

# BRIEF INFORMATION

## Intelligent battery sensor (IBS) 12 V

- Accurate 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

### Customer benefits

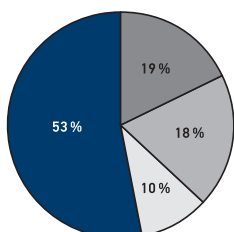
The intelligent battery sensor (IBS) informs you about the current energy status, allowing you to plan your energy supply.

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.

### Application

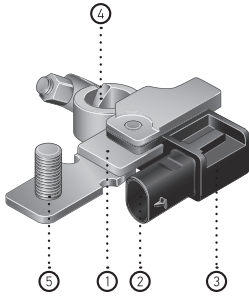
The intelligent battery sensor (IBS) from HELLA is the key element of vehicle energy management.

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 these measurements. The IBS is designed to be used in starter, 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.



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

# DESIGN AND FUNCTION

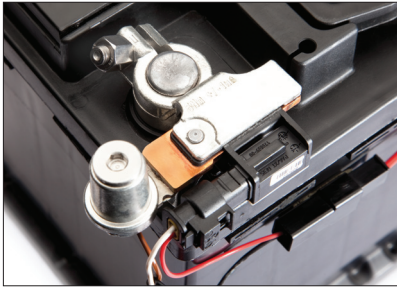


## IBS battery sensor

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.

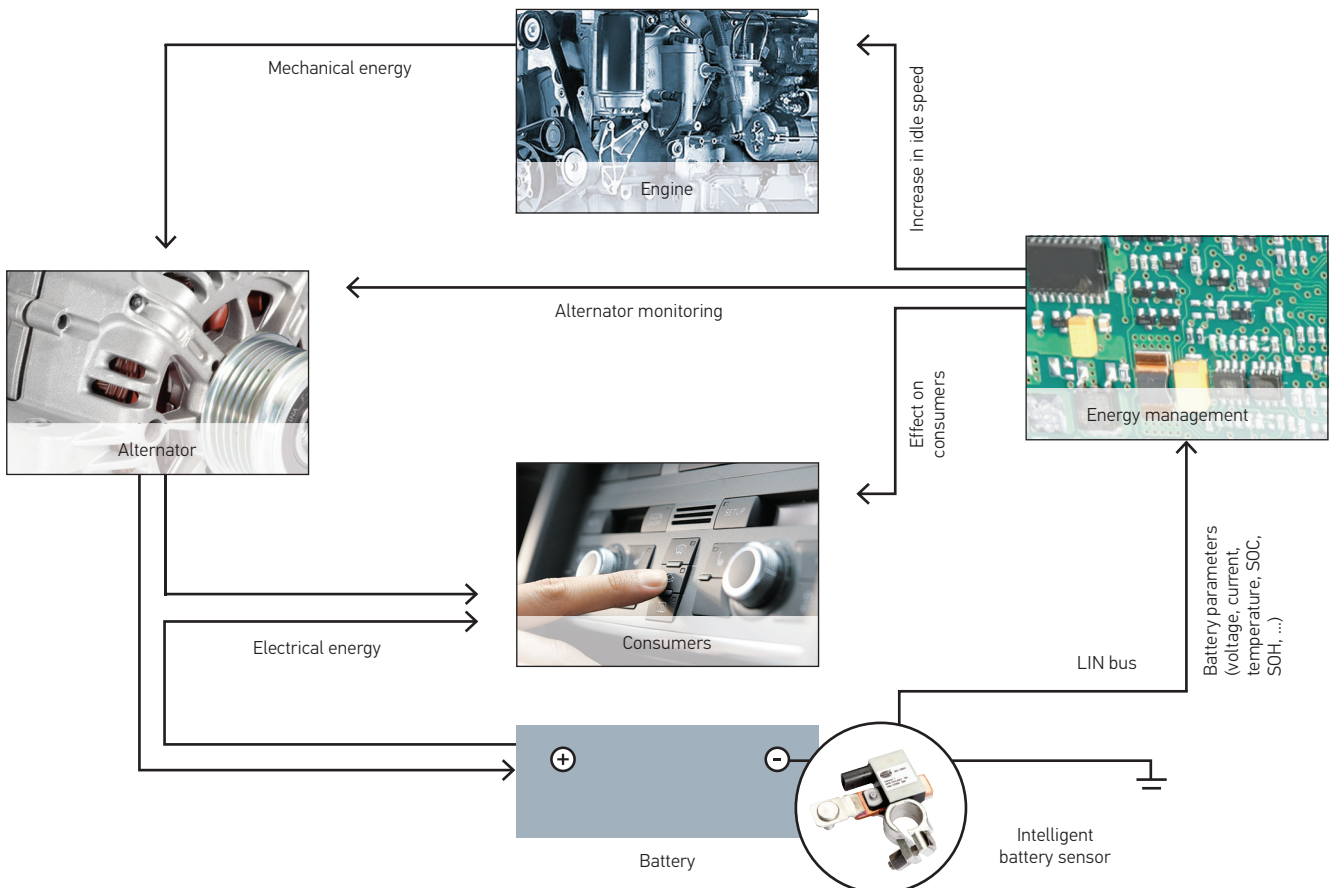
The electronics are located in a cast housing with a plug connector which functions as the interface to the energy management system. The LIN protocol is the communication interface to the higher-level control unit. The supply voltage, used simultaneously as the reference voltage for voltage measurement,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



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

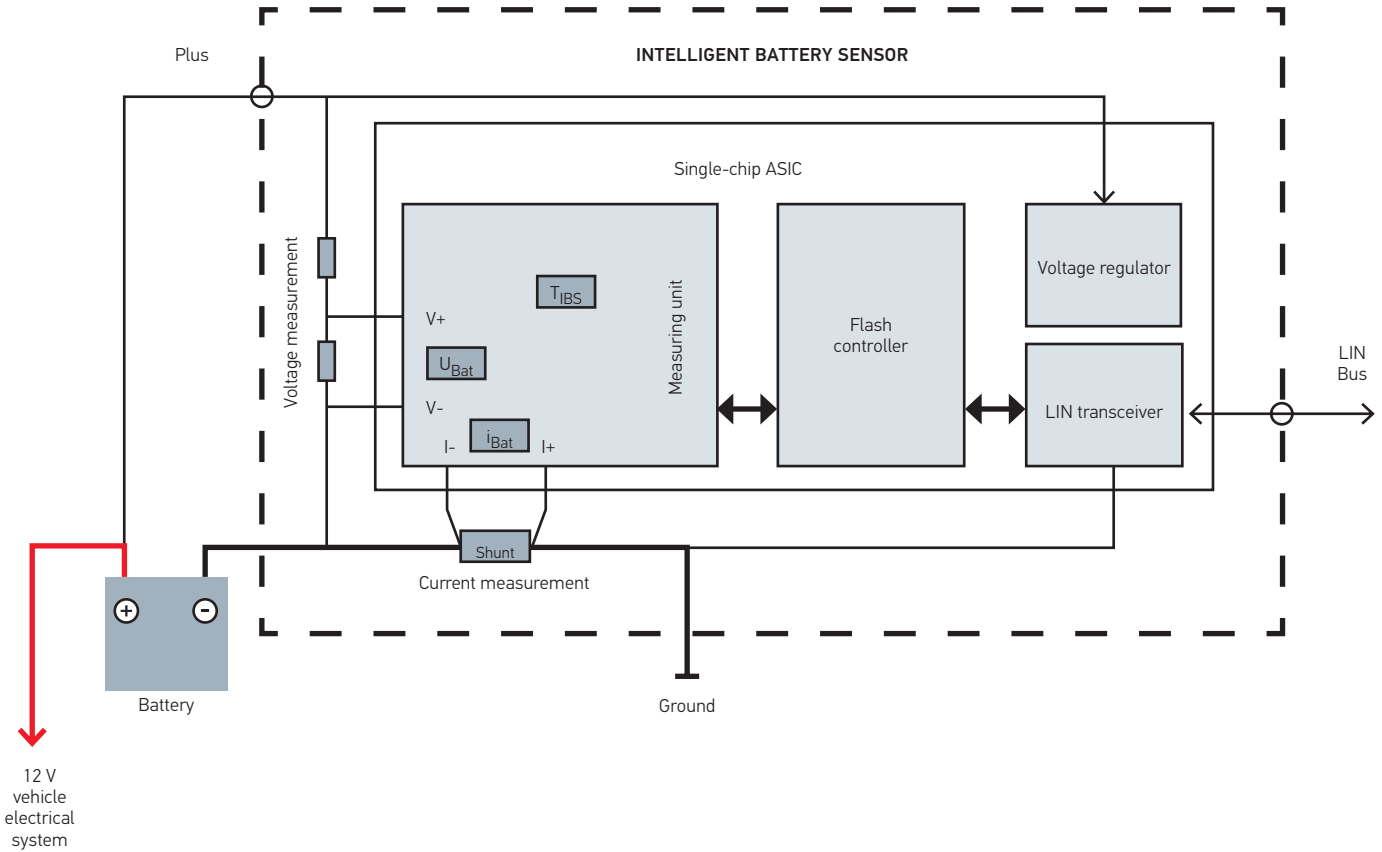
# ENERGY MANAGEMENT WITH INTELLIGENT BATTERY SENSOR

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.



# BLOCK 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.



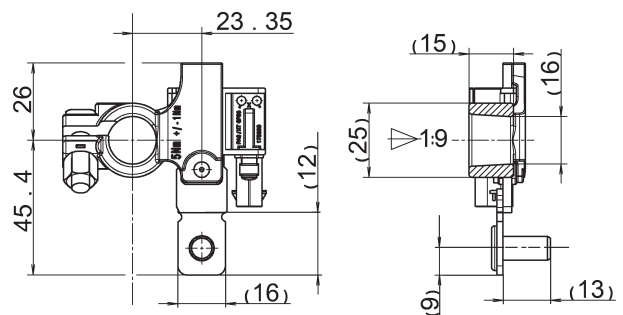
## TECHNICAL DETAILS

### Technical data, 12 V

Operating voltage (min./typ./max)	6 V/14 V/16,5 V
Measurement range <sup>1</sup>	± 1.200 A
Operating current <sup>1</sup> (permanent)	± 155 A
Maximum current <sup>1</sup>	± 1.500 A (500 ms)
Protection class	IP 6K9K
Power consumption (operating modes)	15 mA (normal mode) 120 µA (sleep mode)
Max. battery capacity	249 Ah
Operating temperature	-40°C to 105°C
Grounding bolt	M8
Output signal	LIN (2.0)

<sup>1</sup> Requirement typically:  $T_a \leq 105^\circ\text{C}$ ;  $U_b = 14\text{ V}$ ; ground cable typically: 35 mm<sup>2</sup> cross-section  
Other load configurations on request

### Technical drawing



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## SUMMARY OF VERSIONS

There are two versions of the intelligent battery sensor available. Sensor 1 is the basic version. Sensor 2 is used to monitor a second battery in the same communication network. A screw-on battery pole (battery pole adapter) can also be ordered as an optional accessory.

Operating voltage	Type	Two-way connector	Part number
6 V to 16.5 V	Sensor 1	Hirschmann 872-857 Tyco 1-167 0915-1	<b>6PK 010 842-001</b>
6 V to 16.5 V	Sensor 2	Hirschmann 872-857 Tyco 1-167 0915-1	<b>6PK 010 842-011</b>
<b>Optional accessories:</b> Battery pole adapter for plug and play, installation			<b>9MK 179 472-007</b>