

2、Electrical principle of the whole vehicle 2、整车电气原理

2.1, 电源分配Power distribution

X5000整车电源由蓄电池通过CPD（中央电器装置板）、CCEB（底盘中央电器盒）将电源分为B+、30+、DR+、ACC等类型。其中：X5000 vehicle power supply is divided into B+, 30+, DR+, ACC and other types by battery through CPD (central electrical installation board) and CCEB (chassis central electrical box). Thereinto:

1) B+:

◆ **定义**Definition:

常电，不受开关控制的蓄电池电Normally electric, battery power not controlled by a switch.

◆ **线号线色**Line number line color:

30000, 红色Red;

◆ **实现方式**How to implement:

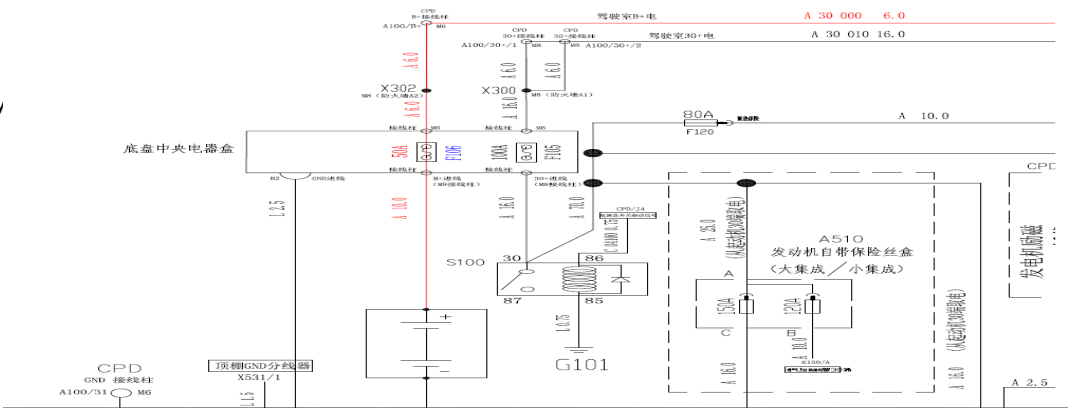
不经过电磁式电源总开关由蓄电池正极直接引出，进入CPD和CCEB，用于车辆常电功能供电，如ECU常电、室内照明灯、转向灯、喇叭等； Without going through the electromagnetic power switch by the battery positive upright

Connected out, into CPD and CCEB, used for vehicle normal electric Function power supply, such as ECU normal power, indoor lighting turn

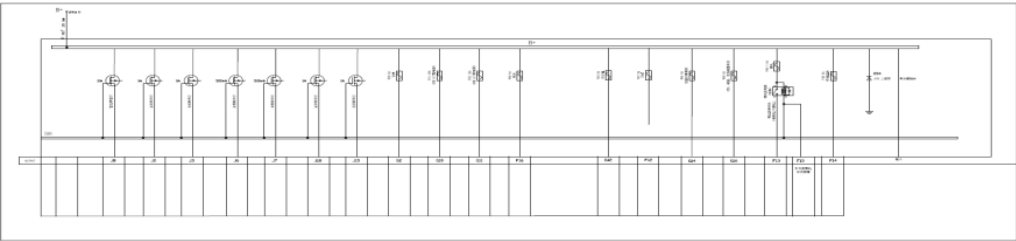
Lights, horns, etc.

保险 fuse:

一级保险Level 1 fuse: F106（CCEB内），50A;



X5000 B+电源原理图



X5000 CPD B+电源保险及针脚

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2) 30+:

◆ 定义Definition:

经过电源总开关，不受钥匙开关控制，受电源总开关控制的电源；After the power main switch, not controlled by the key switch, the power supply controlled by the main switch of the power supply;

◆ 线号线色Line number line color:

30010, 红色Red;

◆ 实现方式How to implement:

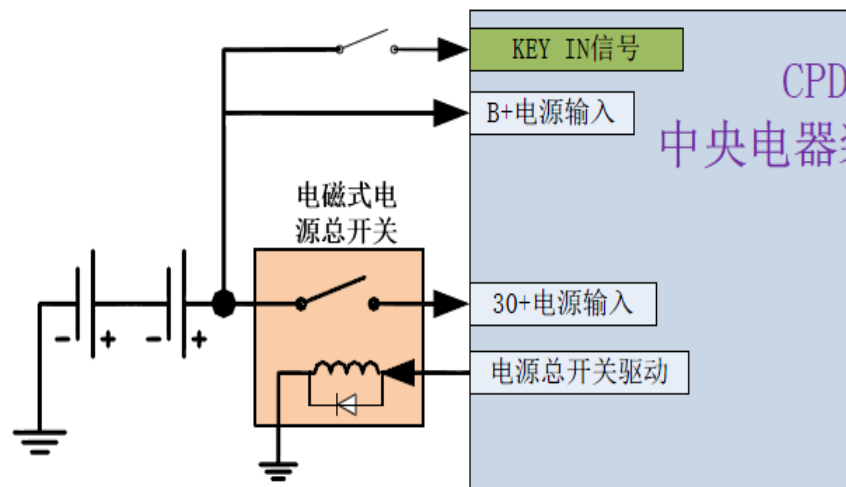
CPD接收钥匙进入信号 (KEY IN)，进行上电逻辑判断之后，通过J4针脚输出驱动电磁式电源总开关吸合，整车上30电；CPD receives the key entry signal (KEY IN) for power-up

After the logic judgment, the electromagnetic power is driven through the J4 pin output

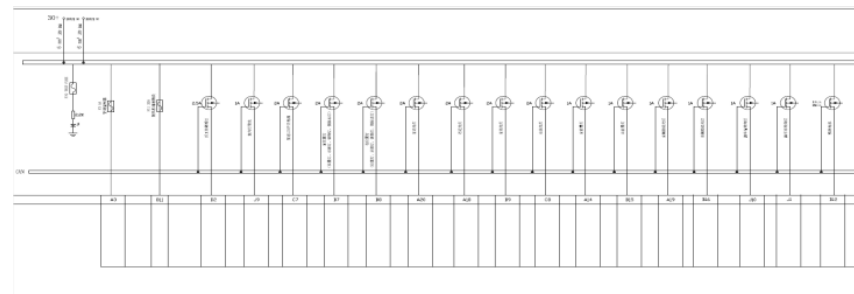
The main switch of the source is closed, and the whole vehicle is 30 electricity;

◆ 保险fuse:

一级保险Level 1 fuse: F105 (CCEB内 100A;



X5000 30+电源原理图



X5000 CPD 30+电源保险及针脚

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2.1 Power distribution 电源分配

2) ACC+:

◆ **定义** Definition:

受钥匙开关控制，START档不输出，简称ACC电源；
Controlled by the key switch, the START file does not output, referred to as ACC power supply;

◆ **线号线色** Line number line color:

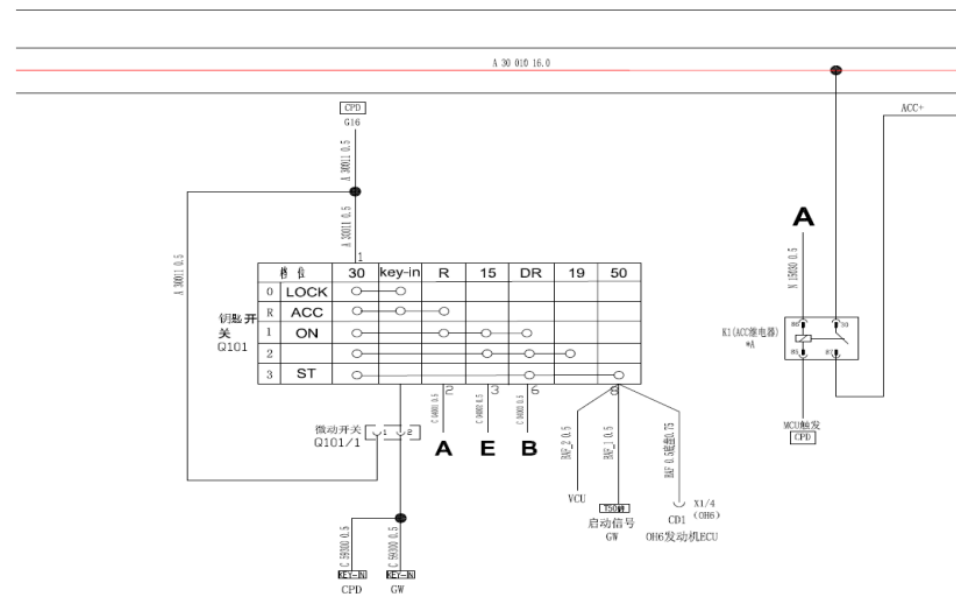
75000，红白 Red and white;

◆ **实现方式** How to implement:

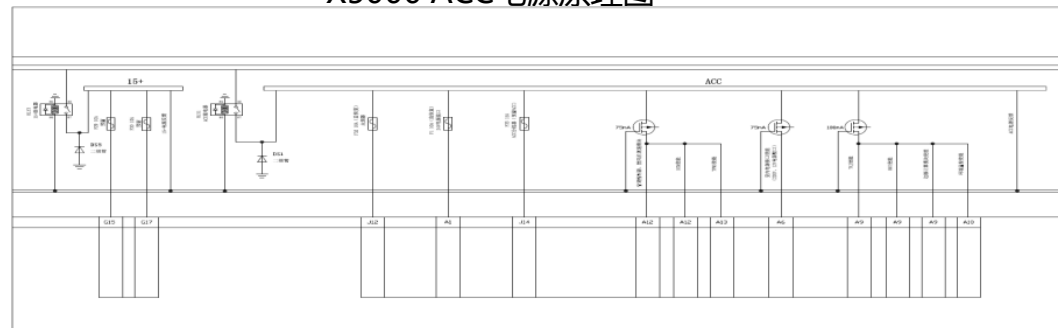
钥匙插入并旋转至R (ACC) 档时，CPD内的MCU触发继电器K1，将30电分为ACC电，主要用于控制器使能、点烟器供电等功能；When the key is inserted and rotated to the R (ACC) gear, the MCU in the CPD triggers the relay K1 and divides the 30 power into ACC power, which is mainly used for functions such as controller enablement and cigarette lighter power supply;

保险 fuse:

二级保险 Secondary fuse : F45 (CPD) ,5A.



X5000 ACC电源原理图



X5000 CPD ACC电源保险及引脚

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2.1 Power distribution 2.1 电源分配

2) DR+:

◆ Definition 定义:

Key switch control, ON file, START file output, referred to as DR power supply;
钥匙开关控制, ON档、START档输出, 简称DR电源;

◆ Line number line color:

◆ 线号线色:

15000, H;

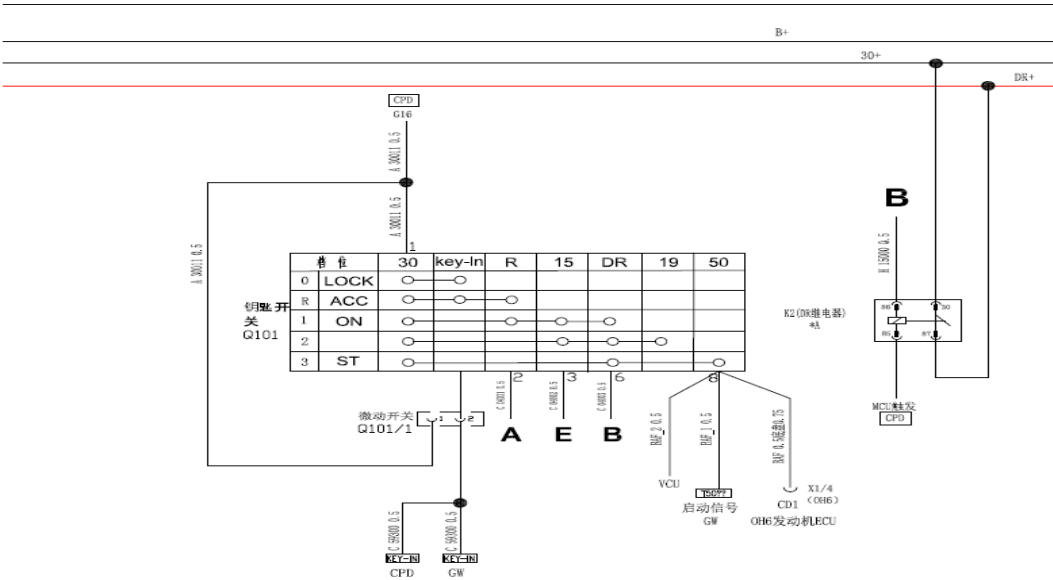
◆ How to implement 实现方式:

When the key is rotated to the start gear, the MCU in the CPD triggers the relay K2 to control 30 power supply continuously, so that the vehicle can start uninterrupted power;

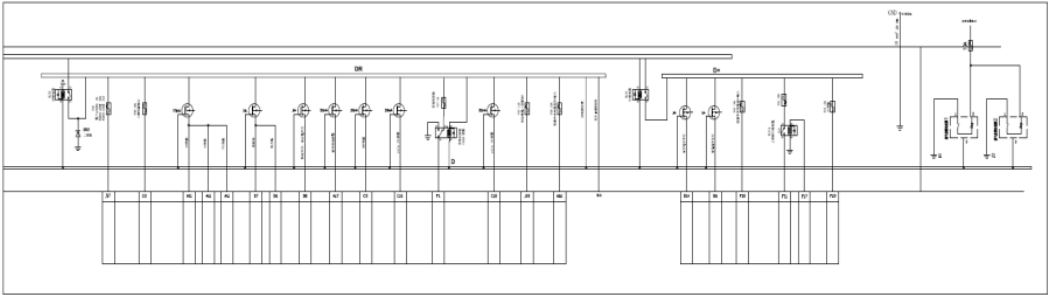
钥匙旋转至start档时, CPD内的MCU触发继电器K2, 控制30电持续供电, 从而使车辆启动不断电;

◆ fuse 保险:

Secondary fuse 二级保险: F45 (CPD) ,5A。



X5000 DR Power supply schematic
X5000 DR 电源原理图



X5000 CPD DR power supply fuse and pins
X5000 CPD DR电源保险及针脚

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2.1 电源分配 Power distribution

中央电器装置板Central electrical installation board (CPD) :

1) 负责B+、30+、ACC+、DR、D+电源的分配,并向总线发送电源状态。每路电路均有短路检测、短路保护、熔断丝状态的检测功能,并能将故障发送至CAN总线。Responsible for the distribution of B+, 30+, ACC+, DR, D+ power supplies and sending power status to the bus. Each circuit has the functions of short circuit detection, short circuit protection, fuse wire status detection, and can send faults to the CAN bus.

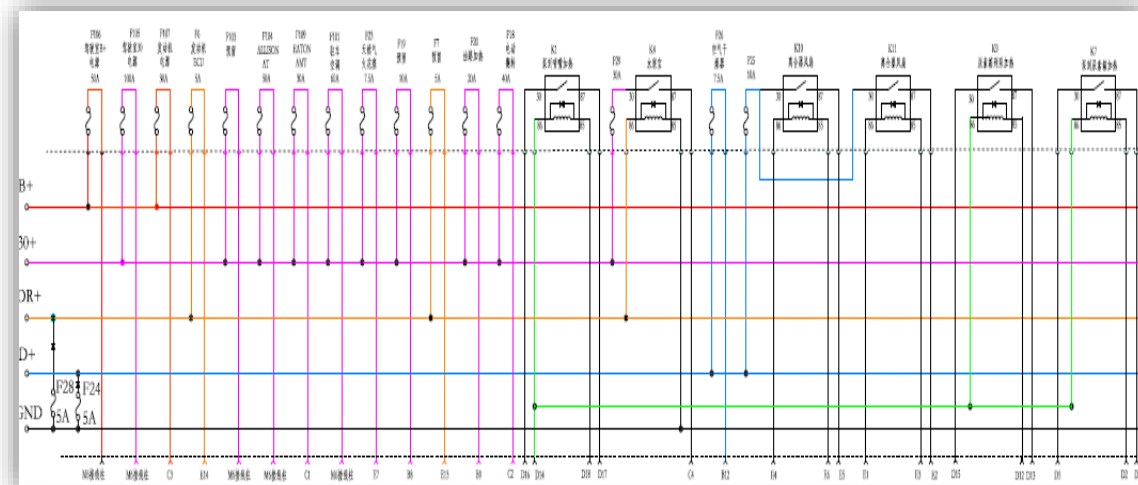
2) 部分车身功能控制Control of some body functions

输入input:

- ◆ 左、右组合开关Left and right combination switch
- ◆ 蓄电池传感器、阳光雨量传感器 (LIN总线信号采集) Battery sensor, sunlight and rain sensor (LIN bus signal acquisition)
- ◆ 油量传感器Oil level sensor
- ◆ 燃气泄露报警传感器Gas leakage alarm sensor

输出 input :

- ◆ 灯光控制Light control
- ◆ 发动机辅助制动、缓速器制动Engine-assisted braking, retarder braking
- ◆ 喷淋、雨刮Spray, wiper



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2.1 电源分配Power distribution

底盘中央电器盒

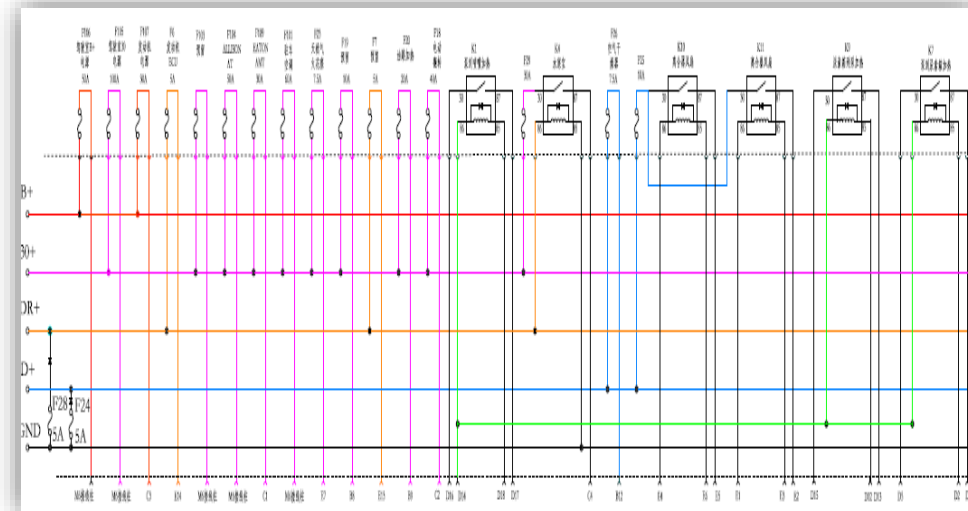
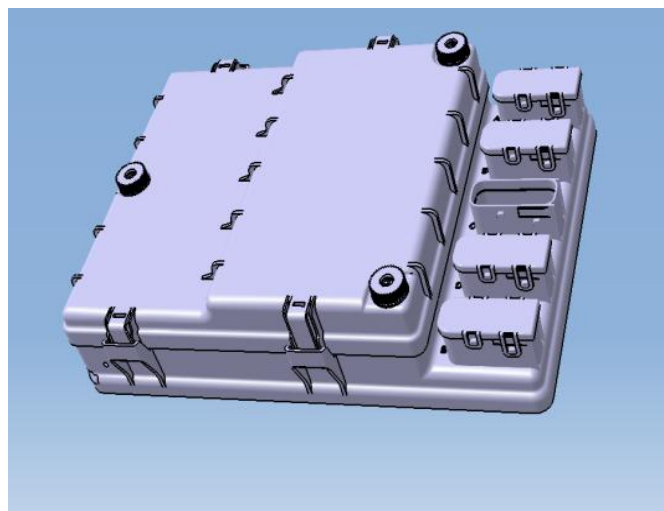
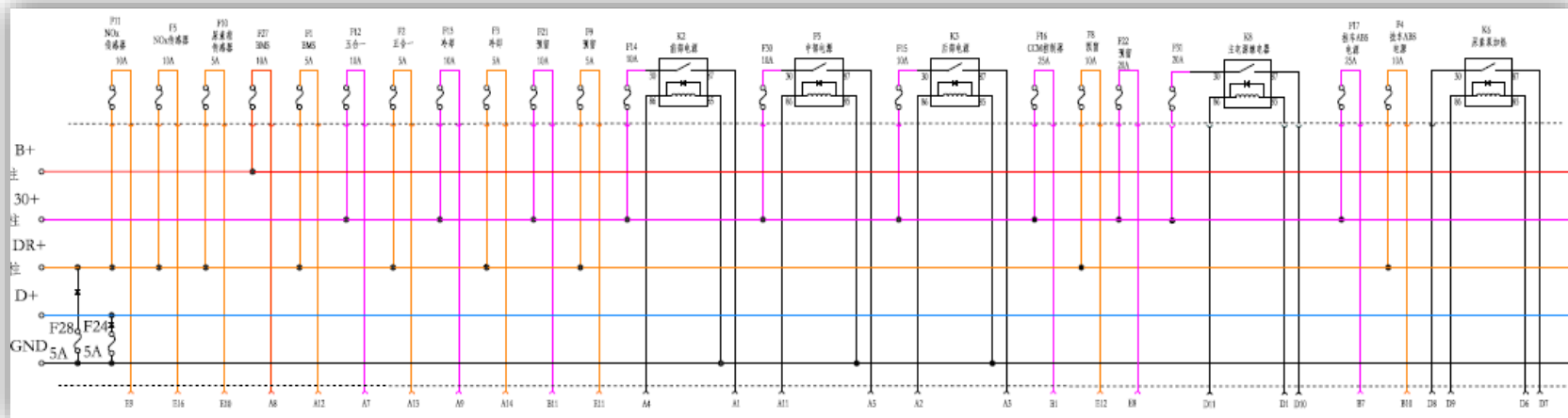
Chassis center electrical box

- 1) 整车电源保护Vehicle power protection
- 2) 底盘部分功能电源分配管理Chassis part function power distribution management

包含以下功能:

Contains the following features:

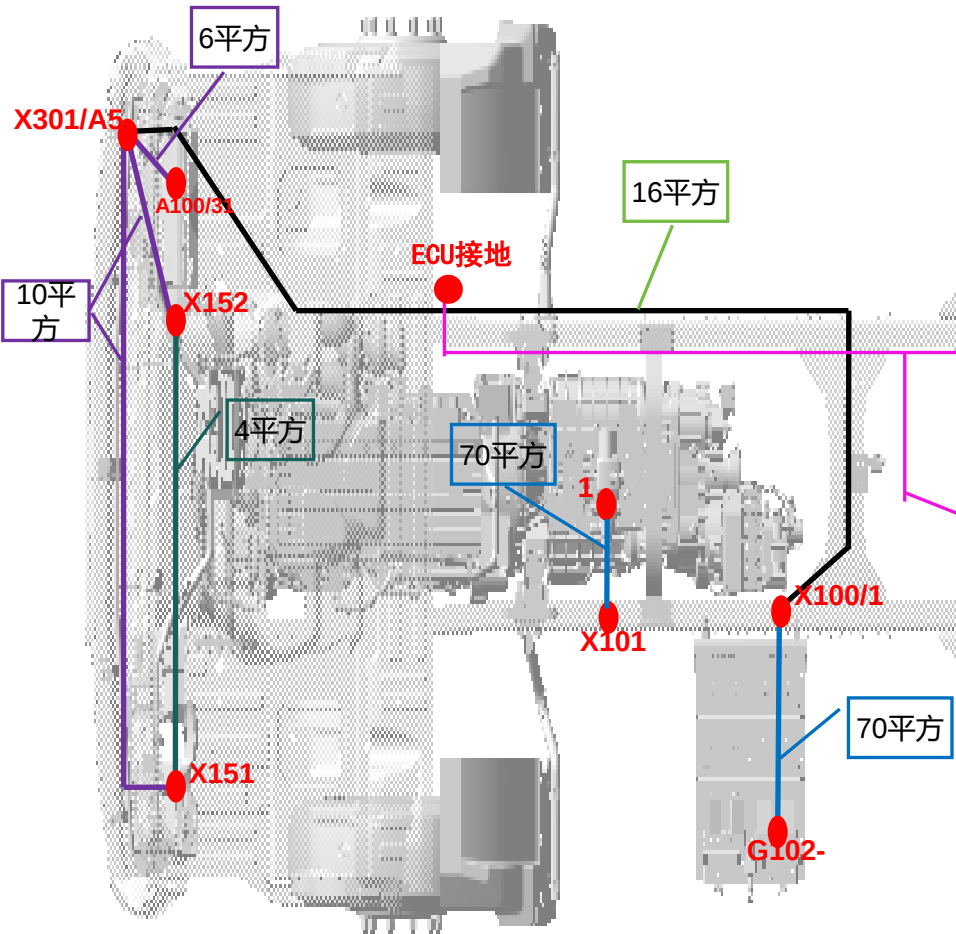
电源Power supply: AT、AMT、驻车空调、油路加热、水寒宝、NO传感器、挂车ABS、新能源车（BMS、五合一、冷却）。AT, AMT, parking air conditioning, oil circuit heating, water hanbao, NO sensor, trailer ABS, new energy vehicle (BMS, five-in-one, cooling). **继电器** Relays:后处理系统、电磁离合器、自卸车上装预留3个。3 aftertreatment systems, electromagnetic clutches, and dump trucks.



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2.2 Rail distribution搭铁分布

X5000搭铁点分布图



搭铁点说明:

- A100/31 CPD接地接线柱
- X151 驾驶室左搭铁点
- X152 驾驶室右搭铁点
- X301/A5 防火墙接地连接点
- G102- 蓄电池II负极接线柱
- X100/1 蓄电池纵梁搭铁点
- X101 纵梁搭铁点
- 1 变速箱搭铁点

Description of the iron point:

- A100/31 CPD grounding terminal post
- X151 cab left iron point
- X152 cab right iron point
- X301/A5 firewall grounding connection point
- G102- Battery II negative terminal post
- X100/1 battery rails with iron points
- X101 stringer iron point
- 1 Gearbox iron point

The negative pole of the battery to the stringer is connected to the iron point
Iron cable from the transmission to the inside of the frame
ECU grounding wire
Cab iron wire input
Cab left rail point input
Cab right rail point input
CPD iron wire input
The cab is connected to the left and right iron points

- 蓄电池负极至纵梁搭铁点连接线
- 变速箱至车架内侧搭铁电缆
- ECU接地线
- 驾驶室搭铁线输入
- 驾驶室左搭铁点输入
- 驾驶室右搭铁点输入
- CPD搭铁线输入
- 驾驶室左、右搭铁点连接线