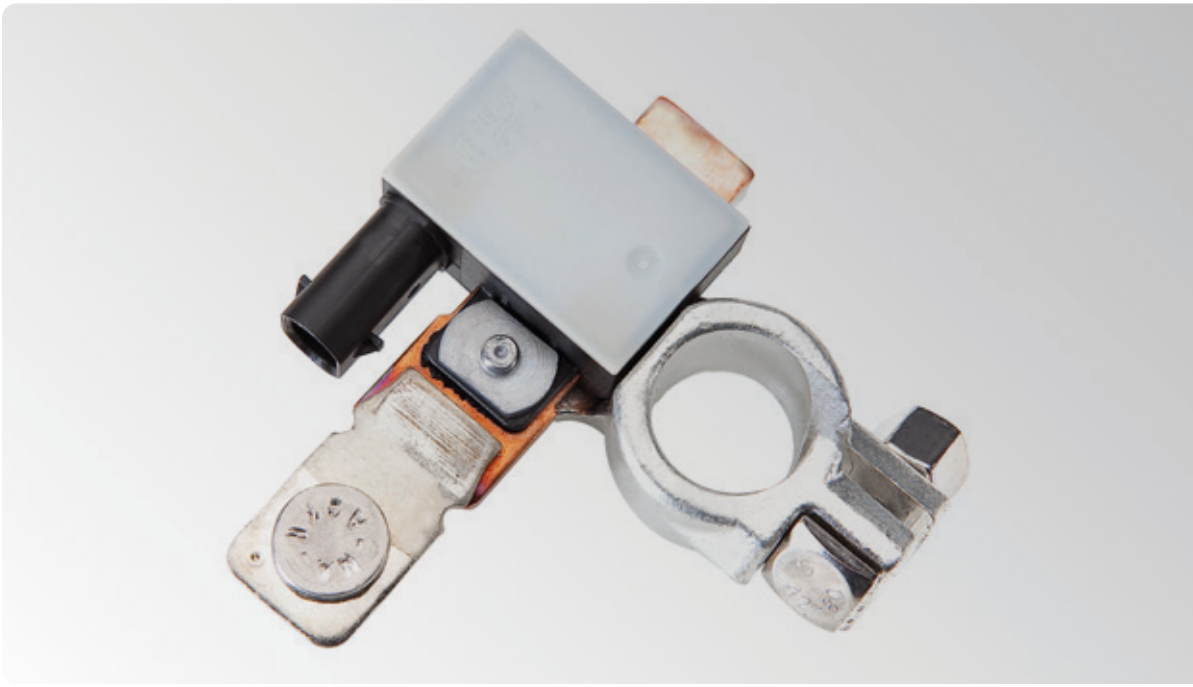


# BRIEF INFORMATION

## 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
→ Vehicle specific design, therefore 1:1 replacement in the vehicle

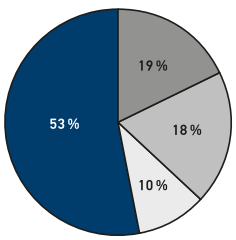
**Customer benefits**
The intelligent battery sensor (IBS) informs you about the current energy status, allowing you to plan your energy supply.

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.

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

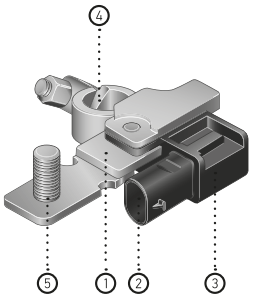
The IBS reliably and accurately measures the battery voltage, current and temperature parameters. Information on the state of charge (SOC), state of health (SOH) and state of function (SOF) of the battery is calculated algorithmically using these measurements. The IBS is designed to be used in starter, 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.

**Application**




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

# DESIGN AND FUNCTION




**IBS battery sensor**

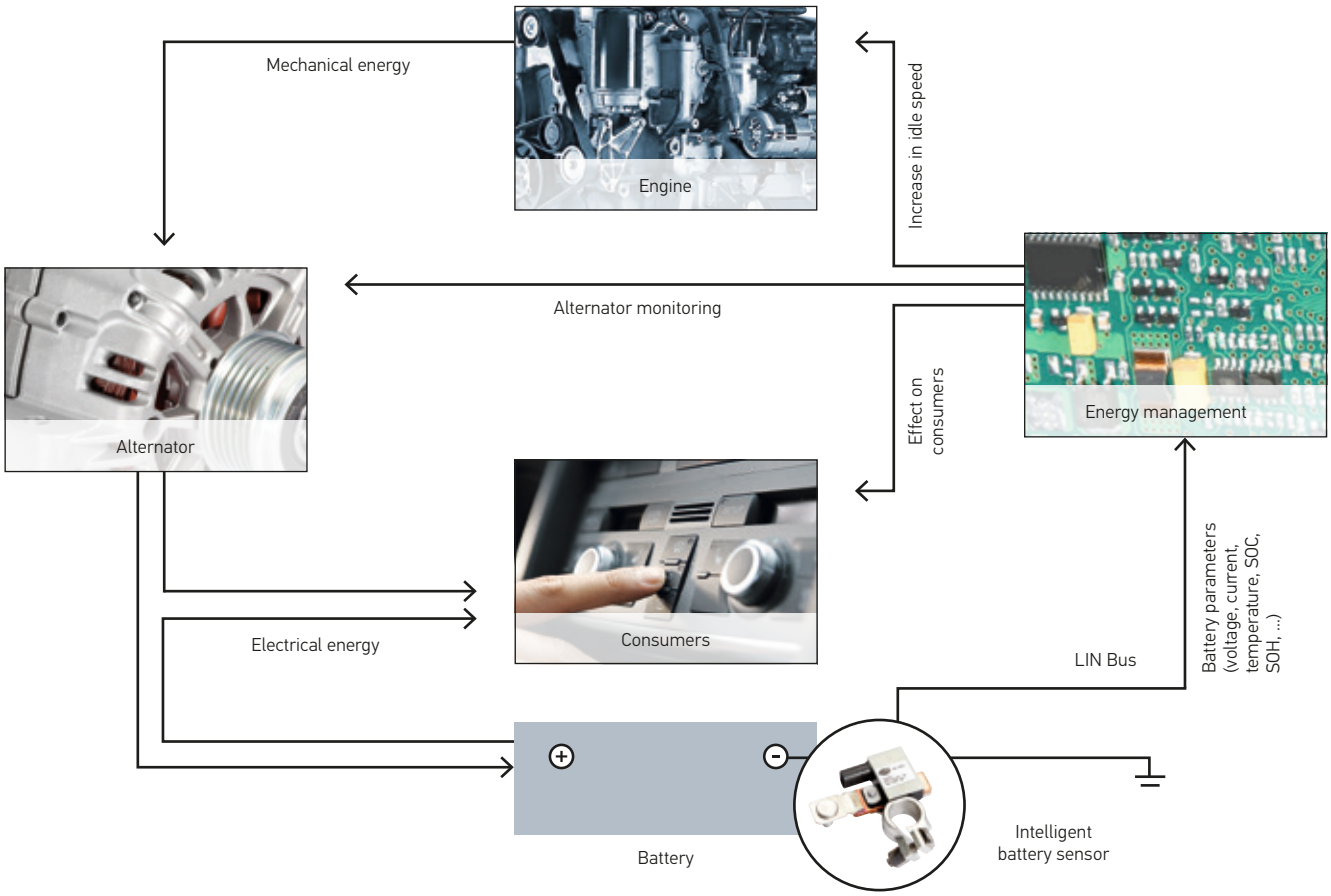
1. **Shunt on the sensor**
2. **Male connector**
3. **Sensor module**
4. **Negative pole terminal**
5. **Screw-on bolt**
   for battery pole adapter

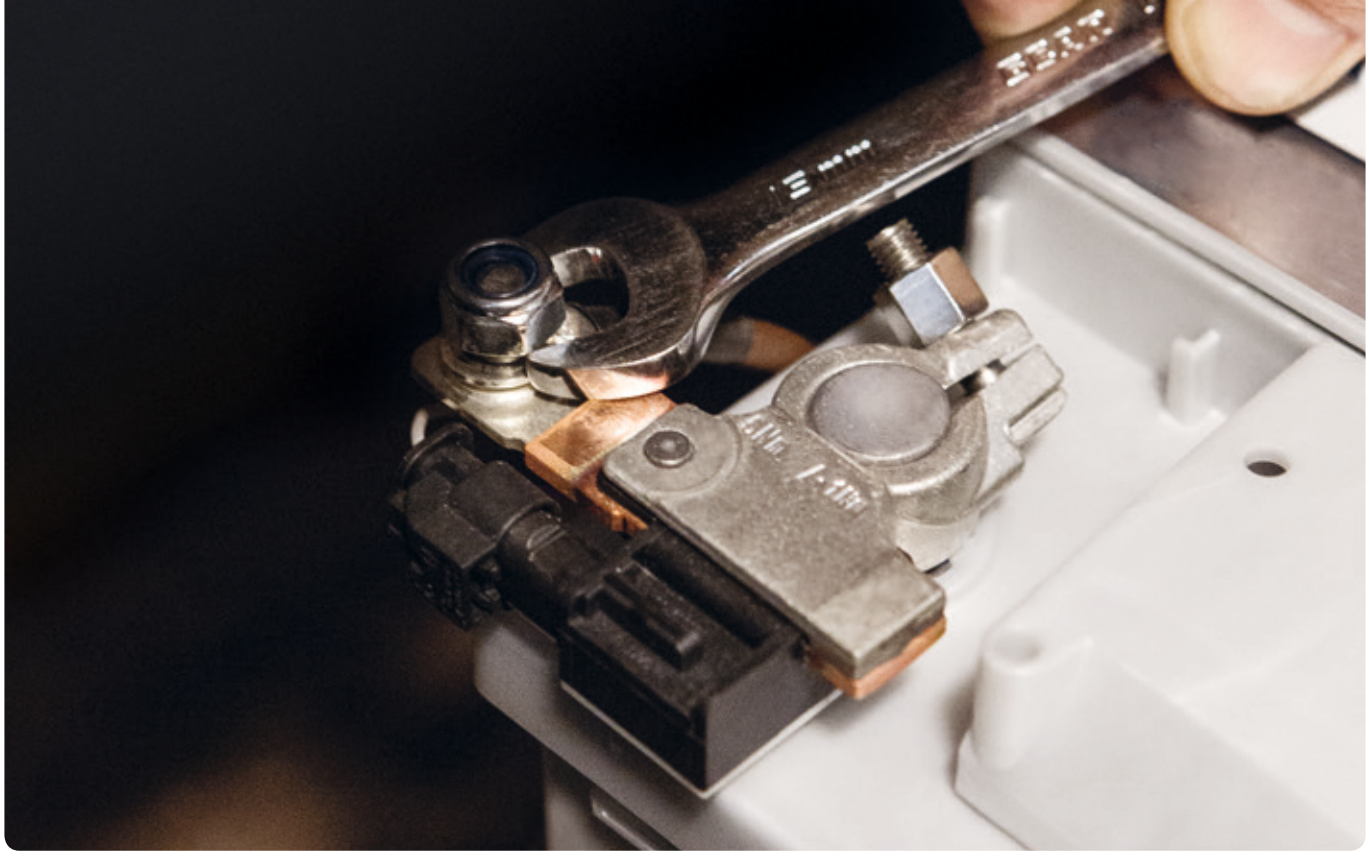
The IBS will be attached directly to the negative terminal of the battery via the pole terminal. In addition to the terminal, the mechanical portion of the battery sensor consists of shunt and ground bolt components. The shunt is attached to the vehicle's load path and is used as a measuring resistor to measure the current indirectly or as a ground cable depending on the version.

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.

# ENERGY MANAGEMENT
## WITH INTELLIGENT BATTERY SENSOR

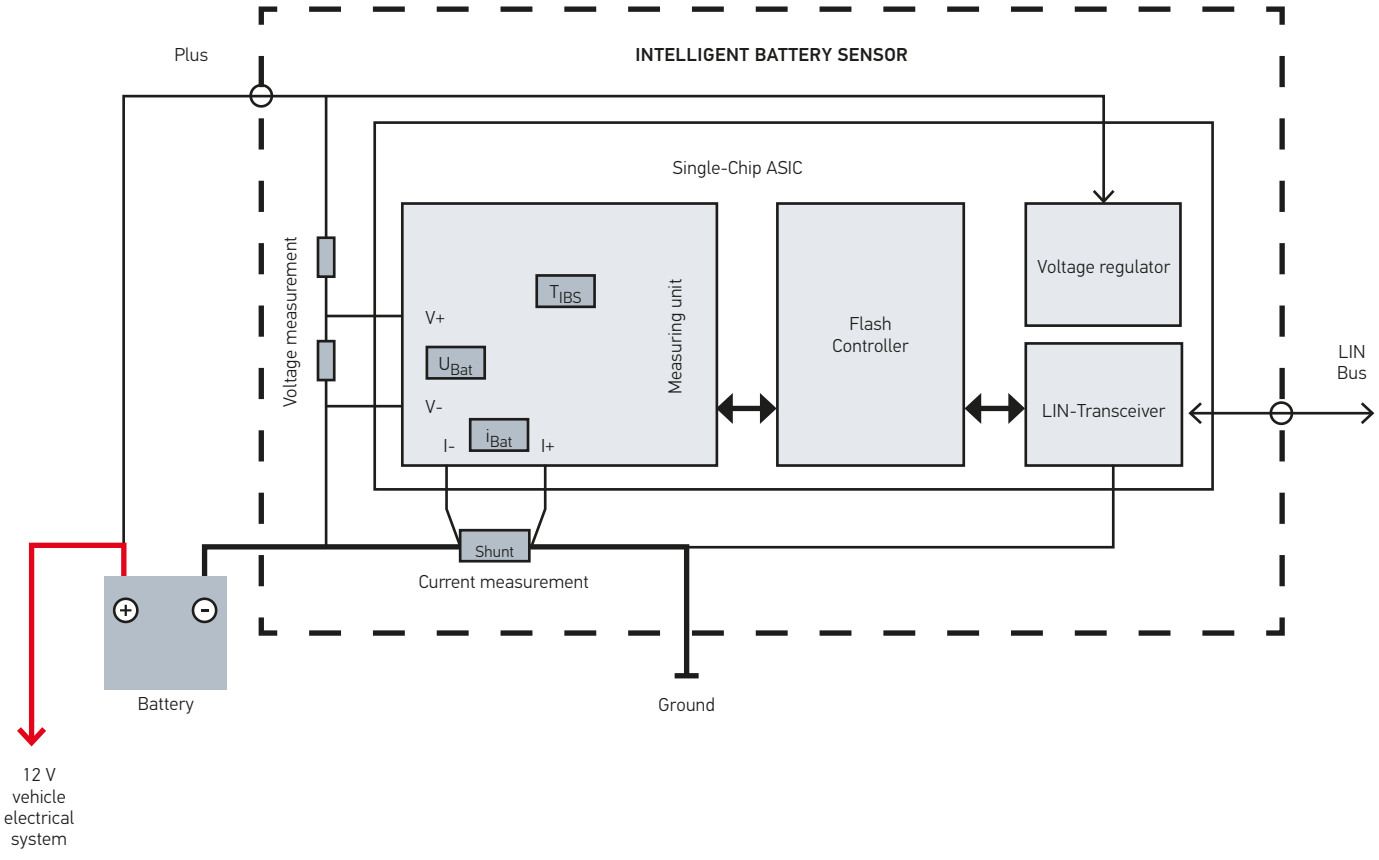
By using the intelligent battery sensor, the energy management system can react quickly in case of critical battery state and influence both consumer behaviour and the alternator.





## 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.



# SUMMARY OF VERSIONS

Currently there are nine versions of the intelligent battery sensor available.

| Manufacturer | Application | HELLA article number | OE number* |
|---|---|---|---|
| BMW | BMW 2 (F45), X1 (F48) | **6PK 013 288-901** | 61 21 9 117 831 |
| BMW | BMW X5 (F15, F85), X6 (F16, F86) | **6PK 010 561-901** | 61 21 6 819 309 |
| BMW | BMW 6 (E63, E64) | **6PK 010 562-941** [1)] | 61 21 7 620 566 |
| GM | Opel / Vauxhall Astra K | **6PK 010 557-921** | 22926732 |
| GM | Opel / Chevrolet / Vauxhall Adam, Mokka, Corsa D, Corsa E, Antara | **6PK 010 557-901** | 13306650/1201049 |
| GM | Opel / Vauxhall Casada, Astra J, Zafira | **6PK 010 557-911** | 12844068/1201044 |
| BMW | BMW 1 (E81, E87), X1 (E84) | **6PK 010 562- 921** [1)] | 61 12 7 618 677 |
| BMW | BMW 1 Coupe / Cabrio (E82, E88), Z4 (E89) | **6PK 010 562-931** [1)] | 61 12 7 616 199 |
| BMW | BMW 1 (F20, F21)<br>BMW 2 (F22, F87)<br>BMW 3 (F30, F80, F31, F34)<br>BMW 4 (F32, F82, F33, F83, F36) | **6PK 012 835-911** | 61 21 9 117 877 |

* OE number for comparative purposes only

| **Accessories** [1)] | | |
|---|---|---|
| Adapter cable (use if required) | **8KA 009 429-901** | – |