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**Vehicle Status Remind**

**Document Owner**

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# 需求概述/Requirement Overview

## 背景价值/Background Information

系统支持用户对当前车辆对外饰灯、制动系统、电子系统灯车辆模块进行检测，并将检测结果呈现给用户，以提升用户体验。  
The system shall support the user to inspect the vehicle modules such as the exterior decorative lights, braking systems and electronic system lights of the current vehicle, and presents the inspection results to the user so as to improve the user experience.

## 名词解释/Terminology

ICEI文档：Clea Family Infotainment Connectivity Electrical Interface Spec  
ICEI document: Clea Family Infotainment Connectivity Electrical Interface Spec

# 需求列表/Requirement List

需要支持的功能列表见表格，表格中提示信息内容仅供参考。  
Refer to table VehicleStatusReminder for a list of functions that need to be supported. The prompt information in the table is for reference only.

需求列表中明确了传统车型和电动车型分别支持的功能，系统需要根据不同车型正确显示对应功能。

In the demand list, the functions supported by traditional models and electric models are clearly specified. The system needs to display the corresponding functions correctly according to different models.



# 需求描述/Requirement Description

~~当整车上电，娱乐系统开启时，~~当整车power mode=RUN时，本系统能够显示当前车辆状态，并对车辆健康进行检测。本系统支持的车辆检测项详细描述见需求列表车辆健康度功能梳理。  
When VCS power mode is “on”, the system shall display the current vehicle status and inspect the vehicle health. For a detailed description of the vehicle inspection items supported by this system, please refer to the requirements list for sorting out the vehicle health functions.

系统需要根据~~总线信号~~标定判断当前车辆配置信息，动态显示当前车辆支持的检测项。  
The system shall judge the current vehicle configuration information according to the ~~bus signal~~ calibration and dynamically display the inspection items supported by the current vehicle.

本文档中定义的功能涉及到的所有总线接口定义及信号收发逻辑均参考ICEI文档。  
All bus interface definitions and signal receiving and sending logic involved in the functions defined in this document shall refer to the ICEI document.

## 车辆健康度/Vehicle Health

### 车辆检测/Vehicle Inspection

本系统提供车辆检测功能，系统能够对当前车辆状况进行检测。  
The system shall provide vehicle inspection function, so that the system can inspect the current vehicle conditions.

用户可以通过系统查看所有检测项的检测信息。若所有检测项均正常，系统需提示用户当前车辆健康。若当前车辆有部分检测项异常，系统需要展示详细的异常项信息。车辆检测范围见附件“Vehicle Status Remind”表格。  
Users shall be able to view the inspection information of all inspection items via the system. If all inspection items are normal, the system shall remind the user about the current status of vehicle health. If the current vehicle has some abnormal inspection items, the system shall display the details of abnormal items. The scope of vehicle inspection is shown in the table “Vehicle Status Remind” of the appendix.

### ~~车辆信息显示与提示/Vehicle Information Display and Reminder~~

Removed.

## 车辆健康度检测项/Vehicle Health Inspection Items

### ~~车辆整体信息/Overall Vehicle Information~~

~~本系统除了显示车辆故障信息外，还需要显示当前车辆的整体状况。本章节定义的车辆基本信息显示内容仅做展示，不作为车辆检测内容。  
In addition to displaying vehicle failure information, the system shall also display the overall status of the current vehicle. The display content of the vehicle basic information defined in this section shall be for display only and not for vehicle inspection.~~

#### ~~总里程/Total Mileage~~

~~用户可以通过本系统查看当前车辆已行驶里程数。系统根据总线信号值获取当前车辆总里程数。  
The user shall be able to view the current mileage of vehicles via this system. The system shall obtain the total mileage of the current vehicle according to the bus signal values.~~

#### 能耗信息/Energy Consumption Information

##### 油耗信息（仅于传统车型和混动车型显示，通过读取标定判断） Best ~~Average~~ Fuel Consumption (Displayed only for traditional models and hybrid models and judged by reading calibration)

本系统支持~~从IPC侧~~获取平均油耗数据并显示平均油耗，显示形式为x.xL/100km。用户可通过系统选择当前显示的平均油耗的计算距离，系统支持3种距离的平均油耗计算，具体距离通过标定读取。  
This system shall display the average fuel consumption by acquiring the bus signal value in the format of x.xL/100km.

对应功能接口以及逻辑参考PIS2076的5.1.2章节

本系统支持~~从IPC侧~~获取最佳油耗数据并显示最佳油耗，显示形式为x.xL/100km。系统支持用户手动重置最佳油耗，重置后最佳油耗数据变为0.

The system supports obtaining the best fuel consumption data from the IPC side and displaying the best fuel consumption in the form of x.xl /100km. The system supports the user to manually reset the best fuel consumption, after which the best fuel consumption data becomes 0.

对应功能接口以及逻辑参考PIS2076的5.1.8章节

本系统支持获取当前车辆的可变缸信息（Active Fuel Management），并显示。若当前车辆支持变缸，则需要显示可变缸信息，否则不显示。若当前车辆支持变缸，当车辆全部气缸都在使用时，则显示~~“V8”“V6”~~“L4”~~中的一种~~。当车辆减少使用气缸数量时，则显示~~“V4”~~“Eco”~~中的一种~~。具体显示逻辑以及显示内容参见PIS2076的第5.1.4章节。

~~针对458项目，对应功能接口以及逻辑参考PIS-2085 IPC SW Spec 章节3.2.1.14.59。~~

~~针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.207。~~

~~For the 458 project, refer to pis-2085 IPC SW Spec section 3.2.1.14.59 for the corresponding functional interface and logic.~~

~~For projects with Global B architecture, refer to section 3.1.207 of GB IPC CTRS for functional interfaces and logic.~~

##### ~~剩余油量（仅于传统车型和混动车型显示，通过读取标定判断）~~

~~用户可以通过本系统查看当前车辆剩余油量。系统需要根据标定判断车型，纯电动车型不显示该项。车辆剩余油量显示值单位为百分比（%），精确到小数点后2位（0.00% – 100.00%）。此状态值由车辆总线数据中分析所得。~~

~~当剩余油量低于8%时，系统提示用户当前剩余油量过低，请至附近加油站。~~

##### 瞬时油耗/Instantaneous Fuel Economy

系统支持显示当前瞬时油耗，范围0.0 – 39.9L/100km，显示形式为x.xL/100km以及x.xL/hr。其中x.xL/hr仅在速度低时显示。特别地，在~~Power mode=“~~Auto Stop”时即车辆静止的情况下不显示瞬时油耗的数据。

瞬时油耗数据的显示逻辑，x.xL/100km和x.xL/hr单位切换，以及“AUTO STOP”的判断逻辑具体参考PIS-2076 5.1.1章节。

The system supports displaying the current instantaneous fuel consumption in the form of x.xl /100km. In particular, the data of instantaneous fuel consumption is not displayed in the case of Power Mode =Auto Stop.

~~针对458项目，对应功能接口以及逻辑参考PIS-2085 IPC SW Spec 章节3.2.1.14.25。~~

~~针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.205。~~

~~For 458 project, refer to section 3.2.1.14.25 of PIS-2085 IPC SW Spec for corresponding functional interface and logic.~~

~~For the project of Global B architecture, corresponding functional interface and logical reference GB IPC CTRS section 3.1.205.~~

##### 小计里程 Trip1/Trip2

系统支持显示小计里程信息，小计里程分为Trip1和Trip2两组数据，每一组数据需要分别显示里程（x.x km）和油耗（x.x L/100km）。若当前车辆为电动车，则显示里程（x.x km）和油耗（x.x kWh/100km）。

系统支持用户分别对Trip1以及Trip2进行reset操作，用户reset后对应信息清空。

具体显示逻辑参考PIS-2076 4.4.2章节。

##### 平均车速

具体显示功能描述以及显示逻辑参见PIS-2076 5.1.3章节。

##### ECO指数&效率显示

具体显示功能描述以及显示逻辑参见PIS-2076 5.1.5章节。

##### 能耗排行

具体显示功能描述以及显示逻辑参见PIS-2076 5.1.6章节。

##### 油耗趋势

具体显示功能描述以及显示逻辑参见PIS-2076 5.1.7章节。

#### ~~油量剩余里程（仅于传统车型和混动车型显示，通过读取标定判断）~~

~~本系统通过总线信号获取当前车辆的剩余里程，并显示给用户。当剩余里程低于40km时，相关信息显示高亮。~~

#### ~~剩余电量（仅于电动车型和混动车型显示，通过读取标定判断）~~

~~本系统能够显示当前车辆可用的电池电量，电量使用8格显示，具体显示方式见PIS1345 Energy~~

#### ~~电池续航里程（仅于电动车型和混动车型显示，~~~~通过读取标定判断）~~

~~本系统通过获取电动车电池电量续航里程总线信号，显示当前车辆续航里程。此状态值由车辆总线数据中分析得到，数值单位为千米（Km），精确到小数点后2位。当续航里程低于40 km时，系统弹框提示用户当前续航里程过低，请为您的爱车充电。用户关闭弹框后，在此次行车过程中都不再弹框提示用户相关内容。~~

### ~~车灯检测/Lamp Inspection~~

~~用户可以通过本系统查看车灯当前状态是否故障。其中包括：牌照灯，近光灯，远光灯，前后位置灯，前后雾灯，日间行车灯（左/右），刹车灯（左/右），高位刹车灯，驻车灯（左/右），倒车灯。  
The user shall be able to check whether the current state of the lamp is faulty or not via this system. These include: license plate lamp, low beam lamp, high beam lamp, front and rear position lamp, front rear fog lamp, daytime running lamp (left/right), stop lamp (left/right), high-mounted stop lamp, park lamp (left/right) and reversing lamp.~~

~~车灯故障时系统需提示用户车灯故障，用户可以通过系统查看详细故障信息，例如：左侧日间行车灯故障。  
In case of any lamp fault, the system shall remind the user, and the user shall be able to view detailed fault information via the system, for example, the fault of left daytime running lamp.~~

### 轮胎系统/Tire System

用户可以通过本系统查看车辆轮胎系统状态，系统可以通过总线信号获取当前轮胎系统状态。系统需要根据信号判断当前数据是否可信。轮胎系统检测功能相关数据不可信时，该系统相关数据不显示。系统需要检测轮胎系统相关的总线信号，当信号丢失时，轮胎系统相关数据不显示，且此时系统不支持用户进行快慢漏气重置以及关闭操作。

Users can check the status of the vehicle tire system through the system, and the system can obtain the current status of the tire system through the bus signal. The system needs to judge whether the current data is credible according to the signal. When the data related to the tire system detection function is not trusted, the data related to the system will not be displayed. The system needs to detect the bus signal related to the tire system. When the signal is lost, the data related to the tire system will not be displayed.

针对458项目，对应功能接口详见下方表格：

For the 458 project, the corresponding functional interfaces are shown in the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| **Signal** | **Range** | **Conversion** | **Comments** |
| Tire Pressure Monitoring System Failed | NA | $0=False; $1=True | True：系统数据不可信，此时轮胎系统中所有功能数据均不可信，系统中相关数据不做显示。  ~~IPC报warning PIS2069 warning186~~ |

针对Global B架构的项目，对应胎压数据接口以及逻辑参考GB IPC CTRS 章节3.1.10

For projects of Global B architecture, refer to section 3.1.10 of GB IPC CTRS for data interface of tire pressure and logic.

#### 胎压/Tire Pressure

用户可以通过本系统实时查看四个车胎的胎压变化。本系统根据总线信号值分别实时显示当前四个车轮胎压（单位：kPa）。针对458项目，系统需要显示当前车辆推荐胎压值，推荐胎压值为~~240~~ 250kPa。  
The user shall be able to view the tire pressure changes of four tires in real time via the system. The system shall be able to display the tire pressure (Unit: kPa) of the current vehicles in real time according to the bus signal values. For project 458, the system needs to display the recommended tire pressure value of the current vehicle, which is 240kPa.

针对458项目，对应胎压数据接口以及逻辑参考PIS-2085 IPC SW Spec 章节3.2.1.14.29

针对Global B架构的项目，对应胎压数据接口以及逻辑参考GB IPC CTRS 章节3.1.10

For the 458 project, refer to pis-2085 IPC SW Spec section 3.2.1.14.29 for the tire pressure data interface and logic.

For projects of Global B architecture, refer to section 3.1.10 of GB IPC CTRS for data interface of tire pressure and logic.

胎压异常报警分为胎压低和胎压高两种。当胎压超出正常范围时，系统需~~根据总线信号进行判断，并~~提示用户当前胎压异常。

When the tire pressure exceeds the normal range, the system shall judge according to the bus signal and remind the user that the current tire pressure is abnormal.

针对458项目，~~对应功能接口详见下方表格，~~判断逻辑以及总线接口参考PIS-2069 Warning 173-183。

For the 458 project, please refer to the table below for the corresponding functional interface. For the logic, please refer to pis-2069 Warning 173-183.

|  |  |  |
| --- | --- | --- |
| **~~Signal~~** | **~~Range~~** | **~~Conversion~~** |
| ~~Tire Right Rear Pressure Status~~ | ~~NA~~ | ~~$0=Unknown; $1=Nominal; $2=Low - Service Now; $3=Low; $4=Low - Extended Mobility; $5=High~~ |
| ~~Tire Left Rear Pressure Status~~ | ~~NA~~ | ~~$0=Unknown; $1=Nominal; $2=Low - Service Now; $3=Low; $4=Low - Extended Mobility; $5=High~~ |
| ~~Tire Right Front Pressure Status~~ | ~~NA~~ | ~~$0=Unknown; $1=Nominal; $2=Low - Service Now; $3=Low; $4=Low - Extended Mobility; $5=High~~ |
| ~~Tire Left Front Pressure Status~~ | ~~NA~~ | ~~$0=Unknown; $1=Nominal; $2=Low - Service Now; $3=Low; $4=Low - Extended Mobility; $5=High~~ |

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.10

For projects of Global B architecture, refer to section 3.1.10 of GB IPC CTRS for data interface of tire pressure and logic.

#### 轮胎漏气/Tire Leakage

##### 轮胎漏气提醒

当轮胎发生快漏气时，系统需通过总线信号获取当前发生快漏气的轮胎信息（例如：左后轮胎发生快漏气），并提醒用户轮胎漏气。  
When the tire is fast leaking, the system shall acquire the information of the current fast leaking tire (e.g. the left rear tire is fast leaking) through the bus signal and remind the user of the tire leaking.

当轮胎发生慢漏气时，系统需通过总线信号获取当前发生慢漏气的轮胎信息（例如：右前=轮胎发生慢漏气），并提醒用户轮胎漏气。  
When the tire is slow leaking, the system shall acquire the information of the current slow leaking tire (e.g. the right front tire is slow leaking) through the bus signal and remind the user of the tire leaking.

针对458项目，对应功能接口详见下方表格：

For the 458 project, the corresponding functional interfaces are shown in the following table:

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| Tire Right Front Air Leakage | 0.0 - 3.0 | $0=normal; $1=Slow; $2=rapid; $3=Unknown; |
| Tire Left Front Air Leakage | 0.0 - 3.0 | $0=normal; $1=Slow; $2=rapid; $3=Unknown; |
| Tire Right Rear Air Leakage | 0.0 - 3.0 | $0=normal; $1=Slow; $2=rapid; $3=Unknown; |
| Tire Left Rear Air Leakage | 0.0 - 3.0 | $0=normal; $1=Slow; $2=rapid; $3=Unknown; |

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.10.5.11

For projects with Global B architecture, refer to section 3.1.10 of GB IPC CTRS for functional interfaces and logic.

##### 轮胎漏气数据重置及关闭

系统支持用户重置轮胎漏气数据。重置数据时，需要系统进行二次确认，并提醒用户该重置过程会持续一段时间，这段时间无漏气数据显示，当重置完成后，系统将恢复漏气提醒。

系统支持用户关闭或开启轮胎快漏气慢漏气数据显示功能（默认开启）。用户关闭后，系统不显示快慢漏气数据信息，也不对快慢漏气进行报警。

信号逻辑详见下方表格，适用于全平台：

|  |  |  |
| --- | --- | --- |
|  | **Signal** | **Conversion** |
| VCU发送 | Tire Leak Detection User Request | $0 = No Action;默认值  $1 = Enable; 开启快慢漏气显示  $2 = Disable; 关闭快慢漏气显示  $3 = Reset；用户reset快慢漏气数据 |
| VCU接收 | Tire Leak Detection Enable Status | $0 = Unknown;  $1 = Enabled;当前快慢漏气显示开启  $2 = Disabled当前快慢漏气显示关闭 |

#### 胎压学习（Tire Location Learning Page）

系统支持用户触发胎压学习功能，该功能仅用于在维修活动（轮胎旋转、轮胎更换）后系统重新学习各个轮胎的位置。

当车辆处于行驶状态时，该功能不可触发。当用户触发胎压学习功能时，系统需要二次确认。当胎压学习被触发后，系统需要提示用户胎压学习正在进行中，并且此时胎压学习无法被在此触发。

CLEA参考PIS-2085中3.2.1.14.30 Tire Location Learning Page章节。

GB参考CTRS中的3.1.10.5.9章节。

CLEA: refer to Section 3.2.1.14.30 Tire Location Learning Page of PIS-2085 for details.

GB: refer to section 3.1.10.5.9 of CTRS.

#### ~~胎温/Tire Temperature（TBD）~~

~~用户可以通过本系统实时查看四个车胎的胎温变化。本系统根据总线信号值分别实时显示当前四个车轮胎温。  
The user shall be able to view the tire temperature changes of four tires in real time via the system. The system shall be able to display the tire temperature of the current vehicles in real time according to the bus signal values.~~

### 制动系统/Braking System

用户可以通过本系统查看车辆制动系统状态，系统可以通过总线信号获取当前制动系统状态。若系统通过总线信号得知当前制动监测系统故障，需告知用户且制动系统相关数据不在界面上显示。  
The user shall be able to check the status of the vehicle braking system via the system. The system shall be able to obtain the current braking system status through bus signals. If the system knows the fault of the current braking monitoring system through the bus signal, the user shall be informed and the relevant data of the braking system shall not be displayed on the interface.

系统需要根据信号判断当前数据是否可信。制动系统检测功能相关数据不可信时，该系统相关数据不显示。系统需要检测制动模块相关的总线信号，当信号丢失时，制动模块相关数据不显示。针对458项目，对应功能接口详见下方表格：

The system needs to judge whether the current data is credible according to the signal. When the relevant data of the braking system's detection function is not trusted, the relevant data of the system will not be displayed. The system needs to detect the bus signal related to the brake module. When the signal is lost, the data related to the brake module will not be displayed. For the 458 project, the corresponding functional interfaces are shown in the following table:

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| Brake Health Monitor System Status | N/A | $0=Normal Mode; $1= Backup Mode; $2= Error;$3=Reserved3 |

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.93

For projects with Global B architecture, refer to section 3.1.93 of GB IPC CTRS for functional interfaces and logic.

#### 刹车片寿命/Brake Pad Life

用户可以通过本系统查看当前刹车片剩余寿命，系统需要分别显示前、后刹车片的寿命信息。系统通过总线信号获取刹车片寿命剩余百分比，以及分别显示前、后刹车片剩余里程信息。  
The user shall be able to view the remaining life of the current brake pads via the system. The system shall display the life information of the front and rear brake pads respectively. The system shall obtain the remaining life percentage of brake pad and remaining mileage through bus signals.

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| Front Brake Pad Life | 0 - 100 % | E = N \* 1 |
| Rear Brake Pad Life | 0- 100 % | E = N \* 1 |
| Front Pad Remain mileage | 0.0 - 500000 km | E=N\*10 |
| Rear Pad Remain mileage | 0.0 - 500000 km | E=N\*10 |

~~文档根据前、后刹车片剩余寿命的多少分为正常、低、极低三个等级。具体见下方表格，~~

|  |  |
| --- | --- |
| ~~刹车片剩余寿命~~ | ~~刹车片状态~~ |
| ~~>50%~~ | ~~正常~~ |
| ~~50%>=n>10%~~ | ~~剩余寿命低~~ |
| ~~<=10%~~ | ~~剩余寿命极低~~ |

系统需要根据总线消息判断是否需要更换刹车片。当总线信号通知系统刹车片剩余寿命过低时，系统需要提示用户当前刹车片寿命，并提醒用户更换前/后刹车片。  
The system shall judge whether brake pads need to be replaced according to bus messages. When the bus signal informs the system that the remaining life of the brake pad is too short, the system shall remind the user for the current life of the brake pad and remind the user to replace the front/rear brake pad.

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| Front Brake Pad Low | N/A | $0=False; $1=True; |
| Rear Brake Pad Low | N/A | $0=False; $1=True; |

系统支持用户手动reset前刹车片或后刹车片的寿命数据，用户完成reset操作后，系统需通过总线信号通知对应模块重置相关数据。对应模块将反馈当前重置操作是否成功，系统需根据该反馈提示用户是否重置成功。此时系统通过总线信号获取到的寿命数据通常为100%。  
The system shall support the user to manually reset the service life data of the front brake pad or the rear brake pad. After the user completes the reset operation, the system shall notify the corresponding module through the bus signal to get the relevant data. At this time, the service life data obtained by the system through the bus signal is usually 100%.

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| Front Pad Wear Initialize Request | N/A | $0=No Action; $1=Initialize |
| Rear Pad Wear Initialize Request | N/A | $0=No Action; $1=Initialize |
| Brake Part Wear Initialize Status | N/A | $0= Reset None; $1=Reset Front Pad; $2=Reset Rear Pad;$3=ResetFrontRotot;$4=ResetRearRotor;$5=Reserved5;$6=Reserved6;$7=Reserved8;$8=Reserved8;$9=Reserved9;$A=ReservedA;$B=ReservedB;$C=ReservedC;$D=ReservedD;$E=ReservedE;$F=ReservedF; |

针对Global B架构的项目，除刹车片寿命和寿命重置功能外，需支持关闭刹车片寿命显示功能。当刹车片寿命显示关闭后，刹车片相关功能均不可用，且不显示当前刹车片寿命数据。对应功能接口以及逻辑参考PIS-2076 5.2.3章节~~GB IPC CTRS 章节3.1.722 3.1.93~~

For projects with Global B architecture, refer to section 3.1.93 of GB IPC CTRS for functional interfaces and logic

#### ~~制动盘寿命/Brake Rotor Life（仅在458项目上支持/Only For 458）~~

~~用户可以通过本系统查看当前制动盘剩余寿命里程，系统需要分别显示前、后制动盘的寿命信息。系统通过总线信号获取制动盘剩余里程，以及分别显示前、后制动盘剩余里程信息。  
The user shall be able to view the remaining mileage of the current brake rotor via the system. The system shall display the life information of the front and rear brake rotor respectively. The system obtains the remaining mileage of the brake disc through the bus signal, and displays the remaining mileage information of the front and rear brake discs respectively.~~

|  |  |  |
| --- | --- | --- |
| **~~Signal~~** | **~~Range~~** | **~~Conversion~~** |
| ~~Front Rotor Remain mileage~~ | ~~0.0 - 500000 km~~ | ~~E=N\*10~~ |
| ~~Rear Rotor Remain mileage~~ | ~~0.0 - 500000 km~~ | ~~E=N\*10~~ |

~~文档根据前、后制动盘剩余寿命的多少分为正常、低、极低三个等级。具体见下方表格，~~

|  |  |
| --- | --- |
| ~~制动盘剩余寿命~~ | ~~刹车片状态~~ |
| ~~>50%~~ | ~~正常~~ |
| ~~50%>=n>10%~~ | ~~剩余寿命低~~ |
| ~~<=10%~~ | ~~剩余寿命极低~~ |

~~系统需要根据总线消息判断是否需要更换制动盘。当总线信号通知系统制动盘剩余寿命过低时，系统需要提示用户当前制动盘寿命，并提醒用户更换前/后制动盘。  
The system shall judge whether brake disc needs to be replaced according to bus messages. When the bus signal informs the system that the remaining life of the brake disc is too short, the system shall remind the user for the current life of the brake disc and remind the user to replace the front/rear brake disc.~~

|  |  |  |
| --- | --- | --- |
| **~~Signal~~** | **~~Range~~** | **~~Conversion~~** |
| ~~Front Brake Pad Low~~ | ~~N/A~~ | ~~$0=False; $1=True;~~ |
| ~~Rear Brake Pad Low~~ | ~~N/A~~ | ~~$0=False; $1=True;~~ |

~~系统支持用户手动reset前制动盘或后制动盘的寿命数据，用户完成reset操作后，系统需通过总线信号通知对应模块重置相关数据。对应模块将反馈当前重置操作是否成功，系统需根据该反馈提示用户是否重置成功。此时系统通过总线信号获取到的寿命数据通常为100%。  
The system shall support the user to manually reset the service life data of the front brake disc or the rear brake disc. After the user completes the reset operation, the system shall notify the corresponding module through the bus signal to get the relevant data. At this time, the service life data obtained by the system through the bus signal is usually 100%.~~

|  |  |  |
| --- | --- | --- |
| **~~Signal~~** | **~~Range~~** | **~~Conversion~~** |
| ~~Front Rotor Wear Initialize Request~~ | ~~N/A~~ | ~~$0=No Action; $1=Initialize~~ |
| ~~Rear Rotor Wear Initialize Request~~ | ~~N/A~~ | ~~$0=No Action; $1=Initialize~~ |
| ~~Brake Part Wear Initialize Status~~ | ~~N/A~~ | ~~$0= Reset None; $1=Reset Front Pad; $2=Reset Rear Pad;$3=ResetFrontRotot;$4=ResetRearRotor;$5=Reserved5;$6=Reserved6;$7=Reserved8;$8=Reserved8;$9=Reserved9;$A=ReservedA;$B=ReservedB;$C=ReservedC;$D=ReservedD;$E=ReservedE;$F=ReservedF;~~ |

#### ~~制动系统温度/Braking System Temperature（仅在458项目上支持/Only For 458）~~

~~用户可以通过系统查看当前制动系统温度。制动系统温度分为前轮、后轮两个部分。当制动系统温度过高时系统需要对用户进行提示。  
The user shall be able to view the current braking system temperature via the system. The temperature of the braking system is divided into front wheel and rear wheel. When the braking system temperature is too high, the system shall remind the user.~~

|  |  |  |
| --- | --- | --- |
| **~~Signal~~** | **~~Range~~** | **~~Conversion~~** |
| ~~Front Brake Temperature~~ | ~~0.0 - 1000 C~~ | ~~E=N\*1~~ |
| ~~Rear Brake Temperature~~ | ~~0.0 - 1000 C~~ | ~~E=N\*1~~ |
| ~~Brake Temperature Warming~~ | ~~N/A~~ | ~~$0=False; $1=True;~~ |

### ~~雨刮状态/Wiper Status~~

#### ~~雨刮寿命/Wiper Life~~

~~用户可以通过本系统查看当前雨刮寿命，系统会显示雨刮寿命剩余百分比。文档根据雨刮剩余寿命的多少分为正常、低、极低三个等级。具体见下方表格，  
The user shall be able to view the current wiper life via the system, and the system shall display the remaining life percentage of the wiper.~~ ~~The document shall be divided into normal, low and extremely low grades according to the remaining life of the wiper. See the table below for details.~~

|  |  |
| --- | --- |
| ~~雨刮剩余寿命 Wiper residual life~~ | ~~雨刮状态 Wiper Status~~ |
| ~~>50%~~ | ~~正常 Normal~~ |
| ~~50%>=n>10%~~ | ~~剩余寿命低 Short residual life~~ |
| ~~<=10%~~ | ~~剩余寿命极低 Extremely Short residual life~~ |

~~当前雨刮剩余寿命极低时，系统要提示用户当前雨刮寿命，并提醒用户更换。  
When the remaining life of the current wiper is extremely short, the system shall remind the user for the current wiper life and remind the user to replace it.~~

~~当前雨刮寿命极低时，系统要提示用户当前雨刮寿命，并提醒用户更换滤芯。系统需提供用户手动reset雨刮寿命的入口。用户进行reset操作后，系统通过总线接口获取的雨刮剩余寿命值应为100%。  
When the current wiper life is extremely short, the system shall remind the user for the current wiper life and remind the user to replace the filter element. The system shall provide the user with an entrance to manually reset the wiper life. After the user performs reset operation, the remaining life of the wiper acquired by the system via bus interface shall be 100%.~~

#### ~~玻璃清洗液余量/Remaining Amount of Glass Cleaning Liquid(TBD)~~

~~当玻璃清洗液余量过低时，系统需要提示用户填加玻璃清洗液。系统根据总线信号判断当前玻璃清洗液余量是否过低，当余量过低时系统需提示用户及时添加玻璃清洗液。  
When the remaining amount of glass cleaning liquid is too low, the system shall remind the user to add glass cleaning liquid. The system shall judge whether the current glass cleaning liquid allowance is too low according to the bus signal and the system shall remind the user to add glass cleaning liquid in time when the allowance is too low.~~

### 空调状态/AC Status

#### 空调滤清器/AC Filter（仅在458项目上支持）

用户可以通过本系统查看当前空调滤清器剩余寿命。系统会显示空调滤清器寿命剩余百分比。本系统需要根据如下表格中的当前空调滤清器状态（正常，低，极低）显示不同颜色，从而起到提示用户及时更换空调滤清器的目的。  
The user shall be able to view the current AC Filter life via the system, and the system shall display the remaining life percentage of the AC Filter. The system shall display different colors according to the current AC filter status (normal, low, extremely low) in the following table, so as to remind the user to replace the air conditioner filter in time.

|  |  |
| --- | --- |
| 空调滤清器剩余寿命 Remaining Life of the AC Filter | 空调滤清器状态 AC filter status |
| >50% | 正常 Normal |
| 50%>=n>10% | 剩余寿命低 Short residual life |
| <=10% | 剩余寿命极低 Extremely Short residual life |

当前空调滤清器寿命极低时，系统要提示用户当前滤芯寿命，并提醒用户更换滤芯。系统需提供用户手动reset空调滤清器剩余寿命的入口。用户进行reset操作后，空气滤清器剩余寿命值应为100%。  
When the current AC filter life is extremely short, the system shall remind the user for the current AC filter life and remind the user to replace the filter element. The system shall provide the user with an entrance to manually reset the AC Filter life. After the user performs reset operation, the remaining life of the AC Filter acquired by the system via bus interface shall be 100%.

针对配备空调滤清器传感器的车辆，系统需要通过如下总线信号获取寿命信息。针对未配备空调滤清器传感器的车辆，对应功能数据由VCU计算并显示，具体参考PIS2085 3.2.1.14.107。系统需根据标定P\_PM2.5\_FILTER\_LIFE\_MENU\_PRESENT判断当前车辆是否配备传感器。当该标定值为True时，由VCU计算并显示，否则通过总线信号。

For vehicles equipped with air conditioning filter sensors, the system needs to obtain life information through the following bus signal. For vehicles not equipped with air conditioning filter sensors, the corresponding functional data were calculated and displayed by VCU, with reference to PIS2085 3.2.1.14.107. The system shall judge whether the current vehicle is equipped with sensors according to the calibration of p\_pm2.5\_filter\_life\_menu\_present. When this calibration value is True, it is calculated and displayed by VCU, otherwise it will pass through the bus signal.

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| PM2.5 Filter remaining Life | 0 - 100.000035 % | E=N\*0.392157 |
| PM2.5 Filter remaining Life Validity | NA | $0=Valid; $1=Invalid |
| Customer reset PM2.5 Filter remaining life | NA | $0=False; $1=True |

### 蓄电池电压/Battery Voltage

系统通过总线信号获取当前蓄电池电压表盘式和数值式状态。蓄电池电压异常时，提示用户。

Gage显示和数值显示对应功能接口以及逻辑参考PIS-2076的5.2.9章节~~PIS-2085 IPC SW Spec 章节3.2.1.14.8~~，电池电压异常判断逻辑参考PIS-2062中的3.4章节，Indicator #8 ~~PIS2069 Warning 192~~。

~~针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.514~~

~~For projects with Global B architecture, refer to section 3.1.514 of GB IPC CTRS for functional interfaces and logic.~~

### 发动机状态/Engine Status

本章节定义的内容不在纯电车型上实现。  
The contents defined in this section shall be not implemented on pure electric vehicles.

#### 机油寿命/Oil Life

用户能够通过本系统查看当前机油寿命，系统显示机油寿命剩余百分比，要求数值精确到整数。~~本系统需要根据如下表格中的当前机油状态（正常，低，极低）显示不同颜色，从而起到提示用户及时更换机油的目的。~~当系统无法正常获取当前寿命值或数据异常时，系统不应显示寿命值，且需提示用户机油寿命系统异常，请用户检查。  
The user shall be able to check the current oil life via the system, which shall display the remaining percentage of oil life, requiring the numerical value to be accurate to an integer. When the system cannot normally obtain the current life value or the data is abnormal, the system should not display the life value, and the user should be reminded that the oil life system is abnormal, please check.

|  |  |
| --- | --- |
| ~~机油寿命 Oil Life~~ | ~~机油状态 Oil Status~~ |
| ~~>50%~~ | ~~正常 Normal~~ |
| ~~50%>=n>10%~~ | ~~剩余寿命低 Short residual life~~ |
| ~~<=10%~~ | ~~剩余寿命极低 Extremely Short residual life~~ |

当前机油寿命极低时，系统要提示用户当前机油寿命，并提醒用户更换机油。  
When the current oil life is extremely short, the system shall remind the user for the current oil life and remind the user to replace the oil.

系统需提供用户手动reset机油寿命的入口，进行reset操作后，系统通过总线接口读取的机油寿命值应为100%。  
The system shall provide the user with an entrance to manually reset the oil life. After the reset operation, the oil life value read by the system via the bus interface shall be 100%.

针对458项目，机油寿命数值显示以及逻辑参考PIS-2085 IPC SW Spec 章节3.2.1.14.27，机油寿命极低判断逻辑参考PIS2069 Warning 165。

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.281

For project 458, the oil life value is displayed and the logical reference is pis-2085 IPC SW Spec section 3.2.1.14.27. The oil life is extremely low and the logical reference is PIS2069 Warning 165.

For projects with Global B architecture, refer to section 3.1.281 of GB IPC CTRS for functional interfaces and logic.

#### 燃油滤清器寿命/Fuel Filter Life

系统根据总线信号判断当前燃油滤清器寿命，当燃油滤清器寿命过低时，系统需要提示用户及时更换燃油滤清器。

当系统无法正常获取当前寿命值或数据异常时，系统不应显示寿命值，且需提示用户燃油滤清器系统异常，请用户检查。  
The system shall judge the current fuel filter life according to the bus signal. When the fuel filter life is too short, the system shall remind the user to replace the fuel filter in time.

When the system cannot normally obtain the current life value or the data is abnormal, the system should not display the life value, and the user should be reminded that the fuel filter system is abnormal, please check.

系统需提供用户手动reset燃油滤清器寿命的入口，进行reset操作后，系统通过总线接口读取的燃油滤清器寿命值应为100%。

针对458项目，对应功能接口以及逻辑参考PIS-2085 IPC SW Spec 章节3.2.1.14.38，燃油滤清器寿命过低判断逻辑参考PIS2069 Warning 264。

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.323

The system shall provide the entry point for the user to manually reset the life of the fuel filter. After the reset operation, the life value of the fuel filter read by the system through the bus interface shall be 100%.

For project 458, the corresponding functional interface and logic reference are pis-2085 IPC SW Spec section 3.2.1.14.38, and the logic reference PIS2069 Warning 264 for fuel filter life is too low.

For projects with Global B architecture, refer to section 3.1.323 of GB IPC CTRS for functional interfaces and logic

#### 发动机空气滤芯寿命/Engine Air Filter Life

系统能够通过读取总线信号数据获取空气滤芯寿命并显示。  
The system shall be able to obtain the life of the air filter element and display it by reading the bus signal data.

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| Engine Air Filter Life Remaining HMI | 0.0 - 127.0 % | E=N\*1.0 |

|  |  |
| --- | --- |
| ~~发动机空气滤芯寿命 Life of Engine Air Filter Element~~ | ~~发动机空气滤芯状态 Engine air filter element status~~ |
| ~~>50%~~ | ~~正常 Normal~~ |
| ~~50%>=n>10%~~ | ~~剩余寿命低 Short residual life~~ |
| ~~<=10%~~ | ~~剩余寿命极低 Extremely Short residual life~~ |

当前发动机空气滤芯寿命极低时，系统要提示用户当前滤芯寿命，并提醒用户更换滤芯。当系统无法正常获取当前寿命值或数据异常时，系统不应显示寿命值，且需提示用户发动机空气滤清器系统异常，请用户检查。  
When the current air filter element life is extremely short, the system shall remind the user for the current AC filter life and remind the user to replace the filter element. When the system cannot normally obtain the current life value or the data is abnormal, the system should not display the life value, and the user should be reminded that the engine air filter system is abnormal, please check it.

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| Engine Air Filter Monitor Status | 0 - 7 | $0=OK; 正常  $1=Replace Air Filter Soon; 尽快更换发动机空气滤芯  $2=Replace Air Filter Now; 立即更换发动机空气滤芯  $3=Fault Present; 数据出错，发动机空滤寿命界面所有数据不可信，此时支持用户进行reset操作  $4=Disabled; 当前发动机空滤寿命显示关闭  $5=No Action |

系统支持用户手动reset发动机空气滤芯寿命数据，用户完成reset操作后，系统需通过总线信号通知对应模块清楚相关数据，此时系统通过总线信号获取到的寿命数据通常为100%。

系统支持用户关闭或开启发动机空滤寿命显示，当用户关闭显示时，该页面寿命显示条为“空”，数值显示“--”，此时不支持用户进行“重置/Reset”和“显示在仪表/Show in Cluster”操作。  
The system shall support the user to manually reset the service life data of the engine air filter element. After the user completes the reset operation, the system shall notify the corresponding module through the bus signal to get the relevant data. At this time, the service life data obtained by the system through the bus signal is usually 100%.

|  |  |  |
| --- | --- | --- |
| **Signal** | **Range** | **Conversion** |
| Engine Air Filter Monitor Driver Request | 0 - 3 | $0=No Action;  $1=Enable; 用户开启发动机空滤寿命界面显示  $2=Disable; 用户关闭发动机空滤寿命界面显示  $3=Reset；用户重置发动机空滤寿命 |

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.718。

#### 发动机水温/Coolant Temperature

本系统通过获取发动机水温总线信号值显示当前发动机水温数值，当发动机水温异常时建议红色显示，温度范围 -40 ~ 215摄氏度，精度1摄氏度。具体参考交互设计。系统需要根据总线信号判定发动机水温是否过高。

针对458项目，对应功能接口以及逻辑参考PIS-2085 IPC SW Spec 章节3.2.1.9.4，水温异常提醒逻辑参考PIS-2062的3.23章节，Indicator #17 ~~PIS-2069 Warning 157，160~~。

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.241

This system displays the current coolant temperature value by obtaining the bus signal value of engine water temperature. When the engine water temperature is abnormal, it is suggested to display it in red. The specific reference is interactive design. The system needs to determine whether the engine temperature is too high according to the bus signal.

For project 458, refer to pis-2085 IPC SW Spec section 3.2.1.9.4 for the corresponding functional interface and logic.

For projects with Global B architecture, refer to section 3.1.241 of GB IPC CTRS for functional interfaces and logic.

#### 变速器油液温度/Transmission Fluid Temperature

本系统通过获取变速器油液温度总线信号值显示当前变速器油温数值。

针对458项目，对应功能接口以及逻辑参考PIS-2085 IPC SW Spec 章节3.2.1.14.41

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.316

This system displays the current transmission oil temperature value by acquiring the transmission oil temperature bus signal value.

For the 458 project, refer to pis-2085 IPC SW Spec section 3.2.1.14.41 for the corresponding functional interface and logic.

For projects with Global B architecture, refer to section 3.1.316 of GB IPC CTRS for functional interfaces and logic.

#### 机油压力/Oil pressure

本系统通过获取机油压力总线信号值显示当前机油压力数值，显示形式为xxx kPa，以及图表形式显示。机油压力异常时，需高亮显示。

The system displays the current oil pressure value by obtaining the oil pressure bus signal value in the form of XXX kPa. When the oil pressure is abnormal, should be highlighted.

具体数据以及显示逻辑参考PIS-2076 Cluster General Requirement 的5.3.5章节

~~针对458项目，Gage显示对应功能接口以及逻辑参考~~~~PIS-2085 IPC SW Spec 章节3.2.1.9.6.4，数值显示对应接口以及逻辑参考PIS-2085 IPC SW Spec 章节3.2.1.14.48。~~

针对Global B架构的项目，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.258 177 ，3.1.239。

For 458 project, refer to section 3.2.1.9.6.4 of PIS-2085 IPC SW Spec for corresponding functional interface and logic.

For the project of Global B architecture, corresponding functional interface and logical reference GB IPC CTRS section 3.1.258177, 3.1.239.

#### 引擎运行时间/Engine Hours

本系统支持显示当前发动机运行总时长（Total Hours Engine Running），以及当前发动机怠速总时长（Total Hours Engine Idle），显示形式为x.x hrs.

This system supports displaying the Total Hours Engine Running and Total Hours Engine Idle, in the form of x.x hrs.

针对CLEA架构的项目，对应功能接口以及逻辑参考PIS-2076的5.2.10章节

~~仅在Global B架构的项目中显示该功能，针对~~Global B架构，对应功能接口以及逻辑参考GB IPC CTRS 章节3.1.320.

This function is only shown in the project of Global B architecture, corresponding to the functional interface and the logical reference section 3.1.320 of GB IPC CTRS.

#### 机油温度/Oil Temperature（仅GB）

针对GB项目，系统支持显示当前机油温度，温度范围为-40-215℃，精确到1℃。展现形式可包括具体温度和图表。具体数据以及显示逻辑参考PIS-2076 Cluster General Requirement 的5.2.13章节。

### ~~车辆电子系统/Vehicle Electronic System~~

#### ~~电子稳定系统/Electronic Stability Program~~

~~用户可以通过本系统查看刹车电子稳定系统（ESP）的状态。  
The user shall be able to view the status of the Electronic Stability Program (ESP) via the system.~~

~~本系统显示刹车电子稳定系统（ESP）是否故障。当ESP故障时，界面显示当前状态的同时，系统通过通知中心弹框提示用户ESP故障。  
This system shall show whether the brake electronic stability program (ESP) is faulty. When ESP fails, the interface shall display the current status, and the system shall remind the user for ESP fault via Pop-ups of the notification center.~~

~~在车辆启动时，车机需对刹车电子稳定系统进行自动检测， ESP系统异常时需提示用户。  
When the vehicle is started, the on-board system shall automatically inspect the electronic stability program, and the user shall be reminded when the ESP system is abnormal.~~

#### ~~牵引力控制系统/Traction Control System~~

~~用户可以通过本系统查看牵引力控制系统（TCS）的状态。  
The user shall be able to view the status of traction control system (TCS) via the system.~~

~~本系统显示牵引力控制系统（TCS）是否故障。当TCS故障时，界面显示当前状态的同时，系统通过通知中心弹框提示用户TCS故障。  
This system shall display whether the traction control system (TCS) is faulty. When TCS fails, the interface shall display the current status, and the system shall remind the user for TCS fault via Pop-ups of the notification center.~~

~~在车辆启动时，车机需对牵引力控制系统进行自动检测， TCS系统异常时需提示用户。  
When the vehicle is started, the on-board system shall automatically inspect the Traction Control System, and the user shall be reminded when the TCS system is abnormal.~~

#### ~~制动防抱死系统/Anti-lock Braking System~~

~~用户可以通过本系统查看制动防抱死系统（ABS）的状态。  
The user shall be able to view the status of the anti-lock braking system (ABS) via the system.~~

~~本系统显示制动防抱死系统（ABS）是否故障。当ABS故障时，界面显示当前状态的同时，系统通过通知中心弹框提示用户ABS故障。  
This system shall display whether the anti-lock braking system (ABS) is faulty. When the ABS fails, the interface shall display the current status, and the system shall remind the user for ABS fault via Pop-ups of the notification center.~~

~~在车辆启动时，车机需对制动防抱死系统进行自动检测，ABS系统异常时需提示用户。  
When the vehicle is started, the on-board system shall automatically inspect the anti-lock braking system, and the user shall be reminded when the ABS system is abnormal.~~

#### ~~电子刹车系统/Electronic Parking Brake System~~

~~用户可以通过本系统查看电子刹车系统（EPB）的状态。  
The user shall be able to view the status of~~ ~~Electronic Parking Brake System (EPB)~~ ~~via the system.~~

~~本系统显示电子刹车系统（EPB）是否故障。当EPB故障时，界面显示当前状态的同时，系统通过通知中心弹框提示用户EPB故障。  
This system shall display whether the electronic parking brake system (EPB) is faulty. When EPB fails, the interface shall display the current status, and the system shall remind the user for EPB fault via Pop-ups of the notification center.~~

~~在车辆启动时，车机需对电子刹车系统进行自动检测， EPB系统异常时需提示用户。  
When the vehicle is started, the on-board system shall automatically inspect the electronic parking brake system, and the user shall be reminded when the EPB system is abnormal.~~

# 系统需求/System Requirements

（定义系统性的需求及外部调用支持等相关内容）  
(Define systematic requirements and support for external calls, etc.)

## 相关CAN信号/Related CAN Signals



## 相关标定项/Related Calibration Items



## 支持Global Search

系统支持用户通过Global Search模块对车辆状态应用界面显示的内容进行搜索。具体参考PIS2059第4.2.5章节。

# 附录/Appendix

**Revision Log**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Date** | **Section** | **Description** | **Author** |
| 0.0.0.0 | May21.2018 | All | Create the document | Wang Ziqi |
| 0.0.0.1 | May24.2018 | All | Modify the format | Wang Ziqi |
| 0.0.0.2 | July29.2019 | All | Added inspection items such as brake disc and engine air filter life. | Wang Ziqi |
| 0.0.0.3 | Jan2.2020 | 3.1，3.2，3.2.5，3.2.8，3.2.4 | 1. Remove information display and reminder  2. Remove lamp inspection, wiper status, vehicle electronic system  3. Brake system temperature divided into front and rear. Add the description of fault monitoring prompt. Add brake pad/rotor remaining mileage display.  4. Update feature list | Wang Ziqi |
| 0.0.0.4 | May29.2020 | ALL | 1.Add Coolant Temperature.  2.Add Transmission Fluid Temperature.  3.Add signals description. | Wang Ziqi |
| 0.0.0.5 | July3rd.2020 | 2, 3, 3.2.1.2, 3.2.8.6, 3.2.8.7 | 1. Add oil pressure. 2. Add engine hours. 3. Add IFE/AFE/Best score features’ description. 4. Update feature list and add the BEV requirements into this. | Wang Ziqi |
| 0.0.0.6 | Nov.14th2020 | 3.2.1，3.2.8.7，4.2，4.3 | 1.增加小计里程trip1/2显示和reset功能  2.更新feature list中BEV车型需要显示里程信息  3.补充标定  4.Engine Hours增加针对CLEA架构的需求。  5.支持global search功能。  6.更新平均油耗refer spec。  7.增加可变缸信息显示。  8.增加Eco指数与效率显示，能耗排行，油耗趋势的显示。 | Wang Ziqi |
| 0.0.0.7 | Feb.5th2021 | 3.2.1.2, 3.2.3, 3.2.3.3，3.2.7, 3.2.8.3, 3.2.8.6 | 1.优化瞬时油耗功能描述，增加L/hr单位显示。  2.明确可变缸显示信息。  3.明确胎压异常判断逻辑。  4.增加蓄电池电压Gage显示需求。  5.增加机油压力Gage显示需求。  6.删除制动盘寿命显示和制动系统温度显示需求。  7.增加发动机空滤寿命显示关闭功能。  8.增加胎压自学习功能。  9.增加机油温度显示。 | Wang Ziqi |