Motion Sensor；

当信号***HMI General Information 3 Protected : Virtual Control Auxiliary Alarm Sensor Request Authenticated*** = $2 Off时，表示请求关闭Motion Sensor；

##### Motion Sensor的状态反馈/Status Feedback of Motion Sensor

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Len** | **Data type** | **Range** | **Conversation** |
| Auxiliary Alarm Sensor Current Selection Value | 2 | ENM | N/A | $0 = Unknown; $1 = On; $2 = Off |

该信号用于表示Motion Sensor当前的工作状态。

当信号***Auxiliary Alarm Sensor Current Selection Value*** = $0 Unknown时，表示当前Motion Sensor状态未知；

当信号***Auxiliary Alarm Sensor Current Selection Value*** = $1 On时，表示当前Motion Sensor状态为开启；

当信号***Auxiliary Alarm Sensor Current Selection Value*** = $1 Off时，表示当前Motion Sensor状态为关闭；

### Motion Sensor的使用架构/Architectural Applicability of Motion Sensor

娱乐系统支持的虚拟控制适用于以下架构：

The architecture(s) supported by VCU virtual control is(are):

* Global-B Buick

# 系统需求/System Requirements

## 账号相关/Account

用户设置的氛围灯模式需支持与用户当前登录车机的账户进行关联，当用户更换车辆时需将氛围灯设定的显示模式及颜色自动同步至车辆进行显示。更换车辆包含同一车型及同一品牌的不同车型。

The ambient light mode set by the user shall be linked to the account currently logged by the user into the Information System; to take a new vehicle, the user shall automatically synchronize the display mode and color set for the ambient light to the new vehicle for display. The aforesaid new vehicle involves the same model and different models of the same brand.

## 相关CAN信号/Related CAN Signals

车辆控制相关CAN消息详见ICEI文档Clea Family Infotainment Connectivity Electrical Interface。

See the ICEI document (Clea Family Infotainment Connectivity Electrical Interface) for the CAN signals related to the vehicle control.

## 外部调用 / External Call

Vehicle Control需要支持Global Search的调用，Global Search传输关键字给Vehicle Control，Vehicle Control需要执行相应的检索，并将结果反馈给Global Search。

# 附录/Appendix

**Revision Log**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Date** | **Section** | **Description** | **Author** |
| 0.0.0.8 | 2021/2/25 | 1.5 | 更新数据库版本（CLEA） | Wang Manyi |
| 0.0.0.8 | 2021/2/25 | 3.3.1.6.1.3 | 修改Percentage Window control : XXX Window Control Position Request信号的控制精度 | Wang Manyi |
| 0.0.0.8 | 2021/2/25 | 3.4.1.6.1 | 根据架构CR# 269676修改座椅加热通风功能的CLEA信号逻辑 | Wang Manyi |
| 0.0.0.8 | 2021/2/25 | 3.4.3 | 根据架构CR#266754，修改座舱模式的CLEA信号逻辑  针对新增的顶衬旋钮需求，澄清相关内容 | Wang Manyi |
| 0.0.0.8 | 2021/2/25 | 3.6.1.6.1.3 | 根据功能安全CR#197136，Main Light Switch VCU Request信号需要满足ASIL B要求 | Wang Manyi |
| ~~0.0.0.8~~ | ~~2021/2/25~~ | ~~3.6.3~~ | ~~恢复AHBA的进屏控制功能~~  ~~修改AHBA的进屏控制的status信号（CLEA）~~  ~~删除AHBA的进屏控制的reminder信号（CLEA）~~ | ~~Wang Manyi~~ |
| 0.0.0.8 | 2021/2/25 | 3.8.2.6.1.3 | 增加TCS/ESC控制请求信号发送时需连续发送三帧的需求 | Wang Manyi |
| 0.0.0.7 | 2021/1/26 | 3.1.1.6.2 | 增加《天窗控制GB信号》章节 | Wang Manyi |
| 0.0.0.7 | 2021/1/26 | 3.2.1.6.2 | 增加《遮阳帘控制GB信号》章节 | Wang Manyi |
| 0.0.0.7 | 2021/1/20 | 3.3.1.4 | 修正文中笔误 | Wang Manyi |
| 0.0.0.7 | 2021/1/26 | 3.3.1.6.2 | 增加《车窗系统控制GB信号》章节 | Wang Manyi |
| 0.0.0.7 | 2021/1/14 | 3.4.1.6 | 更新信号列表Signal List for Seat Vented Heated\_0.0.1.xlsx 为Signal List for Seat Vented Heated\_0.0.2.xlsx | Wang Manyi |
| 0.0.0.7 | 2021/1/12 | 3.4.3.1 | 增加语音操作对所有座舱模式调节功能的支持 | Wang Manyi |
| 0.0.0.7 | 2021/1/19 | 3.6.1 | 将描述中的“前照灯”更新为“近光灯” | Wang Manyi |
| 0.0.0.7 | 2021/1/11 | 3.6.3 | 进一步删除AHBA所支持CLEA控制的部分 | Wang Manyi |
| 0.0.0.7 | 2020/12/17 | 3.6.4.6 | 取消信号***Virtual Control Dome Light Status : Dome Light Available***和***Virtual Control Dome Light Status : Dome Defeat Available***的TBD状态 | Wang Manyi |
| 0.0.0.7 | 2020/12/25 | 3.6.5.6.1.3 | FTP控制信号***VCU Exterior Lamp Switch Request Signal Group : FTP VCU Request***枚举值错误，更正 | Wang Manyi |
| 0.0.0.7 | 2020/12/16 | 3.8.3.4 | 根据HDC侧输入，修改HDC开关支持的整车电源模式 | Wang Manyi |
| 0.0.0.7 | 2020/12/25 | 3.8.6 | 根据CR# 263411: SGM 458 MY23 增加车道偏离辅助软开关，具体变更有：  新增CLEA上两条控制信号***Lane Detection Warning and Control Soft Button Status***和***Lane Detection Warning and Control Soft Button Request***  明确支持的power moding  明确支持的控制方式 | Wang Manyi |
| 0.0.0.7 | 2021/1/21 | 3.13.6 | 修改GB上引擎盖状态信号，由Engine Compartment Ajar改为Front Compartment Ajar Warning Indication On Authenticated | Wang Manyi |
| 0.0.0.7 | 2021/1/12 | 3.14 | 为避免产生歧义，将章节名中的车辆休息模式命名为车辆模式，下属休息模式 | Wang Manyi |
| 0.0.0.7 | 2021/1/12 | 3.14.1 | 由于车辆模式不支持中途打断，故删去相关操作  增加车辆模式功能的语音控制能力 | Wang Manyi |
| 0.0.0.7 | 2021/1/5 | 3.14.2 | 修改车辆模式可视化的可视化信息列表 | Wang Manyi |
| 0.0.0.7 | 2021/1/21 | 3.14.6.1.1 | 修改对配置信息控制信号的描述 | Wang Manyi |
| 0.0.0.7 | 2021/1/28 | 3.15 | 新增之前reserve的章节Motion Sensor的内容 | Wang Manyi |
| 0.0.0.7 | 2020/12/30 | 5 | 因为正文中没有对附录1的引用，删除附录1 | Wang Manyi |
| 0.0.0.6 | 2020/12/14 | All | 增加每个虚拟控制章节中关于所适用总线架构的说明 | Wang Manyi |
| 0.0.0.6 | 2020/12/14 | All | 删除不适用的GB信号章节 | Wang Manyi |
| 0.0.0.6 | 2020/11/26 | 3.2 | 更新遮阳帘分类的描述 | Wang Manyi |
| 0.0.0.6 | 2020/12/8 | 3.3.3.4 | 增加禁窗锁支持的电源模式（OFF） | Wang Manyi |
| 0.0.0.6 | 2020/12/8 | 3.3.3.6 | 修订表中关于GB signal的内容 | Wang Manyi |
| 0.0.0.6 | 2020/12/8 | 3.3.3.6.2 | 增加禁窗锁GB spec的引用版本和原文链接 | Wang Manyi |
| 0.0.0.6 | 2020/11/26 | 3.4 | 更新P\_VEHICLE\_CONTROL\_XX\_ROW\_SEAT\_BACK \_HEATED\_ENABLE标定的描述 | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.4.1.4 | 增加座椅加热通风中对GB整车电源模式的描述 | Wang Manyi |
| 0.0.0.6 | 2020/12/8 | 3.4.1.6.2 | 增加座椅加热通风GB spec的引用版本和原文链接 | Wang Manyi |
| 0.0.0.6 | 2020/11/26 | 3.4.3 | 取消3.4.3章节的MY TBD，需要执行；  对3.4.3章节中的子功能项“舒适下车”和“VIP模式”作MY TBD规定，暂不执行 | Wang Manyi |
| 0.0.0.6 | 2020/11/26 | 3.6.1.1 | 由于大灯控制的QNX控制要求，删除VAC对大灯控制的支持 | Wang Manyi |
| 0.0.0.6 | 2020/11/26 | 3.6.1.4 | 增加大灯控制中对GB整车电源模式的描述 | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.6.1.6.2 | 增加GB spec《Lighting Virtual Switches》的引用版本和原文链接 | Wang Manyi |
| 0.0.0.6 | 2020/12/14 | 3.6.1.7.2.1 | 增加大灯虚拟控制的ASIL B要求特殊说明 | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.6.1.7.2.2 | 增加GB spec《Lighting Virtual Switches》的引用版本和原文链接 | Wang Manyi |
| 0.0.0.6 | 2020/12/1 | 3.6.2.1 | 删除语音助手对雾灯控制的支持 | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.6.2.4 | 增加雾灯控制中对GB整车电源模式的描述 | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.6.2.6.2 | 增加GB spec《Lighting Virtual Switches》的引用版本原文链接 | Wang Manyi |
| 0.0.0.6 | 2020/12/1 | 3.6.3 | 需要执行自动远光灯控制（取消TBD） | Wang Manyi |
| 0.0.0.6 | 2020/12/1 | 3.6.3.1 | 删除语音助手对自动远光灯控制在GB上的支持，删除娱乐系统对自动远光灯控制在CLEA上的支持 | Wang Manyi |
| 0.0.0.6 | 2020/12/1 | 3.6.3.4 | 增加自动远光灯控制中对GB整车电源模式的描述 | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.6.3.6.2 | 增加GB spec《Lighting Virtual Switches》的引用版本和原文链接 | Wang Manyi |
| 0.0.0.6 | 2020/12/1 | 3.6.4.1 | 删除语音助手对顶灯控制的支持 | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.6.4.4 | 增加顶灯控制的整车电源模式power mode=OFF | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.6.4.6.2 | 增加GB spec《Lighting Virtual Switches》的引用版本和原文链接 | Wang Manyi |
| 0.0.0.6 | 2020/12/14 | 3.7.2.6.1.3 | 删除TCS/ESC的请求信号有效性信号（***Freeform Display Fault Indication On***）内容，因已在大灯控制的安全要求中说明 | Wang Manyi |
| 0.0.0.6 | 2020/12/8 | 3.7.3.4 | 增加HDC控制中对GB整车电源模式的描述 | Wang Manyi |
| 0.0.0.6 | 2020/12/8 | 3.7.3.6 | 删除GB中不适用于该功能的信号 | Wang Manyi |
| 0.0.0.6 | 2020/12/9 | 3.7.3.6.2 | 增加GB spec《Chassis Virtual Switches》原文链接 | Wang Manyi |
| 0.0.0.6 | 2020/12/1 | 3.7.3.6.1.4 | 更正笔误 | Wang Manyi |
| 0.0.0.6 | 2020/12/14 | 3.7.6 | 根据主动安全相关输入，统一LKA的中文命名为“车道偏离辅助系统” | Wang Manyi |
| 0.0.0.6 | 2020/12/4 | 3.8 | 注释章节《智能灯光秀》为放在《PIS-2051 Vehicle Setting》上规定 | Wang Manyi |
| 0.0.0.6 | 2020/12/1 | 3.13 | 补充标定控制车辆舒适模式是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.6 | 2020/12/1 | 3.13 | 修改整章文言，将“舒适模式”改为“休息模式” | Wang Manyi |
| 0.0.0.6 | 2020/11/26 | 3.14 | 增加3.14章节《motion sensor》并置为MY TBD | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 1.1 | 更新语音车辆控制指令所引用的spec | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.1.1 | 补充标定控制天窗控制是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.2.1 | 补充标定控制遮阳帘控制是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.3.1 | 补充标定控制车窗控制是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.3.3 | 补充禁窗锁控制Global B架构上所使用的信号  补充标定控制禁窗锁是否支持娱乐系统控制  删除禁窗锁的配置信息、对禁窗锁的控制请求和禁窗锁状态反馈 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.3.4 | 补充标定判断侧边遮阳帘控制是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.4 | 补充标定判断座椅系统控制是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.4.1 | 根据23.38更新座椅加热通风是否支持娱乐系统控制的标定  补充global B车型座椅加热通风的信号接口文档 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.4.3 | 补充标定判断座舱模式控制是否支持娱乐系统控制  在当前MY删除了舒适退出模式的虚拟按键控制  补充了座舱模式调节可视化中顶衬旋钮调节座舱模式时的提示  补充了座舱模式的CLEA信号接口信息  更新了座舱模式的功能安全要求等级 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.5 | 删除整章氛围灯的控制内容，增加引用《PIS-2090\_AmbientLightControl》 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.6.1 | 补充标定判断大灯灯组是否支持娱乐系统控制  补充加global B车型的大灯控制信号接口参考文档  新增特殊情况说明，用于澄清大灯虚拟控制的特殊安全要求  新增大灯虚拟控制要求的信号说明 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.6.2 | 补充标定判断前后雾灯是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.6.3 | 根据《CR 254775: [ELS]458 AHBA/GFHB功能完善》要求，AHBA的实施MY TBD。  补充标定判断自动远光灯是否支持娱乐系统控制  补充global B车型的自动远光灯控制信号接口参考文档 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.6.4 | 补充标定判断顶灯是否支持娱乐系统控制  补充global B车型的顶灯控制信号接口参考文档 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.6.5 | 新增3.6.5章节《FTP》  新增FTP支持的用户操作章节  新增FTP控制的状态可视化章节  新增FTP控制的功能安全要求章节  新增FTP控制的整车电源模式章节  新增FTP控制的性能要求章节  新增FTP控制的信号章节（CLEA only）  新增FTP控制的特殊情况说明章节 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.6.6 | 新增3.6.6章节《双跳灯》  新增双跳灯支持的用户操作章节  新增双跳灯控制的状态可视化章节  新增双跳灯控制的功能安全要求章节  新增双跳灯控制的整车电源模式章节  新增双跳灯控制的性能要求章节  新增双跳灯控制的信号章节（CLEA only）  新增双跳灯控制的特殊情况说明章节 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.7 | 删除3.7章节《电动尾门系统》 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.8.1 | 补充标定判断UPA功能是否支持娱乐系统控制  补充gobal B车型的UPA控制信号章节：3.8.1.6.2（内容暂时TBD） | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.8.2 | 补充TCS/ESC是否支持娱乐系统控制的标定  根据23.40DBC变更，修正娱乐系统请求有效性信号的信号名[MY TBD] | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.8.3 | 补充标定判断陡坡缓降是否支持娱乐系统控制  补充标定判断陡坡缓降功能enable对应的车速信息  补充global B车型的陡坡缓降控制的接口参考文档 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.8.4 | 补充标定判断自动驻车是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.8.6 | 新增3.8.6章节《车道保处辅助系统》  新增LKA支持的用户操作章节  新增LKA控制的状态可视化章节  新增LKA控制的功能安全要求章节  新增LKA控制的整车电源模式章节  新增LKA控制的性能要求章节  新增LKA控制的信号章节  新增LKA控制的特殊情况说明章节 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.10 | 补充标定判断方向盘加热是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.12 | 补充标定判断雨刮系统是否支持娱乐系统控制 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.14 | 新增3.16章节《车辆舒适模式控制》  新增车辆舒适模式支持的用户操作章节  新增车辆舒适模式的状态可视化章节  新增车辆舒适模式的状态可视化的功能安全要求章节  新增车辆舒适模式的状态可视化的整车电源模式章节  新增车辆舒适模式可视化的性能要求章节  新增车辆舒适模式可视化的信号章节 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.15 | 新增3.17章节《Wake Screen》[MY TBD] | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 3.16 | 新增3.18章节《Seat Motion Control》[MY TBD] | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 4.3 | 新增4.3章节《外部调用》 | Wang Manyi |
| 0.0.0.5 | 2020/11/13 | 5 | 删除附录中100色氛围灯RGB色标 | Wang Manyi |
| 0.0.0.4 | 30-Jun-20 | 1.2 | 补充了名称解释；Added terms explanation; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 1.3 | 补充车控总线信号模板说明；Supplement the description of vehicle control bus signal template; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 1.4 | 补充了文档的适用范围；Completes the applicable scope of the document; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 1.5 | 补充了数据库版本信息；Supplemented the database version information; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 2 | 补充了需求列表；Supplemented the demand list; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3 | 补充了标定的描述；删除对附录2的参考；Added the description of calibration; Delete the reference to Appendix 2; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.1.1.1~3.1.1.7 | 新增天窗的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signals, special case description, etc. of sunroof; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.2.1.1~3.2.1.7 | 新增遮阳帘控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signal and special case description of sunshade control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.3.1.1~3.3.1.7 | 新增车窗控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signal and special case description of window control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.3.2 | 删除文中对于不支持控制全部车窗到特定位置的说明；Delete the explanation that it does not support controlling all windows to specific positions; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.3.3.1~3.3.3.7 | 新增禁窗锁控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signals, and special case description of window lock control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.3.4.1~3.3.4.7 | 新增侧边遮阳帘控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signals, and special case description of the side sunshade control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.4.1.1~3.4.1.7 | 新增座椅加热通风控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signals, and special case description of seat heating and ventilation control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.4.2 | 座椅位置记忆需求调整为TBD；Seat memory requirement is adjusted to TBD； | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.4.3 | 章节名称由“舒适进入模式”改为“座舱模式调节”The chapter title is changed from "Comfort Entry Mode" to "Cockpit Mode Adjustment" | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.4.3.1~3.4.3.7 | 新增座舱模式控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as cockpit mode control operation, display, functional safety, power mode, performance requirements, signals and special case description; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.6.1 | 补充了自动大灯跨点火周期自动复位的描述；Completes the description of automatic reset of automatic headlights across ignition cycle; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.6.1.1~3.6.1.7 | 新增大灯控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signals, and special case description of headlight control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.6.2.1~3.6.2.7 | 新增雾灯控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signal and special case description of fog lamp control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.6.3.1~3.6.3.7 | 新增自动远光灯控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signals, and special case description of automatic high beam control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.6.4.1~3.6.4.7 | 新增顶灯控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signal and special case description of overhead light control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.7 | 电动尾门系统需要调整为TBD，功能调整为尾门工作方式的设置；The electric tailgate system needs to be adjusted to TBD, and the function is adjusted to the setting of tailgate working mode; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.8 | 章节名称改为底盘电子系统功能开关；Section name changed to chassis electronic system function switch; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.8.1 | 补充UPA跨点火周期自动恢复开启的说明；Supplement the description of UPA automatic recovery and opening across ignition cycle; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.8.1.1~3.8.1.7 | 新增UPA控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signal and special case description of UPA control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.8.2 | 章节名称改为“ TCS/ESC功能的开关控制”The name of the chapter is changed to "switch control of TCS/ESC function" | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.8.2.1~3.8.2.7 | 新增TCS/ESC控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signals, and special case description of TCS/ESC control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.8.3.1~3.8.3.7 | 新增HDC控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add operation, display, functional safety, power mode, performance requirements, signals, special case description and other information of HDC control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.8.4 | 修正错误描述删除“陡坡缓降”，增加“自动驻车”Correct the error description, delete "steep slope descent" and add "automatic parking" | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.8.4.1~3.8.4.7 | 新增AVH控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signal and special case description of AVH control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.10.1~3.10.7 | 新增方向盘加热控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息；Add information such as operation, display, functional safety, power mode, performance requirements, signals, and special case description of steering wheel heating control; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.11 | 删除HUD调节，相关功能在HUD Spec中定义；Remove HUD adjustment, and relevant functions are defined in HUD Spec; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.12 | 删除 儿童锁Remove child lock | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.13 | 补充了功能从车辆启动到应用可用的性能要求；Completes the performance requirements of the function from vehicle startup to application availability; | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.14 | 新增雨刮系统控制功能，新增控制的操作、显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息Add wiper system control function, and add information such as control operation, display, functional safety, power mode, performance requirements, signals, special case description, etc | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | 3.15 | 新增车门状态可视化功能，新增门显示、功能安全、电源模式、性能要求、信号、特殊情况说明等信息Add visualization function of door status, and add information such as door display, functional safety, power mode, performance requirements, signals, special case description, etc | Chen Deliao |
| 0.0.0.4 | 30-Jun-20 | All | 增加英文翻译；Add English translation | Chen Deliao |
| 0.0.0.3 | June19.2019 | All | Add vehicle control features. | Wang Ziqi |
| 0.0.0.2 | June13.2019 | 3.5，4.1 | Add the ambient light function description. | Wang Ziqi |
| 0.0.0.1 | May24.2018 | All | Create the document | Wang Ziqi |