Boost the RV comfort with smart electronics components

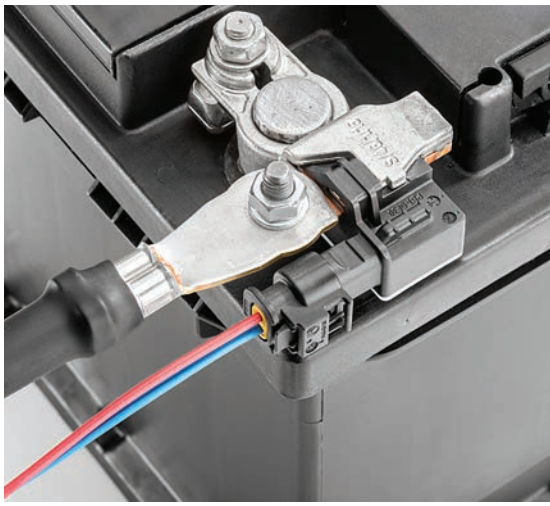
Products from HELLA, the electronics expert, are here to provide that total experience of comfort. HELLA's Intelligent Battery Sensor (IBS) is connected directly to the battery's negative terminal, enabling it to record current, voltage, and battery temperature variables. Drawing on these three values, the software and a controller then use algorithms to calculate the state of charge (SOC) and state of health (SOH). HELLA's IBS features the CI-BUS interface. It allows driver to manage energy storage via smartphone. HELLA has more to offer: radio remote controls, relays, and actuators are also available for delivering added comfort.

Words Giorgio Carpi

Maybe a tour of Norway is your customer ideal RV destination – or maybe it's a campsite in France or simply a quick weekend getaway. Whatever the case, and whether the vehicle is on the move or parked, it needs a power supply reliable for the interior lighting, television, refrigerators, and any other electrical devices. HELLA's Intelligent Battery Sensors (IBS) are designed to help with exactly that. They allow drivers to recognize and turn off unnecessary current consumption early on – before there is the risk of exhaustive discharge causing battery damage or the devices losing a reliable source of power. "That makes the IBS a real essential for RV energy management", says Daniel Quick, Head of Product Management for Electrics and Electronics at HELLA. Once integrated into the vehicle, the IBS can be used for all kinds of different applications. At its most basic, it is able to monitor the battery in the RV's living area and issue a warning if the charge state becomes critical – and the user can decide for themselves the point at which this state is reached. Beyond this, the IBS can be used for forecasting the battery's state of health, so that the user can replace it in good time once it has reached a critical capacity. This is a preventive way of stopping failures from happening.

Keeping an eye on current consumption with the Intelligent Battery Sensor

The IBS is connected directly to the battery's negative terminal, enabling it to record current, voltage, and battery temperature variables. This is what opens up the whole range of functions that are available. Current is measured in the sensor itself via the shunt or measuring resistor. This involves measuring the voltage drop between two points, which is proportional to the current. The voltage is measured using the supply voltage as a reference. This is possible because the sensor receives a steady positive from the battery, and the voltage is both the supply voltage and the measured voltage. The temperature is determined by the temperature sensor integrated in the electronics. Drawing on these three values, the software and a controller then use algorithms to calculate the state of charge (SOC) and state of health (SOH). In RVs, it is particularly common to have multiple batteries on the go at the same time so that the occupants can spend the night in places other than dedicated vehicle sites or campsites. HELLA has consistently developed the IBS with this in mind, and the second generation can now be configured for



as much as 500 ampere hours. This means that it is even possible to monitor multiple series-connected batteries and determine their remaining running times. High standby currents of the kind found in RVs are also no problem for the IBS, as it is still able to deliver reliable information about the battery's state of charge and state of health.

Managing energy storage via smartphone

Yet another advantage of HELLA's IBS is that it features the reliable CI-BUS interface, which allows the sensor to integrate easily into the on-board electronics and then enables communication with various terminal devices. "This means that drivers get a message on their smartphones if the battery state becomes critical, so they can then activate the charger immediately", says Daniel Quick. Alternatively, there is the option of having the charge state communicated directly to the system, which then switches on automatically or adjusts the charging behavior accordingly.

More electrics and electronics tools for non-stop comfort

HELLA has more to offer than just the IBS, however – other electrics and electronics products are also available for delivering added comfort. Radio remote controls, relays, and actuators, for example, are all designed to support a range of automated processes in the vehicle. "Our products make your everyday life in the vehicle easier – they can open and lock cab doors or hatches, switch on interior lighting, and extend sets of steps", says Daniel Quick. As an example, drivers can use the HELLA radio remote control to operate the central locking system or switch on the interior and/or exterior lighting for the vehicle. The signal reaches a radio receiver that then transmits it to the body control unit. This in turn activates an actuator driven by an electric motor, for instance, which ultimately unlocks the doors. Linear and high-force actuators are necessary components in any situation that involves positioning forces. While linear actuators assist in locking furniture drawers, their high-force counterparts are used for processes such as electrical push/pull applications or opening and closing doors, seats, or hoods electrically. Micro actuators, meanwhile, work without force and are used for locking and unlocking parts such as outside hatches and service hatches.

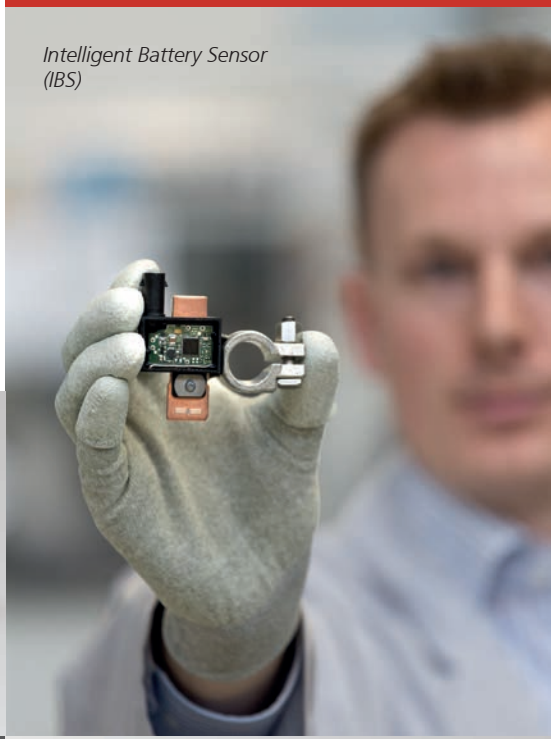
Easy-to-customize products

Custom designs and personalized functions are starting to take their place alongside comfort features as must-have additions to vehicles. Catering to this, HELLA offers extremely flexible options – all switches are modular and can be configured to suit customers' exact needs, and individual lettering can even be applied. So whether the RV is in Norway, France, or on the driveway, HELLA's state-of-the-art module switches, electrical actuators, and Intelligent Battery Sensors ensure that it never goes anywhere without the comfort features the customers want.

Micro actuators

Company Profile

HELLA is a global, family-owned company, listed on the stock exchange, employing over 40,000 people at more than 125 locations in some 35 countries. The HELLA Group develops and manufactures products for lighting technology and electronics for the automotive industry and has one of the largest retail organizations for automotive parts, accessories, diagnostics, and services in Europe. With over 7,000 employees in Research and Development, HELLA is one of the chief drivers of innovation in the market. In addition, the HELLA Group, with sales of € 7.1 billion in the fiscal year 2017/2018, is one of the top 40 automotive suppliers in the world and one of the 100 largest German industrial companies.



Intelligent Battery Sensor (IBS)

RV comfort

Smart energy management with the Intelligent Battery Sensor (IBS)
The IBS integrates directly into the power circuit and is able to determine the charge state and state of health of all conventional lead-acid batteries (flooded, EFB, AGM, and gel). The second generation can now be configured for as much as 500 ampere hours.

Comfortable handling with actuators
Actuators are used in a large number of locking and unlocking applications. They can be used for opening and locking furniture drawers, windows, and doors more easily, for example.

Custom module switch configuration
HELLA has developed two new series: 3100 for robust and waterproof applications and 4100 for indoor applications and the safe switching of low currents. If you are interested, you can configure your own switch plus individual RV symbols easily at hella.com/switch/en

Switch