17、Central electrical device board (CPD) 中央电器装置板（CPD）

◆Installation 安装

1. Electrical device board in each position fuse specifications, relays, controllers should be strictly in accordance with the installation drawings for correct assembly, and plug in place, so that the plug contact tight, to ensure good electrical conductivity. 电器装置板上各位置熔断丝规格、继电器、控制器应该严格按照安装图样进行正确装配，并插接到位，使插接件接触紧密，保证良好导电性能。
2. Electrical device plate fixed on the bracket, a total of four fixed points, bolt mounting, M6 mounting torque (4 ~ 6) N-m电器装置板固定在支架上，共四个固定点，螺栓安装，M6安装力矩（4～6）N·m

17、Central electrical device board (CPD) 中央电器装置板（CPD）

◆Function 功能

1. The central electrical device board is mainly responsible for the control of 30+, ACC power, ON gear power and D+ power for the whole vehicle, and the power distribution of each electrical equipment. 中央电器装置板主要负责整车30+、ACC电源、ON档电源以及D+电源的控制，各用电设备的电源分配；
2. Integrated control and driving of external lighting, signal lights, wiper control and driving. 集成了外部照明灯、信号灯的控制及驱动、雨刮控制及驱动；
3. Receiving light and rain sensor signals, information from the left and right combination switches, battery sensor information via the LIN bus.通过LIN总线接收光线雨量传感器信号，左右组合开关的信息，蓄电池传感器信息；
4. Collecting information from the fuel quantity sensor to realize the function of fuel quantity display and anti-theft.采集油量传感器的信息，实现燃油量的显示及防盗的功能；
5. Power failure emergency power off, gas leakage alarm, bus information collection and other functions.电源故障紧急断电、燃气泄漏报警、总线信息采集等功能。

17、Central electrical device board (CPD) 中央电器装置板（CPD）

Device board fuse and relay arrangement diagram

装置板熔断丝及继电器布置图

F01	10A	24V power connector	F36	5A	ABS DR Power
F02	10A	OBD diagnostic interface	F37	15A	DR Splitter
F03	5A	Air conditioner controller	F38	10A	Top loading interface DR power
1-04	10A	Multimedia	F39	5A	Gauges
F05	20A	12 V power connector	F40	10A	Complete Vehicle Controller (VCU)
F06	5A	Retarder	F41	20A	Door and Window Controller (DCM)
F07	5A	Turning Voice Alarm	F42	15A	Door and Window Controller (DCM)
F08	10A	Electronic parking	F43	5A	SHACMAN Telematics(TXJ)
F09	10A	Top loading interface 30+ power	F44	5A	Edge Computing Module
F10	20A	220V inverter power	F45	5A	Key/PSU
Fll	20A	Heater motor	F46	10A	Electronic Steering Column Lock (ESCL)
Fl 2	15A	AMT power	F47	5A	Tire Pressure Monitoring (TPMS)
h'13	15A	AMT power	F48	5A	Environmental Monitoring
Fl 4	15A	ADAS 30+power	F49	5A	Gateway (GW)
Fl 5	10A	Reserved 30+ power	F50	7.5A	Horn
Fl 6	15A	ABS/EBS	F51	10A	Top-mounted interface relay power supply
F17	15A	EBS	F52	15A	Chassis electrical box D+ power
J-18	15A	ECAS	F53	15A	Reserve D+ power
F19	15A	Individual warm air	F54	7.5A	Trailer reversing light
F20	10A	30+ Splitter	RLY1		ACC power relay (40A)
F21	15A	Wiper motor	RLY2		DR power relay (40A)
F22	7.5A	Trailer position lights	RLY3		15+电源继电器(20A)
F23	7.5A	Trailer rear fog lights	RIY4		D+ Power Relay (20A)
1-24	7.5A	Trailer brake light	RLY5		Trailer position light relay
F25	25A	Chassis electrical box DR power	RLY6		Trailer rear fog light relay
F26	15A	ADAS DRpower	RLY7		Trailer brake light relay
F27	5A	Generator excitation	RLY8		Wiper Relay
F28	10A	Reserve DR power	RLY9		Wiper Relay
F29	10A	Reserve 15+ power	RLY10		Top-mounted interface relays
F30	10A	Reserve 16+ power	RLY11		Trailer reversing light relay
F31	10A	30+ power secondary tube fuse	D1		30+ Power Supply Continuity Diodes
F32	10A	Cigarette lighter	D2		ACC Power Supply Continuity Diode
F33	15A	ACC Splitter	D3		15+ Power Supply Continuity Diodes
F34	15A	ADAS ACC Power	D4		D+ Power Supply Continuity Diodes
F35	15A	Reserve ACC power			

F01	10A	24V电源接口	F36	5A	ABS DR电源
F02	10A	OBD诊断接口	F37	15A	DR分线器
F03	5A	空调控制器	F38	10A	上装接口DR电源
F04	10A	多媒体	F39	5A	仪表
F05	20A	12V电源接口	F40	10A	整车控制器（VCU）
F06	5A	缓速器	F41	20A	门窗控制器（DCM）
F07	5A	转弯语音报警器	F42	15A	门窗控制器（DCM）
F08	10A	电子驻车	F43	5A	天行健（TXJ）
F09	10A	上装接口30+电源	F44	5A	边缘计算模块
F10	20A	220V逆变电源	F45	5A	钥匙/PSU
F11	20A	暖风电机	F46	10A	电子转向柱锁（ESCL）
F12	15A	AMT电源	F47	5A	胎压监测（TPMS）
F13	15A	AMT电源	F48	5A	环境监控
F14	15A	ADAS 30+电源	F49	5A	网关（GW）
F15	10A	预留30+电源	F50	7.5A	喇叭
F16	15A	ABS/EBS	F51	10A	上装接口继电器电源
F17	15A	EBS	F52	15A	底盘电器盒D+电源
F18	15A	ECAS	F53	15A	预留D+电源
F19	15A	独立暖风	F54	7.5A	挂车倒车灯
F20	10A	30+分线器	RLY1		ACC电源继电器（40A）
F21	15A	雨刮电机	RLY2		DR电源继电器（40A）
F22	7.5A	挂车位置灯	RLY3		15+电源继电器（20A）
F23	7.5A	挂车后雾灯	RLY4		D+电源继电器（20A）
F24	7.5A	挂车制动灯	RLY5		挂车位置灯继电器
F25	25A	底盘电器盒DR电源	RLY6		挂车后雾灯继电器
F26	15A	ADAS DR电源	RLY7		挂车制动灯继电器
F27	5A	发电机励磁	RLY8		雨刮继电器
F28	10A	预留DR电源	RLY9		雨刮继电器
F29	10A	预留15+电源	RLY10		上装接口继电器
F30	10A	预留15+电源	RLY11		挂车倒车灯继电器
F31	10A	30+电源二极管熔断丝	D1		30+电源续流二极管
F32	10A	点烟器	D2		ACC电源续流二极管
F33	15A	ACC分线器	D3		15+电源续流二极管
F34	15A	ADAS ACC电源	D4		D+电源续流二极管
F35	15A	预留ACC电源			

17、Central electrical device board (CPD) 中央电器装置板（CPD）

Device board pin definition (Plug H is reserved)装置板针脚定义（插接器H为预留）

Plug A

24V power supply interface	A1
OBD Interface Power	A2
AC Controller	A3
MMI Power	A4
RCU Power	A5
Indoor power interface enable	A6
Turning voice alarm power	A7
EPB power supply	A8
TXJ/MMI/edge module enable	A9
Environmental Monitoring Enable	A10
GW/IC/VCU enable signal	All
TPMS system enable	Al 2
AC/DCM Enable	A13
Left front fog light	A14
12V power connector	A15
Chassis electrical box DR power supply	Al 6
Turning voice alarm enable	Al 7
Right low beam	A18
Left auxiliary high beam	Al 9
Left low beam	A20

PlugB

Key in Signal	B1
Key R signal	B2
Upper installation reserved interface power	B3
Key ON gear signal	B4
Key + 15 gear signals	B5
Right daytime light	B6
Left position light	B7
Right position light	B8
Left high beam	B9
220V power connector	B10
Heater motor	B11
AMT Power	B12
AMT Power	B13
Left daytime light	B14
Right front fog light	B15
Right auxiliary high beam	B16

PlugC

ADAS System 30+ Power Supply	C1
30+ power (reserved)	C2
Reserved	C4
AMT Enable	C5
Corner sensor & ABS enable	C6
Indoor LIN switching power supply	C7
Right high beam	C8
Reversing lights	C9
Rear position light	C10
ABS/EBS Power	C11
ABS/EBS Power	C12
ECAS Power	C13
Independent heat power	C14
Brake Light	C15
RCU Enable	C16
Rear fog light	C17
ECAS Enable	C18

PlugD

30+ power supply (reserved)	D1
Rear working light	D2
Wiper motor high speed gear	D3
Trailer brake light	D4
Wiper motor low speed gear	D5
Wheel axle differential	D6
Power take-off	D7
Brake/clutch switch power	D8
Rear position light and trailer position light	D9
Wiper motor low gear	D10
Trailer fog light	D11
Spray motor	D12
PWM output	D13
Headlight wash control signal	D14

PlugE、F

LIN	E2
CAN H	E3
CAN L	E4
Generator excitation	F1
Neutral signal	F3
Clutch switch signal	F4
Parking brake switch signal	F5
Wiper return signal	F6
Brake switch signal	F7
Reserved	F8
Emergency alarm switch signal	F9
Trailer reverse light	F10
Top mounted relay output	F11
TPMS power	F12
Horn	F13
Environmental monitoring power	F14
Horn Switch	F15
GW Power	F16
Top Mount Relay	F17
Chassis electrical box D+ power supply	F18
D+ power supply (reserved)	F19
Sensor signal (reserved)	F20
Sensor common (low)	F21
Oil sensor signal	F22

PlugG

VCU Power Supply	G1
IC power supply	G2
Power supply reserved for top loading interface	G3
12V power output	G5
EPB enable	G6
Gas leak alarm signal 1	G7
Gas leak alarm signal 2	G8
Reverse gear switch	G9
DCM power supply	G10
DCM power supply	G11
TXJ power supply	G12
Edge Computing Module	G14
+15 Power Supply	G15
Key Switch/PSU Power Supply	G16
+15 Power Supplies	G17

Plug J

Right front turn signal	J3
Electromagnetic type power main switch drive	J4
Electromagnetic type power main switch drive	15
Left turn signal	J6
Right turn signal	口
Power supply for interior lighting	J8
Interior backlight	19
Trailer left turn signal	J10
High drive output (reserved)	JU
Cigarette lighter	J12
Right rear turn signal	J13
ACC power (reserved)	J4
ADAS system ACC power supply	J15
ACC power (reserved)	J16
ADAS system DR power supply	J17
Left rear turn signal	J18
DR power supply (reserved)	J19
ADAS system DR power supply	J20

17、Central electrical device board (CPD) 中央电器装置板（CPD）

Device board pin definition (plug H is reserved)装置板针脚定义（插接器H为预留）

插接器A

24V电源接口	A1
OBD接口电源	A2
AC控制器	A3
MMI电源	A4
RCU电源	A5
室内电源接口使能	A6
转弯语音报警电源	A7
EPB电源	A8
TXJ/MMI/边缘模块使能	A9
环境监控使能	A10
GW/IC/VCU使能信号	A11
TPMS系统使能	A12
AC/DCM使能	A13
左前雾灯	A14
12V电源接口	A15
底盘电器盒DR电源	A16
转弯语音报警使能	A17
右近光灯	A18
左辅助远光灯	A19
左近光灯	A20

插接器B

Key_in信号	B1
钥匙R档信号	B2
上装预留接口电源	B3
钥匙ON档信号	B4
钥匙+15档信号	B5
右日间行车灯	B6
左位置灯	B7
右位置灯	B8
左远光灯	B9
220V电源接口	B10
暖风电机	B11
AMT电源	B12
AMT电源	B13
左日间行车灯	B14
右前雾灯	B15
右辅助远光灯	B16

插接器C

ADAS系统30+电源	C1
30+电源（预留）	C2
预留	C4
AMT使能	C5
转角传感器&ABS使能	C6
室内LIN开关电源	C7
右远光灯	C8
倒车灯	C9
后位置灯	C10
ABS/EBS电源	C11
ABS/EBS电源	C12
ECAS电源	C13
独立暖风电源	C14
制动灯	C15
RCU使能	C16
后雾灯	C17
ECAS使能	C18

插接器D

30+电源（预留）	D1
后工作照明灯	D2
雨刮电机高速档	D3
挂车制动灯	D4
雨刮电机低速档	D5
轮轴差	D6
取力器	D7
制动/离合开关电源	D8
后位置灯及挂车位置灯	D9
雨刮电机地	D10
挂车雾灯	D11
喷淋电机	D12
PWM输出	D13
前照灯清洗控制信号	D14

插接器E、F

LIN	E2
CAN_H	E3
CAN_L	E4
发电机励磁	F1
空档信号	F3
离合器开关信号	F4
驻车制动开关信号	F5
雨刮回位信号	F6
制动开关信号	F7
预留	F8
危急报警开关信号	F9
挂车倒车灯	F10
上装继电器输出	F11
TPMS电源	F12
喇叭	F13
环境监控电源	F14
喇叭开关	F15
GW电源	F16
上装继电器	F17
底盘电器盒D+电源	F18
D+电源（预留）	F19
传感器信号(预留)	F20
传感器公共端（低）	F21
油量传感器信号	F22

插接器G

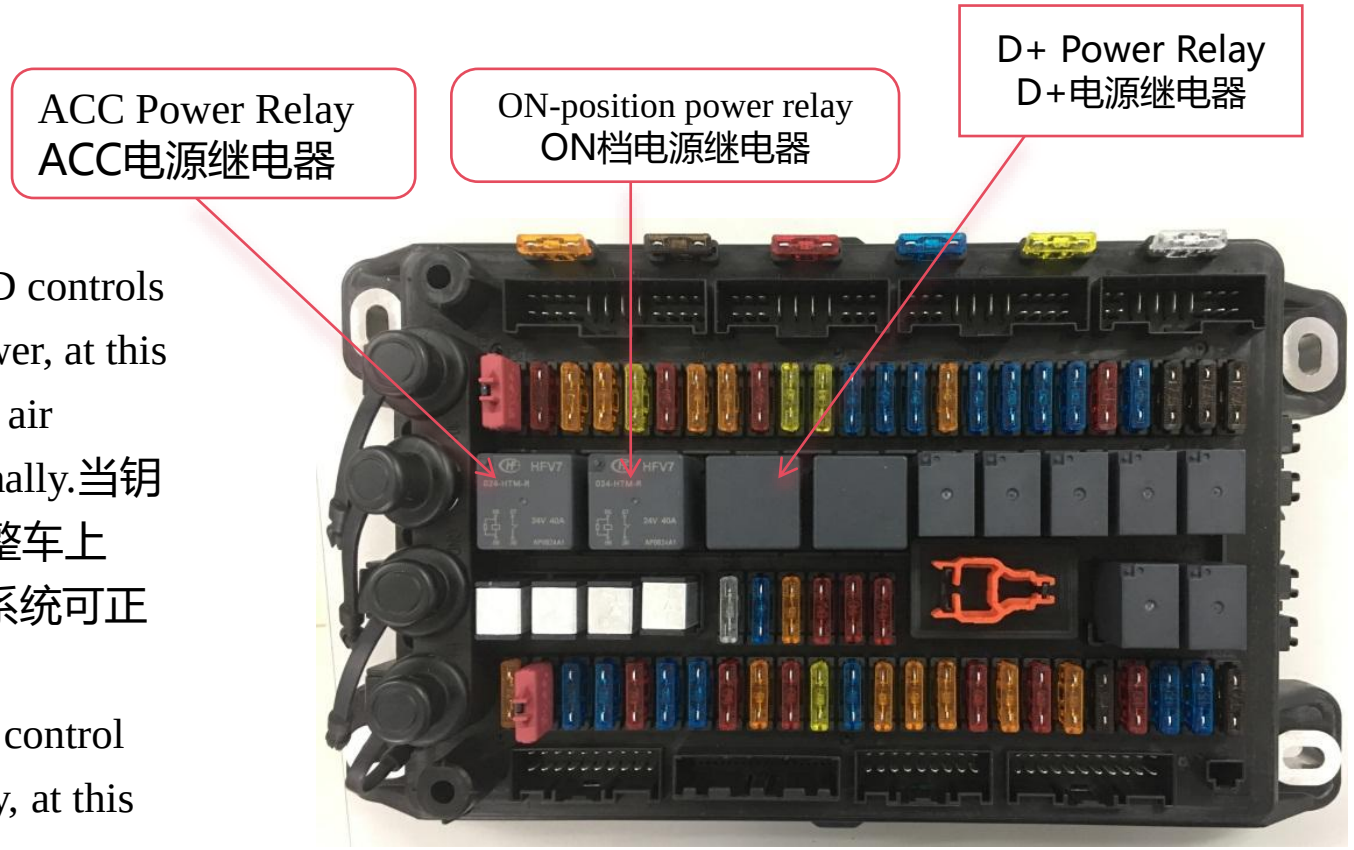
VCU电源	G1
IC电源	G2
上装接口预留电源	G3
12V电源输出	G5
EPB使能	G6
燃气泄漏报警器信号1	G7
燃气泄漏报警器信号2	G8
倒档开关	G9
DCM电源	G10
DCM电源	G11
TXJ电源	G12
边缘计算模块	G14
+15电源	G15
钥匙开关/PSU电源	G16
+15电源	G17
ESCL电源	G18

插接器J

挂车右转向灯	J1
左前转向灯	J2
右前转向灯	J3
电磁式电源总开关驱动	J4
电磁式电源总开关驱动	J5
左侧转向灯	J6
右侧转向灯	J7
室内照明灯电源	J8
室内背光	J9
挂车左转向灯	J10
高驱输出（预留）	J11
点烟器	J12
右后转向灯	J13
ACC电源（预留）	J14
ADAS系统ACC电源	J15
ACC电源（预留）	J16
ADAS系统DR电源	J17
左后转向灯	J18
DR电源（预留）	J19
ADAS系统DR电源	J20

17、Central electrical device board (CPD) 中央电器装置板（CPD）

◆ACC power, ON gear power and D+ power control
ACC电源、ON档电源及D+电源的控制



Advantages and Features 优势及特点:

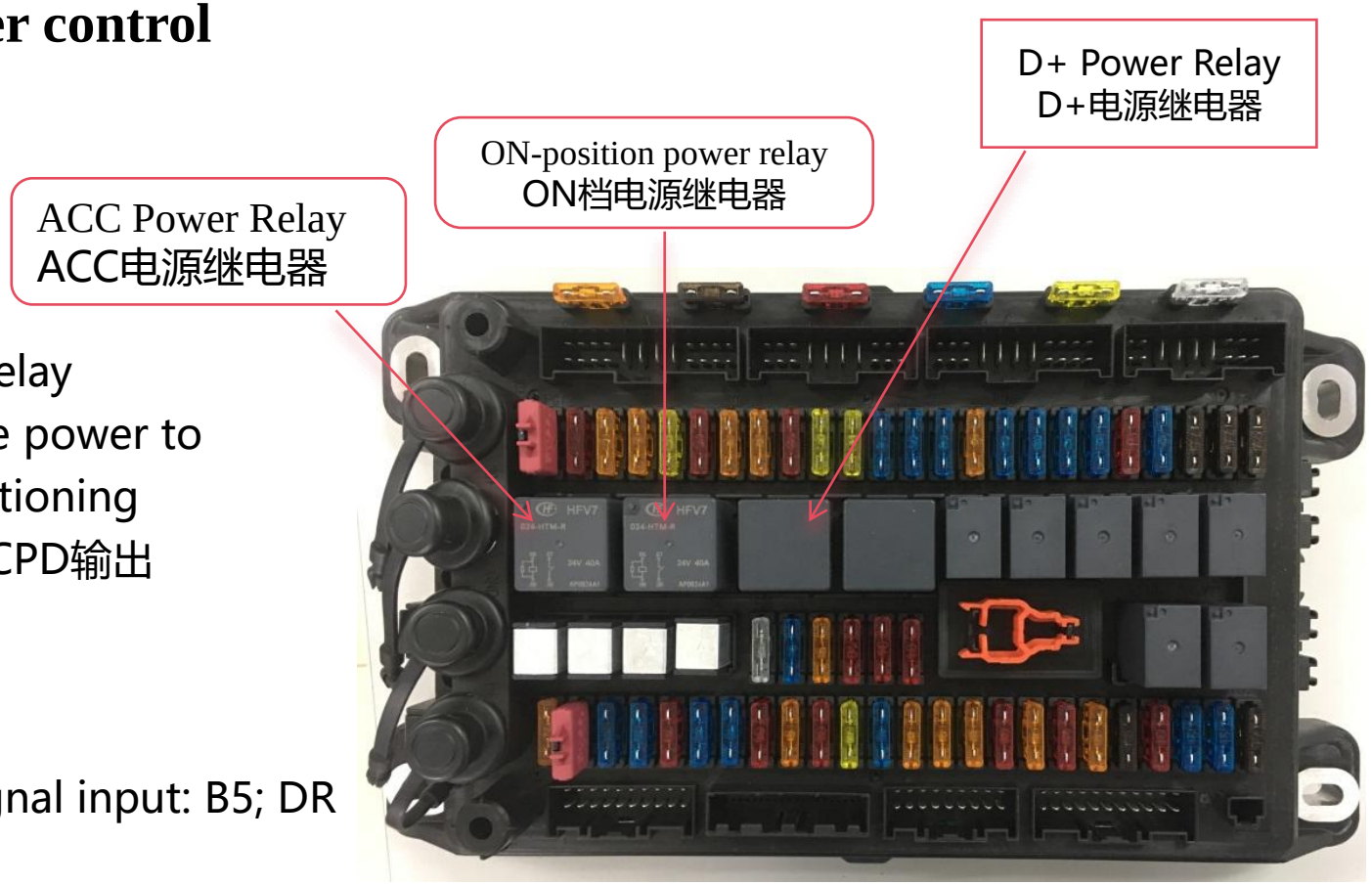
□When the key is inserted into the whole car to ACC gear, CPD controls the ACC power relay to work, and the whole car is on ACC power, at this time, multimedia, SHACMAN Telematics, doors and windows, air conditioning, cigarette lighter and other systems can work normally.当钥匙插入整车至ACC档时，CPD控制ACC电源继电器工作，整车上ACC电，此时，多媒体，天行健，门窗，空调，点烟器等系统可正常工作。

□When the key is inserted into the whole car to ON gear, CPD control ON gear power relay work, the whole car on ON gear electricity, at this time, except for individual systems using D + power, all other systems can work normally.当钥匙插入整车至ON档时，CPD控制ON档电源继电器工作，整车上ON档电，此时，除个别使用D+电源的系统外，其他系统均可正常工作。

17、Central electrical device board (CPD) 中央电器装置板（CPD）

◆ACC power, ON gear power and D+ power control

◆ACC电源、ON档电源及D+电源的控制



Advantages and Features 优势及特点：

□When the vehicle starts normally, the D+ power relay operates and the CPD outputs D+ power to provide power to some power-using equipment such as the air conditioning compressor.当车辆正常启动后，D+电源继电器工作，CPD输出D+电源，提供空调压缩机等一些用电设备电源。

Electrical device board pins 电器装置板针脚：

- Keyin signal input: B1; ACC signal input: B2; 15 signal input: B5; DR signal input: B4.
- keyin信号输入：B1；ACC信号输入：B2；15信号输入：B5；DR信号输入：B4。
- Electromagnetic switch control: J4. 电磁开关控制：J4。

17、Central electrical device board (CPD) 中央电器装置板（CPD）

◆Fuel anti-theft function燃油防盗功能

- ✓ The CPD collects the signal from the oil quantity sensor and sends the oil quantity value to the bus for the instrument display.CPD采集油量传感器的信号，并向总线发送油量值，用于仪表显示；
- ✓ When the vehicle is stopped (when the key is not inserted or when the key is inserted but the parking brake is not released), CPD monitors the rate of change of fuel quantity and drives the critical alarm light and horn to sound 15 times in a row at a frequency of 1Hz for alarm when a fuel theft occurs.车辆停止时（钥匙未插入或钥匙插入但驻车制动未释放时），CPD监测燃油量的变化率，有燃油防盗行为发生时，驱动危急报警灯及喇叭以1Hz的频率连响15次进行报警；

17、Central electrical device board (CPD) 中央电器装置板（CPD）

◆Fuel anti-theft function燃油防盗功能

- ✓ At the same time, CPD monitors the status of the fuel sensor, and when the sensor has an open or short circuit, it drives the critical alarm light and horn to sound 5 times in a row at a frequency of 1Hz for alarm.同时CPD对燃油传感器的状态进行监测，当传感器有开路或短路时，驱动危急报警灯及喇叭以1Hz的频率连响5次进行报警。

Electrical device board pins 电器装置板针脚：

- Oil quantity signal input: F22; Common: F21.

油量信号输入：F22；公共端：F21。

17、Central electrical device board (CPD) 中央电器装置板（CPD）

◆30+ power off function30+电源切断功能

- ✓ After the vehicle is started, if the battery discharge current is too high, i.e. when the whole vehicle power system fails, CPD will take the initiative to cut off the electromagnetic power main switch to ensure the safety of the whole vehicle power system.车辆启动后，如果蓄电池放电电流过大，即整车电源系统故障时，CPD会主动切断电磁式电源总开关，以保证整车电源系统的安全；
- ✓ When the battery power is too low, in order to protect the starting power of the engine, the engine is not started within 10min after the key is inserted and the battery is not effectively charged, the CPD will cut off the main power switch and the whole car 30+ power shutdown.当蓄电池电量过低时，为了保护发动机的启动电量，钥匙插入后10min内未启动发动机，蓄电池未有效充电，CPD会切断电源总开关，整车30+电源关断。

1）When the ambient temperature ≥ 30℃ and the battery power SOC ≤ 10%.当环境温度≥30℃，电池电量SOC≤10%时；

2）When the ambient temperature is ≥10℃ and <30℃, and the battery power SOC≤25%.当环境温度≥10℃且＜30℃，电池电量SOC≤25%时；

3）When the ambient temperature is ≥ -10℃ and <10℃, and the battery power SOC ≤ 40%.当环境温度≥-10℃且＜10℃，电池电量SOC≤40%时；

4）When the ambient temperature <-10℃ and the battery power SOC≤55%.当环境温度＜-10℃，电池电量SOC≤55%时。

17、Central electrical device board (CPD) 中央电器装置板（CPD）

◆30+ power off function30+电源切断功能

- ✓ When the engine is off, the key is not pulled out but the ACC power and ON gear power are invalid, in order to maintain the lowest power consumption of the whole car power system and protect the next engine starting power, after 20min, the whole car 30+ power is cut off, the electrical system enters the dormant state and the electrical equipment on the car no longer works.

当发动机熄火，钥匙未拔出但ACC电源和ON档电源无效时，为维持整车电源系统的最低功耗，保护发动机下一次的启动电量，在20min后，整车30+电源切断，电器系统进入休眠状态，车上电器设备不再工作。

17. Central electrical installation panel (CPD)　17、中央电器装置板（CPD)

◆Trailer configuration identification
◆挂车配置识别

- ✓ When the CPD is powered ON, it automatically identifies whether the whole vehicle has a trailer configuration (driving the left and right turn signals of the trailer, when both the left and right turn signals are open circuit, the whole vehicle is considered to have no trailer configuration), all after the trailer is assembled, it needs to be powered ON again to identify the trailer configuration, otherwise the CPD does not drive the trailer lamps.
- ✓ CPD在上ON档电时，会自动识别整车是否有挂车配置（驱动挂车左右转向灯，左右转向灯均为开路时，则认为整车没有挂车配置），所有在挂厢装配完毕后，需重新上ON档电，以识别挂车配置，否则CPD不进行挂车灯具的驱动。