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**Ambient Light 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，允许用户对氛围灯进行控制，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 ambient light.

本文档主要从功能层面上定义氛围灯控制能力，用户可以通过触控或语音的方式进行氛围灯控制，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 ambient light control capability in terms of functions. The user is allowed to control the ambient light 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.

## 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。

The virtual key control mentioned in this document is only applicable to CLEA models and Global B-Buick models in China.

# 需求列表/ List of Requirements

TBD

# 需求描述/ Requirement Description

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 calibration needs to calibrate each vehicle control module according to vehicle configuration.

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.

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。

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.

氛围灯相关功能仅在发动机启动时可以使用。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 ambient light function is available only at engine start.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. ~~See the Vehicle Control Interface Spec document for the operating conditions of each function module.~~

## 氛围灯/ Ambient Light（Only U458）

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.

系统需要根据标定~~车型配置~~提供氛围灯控制，标定信息参见附录表格，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.

### 打开或关闭氛围灯/ Ambient Light On-Off

一般情况下，~~车辆发动后，~~氛围灯将在系统开机后恢复到上次关机时刻的颜色和亮度。车辆关机熄火时， BCM需记录上次关机时刻氛围灯的颜色和亮度，在下次车辆启动时系统应根据对方模块发送的氛围灯状态信号把颜色和亮度正确显示在系统界面中。

Under normal circumstances, upon the startup of vehicle, the ambient light, after the system is turned on, shall return to the color and brightness at the moment when the system is turned off last time. When the vehicle is halted, the system shall record the color and brightness of the ambient light at the moment when the system is turned off last time to facilitate the display of color and brightness on the system interface when the vehicle is started up next time.

用户可以关闭或打开氛围灯。系统默认氛围灯开启。用户关闭氛围灯，系统需记录上次开启时刻氛围灯的颜色和亮度。

The user is able to turn off or turn on the ambient light. The system shall turn on the ambient light by default. When the user turns off the ambient light, the system shall record the color and brightness of the ambient light at the moment when it is turned on last time.

当氛围灯~~第一次点亮~~，发出的CAN信号数据异常，或者存储的颜色信息丢失时，系统默认发送的颜色为白色RGB(255,255,255)，亮度为60%。

When the ambient light is turned on for the first time or the stored color information gets lost, the default color sent shall be white RGB(255,255,255), with a brightness of 60%.

### 亮度设置/ Brightness Setting

本系统支持单独调节氛围灯亮度，亮度调节范围为20%至100%，调节精度为1%。氛围灯打开时默认的灯光亮度为上次关闭时的亮度，第一次打开的灯光亮度默认是60%。

The system supports separate adjustment of the brightness of ambient light; the brightness adjustment range goes from 20% to 100% and the adjustment accuracy is 1%. The default brightness of the ambient light when turned on is the one at the moment when it is turned off last time. The default brightness at the moment when the ambient light is turned on for the first time is 60%.

夜间时，氛围灯亮度将自动变暗。该功能不需要娱乐系统做逻辑处理，也不需要增加控制入口，灯光变暗的对应逻辑由氛围灯模块处理。

At night, the brightness of ambient light shall go dimming automatically. This function requires neither the logic processing by the Infotainment System, nor the addition of a control entry, because the logic corresponding to light dimming is handled by the ambient light module.

### 颜色设置-单色 / Color Setting - Single Color

用户可以从预设的颜色中选择一种作为当前氛围灯的颜色。

The user is able to select any of the preset colors for the current ambient light.

#### 颜色选择 / Color Selection

用户选中颜色到系统发出信号的时间不得超过100毫秒。

The time taken from the color selection by the user to the signal transmitting from the system shall not exceed 100 milliseconds.

界面上显示的~~100 128~~ 121种颜色，RGB值见附录1 ~~TBD~~。

See Appendix 1 for RGB values of the 121 colors displayed on the interface.

#### 推荐色 / Recommended Colors

当氛围灯支持的预设颜色超过16种颜色时，系统需要从预设颜色中推荐5种颜色给用户选择。系统记录并保存推荐颜色，当车辆重启时系统需将记录的颜色通过总线信号下发给对应模块并进行显示。五种推荐色对应的RGB值详见下方表格：

When the ambient light supports more than 16 preset colors, the system shall recommend 5 colors from the preset ones for the user to select. The system shall record and save the recommended colors; when the vehicle is re-started up, the system shall send, through the bus signal, the recorded colors to the corresponding module for being displayed. The RGB values corresponding to the five recommended colors are as shown in the table below:

|  |  |
| --- | --- |
| 名称  Name | RGB |
| 火焰红  Flame red | 255，0，0 |
| 冰川蓝  Ice blue | 0，252 ~~0~~，255 |
| 森林绿  Forest green | 11 ~~0~~，255，0 |
| 阳光橙  Sunshine orange | 255，115 ~~92~~，0 |
| 丁香紫  Lilac purple | 53 ~~56~~，0，255 |

### 颜色设置-组合色氛围灯（TBD） / Color Setting - Multicolor Ambient Light (TBD)

多色氛围灯是指一条氛围灯带同时显示多种颜色的显示模式。系统支持预置XX种颜色组合供用户选择。用户在选择系统预设的组合颜色时，系统需支持氛围灯显示效果的预览。

The multicolor ambient light involves a display mode in which an ambient light strip displays multiple colors at the same time. The system supports the presetting of XX-color combinations for the user to choose. When the user selects any of the color combinations preset by the system, the system shall support preview of the ambient light display effect.

### 与场景联动 / Linkage with Scenario

与场景联动是指车内氛围灯的显示效果能随车辆所处的不同场景进行对应的显示效果变化，目前能辨识的场景包含：超速、ADAS预警、~~急加速、~~低能源场景。

Linkage with scenario means that the display effect of in-vehicle ambience light can change with the scenario that the vehicle is undergoing. The currently recognizable scenarios involve overspeed, ADAS warning, rapid acceleration, and low energy.

系统支持用户关闭氛围灯与场景联动功能。用户可以对单项功能进行打开和关闭，从而满足不同用户对于驾驶辅助和免打扰的需求。氛围灯与场景联动功能默认开启。系统需提供标定信息，不同车型支持氛围灯联动的场景不同，系统需通过标定对支持的场景开关设置进行适配。当氛围灯被用户关闭时，氛围灯与场景联动功能不生效。

The system supports the user to disable the linkage between the ambient light and scenario. The user can turn individual functions on and off to meet the needs of different users for driving assistance and Do Not Disturb (DND). The linkage between the ambience light and scenario is enabled by default. The system shall provide the calibration information. The linkage between the ambience light and scenario varies with different models. The system shall configure the supported scenario switch settings through calibration.

当多个场景被先后触发时（如低能源场景下发生超速~~急加速~~），氛围灯显示按场景发生的时间先后顺序显示，后发生的场景需要覆盖先发生场景显示，若后发生场景退出后先发生场景还在继续，那么氛围灯需要继续显示该场景。

When multiple scenarios are triggered in succession (such as a rapid acceleration in a low-energy scenario), the ambient light shall be displayed accordingly in the chronological order as the scenarios triggered; the scenario triggered subsequently shall cover the previous one; provided that, after the scenario triggered subsequently exits, the previous one still works, the ambient light shall still display this scenario.

氛围灯场景联动被触发，场景颜色显示的优先级高于用户自定义颜色。为方便后续对场景颜色的优化，场景颜色需要通过标定读取。当场景对应的预警/提示信息被触发时，氛围灯颜色显示对应的颜色直到预警/提示信息取消，恢复用户自定义的模式进行显示。

The ambient light scene linkage is triggered, and the scene color display has a higher priority than the user-defined color. In order to facilitate the subsequent optimization of scene color, scene color needs to be read by calibration.When the warning/prompt message corresponding to a scenario is triggered, the ambient light shall be displayed based on the corresponding color until the warning/prompt message disappears and then returned to display based on the user-defined mode.

具体时序下图所示，A、B分别代表低能源场景和除低能源外的场景，除低能源外的场景优先级高于低能源场景。

The chronological order is as shown in the figure below: A and B respectively represent the low energy scenarios and other non-low energy scenarios; the latter enjoys a higher priority than the former.

A

A

B

B

时序1 Chronological Order 1

B

B

A

A

时序2 Chronological Order 2

#### V2X预警

系统需支持如下V2X预警功能与氛围灯的联动。系统需要通过标定判断该车辆是否支持V2X预警与氛围灯联动功能。

The system shall support the linkage between the following V2X warning functions and the ambient light. The system needs to judge whether the vehicle supports V2X warning and atmosphere light linkage function through calibration.

1. 交叉路口碰撞预警 / Intersection collision warning
2. ~~紧急制动预警 / Emergency braking warning~~
3. 闯红灯预警 / Red light running warning

|  |  |  |
| --- | --- | --- |
| V2X Warning Indication Request | $0=No Indication;$1=Forward Collision Warning;$2=Intersection Collision Warning;$3=Left Turn Assist Warning;$4=Blind Spot Warning/Lane Change Warning;$5=Do Not Pass Warning;$6=Emergency Brake Warning;$7=Abnormal Vehicle Warning;$8=Control Loss Warning;$9=Hazardous Location Warning;$A=Speed Limit Warning;$B=Red Light Violation Warning;$C=Vulnerable Road User Collision Warning;$D=Green Light Optimal Speed Advisory;$E=In-Vehicle Signage;$F=Traffic Jam Warning;$10=Emergency Vehicle Warning;$11=Vehicle Near-Field Payment;$12=Work Zone Warning;$13=Reserved 1;$14=Reserved 2;$15=Reserved 3;$16=Reserved 4;$17=Reserved 5;$18=Reserved 6;$19=Reserved 7;$1A=Reserved 8;$1B=Reserved 9;$1C=Reserved 10;$1D=Reserved 11;$1E=Reserved 12;$1F=Reserved 13; | $2=Intersection Collision Warnin：当系统接收到$2时表示交叉路口碰撞预警触发，不发送$2则预警取消。  $B=Red Light Violation Warning：当系统接收到$B时表示闯红灯预警触发，不发送$B则预警取消。 |

V2X模块将通过总线信号通知系统当前V2X预警何时被触发，何时取消。系统需根据该总线信号发出相应的颜色信号。即当V2X预警触发时氛围灯显示~~响应颜色~~红色RGB(255,0,0)。，预警取消时恢复原用户设定的颜色。特别地，当预警时间持续超过10s时，系统自动取消当前预警对应的氛围灯显示。

The V2X module shall inform the system through the bus signal when the current V2X warning is going to be triggered and canceled. The system shall send a corresponding color signal according to the bus signal. That is, when the alarm is triggered, the corresponding color will be displayed by the atmosphere light, and when the alarm is cancelled, the color set by the original user will be restored. In particular, when the warning time exceeds 10s, the system automatically cancels the display of the atmosphere light corresponding to the current warning.

~~当多种预警信息同时发生时，V2X模块会根据自身定义的优先级将需要预警的信息通知到系统，系统针对V2X模块上发的通知显示对应预警的氛围灯颜色。~~

~~When multiple warning messages are triggered at the same time, the V2X module shall notify the system of the warning message required based on the priority it defines while the system shall display the ambient light color corresponding to the warning message sent by the V2X module.~~

#### ADAS预警

系统需支持如下ADAS预警与氛围灯联动的功能。系统需要通过标定判断该车辆是否支持ADAS预警与氛围灯联动功能。

The system shall support the linkage between the following ADAS warnings and the ambient light. The system needs to judge whether the vehicle supports ADAS warning and atmosphere light linkage function through calibration.

1. ~~自动防撞准备/~~前方预碰撞系统（碰撞预警） / Collision Preparation System

当系统接收到Alert Warning Indication Request = Alert Level 3时表示预警触发，不发送则预警取消。具体参考PIS-2085中3.2.1.11.3.1章节中的Warning Number 394。

When the system receives An Alert Warning Request = Alert Level 3, an Alert is triggered; otherwise, an Alert is cancelled. Warning Number 394 in Section 3.2.1.11.3.1 of PIS-2085 is referred to for details.

1. 前置行人检测（行人警告） / Front Pedestrian Detection

当系统接收到Pedestrian Warning Indication Request = $2= Pedestrian alert时表示预警触发，不发送则预警取消。具体参考PIS-2085中3.2.1.11.3.1章节中的Warning Number 2211。

When the system receives Pedestrian Warning Request = $2= Pedestrian Alert, the Warning is triggered; otherwise, the Warning is cancelled. For details, please refer to Warning Number 2211 in Section 3.2.1.11.3.1 of PIS-2085.

1. ~~倒车自动制动及警告系统 / Rear Virtual Bumper~~

ADAS模块将通过总线信号通知系统当前ADAS预警何时被触发，何时取消。系统需根据该总线信号发出相应的颜色信号。当ADAS预警被触发时，氛围灯从当前显示颜色变为红色RGB(255,0,0)显示。

The ADAS module shall inform the system through the bus signal when the current ADAS warning is going to be triggered and canceled. The system shall send a corresponding color signal according to the bus signal.

#### 其他场景

超速：对于超速的定义参见PIS2062的3.51章节~~《驾驶行为分析》PIS2033~~，当超速预警被触发时，氛围灯从当前显示颜色变为红色RGB(255,0,0)显示。~~若用户一直处于超速状态超过5min时氛围灯显示红色RGB(255,0,0)可标定~~，当用户解除超速时恢复氛围灯显示，用户可能通过system setting中的超速开关或语音识别功能暂时解除超速警示，详细设置定义参见PIS2046的仪表与HUD设置章节。

Overspeed: See PIS2033 *Driving Behavior Analysis* for the definition to overspeed; under the scenario of overspeed, the current display color of ambient light shall be changed to red. In case the overspeed status lasts for more than 5 minutes, the display color of ambient light shall be ~~dark~~ red; when the user stops speeding, the original color of ambient light shall be restored.

~~急加速：对于急加速的定义参见《驾驶行为分析》PIS2033，当用户车辆发生急加速时，氛围灯变更为红色RGB(255,0,0)显示。急加速取消后恢复氛围灯显示。~~

Rapid acceleration: See PIS2033 *Driving Behavior Analysis* for the definition to rapid acceleration; when the user rapidly accelerates the vehicle, the ambient light shall be displayed in red. When the user stops rapid acceleration, the original color of ambient light shall be restored.

~~低能源场景：关于低能源场景的判别参见《场景判断及服务》PIS2060的描述。~~低能源场景触发逻辑为：当IPC Warning Number 139被触发时则触发低能源场景，当该报警解除后场景取消。具体接口参考文档PIS2085 3.2.1.11.3.1章节中Warning Number 139。当系统检测到车辆处于低能源场景时，氛围灯变为绿色RGB(0,255,0)显示，场景取消后恢复氛围灯显示。

Low energy scenario: See the description as given in PIS2069 and PIS2085 *Scenario Judgment and Service* for the judgement of the low energy scenario. When the system detects that the vehicle is in a low energy scenario, the ambient light shall be displayed in green. When the scenario is canceled, the original color of ambient light shall be restored.

### 氛围灯与VR/Phone随动（Only U458）~~（TBD）~~

氛围灯开启时，当语音识别功能被唤醒，或蓝牙电话来电时，氛围灯动态变色。

当语音识别功能被唤醒时，和蓝牙电话来电时，系统需要发送如下信号至BCM模块。系统正确识别两个场景的触发状态，并在语音识别被触发时发送对应信号值给到BCM。具体氛围灯是否动态变色由BCM处理。

|  |  |  |
| --- | --- | --- |
| Message | Signal | Conversion |
| Colorful\_Ambient\_Light\_Ctrl\_VCU | ILS Ambient Light Animation Control Request Service\_VCU | $3=Animation3(VR); $4=Animation4(Phone) |

用户可以通过设置关闭该功能，具体参见PIS2051中附件Clea customization setting feature list表格中氛围灯设置选项。

## GB Buick Ambient Light Control

本章节是针对Global B架构，Buick车型的氛围灯的功能描述。

针对传统车型，氛围灯控制功能仅在power mode=run时可用。系统需要支持根据总线信号判断当前车辆氛围灯支持哪些控制功能，界面需要综合考虑不同功能配置的影响。可能存在的功能配置如下：

1. 系统同时支持氛围灯开关/颜色/亮度调节。
2. 系统仅支持氛围灯~~开关/~~亮度调节。

系统能够通过信号判断当前支持哪些氛围灯调节功能。

当VCU接收信号满足如下条件时，系统支持氛围灯开关/颜色/亮度调节：

Interior Ambient Animation Control Customization Setting Available = TRUE

当VCU接收信号满足如下条件时，系统仅支持氛围灯亮度调节：

Interior Ambient Brightness Control Customization Setting Available = TRUE

Interior Ambient Animation Control Customization Setting Available = FALSE

Interior Ambient Color Control Customization Setting Available = FALSE

This section describes the function of the ambient light in the Global B architecture, Buick model.

For traditional models, the ambient light control function is only available when Power Mode =run. The system needs to support determining which control functions are supported by the current vehicle ambient light according to the bus signal, and the interface needs to comprehensively consider the influence of different function configurations. The possible functional configurations are as follows:

1. The system also supports air light switch/color/brightness adjustment.

2. The system only supports air light switch/brightness adjustment.

### 氛围灯颜色调节/Ambient Light Color Change

车辆发动后，氛围灯将在系统开机后恢复到上次关机时刻的颜色和亮度。车辆关机熄火时，氛围灯状态由BCM模块记录，在下次车辆启动时系统通过总线信号获取当前氛围灯状态并正确显示在系统界面中。

After the vehicle is started, the atmosphere light will return to the color and brightness of the last shutdown moment after the system is turned on. When the vehicle shuts off, the state of the atmosphere light will be recorded by the BCM module. When the next vehicle starts up, the system will obtain the current state of the atmosphere light through the bus signal and display it in the system interface correctly.

用户可以关闭或打开氛围灯。氛围灯的默认状态由总线信号通知VCU。

用户可以从预设的颜色中选择一种作为当前氛围灯的颜色。 系统最多支持126 ~~30~~种预设颜色。 当前颜色由总线信号通知VCU。系统需要根据总线信号动态判断当前车辆支持的氛围灯颜色数量（目前氛围灯模块支持用户通过系统界面选择121 ~~26~~种氛围灯颜色）。

系统需要支持根据总线信号动态判断当前车辆是否支持氛围灯颜色调节功能，若当前车辆不支持颜色开关调节，系统需要隐藏相关功能项。

The user can turn off or on the ambient light. The default state of the ambient light is notified to the VCU by the bus signal.

The user can choose one of the preset colors as the current ambient light color. The system supports up to 126 preset colors. The current color is notified to the VCU by the bus signal.

The system needs to dynamically judge whether the current vehicle supports the color adjustment function of atmosphere light according to the bus signal. If the current vehicle does not support color switch adjustment, the system needs to hide relevant function items.

具体信号解析详见下方表格：

|  |  |  |
| --- | --- | --- |
| Signal Name | Conversion | Logic |
| Ambient Control Customization Change Setting Request : Interior Animation | $0 = No Action;  $1 = OFF;  $2 = Animation Type 1;  …  $F = Animation Type 14 | 当用户关闭氛围灯时发送$1=OFF;  当用户打开氛围灯时发送$3=Animation type2(ON);  当用户选择氛围灯与Drive Mode联动时，发送$2=Animation type1;（relerved）  当用户选择Demo Mode时，发送$4=Animation type3（reserved） |
| Ambient Control Customization Current Setting Value : Interior Animation | $0 = Setting Unknown;  $1 = Off;  $2 = Animation Type 1;  …  $F = Animation Type 14 | 当VCU接收$1=OFF时，当前氛围灯关闭；  当VCU接收$3=Animation type2(ON) 时，当前氛围灯开启并支持颜色选择；  当VCU接收$2=Animation type1时，当前氛围灯开启与Drive mode联动模式;（relerved）  当VCU接收$4=Animation type3时，当前氛围灯开启Demo mode模式;（relerved） |
| Interior Ambient Animation Control Customization Setting Available | $0 = FALSE;  $1 = TRUE | 是否支持氛围灯通过娱乐系统调节。  当接收True时，支持娱乐系统控制氛围灯模式以及颜色；  当接收False时，不支持娱乐系统控制氛围灯模式以及颜色 |
| Interior Ambient Animation Control Customization Availability Flag 1-15 | $0 = FALSE;  $1 = TRUE | 是否显示对应氛围灯开关和设置项。  当信号xxx Flag n为True时，显示对应设置项，为False时不显示。  Flag1：OFF  Flag2：Drive Mode（relerved）  Flag3：ON  Flag4：Demo Mode（relerved） |
| Ambient Control Customization Change Setting Request : Interior Color | $0 = No Action $1 = OFF $2 = Color Type 1 $3 = Color Type 2 …  ~~$1F = Color Type 30~~  $7F=Color Type 126 | VCU发送用户选择的氛围灯颜色（Color type1-126）给到对方模块  信号值number与颜色RGB值的对应关系参考附件“GB BUICK氛围灯RGB”表格。 |
| Ambient Control Customization Current Setting Value : Interior Color | $0 = Setting Unknown $1 = Off $2 = Color Type 1 $3 = Color Type 2 …  ~~$1F = Color Type 30~~  $7F=Color Type 126 | VCU通过读取信号显示当前氛围灯颜色 |
| Interior Ambient Color Control Customization Availability Flag 1-N | $0 = FALSE $1 = TRUE | VCU通过读取信号判断当前车辆支持哪些氛围灯颜色以及开关选项。  True：支持对应功能或颜色  False：不支持信号对应功能或颜色  其中Flag N分别代表：  Flag1: OFF  Flag2: Color Type1  …  ~~Flag31: color Type30~~  Flag127：color Type126  信号名称number与颜色RGB值的对应关系参考附件“GB BUICK氛围灯RGB”表格。 |
| Interior Ambient Color Control Customization Setting Available | $0 = FALSE $1 = TRUE | 当前车辆氛围灯是否支持颜色调节 |

当氛围灯支持的预设颜色超过16种颜色时，系统需要从预设颜色中推荐5种颜色给用户选择。系统记录并保存推荐颜色，当车辆重启时系统需将记录的颜色通过总线信号下发给对应模块并进行显示。五种推荐色对应的RGB值详见下方表格：

When the ambient light supports more than 16 preset colors, the system shall recommend 5 colors from the preset ones for the user to select. The system shall record and save the recommended colors; when the vehicle is re-started up, the system shall send, through the bus signal, the recorded colors to the corresponding module for being displayed. The RGB values corresponding to the five recommended colors are as shown in the table below:

|  |  |
| --- | --- |
| 名称  Name | RGB |
| 火焰红  Flame red | 255，0，0 |
| 冰川蓝  Ice blue | 0，252，255 |
| 森林绿  Forest green | 11，255，0 |
| 阳光橙  Sunshine orange | 255，115，0 |
| 丁香紫  Lilac purple | 53，0，255 |

### 氛围灯亮度调节/Ambient Light Brightness Change

系统需要支持调节氛围灯亮度。氛围灯亮度支持多级调节，通常情况下支持4级亮度调节，具体可以通过总线信号判断。

系统需要支持根据总线信号动态判断当前车辆是否支持氛围灯亮度调节功能，若当前车辆不支持亮度调节，系统需要隐藏相关功能项。

The system needs to support and adjust the ambient light intensity. Ambient light brightness support multi-stage regulation, usually support 4 brightness regulation, specific can be judged by the bus signal.

The system needs to dynamically judge whether the current vehicle supports the adjustment function of ambient light brightness according to the bus signal. If the current vehicle does not support the brightness adjustment, the system needs to hide relevant function items.

具体信号解析详见下方表格：

|  |  |  |
| --- | --- | --- |
| Ambient Control Customization Change Setting Request : Interior Brightness | $0 = No Action $1 = BrightnessLevel 1 $2 = BrightnessLevel 2 $3 = BrightnessLevel 3 $4 = BrightnessLevel 4 $5 = ReservedLevel 5 $6 = ReservedLevel 6 $7 = ReservedLevel 7 | VCU发送用户选择的氛围灯亮度  ~~$1-4：BrightnessLevel 1-4~~  $1=BrightnessLevel1：OFF  $2=BrightnessLevel2：Low  $3=BrightnessLevel3：Medium  $4=BrightnessLevel4：High  $5-7：Reserved |
| Interior Ambient Brightness Control Customization Availability Flag 1-7 | $0 = FALSE $1 = TRUE | Flag1-7 ~~Level 1-4~~：亮度调节菜单显示哪些选项，系统支持几级亮度调节。  当Flag n发送true时，显示对应亮度选项，false时不支持对应亮度设置选项。  Flag1：OFF  Flag2：Low  Flag3：Medium  Flag4：High  Flag5-7：reserved |
| Interior Ambient Brightness Control Customization Setting Available | $0 = FALSE $1 = TRUE | 系统是否支持氛围灯亮度调节功能。  True：显示氛围灯亮度调节  False：隐藏氛围灯亮度调节功能 |
| Ambient Control Customization Current Setting Value : Interior Brightness | $0 = Setting Unknown $1 = BrightnessLevel 1 $2 = BrightnessLevel 2 $3 = BrightnessLevel 3 $4 = BrightnessLevel 4 $5 = ReservedLevel 5 $6 = ReservedLevel 6 $7 = ReservedLevel 7 | VCU通过读取该信号显示当前氛围灯亮度  $1=BrightnessLevel1：OFF  $2=BrightnessLevel2：Low  $3=BrightnessLevel3：Medium  $4=BrightnessLevel4：High  $5-7：Reserved |

# 附录/Appendix

附录1：



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附录2：



标定：



**Revision Log**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Date** | **Section** | **Description** | **Author** |
| 0.0.0.3 | Feb.21 th.2021 | 3.1.5.3 ，3.1.6，3.2.1，3.2.2 | 1.明确458氛围灯与低能源场景联动。  2.增加氛围灯与VR/Phone联动功能。  3.根据GB DBC变更GB项目氛围灯信号判断逻辑。  4.GB氛围灯最多支持121种颜色，并支持推荐色  5.附件增加氛围灯RGB值。  6.变更458氛围灯颜色为121色，并变更推荐色 | Wang Ziqi |
| 0.0.0.2 | Nov.15th.2020 | 3.1.5,3.1.6，3.2.1 | 1.删除急加速和氛围灯联动功能。  2.明确超速联动功能判断逻辑。  3.GB氛围灯目前支持26种颜色。  4.增加氛围灯与VR/Phone联动功能。（TBD）  5.增加标定表。 | Wang Ziqi |
| 0.0.0.1 | Oct17.2020 | All | 将氛围灯需求从PIS-2045 Vehicle Control v0.0.0.4版本中移除，并单独创建PIS2090 Ambient Light Control。  基于上一版需求PIS-2045 Vehicle Control V0.0.0.4中氛围灯章节的新增变更点如下：   1. 增加GB架构项目对应的氛围灯功能。 2. 增加氛围灯联动功能对应的总线接口。 3. 将458项目上的100种颜色调节变更为128种。 4. 增加CLEA架构中氛围灯相关接口描述。 | Wang Ziqi |