

X6000电器架构系统介绍

Introduction to X6000 Electrical Architecture System

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架构系统:**Architecture system:****1、架构总线介绍****1. Introduction to architecture bus**

X6000架构为 **全新设计** 平台，具备 **6路** 总线，分别为信息ICan、车身Bcan、底盘Ccan、引擎动力Ecan、传统系Pcan、诊断Dcan。

The X6000 architecture is the newly designed 1 platform with 6 buses, namely Information ICan, Body Bcan, Chassis Ccan, Engine Power Ecan, Traditional System Pcan, and Diagnosis Dcan.

*全新设计对应的是参考某一平台，如果是参考的需要说明主要变化点。

* The new design corresponds to a reference platform, and if it is a reference, the main changes need to be explained.

信息ICan:主要为MMI（集成AC控制）、TXJ、EVM（环境监控）、TMS（疲劳监控）、GW。GW和TXJ带电阻。

Information Ican: mainly MMI (integrated AC control), TXJ, EVM (environmental monitoring), TMS (fatigue monitoring), GW. GW and TXJ come with resistance.

车身Bcan: BCM、AC、TPMS、DCM、CSC、IC。其中IC和GW带电阻。

Body Bcan: BCM, AC, TPMS, DCM, CSC, IC. IC and GW come with resistance.

BCM自带子系统：阳光雨量、灯光组合开关（卧铺）、高架箱灯光开关的Lin线；

BCM built-in subsystems: LIN buses of sunlight and rainfall, and light combination switch (berth), and overhead box light switch;

DCM自带子系统：门控开关、天窗控制器的Lin线。

DCM built-in subsystems: LIN buses of door control switch and sunroof control unit.

TPMS自带子系统：胎压后检测模块，后模块带挂车检测模块Lin线。

TPMS built-in subsystems: LIN buses of tire pressure rear detection module, and rear module with trailer detection module.

CSS自带子系统：智能发电机、左、右电机控制器的Lin线。且子网有AFS前、后高度传感器。**暂时为未使用。**

CSS built-in subsystems: LIN buses of smart alternator, and LH and RH motor control units. The subnet also includes AFS front and rear level sensors, which are currently unused.

GW自带子系统：方向盘左右开关Lin线；灯光总开关硬线。

GW built-in subsystems: LIN bus of steering wheel LH/RH switch; Light master switch hardwire.

*方向盘左右Lin线开关、门控左右Lin线开关需要拆解。

* The LH/RH LIN bus switch of the steering wheel and the LH/RH LIN bus switch of the door control require disassembly.

*多媒体MMI集成AC控制部分操作显示需要拆解。

* The operation display of the integrated AC control part of Multimedia MMI requires disassembly.



架构系统:**Architecture system:****1、架构总线介绍****1. Introduction to architecture bus**

底盘Ccan: ECAS、油品类传感器（已取消）、语音报警器；该总线250Kb, GW和线束带电阻。

Chassis Ccan: ECAS, oil sensor (canceled), voice alarm. The bus operates at 250 Kb, and GW and wire harness come with resistance.

动力Ecan: 一键启动系统（PSU/PEPS/IMMO）、ESCL、发动机ECU、VCU、EndurantAMT；VCU和ECU带电阻。

Power Ecan: PEPS (PSU/PEPS/IMMO), ESCL, Engine ECU, VCU, EndurantAMT. VCU and ECU come with resistance.

潍柴ECU: 自带250kb子系统，包括上下氮氧传感器、尿素品质、温度传感器；

Weichai ECU: built-in 250kb subsystem, including upper and lower NOx sensors, and urea quality and temperature sensors;

康明斯ECU: 自带250kb子系统，包括上下氮氧传感器、尿素品质、温度传感器。

Cummins ECU: built-in 250kb subsystem, including upper and lower NOx sensors, and urea quality and temperature sensors;

传动系Pcan: VCU、RCU、SLU/SGW、ACC、AEBS、ABS/EBS、TCU、SAS；VCU和GW带电阻。

Powertrain Pcan: VCU, RCU, SLU/SGW, ACC, AEBS, ABS/EBS, TCU, SAS. VCU and GW come with resistance.

VCU子系统: Scan, 包括LKAS、ADAS、EHPS、前向雷达。但ADCC也可能在Pcan, 涉及配置自适应。

VCU subsystem: Scan, including LKAS, ADAS, EHPS, and forward radar. However, ADCC may also be in Pcan, involving configuration adaptation.

诊断Dcan: GW、OBD、TXJ、ECU、TCU。

Diagnosis Dcan: GW, OBD, TXJ, ECU, and TCU.

6和14为整车诊断CAN且接TXJ；3和11为TCU诊断；2和10是ISM的诊断；1和9是潍柴的诊断；12和13为WoodWord系统。

6 and 14 are vehicle diagnosis CAN connected to TXJ; 3 and 11 are TCU diagnosis; 2 and 10 are ISM diagnosis; 1 and 9 are Weichai diagnosis; 12 and 13 are WoodWord system.

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架构系统:**Architecture system:****2、架构重点控制器功能及线信号****2. Key control unit functions and line signals of the architecture****MMI多媒体屏 (DZ97189700280):****MMI multimedia screen (DZ97189700280):**

功能: 显示监控画面 (EVM和TMS的报文信号) ;

Function: Display monitoring screen (message signals of EVM and TMS);

控制空调 (配置字和AC报文信号) ;

Control A/C (configuration bits and AC message signals);

冗余开关设计 (门窗、灯光、远程油门、Ecas控制、风扇控制、AEBS倒车开关) ;

Redundant switch design (switches of doors, windows, lights, remote accelerator, Ecas control, fan control, and AEBS reverse);

集成双闪开关功能;

Integrated double flash switch function;

非难点功能: 流量充值、投屏、车辆医生、蓝牙等等。

Non-difficult functions: traffic recharge, screen projection, vehicle doctor, Bluetooth, etc.

重点信号:**Key signals:**

线束: 接MIC控制至方向盘处语音麦克风 (DZ9L149586110) 、车内喇叭控制、天线放大器 (单线电源12V) 、GPS、4G天线;

Wire harness: Connect the MIC control to the voice microphone on the steering wheel (DZ9L149586110), in-car speaker control, antenna amplifier (single-wire power supply 12V), GPS, and 4G antenna;

报文: 外发和接收的主要报文名称。

Message: The name of the main message sent and received.

Lin信号通过网关转发的Switch2报文接收开关信息; MMI报文收音机信号和部分空调控制;

The Lin signal receives switch information through the Switch2 message forwarded by the gateway; MMI messages radio signal and partial A/C control;

MMIctrCab报文集成软开关信号; EVM1报文接收环境监控报警;

MMIctrCab message integrates soft switch signals; EVM1 message receives environmental monitoring alarms.

ACP1报文发送空调控制等信息。

ACP1 message sends A/C control and other information.

接收AC1报文, 根据驻车空调压缩机判断驻车空调控制; 接收空调模式确定按钮是否可使用; 设定温度显示。

Receive the AC1 message and determine the parking A/C control based on the parking A/C compressor; receive the A/C mode to determine whether the button can be used; set the temperature display.

*MIC控制接方向盘开关, 该开关涉及电气喇叭控制、MIC控制、开关Lin信号控制, 具体见“时钟弹簧及方向盘组合开关系统”。

* MIC control is connected to the steering wheel switch, which involves electric horn control, MIC control, and switch Lin signal control. See "Clock Spring and Steering Wheel Combination Switch System" for details.



架构系统:**Architecture system:****2、架构重点控制器功能及线信号****2. Key control unit functions and line signals of the architecture**

BCM车身控制器 (DZ9L149585101、DZ9X189321004) :

BCM (DZ9L149585101, DZ9X189321004):

功能:**Functions:**

灯光: 左组合开关和灯光总开关硬线至网关, BCM接收网关的报文信号控制灯光;

Lighting: The LH combination switch and main lighting switch are hardwired to the gateway, and the BCM receives the message signal from the gateway to control the lighting;

雨刮控制: 左组合开关硬线至网关, BCM接收网关、Lin (自动雨刮) 报文控制雨刮;

Wiper control: The LH combination switch is hardwired to the gateway, the BCM receives the gateway and Lin (auto wiper) messages to control the wiper;

上电控制: 钥匙系统硬线将Keyin信号给网关, BCM接收网关报文控制电磁电源总开关进行30电控制;

Power-on control: The key system hardwires the Keyin signal to the gateway, and the BCM receives the gateway message to control the electromagnetic master power switch for 30 voltage control;

机油信息: 机油液位和温度硬线给BCM, 机油品质等Lin给BCM, BCM为其供电, 该功能逐步取消;

Oil information: The oil level and temperature are hardwired to the BCM, the oil quality and other Lins are wired to the BCM, and the BCM supplies power to it. This function will be gradually cancelled;

油量采集: 接收油量传感器的电阻信号转化为报文信号给仪表显示;

Oil amount acquisition: Receive the resistance signal of the oil amount sensor and convert it into a message signal for the instrument to display;

差速锁控制: 差速锁开关硬线至网关, BCM接收报文驱动电磁阀, 并接收到位开关硬线至BCM用于显示。

Differential lock control: The differential lock switch is hardwired to the gateway, and the BCM receives the message to drive the solenoid valve, and receives the position switch hardwired to the BCM for display.

重点信号:**Key signals:**

线束: 灯光及传感器信号、CAN和Lin信号; 无特殊信号。

Wire harness: light and sensor signals, CAN and Lin signals; no special signals.

报文: Switch1灯光雨刮轮轴差开关报文; MMlctrCab接收多媒体的灯光控制; BCMlinCmd发送油箱位置、雨量灯光传感器信息等。

Message: Switch1 light wiper axle difference switch message; MMlctrCab receives multimedia light control; BCMlinCmd sends information on fuel tank position, rainfall light sensor, etc.

BCM1发送自身灯光、燃油被盗、雨刮状态; BCM2发送油量、电源辅助、油品等状态; BCM3发送电源控制、钥匙应急插入等。

BCM1 sends its own light, fuel theft, and wiper status; BCM2 sends oil amount, power supply auxiliary, oil type and other status; BCM3 sends power control, key emergency insertion, etc.



2、架构重点控制器功能及线信号：DCM门窗控制器（DZ9L149585114）：

2. Key control unit functions and line signals of the architecture: DCM (DZ9L149585114):

功能：

Functions:

门锁开闭：遥控开闭锁（PEPS认证）；机械开闭（主驾侧可以附带副驾）；MMI同时开闭锁左右；TXJ、APP远程同时开闭锁。

Door lock opening and closing: Remote control unlock/lock (PEPS certification); Mechanical unlock/lock (the driver's side can be attached to the co-driver); MMI simultaneously unlocks/locks LH/RH; TXJ and APP remotely simultaneously unlock/lock.

门锁电机控制：自动落锁、二次闭锁、碰撞解锁（预留）；

Door lock motor control: automatic locking, secondary lockout, collision unlocking (reserved);

门窗升降：按键在上电实现点动或一键升降；ACC后90s内均可实现点升点降；PEPS一键升降；多媒体一键升降；APP或TXJ升降。

Lifting and lowering of doors and windows: The button can be used to realize inching or one-key lifting after power-on; Point-up and point-down can be realized within 90 s after ACC; PEPS one-key up and down;

MMI one-key up and down; APP or TXJ up and down.

后视镜调节：分为左右调节、上下调节，一共三个针脚，一个公共端，一个上下驱动，一个左右驱动，

Rearview mirror adjustment: Divided into LH/RH adjustment, up/down adjustment, with a total of three pins, one common terminal, one up/down drive, and one LH/RH drive.

公共端与另两个通过正负极信号实现不同调节（上下左右）功能。

The common terminal and the other two realize different adjustment functions (up/down and LH/RH) through positive and negative battery signals.

后视镜加热：只输出加热正极线束控制，负极接地。

Rearview mirror heating: Only output heating positive wire harness control, with negative grounding.

后视镜记忆：通过开关或者命令报文，根据后视镜模拟量输入，记忆当前位置，在需要时通过一键复位，直接恢复到默认位置。

Rearview mirror memory: Through switches or command messages, according to the analog input of the rearview mirror, the current position is memorized, and when needed, it can be reset to the default position directly by one-key reset.

门灯控制：开关车门时控制左右门灯同时开关。

Door light control: When opening and closing the door, control the LH and RH courtesy lamps to switch on and off at the same time.

重点信号：

Key signals:

线束：LIN线和CAN线；DCM安装于左侧车门，左侧车门线束对接，通过仪表台线束在对接右侧车门线束；左右后视镜上下左右各3根加热公用1根；后视镜记忆DCM输出公共地，再从左、右后视镜收集上下（1pin）、左右（1pin）位置信号共4根线束；

Wire harness: LIN bus and CAN bus; DCM is installed on the LH door, the LH door wire harness is connected, and the RH door wire harness is connected through the dashboard wire harness; LH and RH mirrors have 3 wires each for up/down and LH/RH adjustment, and 1 wire for heating; The rearview mirror memory DCM outputs the common ground, and then collects up/down (1pin), LH/RH (1pin) position signals from the LH/RH mirrors, a total of 4 wire harnesses;

收左右门锁状态、门开关状态；出主副驾开闭锁各2根正反转控制；主副驾门窗各2根正反转控制；门灯；

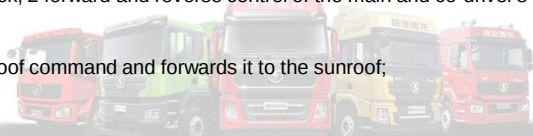
Collect the state of the LH/RH door locks and door switch state; Output 2 forward and reverse control of the main and co-driver's door unlock/lock; 2 forward and reverse control of the main and co-driver's doors and windows; Courtesy lamps;

报文：Switch2(ACC和ON挡)、MMIctrCab（控制车窗）、MMI_CtrDCM后视镜恢复；BCMIinCmd接收天窗命令转发给天窗；

Message: Switch2 (ACC and ON position), MMIctrCab (control window), MMI_CtrDCM rearview mirror recovery; BCMIinCmd receives the sunroof command and forwards it to the sunroof;

DCM1（门灯窗镜状态）和DCM2（镜记忆位）、PEPS认证报文。

DCM1 (courtesy lamp and window mirror state) and DCM2 (mirror memory bit), PEPS authentication message.



架构系统:

Architecture system:

2、架构重点控制器功能及线信号

2. Key control unit functions and line signals of the architecture

AC空调控制器 (DZ9L149585111) :

AC A/C (DZ9L149585111):

气体走向原理: 鼓风机通过内外循环电机控制进入鼓风机的进气来源, 鼓风机运转后将出气送到制冷芯体, 从制冷芯体出来后

Principle of gas flow: The blower controls the source of intake air entering the blower through the internal and external circulation motor. After the blower operates, it sends the outgoing air to the cooling core.

混合风门电机控制, 要么直接出来要么进入制热芯体; 如果风门关闭, 冷气或自然风直接通过出气口出来; 如果混合风门开启,

After coming out of the cooling core, the mixing damper motor controls whether the air directly exits or enters the heating core; if the damper is closed, cold air or natural air will come out directly through the air outlet; if the mixing damper is opened,

气体再次进入制热芯体, 通过制热芯体后在进入各个出风口, 具体受模式电机控制。

the gas re-enters the heating core, passes through the heating core, and then enters various air outlets, which are controlled by the mode motor.

驻车空调: 为保护压缩机, 需要高低压开关, 该开关不影响管路通断, 但影响输出开关状态影响电源, 实现保护。

Parking A/C: In order to protect the compressor, a high/low-voltage switch is required. This switch does not affect the opening and closing of the pipeline, but affects the output switch state and affects the power supply to achieve protection.

制冷功能: 压缩机启动、提转速; 将冷媒送到膨胀阀, 进入制冷芯体; 芯体就是散热器, 增加散发面积, 再由鼓风机带走热量。

Cooling function: The compressor starts and the engine speed is increased; the refrigerant is sent to the expansion valve and enters the cooling core; the core is the radiator, increasing the dissipation area, and then the blower takes away the heat.

制冷开启就是压缩机打开, 且压缩机不可调转速, 只能通过开启关闭压缩机实现制冷温度调节, 所以手动模式下没有制冷

Cooling on means that the compressor is turned on, and the engine speed of the compressor cannot be adjusted. The cooling temperature can only be adjusted by turning on and off the compressor, so there is no cooling temperature adjustment in manual mode.

温度调节, 只有蒸发器保护、冷媒高低压保护关闭压缩机, 自动模式下根据温差实现开启关闭压缩机调节温度。

There are only evaporator protection and refrigerant high and low voltage protection to shut down the compressor. In auto mode, the compressor can be turned on and off according to the temperature difference to adjust the temperature.

制热功能: 将发动机热冷却液通过水阀电机控制进入制热芯体, 气体流通还需要混合电机控制; 水阀电机和混合电机均是可

Heating function: The hot coolant of the engine enters the heating core through the control of the water valve motor, and the gas circulation also needs to be controlled by the hybrid motor; both the water valve motor and the hybrid motor are steplessly adjustable,

无极调节的电机, 所以制热温度调节可以通过此两个电机开度实现, 前者控制热水进水量(热源), 后者控制出气比例。

allowing for temperature regulation. The former controls the amount of hot water inlet (heat source), and the latter controls the air outlet proportion.

混合风门: 决定进入出风口的气体是否经过制热芯体, 如果有制热需求或除霜需求就必须经过, 但可以无极调节实现分气混合比例。

Mixing damper: Determine whether the gas entering the air outlet passes through the heating core. If there is a heating demand or defrosting demand, it must pass through, but it can be adjusted steplessly to achieve the gas distribution and mixing proportion.

除霜模式: 除霜模式下需要制冷又制热, 制冷主要是干燥空气, 制热主要是除已经产生的雾气。此时混合风门需要开启。

Defrost mode: In defrost mode, cooling and heating are required. Cooling is mainly to dry the air, and heating is mainly to remove the fog that has been generated. At this time the mixing damper needs to be opened.

风量控制: 接收报文, 控制鼓风机, 实现风量大小。

Air volume control: Receive messages and control the blower to realize desired air volume.



架构系统:**Architecture system:****2、架构重点控制器功能及线信号****2. Key control unit functions and line signals of the architecture****AC空调控制器 (DZ9L149585111) :****AC A/C (DZ9L149585111):**

出风控制: 通过控制模式电机, 将来自制冷芯体或制暖芯体的空气, 从除霜、吹脸、吹脚的风道吹出来。

Air outlet control: By controlling the mode motor, the air from the cooling core or heating core is blown out from the air ducts for defrosting, upper airflow, and lower airflow.

内外循环: 主要是进入鼓风机的空气来源, X6000是内外循环二选一, 部分本体可以实现内外同时进气。

Internal and external circulation: It is mainly the source of air entering the blower. X6000 can choose one of internal and external circulation, and some bodies can realize both internal and external air intake.

蒸发器保护: 蒸发器就是制冷芯体, 为防止其结冰, 需要阻止进一步制冷, 需要端来压缩机。

Evaporator protection: refers to the cooling core which shall be prevented from further cooling for the sake of freezing, and a compressor is required.

重点信号:**Key signals:**

线束: 结构复杂, 自带线束、仪表台线束、仪表台附加线束(驻车空调)。30点、ACC电、

Wire harness: complex structure, with self-equipped wire harness, dashboard wire harness, and dashboard additional wire harness (parking A/C). 30 voltage, ACC Power,

线束空调本体线束与整车对接 (3pin+20pin)、在接自身传感器(室内温度、三态开关、水阀)、最终回到控制器本身 (20pin+16pin)。有驻车空调时需要仪表台内附加线转接自带线束到发动机线束。

Wire harness of the wire harness A/C is connected to the vehicle (3 pin + 20 pin), and its own sensors (indoor temperature, tristate switch, water valve), and finally returns to the control unit itself (20 pin+16 pin). When there is a parking A/C, additional wires inside the dashboard need to transfer the built-in wire harness to the engine wire harness.

报文: 空调模式、AC启动、进风模式、出风模式、冷媒压力、风量档位、温度设定、车内外温度、水阀状态。

Messages: A/C mode, AC start, air inlet mode, air supply mode, refrigerant pressure, air volume position, temperature setup, interior and exterior temperature, water valve state.

接收ACP1报文控制模式、阀门、温度、风量等。发送AC1反馈所以内部状态, 见DBC (B Pcan)

Control mode for receiving ACP1 messages, valve, temperature, air volume, etc. Send AC1 to feedback all internal states. See DBC (B Pcan).



架构系统:**Architecture system:****2. 架构重点控制器功能及线信号****2. Key control unit functions and line signals of the architecture****一键启动PEPS (DZ9L149585120) :****PEPS (DZ9L149585120):****功能:****Functions:**

由启动按钮、控制器、4组天线、两个微动开关、遥控器、ESCL组成; 实现开锁车门、开锁车窗、上电、启动控制。

It consists of a start button, a control unit, 4 sets of antennas, two microswitches, a remote control and ESCL; it achieves unlocking doors and windows, power-on and start control.

按钮: 直接与控制器连接, 起到开关和提示作用, 每次按下就是正常的开关闭合, 反馈信号给控制器并接收指示, 其没有控制逻辑;

Button: by directly connecting to the control unit, it functions as a switch and prompt. Each press refers to the normal close of switch, responds signals to the control unit and receives instructions, which means nothing about the control logic;

天线: 分为4组均接2根来自控制器的线束, 中控控制遥控器接收校验, 判断钥匙合法性 (匹配钥匙),

Antenna: by dividing into 4 groups, each is connected to 2 wire harnesses from the control unit, with the central remote control receiving the verification and determining legality of the key (matched with the key). 左、右两组与微动开关关联; 顶置备用校验。

The two groups of LH and RH are associated with the microswitch; the top is equipped with spare calibration.

微动开关: 匹配同侧天线实现不操作开门, 按下开关且钥匙被天线监测到后, 可以直接开门, 不用按遥控器和机械钥匙。

Microswitch: by matching with the same side antenna, the door is opened without operation. Press the switch and the key is detected by the antenna, so that you can open the door directly without pressing the remote control or the mechanical key.

遥控器: PEPS作为无钥匙进入系统, 其首先充当车辆钥匙, 实现上电启动; 其次遥控器集成门窗控制。

Remote control: as a passive entry system, PEPS first serves as a vehicle key to achieve power-on start; secondly, the remote control integrates door and window control.

其特点是遥控器只和PEPS控制器匹配, 其通过按键将指令给控制器, 控制器在与DCM进行认证交互, 实现门窗控制功能。

It features in that the remote control only matches with the PEPS control unit, and sends commands to the control unit through keys, which then authenticates and interacts with the DCM, so as to realize the door and window control function.

ESCL转向柱锁: 满足法规锁方向, 当车辆合法钥匙进入时, 按下按钮或制动等, PEPS与ESCL认证成功, 可以实现解锁,

ESCL steering column lock: conforms to the legal lock direction. When the legal vehicle key is inserted, press the button or brake, etc., so that PEPS and ESCL authentication are successful for unlocking.

然后才允许上电, 非法钥匙不能实现钥匙插入和解锁, 也不能上电。

Only then power-on is permitted. Illegal keys can neither be inserted and used to unlock, nor be powered on.

重点信号:**Key signals:**

线束: 天线、按钮、微动开关线束均来源于ECU, ESCL线束独立; 微动开关和天线通过左右车门线束对接, 顶棚天线在右顶棚。

Wire harness: the antenna, button, and microswitch wire harness all come from the ECU, with the independent ESCL wire harness; the microswitch and the antenna are connected through the LH / RH door harnesses, with the roof antenna on the RH roof.

报文: 与DCM、VCU、ESCL的认证报文, 发送PSU1、PEPS1。

Message: authentication messages with DCM, VCU and ESCL, send PSU1 and PEPS1.



架构系统:**Architecture system:****2. 架构重点控制器功能及线信号****2. Key control unit functions and line signals of the architecture****VCU系统 (DZ9L149585402) :****VCU system (DZ9L149585402):****功能:****Functions:**

防盗认证: 与PEPS和ECU的认证集合。

Anti-theft authentication: authentication collection with PEPS and ECU.

车贷管理: 与TXJ的握手认证、防拆认证、远程限速认证、远程限速认证。

Vehicle loan management: handshake certification, anti-tamper certification, remote engine speed limit certification, and remote vehicle speed limit certification with TXJ.

启动熄火: 正常启动条件、车下熄火启动。条件: 认证、制动、N挡、变速箱允许启动。

Start and flameout: normal start conditions, off vehicle start. Conditions: certification, brake, N gear, and start by transmission.

发动机转速控制: PTO功能, 低怠速控制功能, 变速箱转速控制。

Engine speed control: PTO function, low idle speed control function, transmission engine speed control.

扭矩控制: 油门、巡航、第三方控制器; 重点是与发动机的分工协作。影响: 涉及限扭、跛行。

Torque control: accelerator, cruise, third-party control unit; the focus is on the division of labor and cooperation with the engine. Effects: involving torque limit and limp-hole.

风扇控制: 影响条件水温、缓速器、进气温度、空调, 各自作用时机及特点; 风扇上电控制, 耗电流, 信息查看, 硅油风扇测试。

Fan control: water temperature under affected conditions, retarder, gas inlet temperature, and A/C, with respective timing and characteristics of action; fan power-on control, current consumption, information viewing, and silicone oil fan testing.

巡航控制: 油门、制动、离合、空挡、车速转速比、ABS激活, 车速40kph、配置字; 指示灯及提示, 结合PTO排除故障。

Cruise control: accelerator, brake, clutch, N position, vehicle / engine speed ratio, ABS activation, vehicle speed 40 kph, configuration bits; indication lamp and prompts, fault troubleshooting combined with PTO.

辅助制动: 分类、排、缸、缓速器; 开关特点, 信号走向, 控制逻辑条件、配置字, 空挡、转速、ABS激活, 油门踏板开度,

Assisted brake: classification, row, cylinder, retarder; switch characteristics, signal direction, control logic conditions, configuration bits, N position, engine speed, ABS activation, accelerator pedal opening,

主副刹联动: 油门开度、ABS未激活、转速, 条件制动开度3%+30kph; 缸内制动10%+40kph; 20%+40kph.开关、配置字、风扇。

Main and auxiliary brake linkage: accelerator opening, inactive ABS, engine speed, conditional brake opening 3% + 30 kph; VVEB 10% + 40 kph; 20% + 40 kph switch, configuration bits, fan.

诊断刷写休眠: 控制器标识、Pin风扇开度扭矩转速等, 车速限制修改、配置触发,

Diagnosis flashing and sleep: control unit sign, Pin fan opening and torque engine speed, etc., vehicle speed limit modification, configuration trigger,

刷写方式: 控制器列表、功能模块; 休眠电流测试方法。

Flashing method: control unit list, functional module; sleep current test method.

线束: Can线节点; 相关控制器位置及总线分布, 关联控制器; 风扇线束。

Wire harness: Can bus node; related control unit location and bus distribution, associated control unit; fan wire harness.



架构系统:

Architecture system:

3、配置字系统介绍

3. Introduction to the configuration bits system

配置字，是X6000车型为适应车辆智能化、多配置化的软件管理方案，使用配置字实现统一软件和功能兼容性；

Configuration bits refer to a software management solution for the X6000 model to adapt to vehicle intelligence and multi-configuration, by which the unified software and functional compatibility are achieved;

配置字主要用于功能开启或关闭，用于性能策略选择等。

Configuration bits are mainly used to enable or disable functions, select performance strategies, etc.

在特殊工况或更换控制器后，可能存在配置字对功能影响，影响车辆运营的配置字，及故障表现如下：

Under special working conditions or after replacing the control unit, there may be impact on functions with configuration bits. Configuration bits that affect vehicle operation and the fault symptoms are as follows:

故障类型 Fault type	故障现象 Fault phenomenon	故障原因 Fault cause
启动问题 Start problem	车辆不能正常启动，延迟可以启动 The vehicle shall be started with delay, instead of normal start.	VCU丢TCU类型 VCU lost TCU type
启动问题 Start problem	车辆不能启动，启动时黑屏下电 The vehicle shall not start, as it will power off at startup in the blank screen	VCU丢EBS类型 VCU lost EBS type
行驶问题 Driving problem	车辆不能挂挡 行驶 The vehicle shall not drive in gear	SWG丢失TCU类型 SWG lost TCU type
功能失效 Functional failure	驻车空调开关图标丢失，不能开启驻车空调 The parking A/C cannot be turned on as the switch icon is missing	MMI丢失空调附加功能 MMI loses A/C additional functions
显示问题 Display problem	机油品质等不能显示 Oil quality, etc. cannot be displayed	BCM或仪表丢失机油品质功能 BCM or IC loses oil quality function



架构系统:

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3. Introduction to the configuration bits system

控制器 Control unit	配置字 Configuration bits	识别需求 Identify demands	对应故障 Corresponding fault
VCU	TCU类型 TCU type EBS类型 EBS type 风扇类型 Fan type	空挡信号来源 N position signal source 制动信号来源 Brake signal source 输出控制信号差异 Output control signal difference	启动延迟 Start delayed 启动失败 Start failed 影响油耗 Fuel consumption affected
SWG	TCU类型 TCU type	需要发送的换挡报文逻辑差异 Logical differences in the gear shift messages that will be sent	不能换挡行驶 Fail to drive with gear shift
PEPS	ESCL配置 ESCL configuration	是否有管柱锁认证 With a column lock certification or not	不能上电 Fail to power on
MMI	空调附加功能配置 A/C additional function configuration	是否有驻车空调功能 Is there a parking A/C function?	驻车空调功能失效 Parking A/C functional failure
GW	方向盘开关类型 Steering wheel switch type	辅助制动及巡航开关来源 Assisted brake and cruise switch source	辅助制动与巡航功能丢失 Assisted brake and cruise control function lost
DCM	后视镜调节 Rearview mirror adjustment	功能配置识别 Functional configuration recognition	后视镜调节功能失效 Functional failure of rearview mirror adjustment
BCM	电磁电源总开关类型 Electromagnetic master power switch type	识别单稳态和双稳态 Identify monostable and bistable states 控制方式信号不一致 Inconsistent control mode signals	影响30上电 Affect 30 power-on



架构系统:

Architecture system:

3、配置字系统介绍

3. Introduction to the configuration bits system

控制器 Control unit	配置字 Configuration bits	识别需求 Identify demands	对应故障 Corresponding fault
MMI	车型 Model 油品配置 Oil product configuration 毫米波雷达 MMW radar TPMS胎压配置 TPMS tire pressure configuration 天窗控制器 Sunroof controller 后视镜及座椅记忆功能 Rearview mirror and seat memory function 电动后视镜调节 Electric rearview mirror adjustment	是否显示挂车界面 Display the trailer interface or not 是否显示油品界面参数 Display oil product interface parameters or not 360显示界面是否增加 360 display interface increases or not 胎压显示界面 Tire pressure display interface 增加软开关 Add the soft switch 增加软开关 Add the soft switch 增加软开关 Add the soft switch	影响多媒体的显示和软开关控制 Affect MMI display and soft-switch control
IC	轮胎防盗 Anti-theft of tire K值 K value 发动机类型 Engine type ABS和EBS类型 ABS and EBS types 排放类型 Emission type	识别配置 Recognition configuration 计算车速等信息 Calculate vehicle speed and other information 识别经济区、报警点 Identify economic zones and alarm points 识别配置显示 Display recognition configuration OBD警示灯差异 Differences in OBD warning lights	影响仪表对该功能的软开关 Affect the instrument soft switch for this function 影响车速、里程、油耗计算 Affect vehicle speed, mileage, and fuel consumption calculation 发动机经济区显示、水温报警点 Economic zone display of the engine, water temperature alarm point 警示灯不一致、ESC显示不一致 Inconsistent warning lights and ESC display 警示灯不一致 Inconsistent warning lights
EVM	车型 Model	识别倒挡信号来源VCU或CPD Identify the R gear signal source VCU or CPD	影响倒挡显示画面 Affect the R display picture



架构系统:

Architecture system:

3、配置字系统介绍

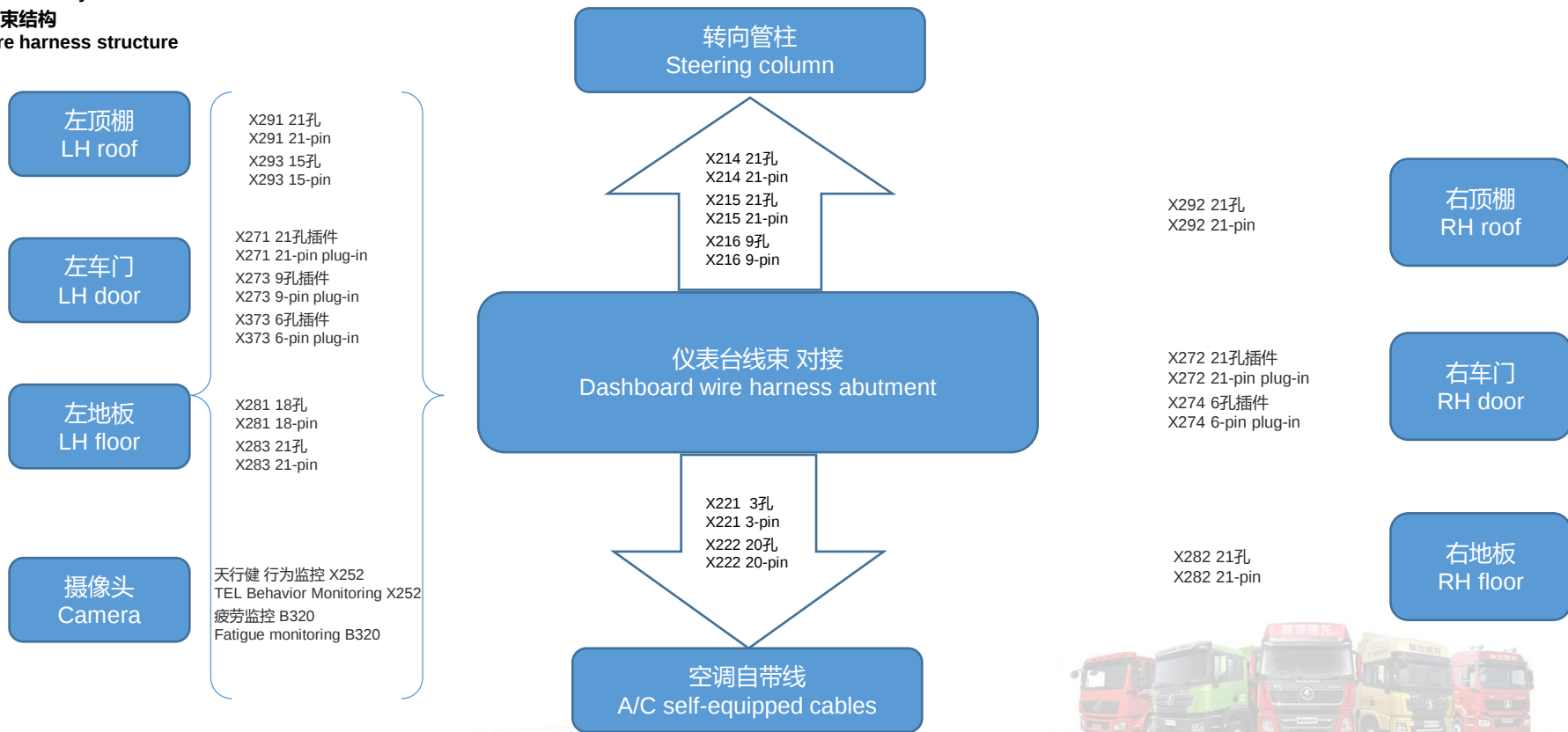
3. Introduction to the configuration bits system

控制器 Control unit	配置字 Configuration bits	识别需求 Identify demands	对应故障 Corresponding fault
EVM	车型 Model	识别倒挡信号来源VCU或CPD Identify the R gear signal source VCU or CPD	影响倒挡显示画面 Affect the R display picture
BCM	燃油传感器精度 Fuel sensor accuracy 自动灯光雨刮功能 Auto light and wiper system functions 燃油防盗功能 Fuel anti-theft function 油品类传感器 Oil quality sensor RCU类型 RCU type TCU类型 TCU type 电池容量 Battery capacity 前照灯-尾灯类型 Headlamp - taillamp type 驾驶室类型 Cab type	是否高精度传感器 High-precision sensor or not 功能是否开启 Start function or not 功能是否开启 Start function or not 功能是否开启 Start function or not 识别有无缓速器 Identify the retarder or not 识别档位和变速箱类型 Identify the position and transmission type 识别容量大小 Identify the capacity size 驱动功率 Drive power 识别卧铺灯开关/类型、组别 Identify switch / type and group of the berth	油量显示错误 Oil amount display error 丢失自动灯光雨刮功能 Auto light and wiper system function lost 燃油防盗异常打开或关闭 The fuel anti-theft is abnormally turned on or off 功能不能开启、显示，误报故障 The function cannot be turned on or displayed, with a false report of fault. 影响制动灯点亮 Affect coming on of the brake light 倒车灯点亮及变速箱机油显示 The reversing light comes on and the transmission oil is displayed 配合传感器使用，显示电量信息 Use with sensors and display battery information 灯具点亮及诊断 Lamps come on for diagnosis 灯光控制和诊断 Light control and diagnosis
诊断仪 Diagnostic unit	各控制器配置 Configuration of each control unit 电器架构 Electrical equipment structure	区分是否有对应控制器 Distinguish whether there is a corresponding control unit 区分控制器，确定工位执行 Differentiate control units and execute with the confirmed station	诊断界面丢失控制器无法诊断 The diagnosis interface is missing and the control unit cannot diagnose VMS等配置的自动输入 Automatic input of VMS and other configurations



架构系统:
Architecture system:

4. 线束结构
4. Wire harness structure





架构系统:

Architecture system:

4. 线束结构

4. Wire harness structure



架构系统:

Architecture system:

4、线束结构

4. Wire harness structure

