

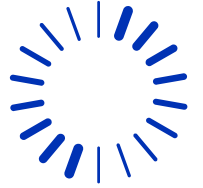


DCBM Series

Direct Current Billing Meter

DCBM

Direct Current Billing Meter



Smart, compact, and robust design

- Maximum current 400 A - 600 A / 1000 V nominal voltage
- Class B accuracy, Bi-directional meter for V2G
- Modular meter with cable length from 30cm to 3.5m

For retrofit & new EVs' chargers

DESIGN FLEXIBILITY

Complies with metering standards

- Designed according to VDE-AR-E-2418-3-100
- Fully compliant with the German "Eichrecht" regulation
- EN 50470, EN 61000, IEC 62052

Allows legal DC billing

E-MOBILITY

Secure billing transactions

- Signed billing data sets according to the S.A.F.E OCMF protocol
- Enable a total transparency of billing data for users
- Cloud Operators Interoperability

S.A.F.E OCMF

DATA SECURITY

IoT product

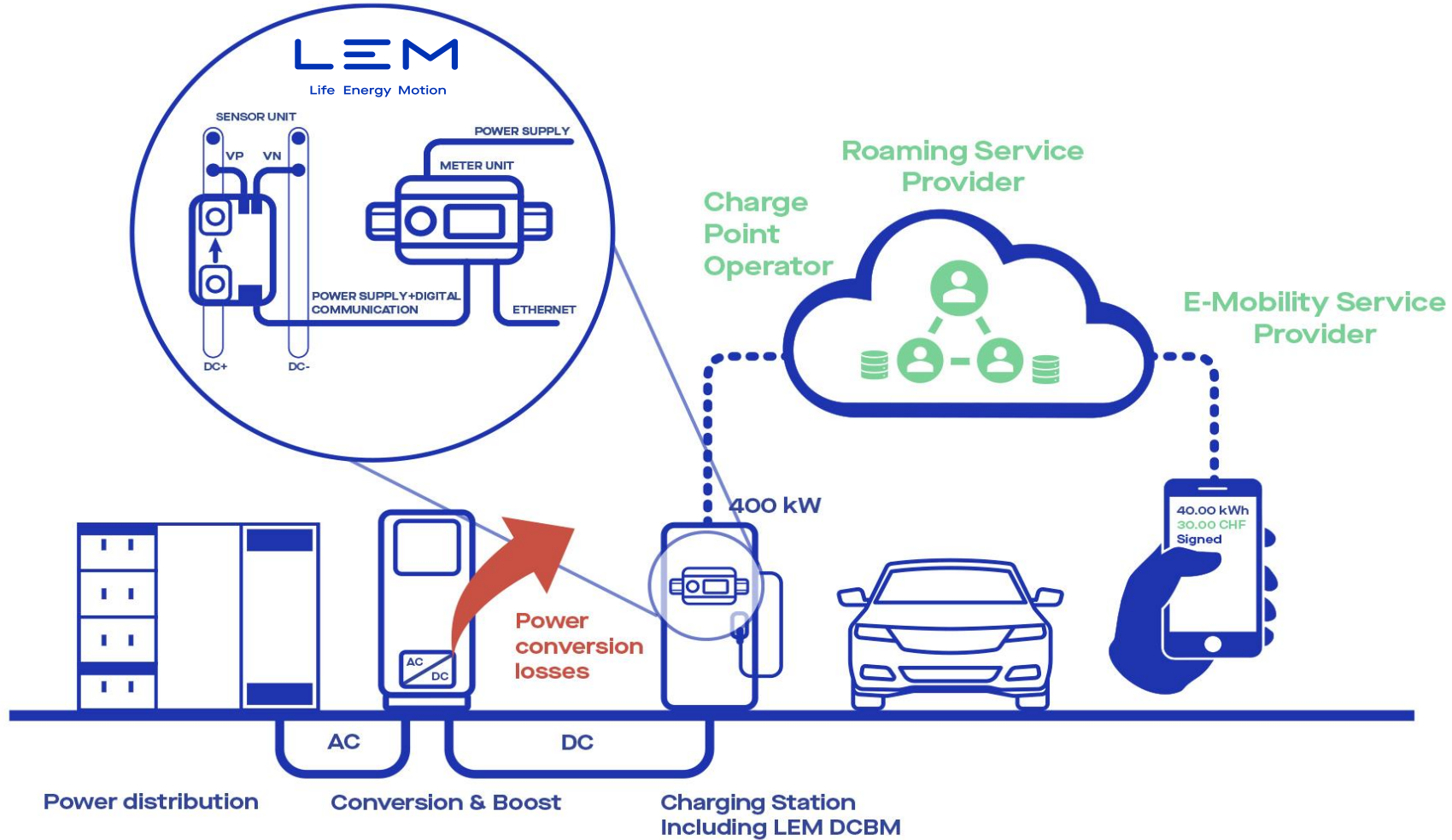
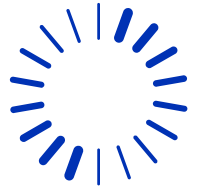
- Ethernet communications supporting the HTTPS/REST protocol
- NTP (Network Time Protocol) time synchronization
- Includes an LCD display showing live measurements, energy, alarms and legal data

Cloud Operators Interoperability

DIGITIZATION

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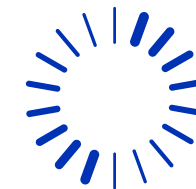
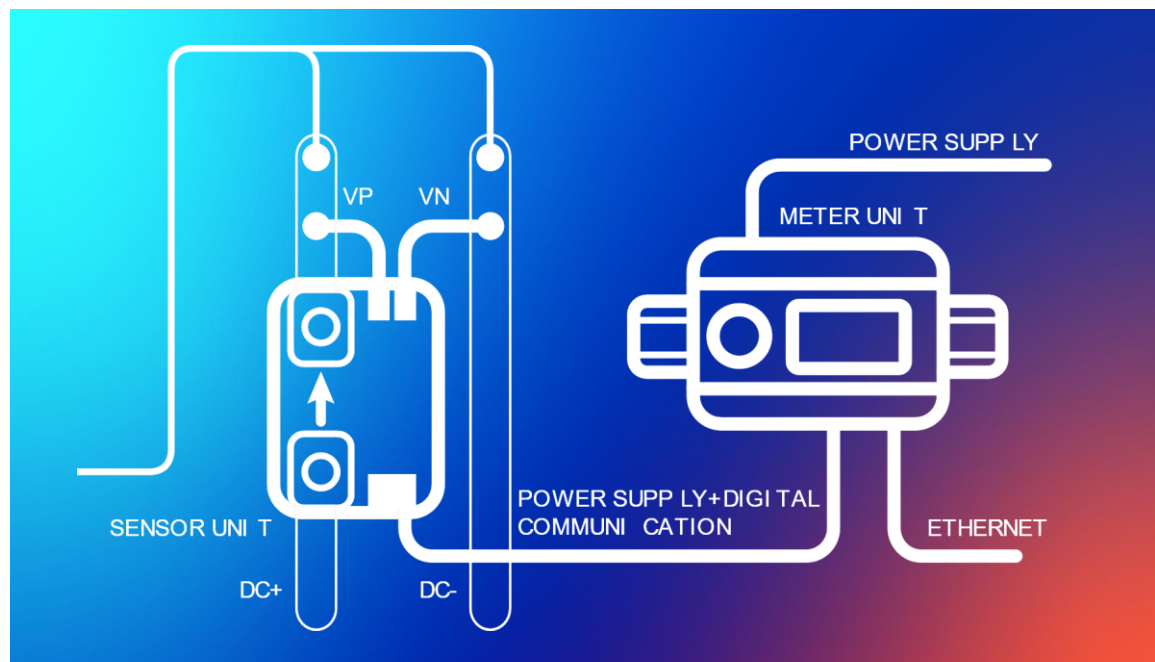


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Market needs:

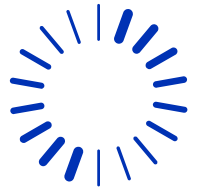
- DC Charging Stations for EVs' must implement a DC meter certified, compliant with "Eichrecht", meaning "German metrology legislation"
- Losses due to AC DC conversion should not be paid by EV owners. DC meter ensures the measure of DC energy



- **Senor Unit** measures the current, the voltage and insulates measures to send them to the Meter Unit. Two versions are available, $400A_{max}$ or $600A_{max}$
- **Cable** transmits data from the Sensor Unit to the Meter Unit. The cable is robust for an external environment up to 1000 VDC conditions
- **Meter Unit** is the heart of the DC meter. It receives external data (IDs, Time,...) coming from the charger controller, receives measures coming from the Sensor Unit, combines data, signes data and transmits all the data package to the charger controller via an Ethernet communication

DCBM

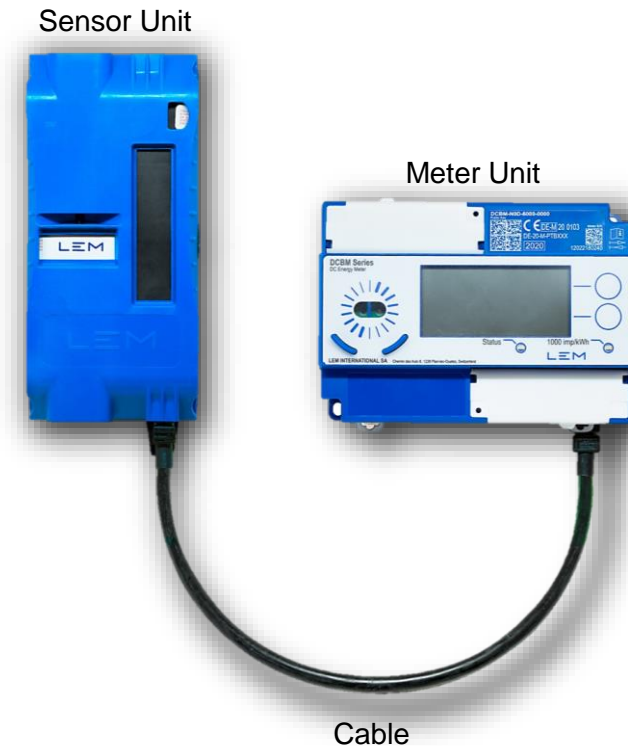
Direct Current Billing Meter



Key features

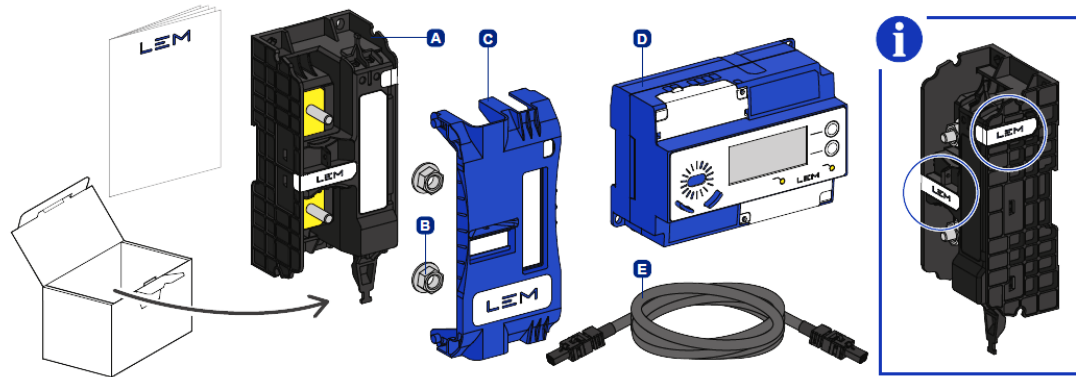
- Split module concept, very compact
- Cable lengths between Meter Unit and Sensor Unit: 30cm to 3.5m
- DCBM 400 I_{st} 320mA, I_{min} 4A, I_{tr} 8A, I_{max} 400A
- DCBM 600 I_{st} 480mA, I_{min} 6A, I_{tr} 12A, I_{max} 600A
- Voltage measurement from 150V to 1150V
- Bi-directional meter
- Charging cable resistance compensation managed by DCBM
- Class Accuracy B
- Supply voltage: 12V DC to 24V DC
- Meter Unit operating temperature range: -25°C to 70°C
- Sensor Unit operating temperature range: -40°C to 85°C
- Maximum Bus-bar operating temperature: 105°C
- IP 20 rating
- Instantaneous data provided with a refresh rate at 1Hz, Current, Voltage, temperature, Energy positive and negative
- Ethernet communication with HTTPS/REST protocol, NTP time synchronization
- Fixe ip address or DHCP protocol
- Data encapsulated with OCMF protocol (SAFE, Software Alliance For E-mobility) and **signed data**
- Rated insulation voltage at 1000VDC, Reinforced
- Certified DC meter compliant with [VDE-AR-E-2418-3-100](#)

DCBM product



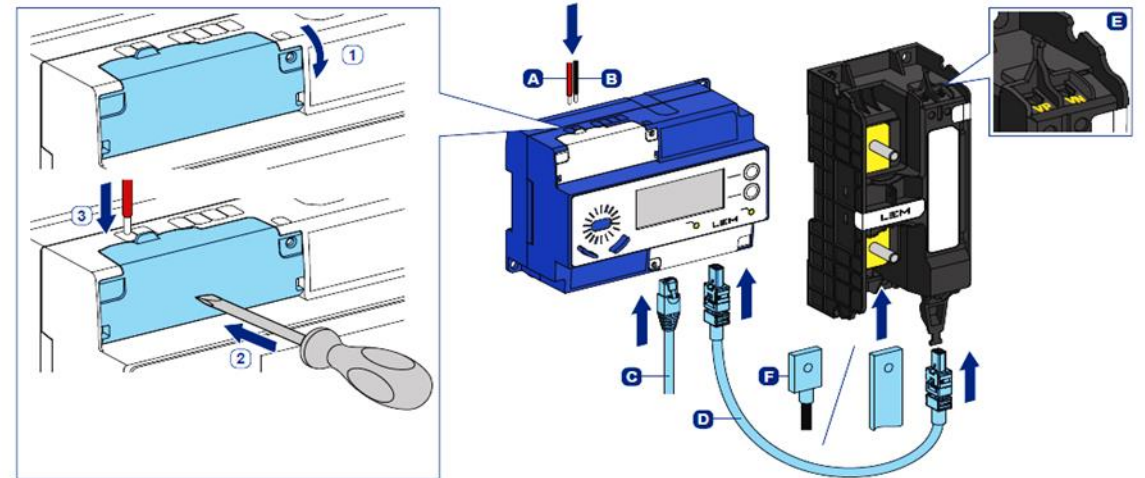
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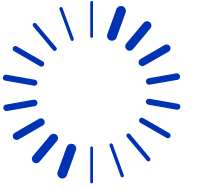
QUICK & EASY

ROBUST



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1 Meter solution

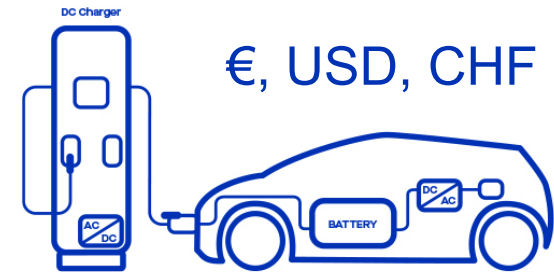


2 Certification

Conformity Assessment

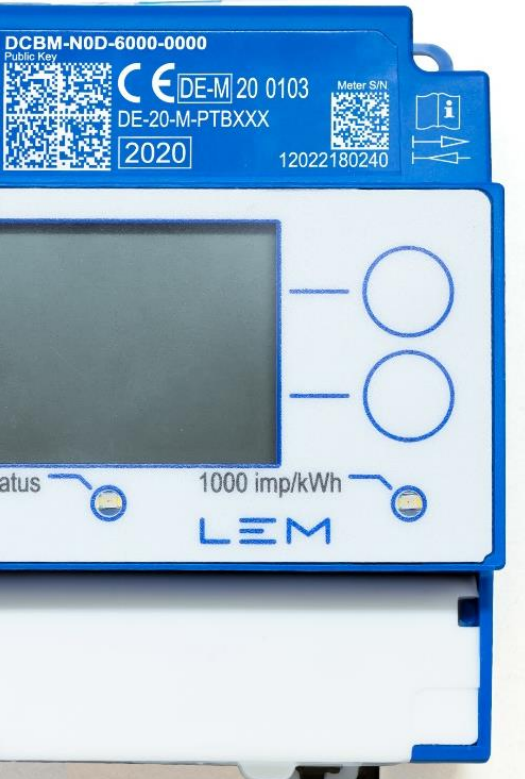
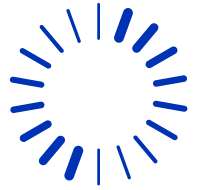
 Approval MODULE B	Tests MODULE F
Baumusterprüf- bescheinigung	Eichung

3 Billing is allowed



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```
{
  "paginationCounter": 2,
  "transactionId": "demo1234",
  "evseld": "+49*DEF*E123ABC",
  "clientId": "12",
  "tariffId": 0,
  "cableSp": {
    "cableSpName": "0 mohm",
    "cableSpId": 0,
    "cableSpRes": 0
  },
},
"userData": "",
"meterValue": {
  "timestampStart": "2019-12-11T17:17:04+01:00",
  "timestampStop": "2019-12-11T17:17:20+01:00",
  "transactionDuration": 16,
  "intermediateRead": false,
  "transactionStatus": 25,
  "sampleValue": {
    "energyUnit": "kWh",
    "energyImport": 1.709,
    "energyImportTotalStart": 1183.060,
    "energyImportTotalStop": 1184.769,
    "energyExport": 0.000,
    "energyExportTotalStart": 0.000,
    "energyExportTotalStop": 0.000
  }
},
},
"meterId": "MU_ID_123456",
"signature": "3046022100E829A3CE0F053A6023C6B677A9B4A0AF8D34385E6E8DA3EBB8CDB0D295F5DC4A022100831172 ",
"publicKey": "C47DDE84F44D86D273A370B4EBCAAAF6384B528B4E0A1F7583EC9C1264EBFEA89B2B13CF747C6DABD20039 "
```

} Selected by cableId

Counter incremented by every read access to guarantee unicity

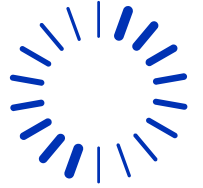
Copy of the IDs (see start command)

Transaction readings and status

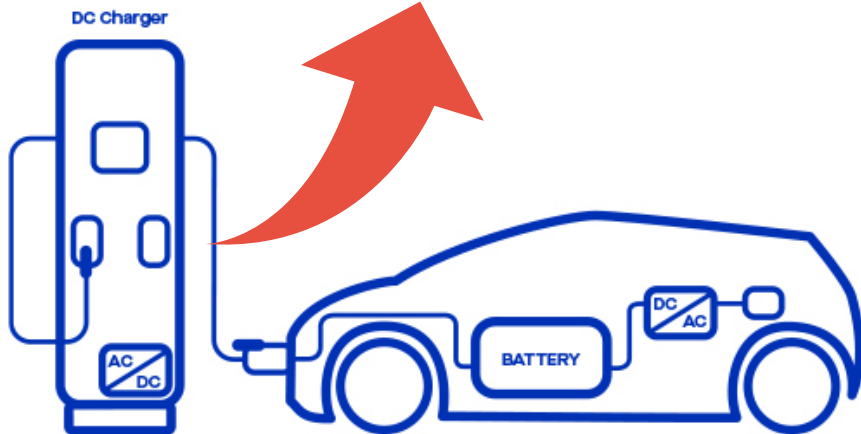
Data needed for signature verification

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Power charging cable losses



Charging cable, between charger and EV,
generates power losses due to his own resistance.
DCBM integrates the compensation function

Compensation function

DCBM covers all compensation cases

- Dynamic
- Fix compensation
- No compensation

Via software



Thank you

Please contact us: <https://www.lem.com/en/form/contact-us>

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