FAQs

Hella IBScontrol

What does C20/K20 or C100/K100 mean in the battery capacity specification?

A battery has a higher or lower capacity depending on the intensity of current with which it is discharged. C20/K20 specifies the capacity a battery has that is discharged for 20 hours (with a current I=C20/20) down to final discharging voltage (C100/K100: capacity for discharging over 100 hours down to final discharging voltage, with a current I=C100/100). Since significantly greater currents are drained from the battery during discharge over 20 hours than during discharge over 100 hours, the specification of the capacity for C20/K20 (standard capacity) is lower than for C100/K100. For this reason, make sure you compare the same values.

Why can a battery have different capacities?

A battery's capacity can be influenced by different processes. Alongside irreversible ageing caused by excess load or permanent trickle charge (plate condensation), storage in a partly discharged state, frequent charging and discharging (measurement error of the active material through cycles), three other effects influence a battery's capacity, namely the Peukert effect, the ambient temperature and sulphation.

- Peukert effect: The Peukert effect states that the higher the discharging current of a battery, the lower the battery capacity that is available. In other words, the higher the current intensity required for a consumer, the lower the battery capacity that is available.

- Temperature: As temperature increases, so does battery capacity. This increase in capacity, however, is paid for by a faster ageing process and thus lower capacity in the long term. As temperatures fall below 25°C, the capacity of a battery is reduced. This means the full capacity is no longer available. This gives the impression that capacity could be increased by operating the battery at more than 25°C. This is not quite true, however, since from a certain temperature the self-discharging rate consumes the increase in capacity.

- In the case of sulphation, the active battery material is covered by a growing sulphate layer in its discharged state, which initially reduces capacity. The layer degenerates during charging. If users wait too long to charge the battery, the layers harden, leading to complete battery failure.

What special points should be heeded when batteries are switched in parallel?

The batteries should be identical. This means they should be of the same type, the same age and the same capacity. In addition, all connection cables (electrical connectors) should be of the same length and thickness so that no different voltages occur. No more than four batteries should ever be connected in parallel.

Can I use old and new batteries together?

This should not be done with batteries connected in parallel or in series if at all possible, as otherwise the battery with the lowest capacity will be overcharged.

What happens if the sensor does not recalibrate itself?

In this case the display for SOC and remaining running time is/will become inaccurate. If the sensor should not have recalibrated itself after a week, the customer is given a warning in the form of "!" on the display.

Why does the sensor have to calibrate itself?

In order to be able to determine the battery's State of Charge as exactly as possible.

Why is the IBScontrol so accurate?

Intelligent battery management from Hella allows the battery's State of Charge to be determined exactly through:

- Extremely precise and continual current and voltage measurement
- Taking the battery temperature into account
- Continual Ah balancing and monitoring to determine the battery's State of Charge and State of Health
- Automatic recalibration
- Adaptation of the system through respective battery curves

How is battery ageing taken into account with the IBScontrol?

Through an automatic recalibration mechanism and the interpretation of historic states of charge.

Why can battery ageing (SOH) become better?

Because the charge at higher temperatures can lead to a better State of Charge and thus to a better State of Health, and because a "sulphated" battery can be "desulphated" again during longer charging. Typically, the charging rate increases as seasons change. When winter changes to summer, the battery's charging ability increases, causing the SOC to increase and also improving the SOH level. Higher temperatures speed up ageing, however, so that the higher SOH displayed is only a "brief treat".

How is the battery's State of Health determined initially?

After calibration (exclamation mark on the main screen goes off), the current capacity (SOC) of the battery is determined, taking the temperature and type of battery set into account. With an initial charge state of 85% and the first charging current, battery ageing of 15% is assumed as the initial value. After this, the battery ageing is determined from the historic charge rating and discharging ability of the battery according to the charging and discharging processes. After calibration, battery ageing is set to 0% without charging current.

What is the difference between the IBScontrol and conventional voltmeters and ampere hour counters?

Pure voltage measurement only makes sense if you know:

- whether the battery is at rest
- that there is no ageing
- that the temperature is constant

Ampere hour counters do not take any charge factor into account for Ah integration.

The Peukert factor is not always the same for different battery types. IBScontrol takes the battery type into account during initial set-up and determines the probable remaining running time with the momentary current drain accordingly.

The IBScontrol determines capacity using complex algorithms that have been in use reliably for years in Original Equipment in the automotive industry, such as the one for quiescent voltage (OCV curve) and a very exact Ah integration. Battery ageing is determined through history of the battery capacity. The OCV curve and its temperature compensation represent an exact copy of the battery, since the acid density of the battery is reflected in the quiescent current.