Onboard power supply management

The onboard power supply control unit J519

Functions of onboard power supply control unit

Until now control units and relays functioned at different locations in the vehicle. In the onboard power supply control unit, these functions are now localised.

The onboard power supply control unit in the Touareg is responsible for the following functions:

- Load management
- Parking light
- Dipped beam headlights
- Side lights
- Turn signals (not in exterior mirrors)
- Main beam headlights
- Additional main beam headlights
- Fog lights
- Footwell lights
- Terminal 58d
- Indicator lamp for hazard warning lights
- Relay for headlight washer system
- Fuel pump priming action
- Horn
- Twin washer pump
- Interior lights
- Rain and light sensor voltage supply

Furthermore, the following switches and signals are processed and sent via the CAN bus to other control units.

- Bonnet contact switch
- Exterior mirror adjustment switch
- Hazard warning lights button
- Light switch
- Voltage supply at starter and onboard power supply battery

Onboard power supply control unit



S298_012

Fitting location

The onboard power supply control unit can be found in the vehicle interior on the driver's side under the dash panel in the footwell. It is connected to the E-box in the same way as

the entry and start authorisation control unit.

Fitting location of onboard power supply control unit and entry and start authorisation control unit



Load management

Furthermore, the onboard power supply control unit deactivates convenience system consumers and long-term HT consumers e.g. heated rear windscreen, so that heavy discharging of the battery is avoided. If the onboard power supply is placed too much under load, the idling speed is also increased. This ensures that there is always sufficient energy to start the engine. Switching off is inline with the guidelines for the Volkswagen Phaeton and is described in Self-Study Programme 272.



Priming function of electrical fuel pump

The petrol engines of the Volkswagen Touareg all feature a priming function of the fuel pump so that enough pressure in the fuel lines can be built up.

Function:

When the driver's door is opened and terminal 15 is closed, a signal is sent via the CAN bus from the entry and start authorisation control unit J518 (terminal 15 off), a signal is also sent from the driver's door control unit J386 (driver's door opened) and, for reasons of safety, a discreet signal (status of terminal 15) is sent to the onboard power supply control unit J519. This then actuates the relay to prime the fuel pump for approx. 2 seconds. The priming function of the fuel pump is stopped when the ignition is switched on. Continued actuation is done through the engine control unit.



If the driver's door stays open, the actuation is repeated a maximum of three times in intervals.

Timed actuation from the onboard power supply control unit prevents continued actuation of the fuel pump if the driver's door is opened and closed a number of times in short intervals.

Crash shut-off

If with the ignition switched on a crash is detected, a signal is sent from the airbag control unit J234 via the CAN bus and the fuel pump is switched off immediately. After about 5 seconds it can be activated again by switching the ignition off and on.



Key

- G6 Fuel pump
- J17 Fuel pump relay
- J386 Driver's door control unit
- J518 Entry and start authorisation control unit
- J519 Onboard power supply control unit
- J623 Engine control unit

Interior light actuation

The interior lighting is actuated by the onboard power supply control unit. The voltage supply comes from terminal 30G.

To prevent discharge of the vehicle battery when the interior lights are switched on, power supply from terminal 30G is interrupted in the following circumstances:

- the ignition is switched off,

Data transfer

- the vehicle is locked from the outside and all doors are locked.

Terminal 30G is activated under the following circumstances:

- the interior light switch is actuated,
- the ignition is switched on,
- the vehicle is unlocked, a door, the bonnet or the tailgate is opened,
- the bonnet contact switch.



Key

- Interior light switch
- J234 Airbag control unit
- J285 Dash panel insert (Gateway)
- J386 Driver door control unit
- J387 Front passenger door control unit
- J388 Rear left door control unit
- J389 Rear right door control unit
- J519 Onboard power supply control unit
- W Interior lights

If a crash is detected, the interior light is switched on immediately. After the ignition is switched on and off and after is has been switched on again, the cut-off function from terminal 30G is reactivated.

Onboard power supply management

The function layout

Key

		30		
A	Battery	15	_	
D	Ignition switch	31		•
EI	Light switch			
E3	Hazard warning light switch			
E20	Light regulator for lighting			
	switches and instruments			
E43	Exterior mirror adjustment switch			
E48	Mirror adjustment change-over switch			
E102	Headlight range control adjuster			
E231	Exterior mirror heating button			
E263	Mirror fold system switch			E 458 E 457 E 326
E314	Rear fog light button			
E315	Fog light button			
E316	Glove box button			
E326	Interior light button, front			
E457	Driver reading light button			
E458	Front passenger reading light button			
F120	Anti-theft alarm/			
	vermin repellent system contact switch			¥7
F335	Stowage compartment illumination switch	- 1	•	- -
G213	Rain sensor			
H2	High tone horn	S	S	
H7	Low tone horn		Ψ.	
J39	Relay for headlight washer system		4	
J144	Interior light switch-off delay blocking diode			
	Interior lighting			<u> </u>
M1	Side light bulb, left			
M3	Side light bulb, right			<u>A A A</u>
M5	Turn signal bulb, front left	-		
M7	Turn signal bulb, front right		Dar	
M29	Dipped beam bulb, left		D/15	
M30	Main beam bulb, left	Ξ		U U
M31	Dipped beam bulb, right	Ţ		
M32	Main beam bulb, right	0-		
U1	Cigarette lighter			
U9	Cigarette lighter, rear			
				11



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Onboard power supply management

The function layout

(driver side)

Automatic anti-dazzle interior mirror

Y7

Key

J285	Control unit with display in dash papel insert
1400	Wiper motor control unit
1518	Entry and start authorisation control unit
5510	Start authorisation
J519	Control unit for onboard power supply
J533	Diagnosis interface for data bus
K6	Hazard warning light system warning lamp
L22	Foglight bulb, left
L23	Foglight bulb, right
L28	Cigarette lighter light bulb
L42	Socket light bulb
L67	Dash panel left vent illumination
L68	Dash panel central vent illumination
L69	Dash panel right vent illumination
L78	Mirror adjustment switch illumination
L87	Central rear vent illumination
L88	Rear left vent illumination
L89	Rear right vent illumination
L106	Footwell illumination, rear left
L107	Footwell illumination, rear right
L120	Shelf illumination
L151	Front left footwell illumination
L152	Front right footwell illumination
U19	12 V socket -3-
U20	12 V socket -4-
V11	Headlight washer system pump
V59	Windscreen and rear window washer pump
V	Windscreen washer motor
W1	Front interior light
W11	Reading lamp, rear left
W12	Reading lamp, rear right
W13	Front passenger reading light
W14	Illuminated vanity mirror
	(tront passenger side)
W19	Reading lamp, driver side
W20	Illuminated vanity mirror











The headlights

Main headlights

The basic equipment comprises a DE headlight with H7 halogen bulb and a H9 halogen bulb for main beam.

Headlights without additional main beam

Turn signal light Side light



7

The "M" equipment level features bi-xenon headlights for main and dipped beam and additional DE headlights with H7 bulbs for main beam. On this version, only the headlights for additional main beam flash when the flasher unit is actuated and the dipped beam is not switched on. A brief actuation of the xenon lamps, e.g. when flashing lights as a signal, shortens their useful life. The turn signals are cool blue in appearance but flash yellow when they are switched on.

Headlight with additional main beam



The rear light

For the rear lighting of the vehicle, rear light clusters with bulbs are used. The rear light clusters are split into two parts. One part is fixed to the sidewall and the second part can be found on the tailgate.

Rear light cluster



Vehicle at normal level





Vehicle raised



Rear fog light

Due to the Touareg's off-road capability, the adaptive suspension of the vehicle allows greater changes in vehicle height than on normal automobiles. Government regulations require, in Japan for example, that the rear fog light is switched off when the vehicle is in the highest position.

This function is available for other countries as a code in the onboard power supply control unit.

Lighting

Surround lighting

The lights integrated in the exterior mirrors illuminate the area around the vehicle.

Conditions for activation:

The lights are actuated simultaneously with:

- the interior lights,
- the coming home/leaving home lighting function.

The surround lights are controlled by the onboard power supply control unit via the CAN bus and actuated by the driver's and front passenger's door control units.

To prevent the surround lights from becoming damaged by long periods of activation, a protection feature is integrated in the onboard power supply control unit which switches off the lights after a prescribed duration to allow them to cool down.

Surround lights





S298_023

The convenience lighting

Lighting settings

In the set-up menu of the dash panel insert, various adjustments can be made to the lighting:

- Duration of coming-home lighting,
- Day driving light,
- Brightness of footwell lighting.

The duration of the coming-home lighting can be set between 0-90 seconds. After 90 seconds, the lights are switched off automatically to avoid discharging of the battery.

In the set-up menu, the day driving light function can be switched on or off. This option is only available in countries where day driving lights are not a legal requirement.

Display in instrument panel insert



S298_031



The footwell lighting can be adjusted from 0 %-100 %.

Display in instrument panel insert



S298_032

The lighting

Functions:

Turn signals

The main function of the turn signals is set in the onboard power supply control unit.

Signal sequence:

- Turn signal switch
- Steering column electronics control unit
- Onboard power supply control unit (actuation of turn signals)
- Trailer detection control unit (actuation of turn signals on trailer)
- Driver and front passenger door control units (actuation of turn signals in exterior mirrors)
- Dash panel insert (actuation of warning lights and display of warning messages)

Side lights



The main function of the side lights is also set in the onboard power supply control unit.

Signal sequence:

- Light switch
- Onboard power supply control unit (actuation of front lights)
- Convenience system central control unit (actuation of rear lights)
- Trailer detection control unit (actuation of turn signals on trailer)
- Dash panel insert (actuation of warning lights and display of warning messages)







Driving lights

The main function of the driving lights is also set in the onboard power supply control unit.

Signal sequence:

- Light switch
- Onboard power supply control unit (actuation of headlights)
- Dash panel insert (actuation of warning lights and display of warning messages)

An additional switching option in the onboard power supply control unit permits activation of the headlights if the onboard power supply control unit should fail or the side light and dipped beam light switches should cease to function.







Automatic driving light control

The automatic driving light control is set in the onboard power supply control unit as normal.

Signal sequence:

- Light switch in automatic driving light position
- Input signal from light sensor via wiper motor control unit, Infotainment and Gateway CAN bus
- Onboard power supply control unit (actuation of front lights)
- Convenience system central control unit (actuation of rear lights)
- Trailer detection control unit (actuation of turn signals on trailer)
- Dash panel insert (actuation of warning lights and display of warning messages)

The automatic driving light control is only active when the light switch is in the relevant position.









Driver information

Function:

The warning lights and instruments in the dash panel insert receive their information from the control units via the CAN bus or discreet wiring from their own sensors.

Signals that are sent via the CAN bus from the control units make their way to the processor in the dash panel insert via the Gateway.

The control units can be adapted in the Gateway using the vehicle diagnosis system VAS 5051. If the control units are not adapted, the warning lights and instruments cannot be actuated.

Sensors









Entry and start authorisation

Function:

Central locking in general

The central locking of the vehicle is controlled by the convenience system central control unit. The doors and the tailgate are locked. The lock positions of the doors are unlocked, lokked and secured or not secured. In the tailgate the lock positions are locked and unlocked.

If the vehicle is locked and secured, the LEDs in the driver and front passenger doors will be actuated. Actuation lasts for about 5 seconds and is controlled by the convenience system central control unit. Thereafter it is controlled by the door control units.

If the convenience system central control unit should fail, the driver's door control unit will take over in emergency operation mode. A difference in operation cannot be detected.



Operation via radio remote control

The information from the radio remote control is received by the aerial of the entry and start authorisation control unit.

The entry and start authorisation control unit passes the information on via the convenience CAN bus to the convenience system central control unit. This is turn actuates the door control units.

Look / unlook warning light



Locking motors



Operation via proximity sensors

Apart from opening the door, no other action is necessary. The entry and start authorisation control unit detects the transponder in the ignition key. When the door handle is actuated, the action is detected by the entry and start authorisation control unit by means of a signal. A signal is then also sent via the convenience CAN bus to the convenience system central control unit. This actuates the relevant door control unit.

Activating and deactivating the anti-theft alarm system

The anti-theft alarm system is activated in positions locked or secured.

If the ignition is switched on, the anti-theft alarm system cannot be activated.

An active anti-theft alarm system is displayed by the central locking warning lights in the front doors for a maximum of 28 days.



Look / unlook warning light



Locking motors



Service

The lighting

Removing headlights

The headlights are designed based on the principle of sliding drawers. They can be pulled out. To do this, a socket must be used on a hexagon drive to unscrew the headlights. This releases the lock and the headlight can be removed.

The direction of rotation differs on the left and right.

Headlights with safety locks



Rear lights

On the fixed part of the rear light cluster, the lamp must be removed to replace the bulb.

The bulbs of the rear light in the tailgate can be replaced by changing the lamp holder.

Rear lights





Diagnosis

Guided fault finding

The data from the guided fault finding function is interrogated by the vehicle diagnosis, testing and information system VAS 5051.

To do this, the guided fault finding function must be selected. All the necessary information can be found there.

The data is interrogated via a diagnosis interface for the data bus in the dash panel insert.

A wired communication connection is only necessary to some control units in the drive train CAN bus, to control units for gas discharge lamps and to the convenience system central control unit.

Signal sequence



S298_047

CAN bus

Bi-directional data wire between control units. The data can be sent in both directions (bi-directional). Data buses work at different rates of data transfer. 500 kBit/s means that 500 000 binary figures, that is 0 or 1, can be sent per second.

Discreet signal

This is a voltage signal which is sent via a normal cable.

Gateway

This is a data interface (connection), which allows different data signals to be sent from one CAN bus to another.



1. Which control units belong to the Drive Train CAN bus?

- □ a) The airbag control unit, the convenience system central control unit, the tyre pressure monitor control unit.
- □ b) The steering column electronics control unit, the entry and start authorisation control unit, the engine control unit, the airbag control unit.
- □ c) The wiper motor control unit, the door control units, the rear blind control unit, the airbag control unit.

2. Where can the battery main / isolation switch E 74 be found?

- □ a) In the luggage compartment, next to the starter battery.
- $\hfill\square$ b) In the engine compartment, near the alternator.
- □ c) In the back-up fuse box, under the driver's seat.

3. If the voltage of the onboard power supply battery is below 11.2 Volt,

- □ a) it is discharged.
- □ b) it is weak, but not discharged.
- \Box c) the alternator is defective and must be replaced.

4. Which functions are controlled by the onboard power supply?

- □ a) The parking light, fog lamps, twin washer pump.
- □ b) The brake lights, the rear turn signals, the power latch function in the tailgate.
- □ c) The wiper motor, the central locking, the sliding/tilting sunroof.

5. Which lighting settings can be carried out in the set-up menu of the dash panel insert?

- □ a) Change in the flash frequency of the turn signals.
- □ b) Day driving light in countries where there is no legal requirement for them to be on permanently.
- □ c) The brightness of the footwell lighting.

6. Which control units play a role in the "Automatic driving light" function?

- □ a) The onboard power supply control unit, the wiper motor control unit, the convenience system central control unit.
- □ b) The steering column electronics control unit, the onboard power supply control unit, the trailer detection control unit.
- □ c) The entry and start authorisation control unit, the onboard power supply control unit, the convenience lighting control unit.



Answers: 1. b ک. دع. b4. a5. b, د6.a



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