

FUB-FUB-FB-610002-K08 Power management: Closed-circuit current monitoring

ISTA system version	3.53.13.15645	Data version	R--	Programming data	-
VIN		Vehicle	4*/F82/COUPE/M4/S55/MANUAL/USA/LL/2015/06		
Integration level factory	-	Integration level (current)	-	Integration level (target)	-
Mileage	0 km				

Closed-circuit current monitoring

The power management with IBS monitors the standby current of the vehicle in the rest state. If a standby current violation is determined, various measures are initiated. These measures are intended to prevent the battery state of charge from reaching the startability limit.

Brief component description

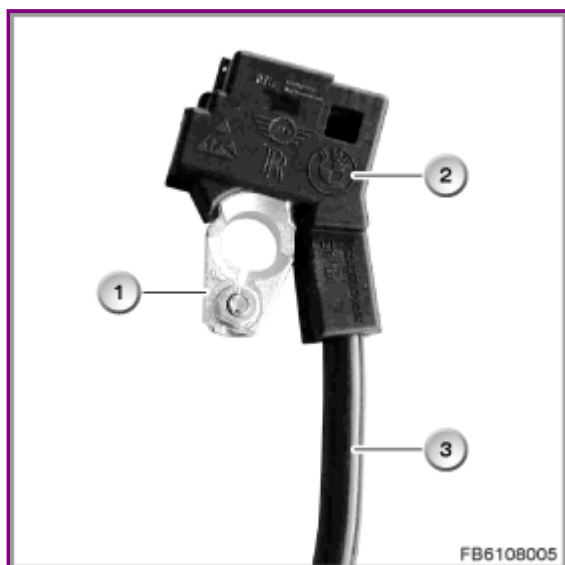
The following components are described for the closed-circuit current monitoring:

- Intelligent battery sensor
- Digital Motor Electronics (DME), Digital Diesel Electronics (DDE) or Electrical Digital Motor Electronics (EDME)
- Terminal control (e.g. junction box electronics (JBE), front electronic module (FEM) or Body Domain Controller (BDC))

IBS: Intelligent battery sensor

The intelligent battery sensor (IBS) is a mechatronic component with its own microcontroller for monitoring the battery condition. The IBS continuously measures the following values on the battery:

- Voltage
- Charge and discharge current
- Battery temperature



Item	Explanation
1	Negative battery terminal

2	Intelligent battery sensor
3	Battery earth lead

The IBS is connected with the DME, DDE or EDME via a local interconnect network bus (LIN bus) for data transfer. The IBS is installed in the battery in the case of the 12 V lithium ion battery.

Digital Motor Electronics (DME), Digital Diesel Electronics (DDE) or Electrical Digital Motor Electronics (EDME)

Power management is carried out by the engine control unit. Power management uses the information from the intelligent battery sensor. Refer to following functional description: [Power management](#).

Terminal control

The terminal control controls the bistable relay of terminal 30F upon request from the intelligent battery sensor (IBS) for standby current violation or reaching startability limit.

System functions

The following system function is described for the power management:

- Closed-circuit current monitoring

Closed-circuit current monitoring

For closed-circuit current monitoring, a distinction is made between the following two cases:

- Rest state without auxiliary consumer units
- Rest state with logged on auxiliary consumers

The intelligent battery sensor starts closed-circuit current monitoring 30 min after switch-off of terminal 30B.

Rest state without auxiliary consumer units

After the start of closed-circuit current monitoring, the intelligent battery sensor measures the standby current. If the threshold value of 80 mA is exceeded, intelligent battery sensor registers a standby current violation.

If the discharge of the battery this causes is greater than 1 Ah, the following measures are run in succession as long as there is a standby current violation:

- Reset of terminal 30F: The IBS reports a standby current violation and requests a reset of terminal 30F.
- Switch-off of terminal 30F: If there is still a standby current violation after resetting terminal 30F and reaching the rest state again, the intelligent battery sensor requests switch-off of terminal 30F.

The power management stores a corresponding fault entry in the DME/DDE/EDME and after switching on terminal 15 again the following Check Control message displayed:

- Increased battery discharge.

The results of the last 24 closed-circuit current monitoring operations (value range of the standby current value and measure carried out) are stored in the engine electronics:

- Standby current value:
 - 0-80 mA (normal standby current during the rest state)
 - 80--200 mA
 - 200--1000 mA
 - Over 1000 mA
- Requested measure:
 - No measure (no standby current violation or caused discharge less than 1 Ah)
 - Reset of terminal 30F
 - Switch-off of terminal 30F
 - No measure but renewed standby current violation with terminal 30F switched off

Rest state with logged on auxiliary consumers

An auxiliary consumer is a consumer which can also be activated in the vehicle rest state and hence can have a standby current consumption outside the nominal range:

- Telematic Control Unit (TCU), Combox or Telematic Communication Box (TCB): active telecommunications, active telematics service, active emergency call.
- Integrated automatic heating and climate system: independent ventilation function, auxiliary heater or residual heat function, castor interior temperature sensor blower
- Headunit: Radio.
- Terminal control: lighting function (e.g. side lights or parking lights). The lighting function is a consumer that is prescribed by law.

All auxiliary consumer units must log onto the power management if they want to run a function in the rest state that requires standby current consumption greater than the setpoint value. This is necessary to prevent false interpretations in the closed-circuit current monitoring. After the function is ended, a deactivation must take place.

If at least one auxiliary consumer unit is logged on, there is no closed-circuit current monitoring. In the rest state, the intelligent battery sensor then only monitors the battery state of charge. Depending on the battery state of charge, the power management performs the following measures:

- When the upper startability limit is reached: All auxiliary consumers except for the lighting function (safety-related) are requested to switch off. The power management also requests a switch-off of terminal 30B, if it is still active.
- Reaching the lower startability limit:
 - If no lighting function is active, the power management requests a switch-off of terminal 30F.
 - If the side lights or parking lights are active, there is no switch-off of terminal 30F. The side lights or parking lights are then switched off after a period of 12 h has elapsed after "Terminal R off".
 - If the hazard warning flasher function is active, there is no switch-off of terminal 30F and the hazard warning flasher function.

Notes for Service department

General notes

Notice! Troubleshooting only in the event of a standby current violation

In the event of a problem with increased standby current, first check whether additional retrofitted electrical consumers (e.g. hands-free system, navigation device, device for enabling the TV function during journey, cooler box, rodent repellent device, etc.) is connected to terminal 30, terminal 30F or directly to the battery. If necessary, ask the customer if components were retrofitted. Then run an external standby current measurement and identify the possible cause (control units connected to terminal 30 or terminal 30F) by restricting the power distribution box and gradually removing fuses or disconnecting the corresponding control units.

Diagnosis instruction

Service function 'Evaluate closed-circuit current monitoring'

This service function can be used to read out the results of the last 24 closed-circuit current monitoring runs.

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