WELCOME!

IEM-DCC 500

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IEM-DCC 500 IS A CERTIFIED REVENUE-GRADE DC METER

Certificate proving compliance to consumer-protecting standards

- Non-discriminatory billing by kWh
- Certified accuracy
- Tamper-proofing

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PRODUCT IEM-DCC METER

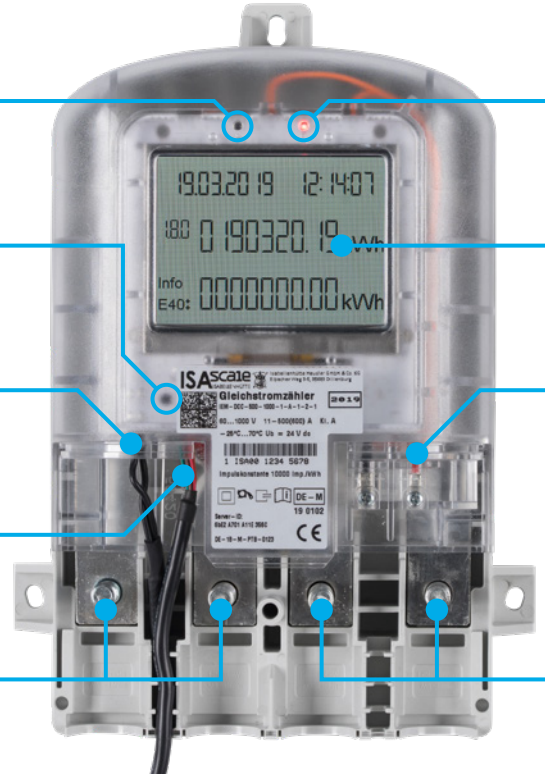
Optical data interface
display reading (push operation)

Product label with certified information
public key is included in 2D-barcode

DC supply voltage 10-48 V

RS 485 communication interface
SML-protocoll (Push/Pull operation)

Power contacts
DC-input



IR- test LED

Meter display
date // time // total // transaction modus

Additional voltage measurement
cable losses compensation

Power contacts
DC-output

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PRODUCT IEM-DCC METER

Key features

- Nominal current and voltage: 500 A and 1000 V
- Accuracy @ nominal current: < 0,2 %, Class B (EN 50470)
- Fully sealable and flame protected according to UL94 V-0
- Operating temperature from -40 °C to +75 °C
- RS485 with RJ12 plug communicating SML v.1
- Multiple levels of display scrolled by optical input (flashlight pulses)
- Power, Voltages, compensation parameters, etc.

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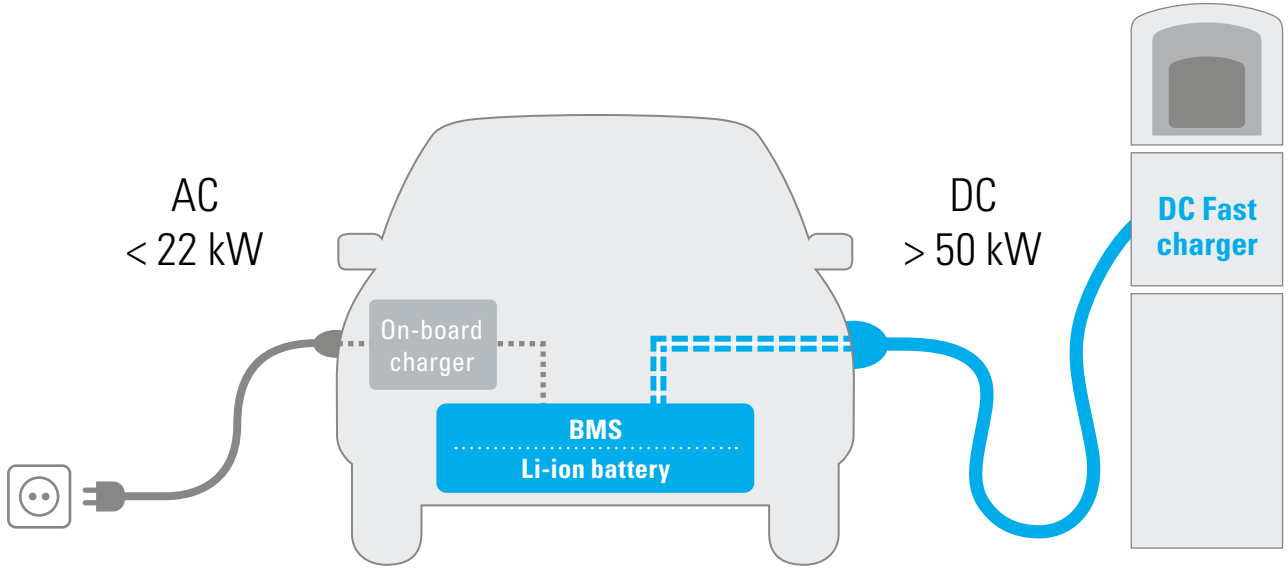
DC ENABLES HIGH-POWER CHARGING WITH 50 KW UP TO 1000 KW REDUCING THE CHARGING TIME

- Due to limitations in size and weight of the on-board charger, the charging power for AC charging is limited.
- When charging DC, the current doesn't have to be transformed, which allows to bypass the on-board charger and thus realize much higher charging power.
- This allows to significantly reduce the charging time, laying the foundation for developing batteries with higher capacities and therefore increasing the broad public acceptance of electric mobility.



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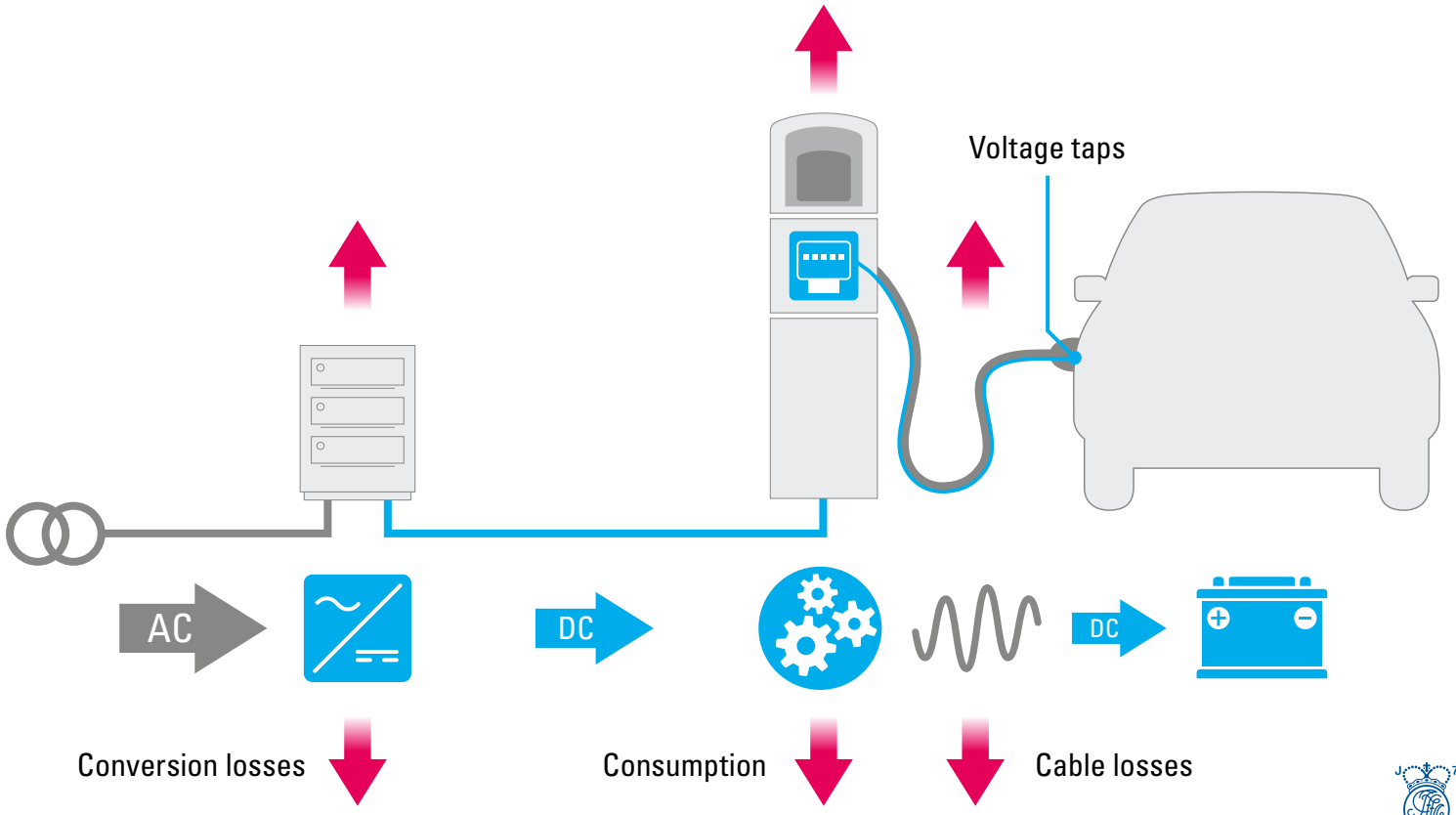
MEASURING VOLTAGE AT THE PLUG ALLOWS TO ACCOUNT FOR THE DIFFERENT LOSSES IN HIGH-POWER CHARGING APPLICATION

- If an AC meter is used to measure the energy fed into the AC/DC converter, the customer is charged for conversion losses, consumption of the dispenser and for cable losses
- Using IEM-DCC 500 with the 4-wire-measurement allows to measure the energy at the plug thus ensuring the highest accuracy in recording the supplied energy



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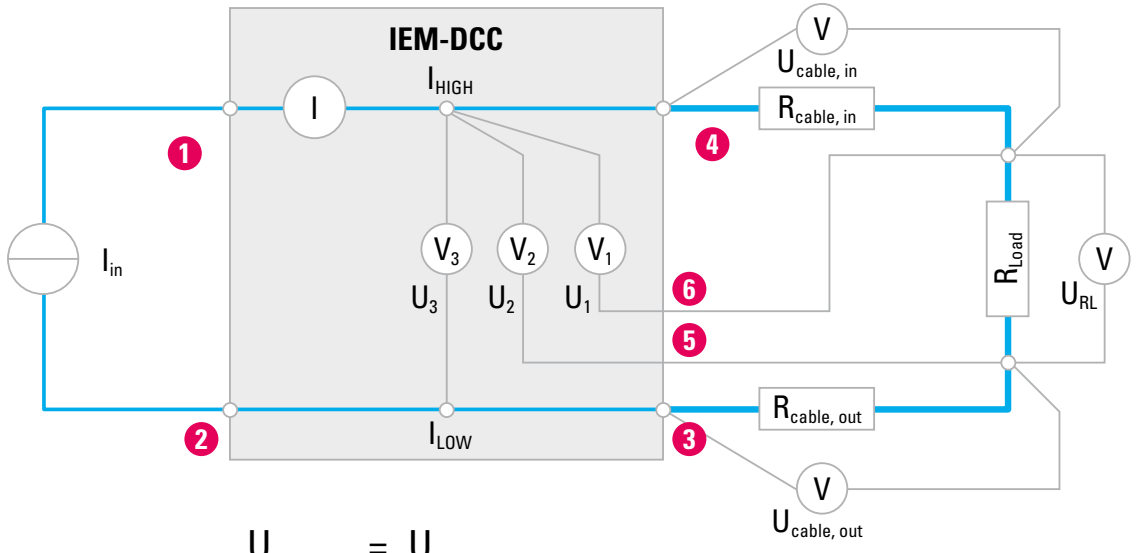
4-WIRE MEASUREMENT TO RECORD THE ENERGY AT THE PLUG

- Additional measurement channels allow to bypass the resistances of the contacts and the cables and measuring the voltage drop at the vehicle inlet.
- The differential voltage measurement in 3 channels alows to determine the cable losses and send a notification in case they cross a predefined threshold.



$$U_{cable,in} = U_1$$
$$U_{RL} = U_2 - U_1$$
$$U_{cable,out} = U_3 - U_2$$

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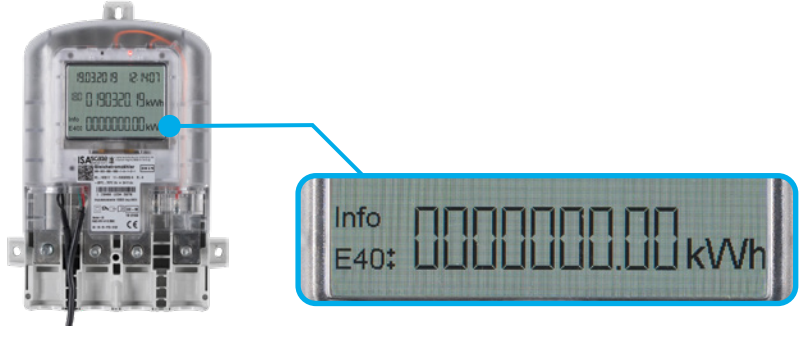
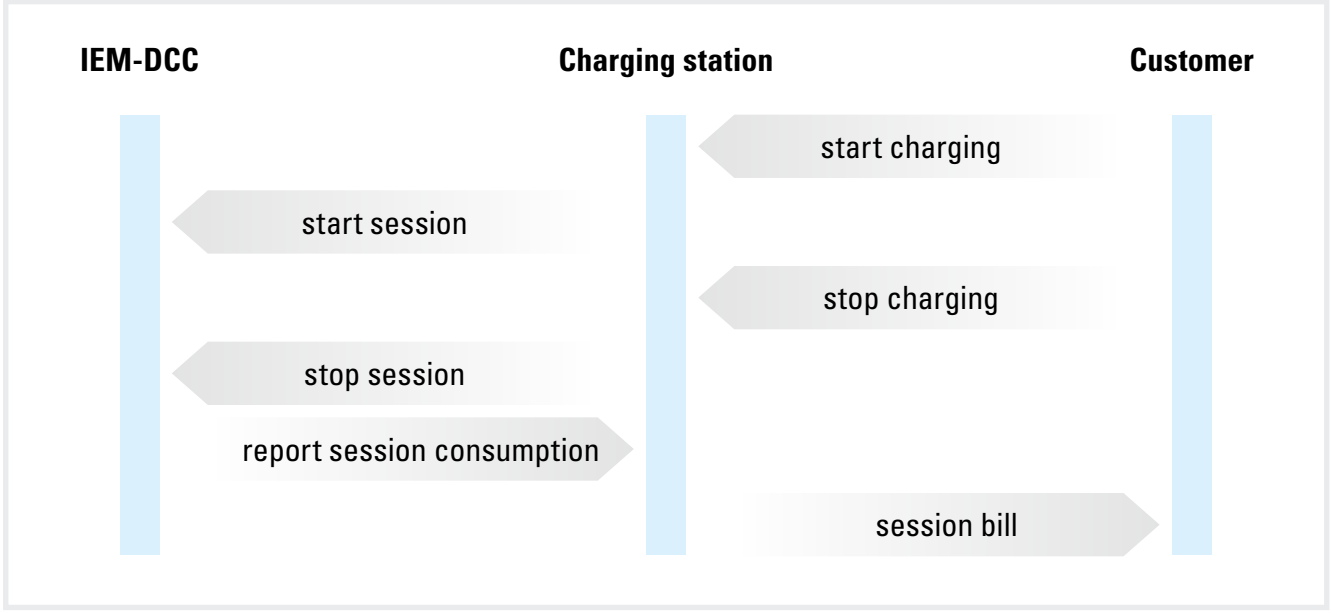
IEM-DCC 500 IMPLEMENTS A LOGIC TO FOLLOW THE CHARGING PROCESS

- In comparison to a standard energy meter, the IEM-DCC 500 has implemented a logic, which allows it to follow the charging process. As the meter knows, when the session starts and when it ends, it has the possibility to record energy between two events.
- The additional line showing the energy supplied during the transaction ensures a customer experience similar to a regular petrol station, thus increasing the customer trust and comfort.





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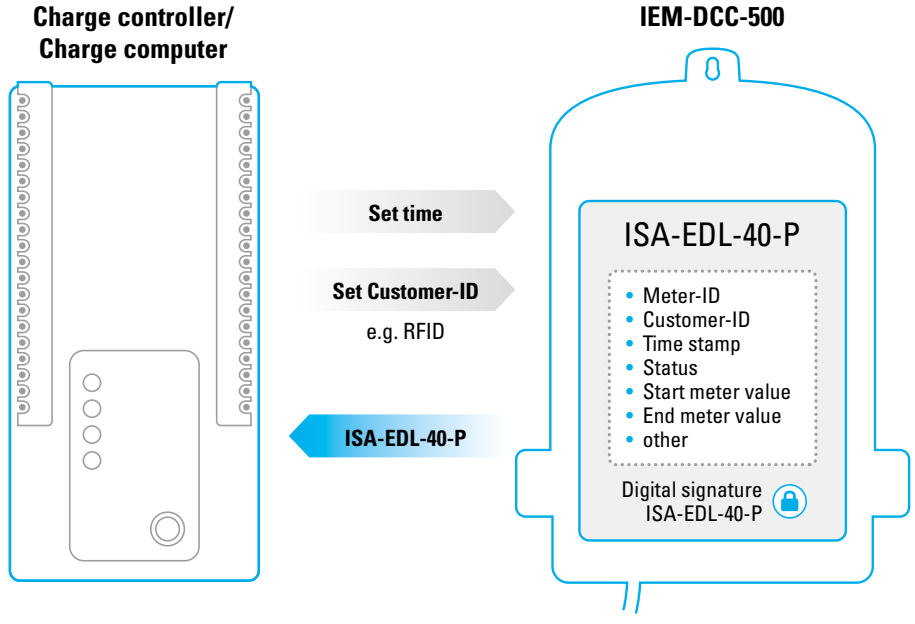
CONTENT OF DIGITALLY SIGNED DATA

Delayed Billing

- In contrast to the common approach of immediate bill settlement at the gas station, subscription-based models gain popularity in the EV-charging. In such case, the bill is created in the servers of the energy contractor and presented to the customer usually on a monthly basis.
- This approach presents two problems to the customer: the verification of the transaction in the bill as being their own (belonging), and the verification of the data in the bill as being correct (authenticity).
- The problem of belonging of a transaction to a specific customer is solved by assigning a customer-ID and a time-stamp to the session consumption, creating unique data sets marking a specific charging transaction.
- Implementation of public-key infrastructure allows the meter to digitally sign each of the unique data sets, preventing it from undetected changes later on.



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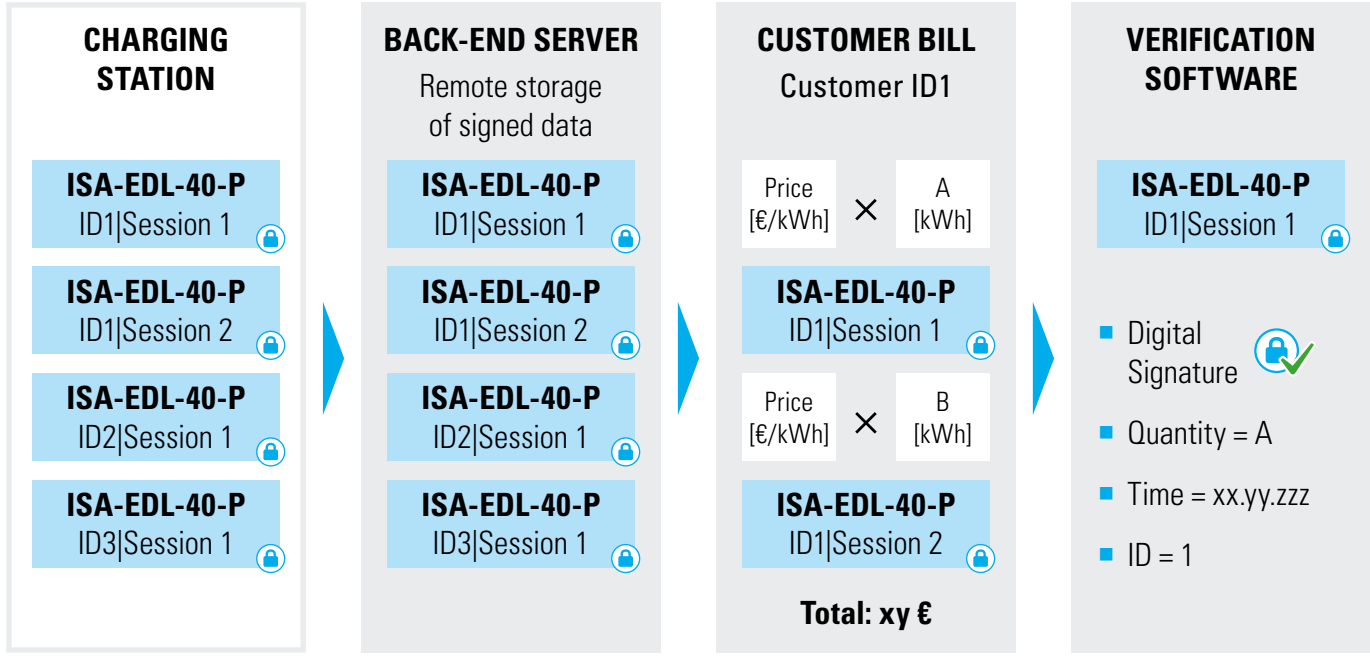
DATA STORAGE IN THE BACK-END SERVER OF ENERGY CONTRACTOR

- When the bill is presented to the customer, the data set may also be digitally provided to the customer.
- To verify the data set, a certified software may be provided to the customer. The software may be provided as a part of the billing tools of each energy contractor or as an independent standardized tool.
- Providing signed data and means for verification of the signature can fulfill the requirements for tamper-proofing and the transparency to the customer, thus increasing customer comfort and trust in public charging.



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Thank you very much
for your attention!

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