



## BRIEF INFORMATION

### Intelligent battery sensor (IBS) 24 V

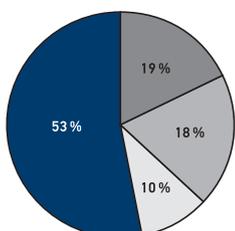
- High-accuracy measurement of battery voltage, current and temperature parameters
- Determination of the battery state of charge (SOC), state of health (SOH) and state of function (SOF) condition parameters
- Simple electrical and mechanical integration

## PRODUCT FEATURES

### Benefit to the customer

The Intelligent Battery Sensor (IBS) informs you about the current energy status, allowing you to plan your energy supply.

In order to carefully conserve the energy of the vehicle battery, it is necessary to know the state of charge, ageing and any changes to the battery, as weak batteries are the main cause of vehicle breakdown in more than 50% of cases according to a study by the ADAC, the German automobile association.



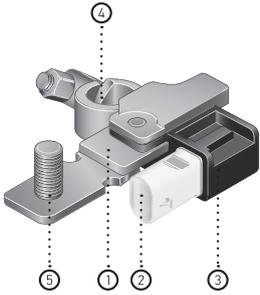
53% – Battery  
19% – Alternator  
18% – Other causes  
10% – Starters

### Application

The intelligent battery sensor (IBS) from HELLA is the key element of vehicle energy management.

The IBS reliably and accurately measures the battery voltage, current and temperature parameters. Information on the state of charge (SOC), state of health (SOH) and state of function (SOF) of the battery is calculated algorithmically using the measurements. The IBS is designed to be used in starter (standard or EFB), gel and AGM batteries to monitor in-vehicle starter or consumer batteries. The IBS can be directly integrated into the vehicle's electrical system with the standardised LIN protocol.

# DESIGN AND FUNCTION

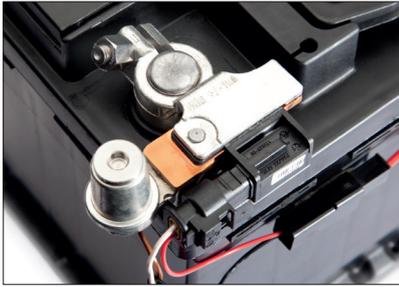


## IBS battery sensor

1. Shunt on the sensor
2. Male connector
3. Sensor module
4. Negative pole terminal
5. Screw-on bolt for battery pole adapter

The IBS is attached directly to the negative pole of the battery via the pole terminal. Alongside the terminal, the mechanical portion of the battery sensor consists of the shunt and grounding bolt. The shunt is attached to the vehicle's load path and is used as a measuring resistor to measure the current indirectly. The ground cable can be conveniently attached to the grounding bolt, e.g. with the optionally deliverable battery pole adapter.

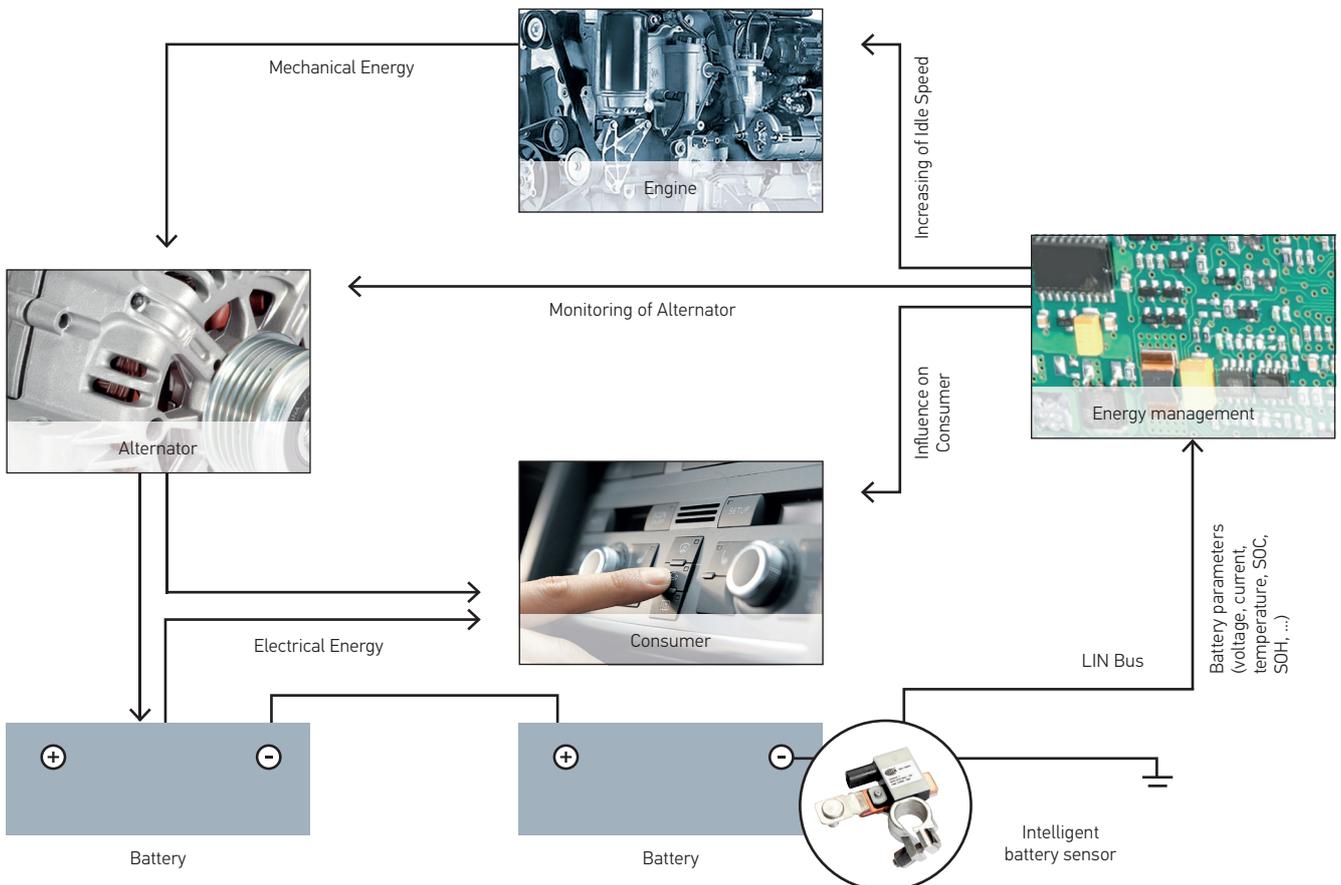
The electronics are located in a cast housing with a plug connector which functions as the interface to the energy management system. The LIN protocol is the communication interface to the higher-level control unit. The supply voltage, used simultaneously as the reference voltage for voltage measurement, is provided by the connection to the positive poles of both batteries.



Fitted on standard battery terminal  
(Battery pole adapter not included in scope of delivery).

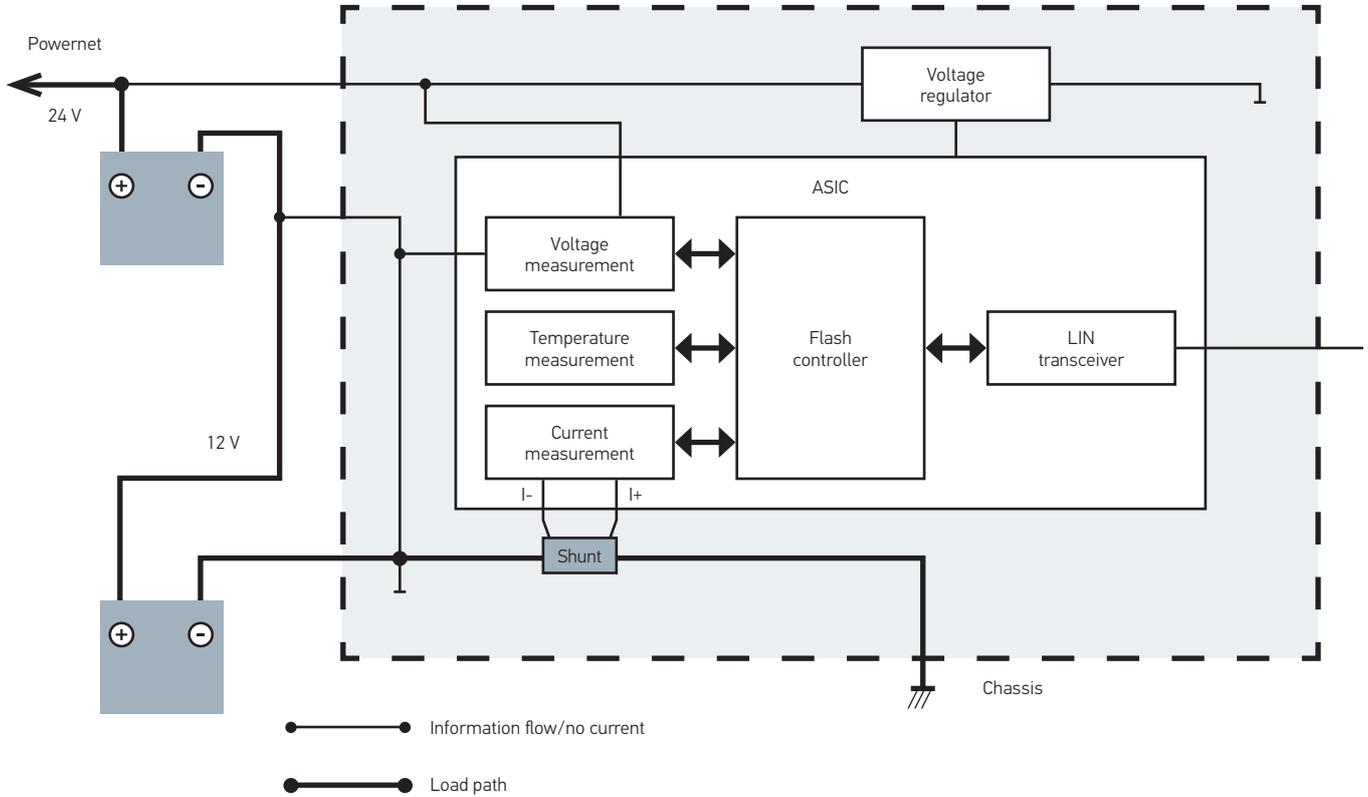
# ENERGY MANAGEMENT WITH INTELLIGENT BATTERY SENSOR

By using the intelligent battery sensor, the energy management system can react quickly in case of critical battery state and influence both consumer behaviour and the alternator.



# CIRCUIT DIAGRAM OF THE INTELLIGENT BATTERY SENSOR

The ASIC is the main electronics component used to record and process measured values. Measured value acquisition in the ASIC, as a precision sensor, is the core function of the intelligent battery sensor and is used to record the physical parameters of current, voltage and temperature.



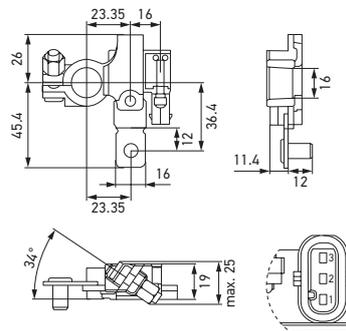
## TECHNICAL DETAILS

### Technical Data, 24 V

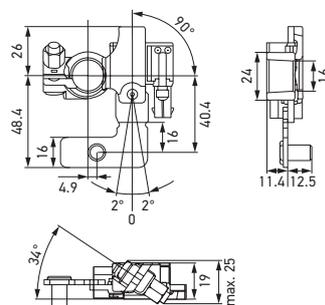
Operating voltage	7.5 – 32 V
Permanent Load Current <sup>1</sup>	± 200 A
Maximum Current <sup>1</sup>	± 2,000 A (500 ms)
Protection Class	IP 6K9K
Power consumption (operating modes)	≤ 16 mA (normal mode) ≤ 230 uA (sleep mode)
Max. battery capacity	255 Ah
Operating temperature	-40°C to 80°C
Grounding bolt	M8
Output signal	LIN (2.0) or higher
ASIL grade	QM

<sup>1</sup> Typical condition:  $T_a \leq 80^\circ\text{C}$ ;  $U_b = 24\text{ V}$   
 Typical ground cable:  $\geq 70\text{ mm}^2$   
 Approved for maximum 500 ms.  
 Other configurations on request.

### Technical drawing 6PK 011 700-001



### Technical drawing 6PK 011 700-311



# SUMMARY OF VERSIONS

A screw-on battery pole (battery pole adapter) can also be ordered as an optional accessory.

Operating voltage	Type	Mating connector	Part number	PU *
7.5 – 32 V	Cable lug straight	Hirschmann 872-858-546	<b>6PK 011 700-001</b>	<b>1</b>
7.5 – 32 V	Cable lug straight	Hirschmann 872-858-546	<b>6PK 011 700-007</b>	<b>100</b>
7.5 – 32 V	Cable lug right-angled	Hirschmann 872-858-546	<b>6PK 011 700-311</b>	<b>1</b>
7.5 – 32 V	Cable lug right-angled	Hirschmann 872-858-546	<b>6PK 011 700-317</b>	<b>100</b>

**Optional accessories:**

**9MK 179 472-007**

Battery pole adapter for plug and play, installation

\* packaging unit