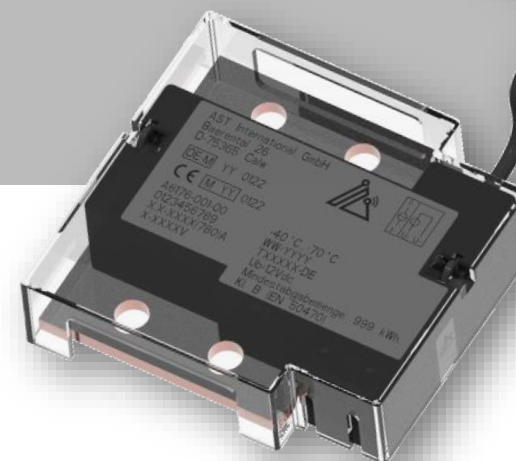




AST DC-Meter



AST INTERNATIONAL
ADVANCED SENSOR TECHNOLOGIES

Transaction S.A.F.E. OCMF

- ▲ Billing according to S.A.F.E. OCMF protocol
- ▲ Transparent billing
- ▲ Cloud operated

IoT

- ▲ Communication supporting Ethernet, RS485 and CAN
- ▲ LCD display (legal data, energy and alarm)
- ▲ NTP (Network Time Protocol)
- ▲ Cloud operated

Design (New & Retrofit)

- ▲ Compact and versatile as one unit or with detached display up to 5 meter cable length
- ▲ Continuous high current and voltage measurement up to 1000A and 1000V (Megawatt charging for trucks and buses)
- ▲ Class B accuracy, bi-directional meter

International Metering Standards

- ▲ Complies with the German (Eichrecht), French and US calibration laws and regulations
- ▲ EN 50470, EN 61000, IEC 62052
- ▲ IEC 62053-41:2021
- ▲ According to VDE-AR-E-2418-3-100



Loop for seal



Power rail with 2 screw-on points

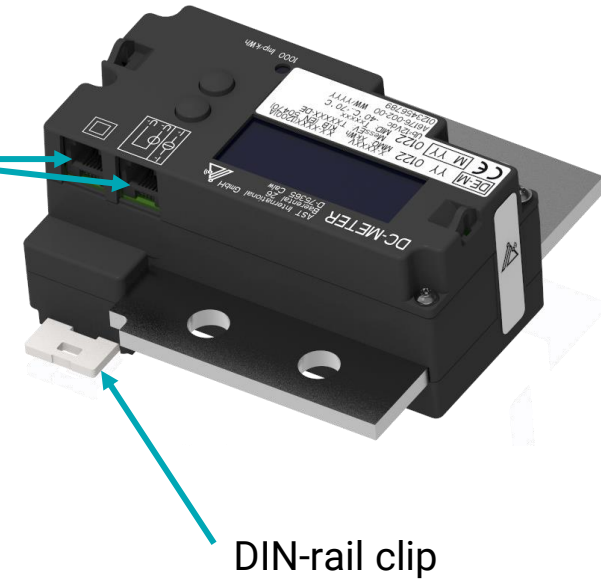
Status-LED

2 back RJ12 connectors

Buttons

1 front RJ12 connector

2 voltage connections



DIN-rail clip

Market needs

⚡ Continuous current and voltage measurement for fast & ultra charging stations as well as Megawatt charging stations.

⚡ High current up to 650A or 1000A

⚡ High voltage up to 1000V



- ⚡ DC-Meter conformity - German „Eichrecht“ (metrological legislation)
- ⚡ Finland and Austria to follow German lead and adapt
- ⚡ Similar legislations based on the German „Eichrecht“ in France and the United States of America (California), other countries will follow
- ⚡ 4-wire-measurement which allows cable compensation
- ⚡ Full accuracy over complete measurement range (7.8A to 650A and 10A to 1000A)
- ⚡ Compact DC-Meter or variant with a detached display

AST DC-Meter – product overview

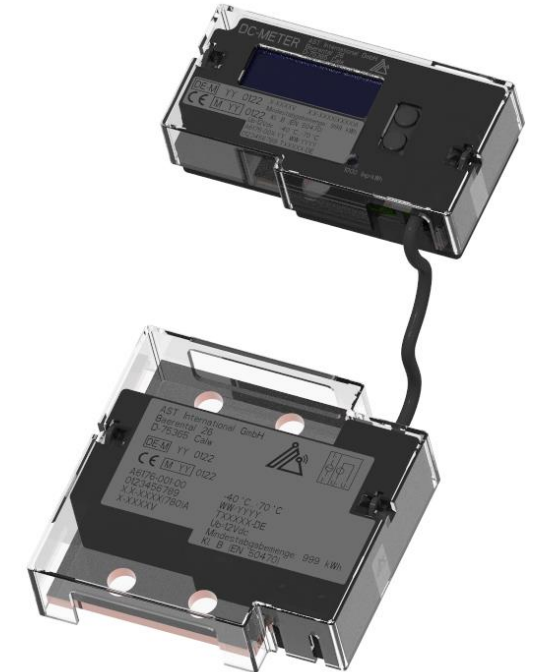
DC650	DC1000
Current	
$I_n = 650A$	$I_n = 1000A$
$I_{min} = 7.8A$	$I_{min} = 12A$
$I_{tr} = 15.6A$	$I_{tr} = 24A$
$I_{max} = 780A$	$I_{max} = 1200A$
$I_{st} = 0.62A$	$I_{st} = 0.96A$
Voltage	
$U_n = 1000V$	$U_n = 1000V$
$U_{max} = 1200V$	$U_{max} = 1200V$
$U_{min} = 150V$	$U_{min} = 150V$
Accuracy class	
- Class 1, IEC 62053-41:2021 - Class B - MID (according to 2014/31/EU of the EUROPEAN PARLIAMENT AND COUNCIL, attachment V, MI-003)	- Class 1, IEC 62053-41:2021 - Class B, accuracy starting at 10A - MID (according to 2014/31/EU of the EUROPEAN PARLIAMENT AND COUNCIL, attachment V, MI-003)

Both available in following design variations:

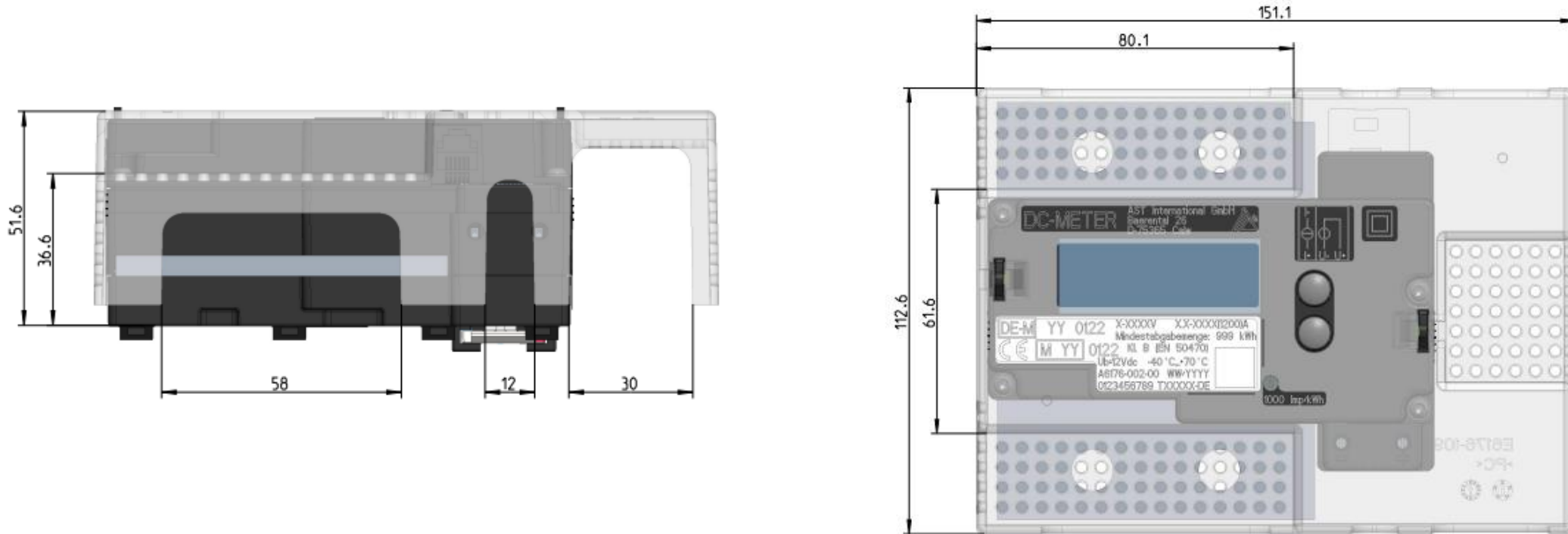
Compact Version



Detached Display Version



Dimensions **with** housing DC650 / DC1000 - **Compact Version**

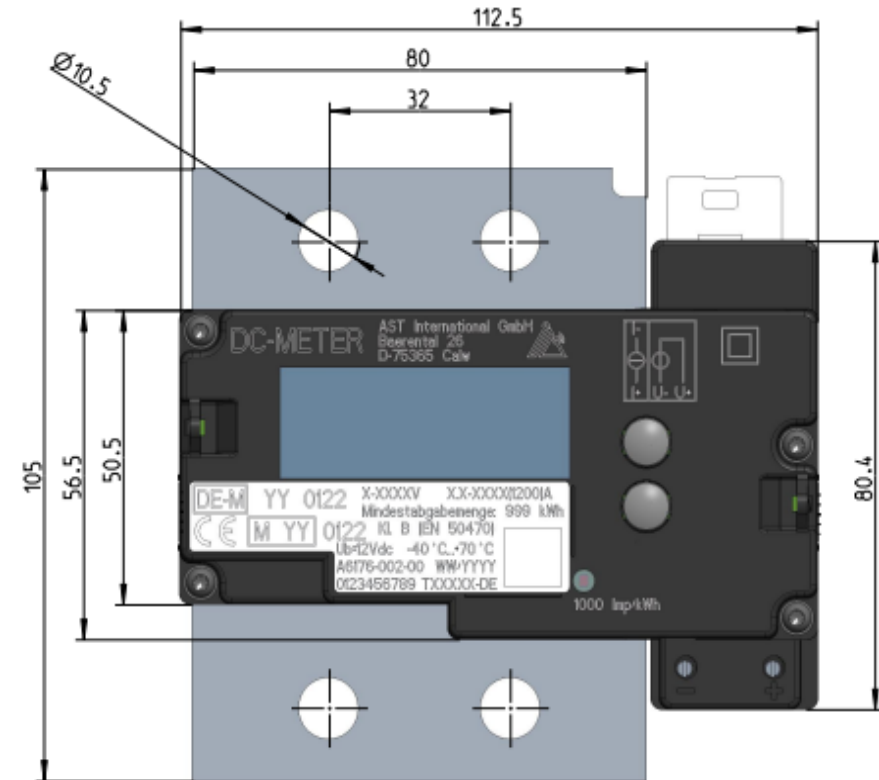
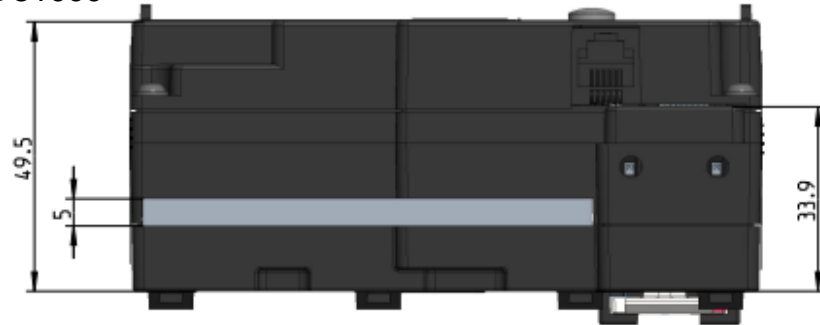


Dimensions **without** housing DC650 / DC1000 - Compact Version

DC650

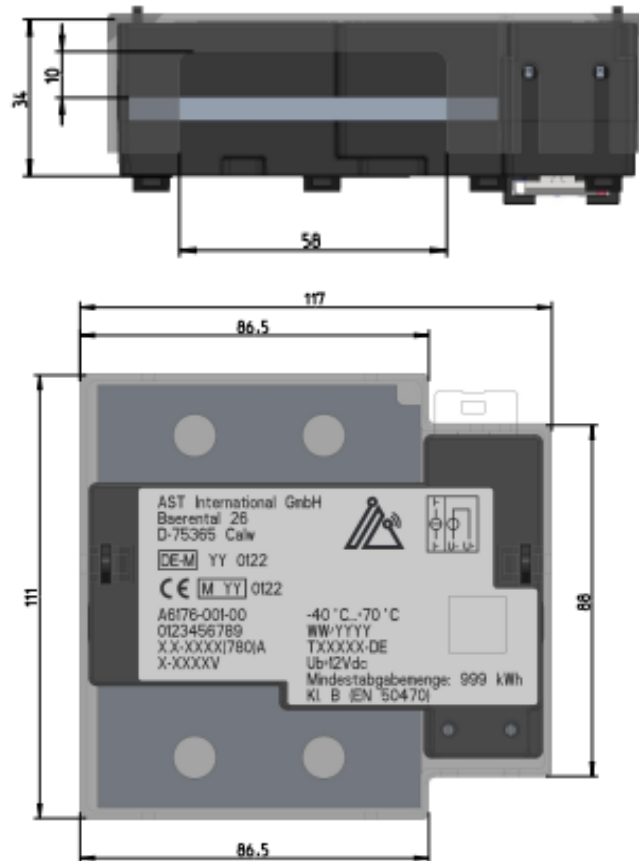


DC1000

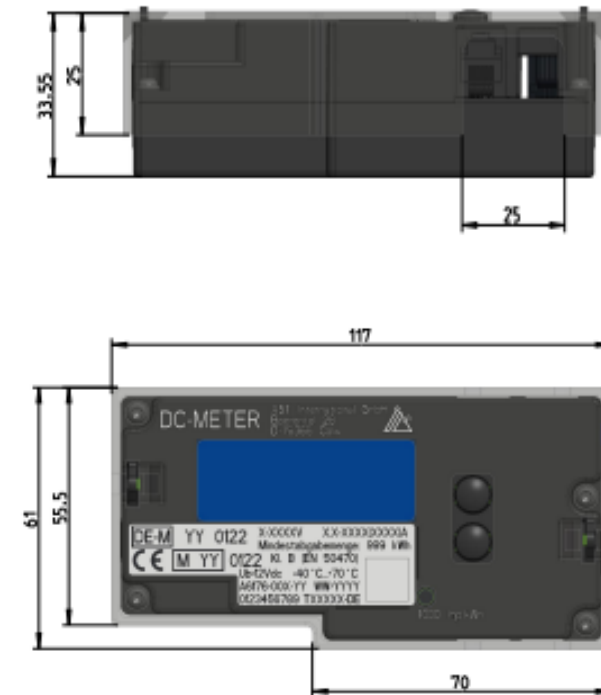


Dimensions **with** housing DC650 / DC1000 - **Detached Display Version**

Sensor Unit

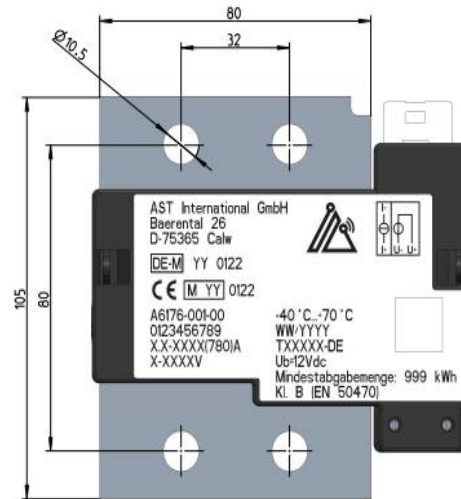
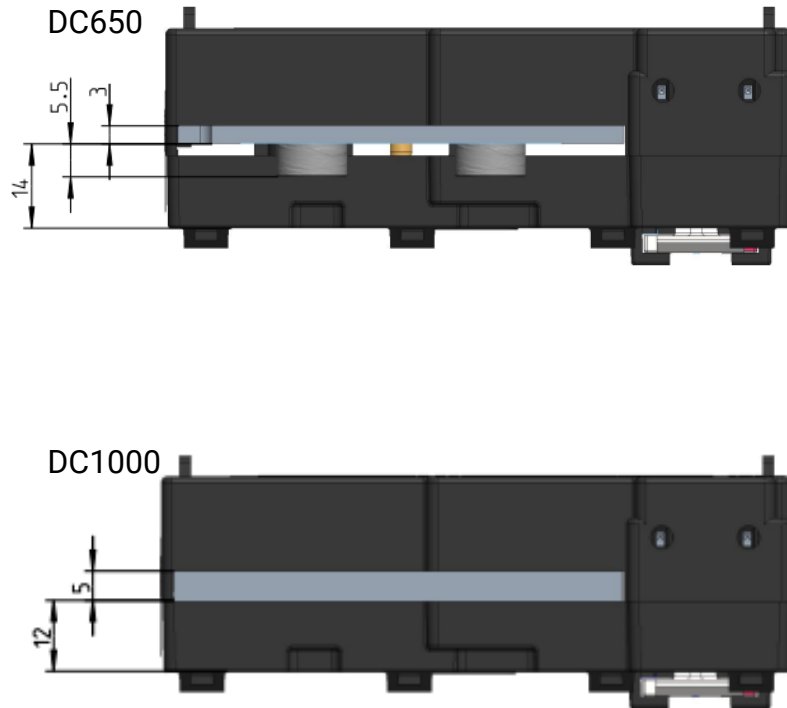


Meter Unit

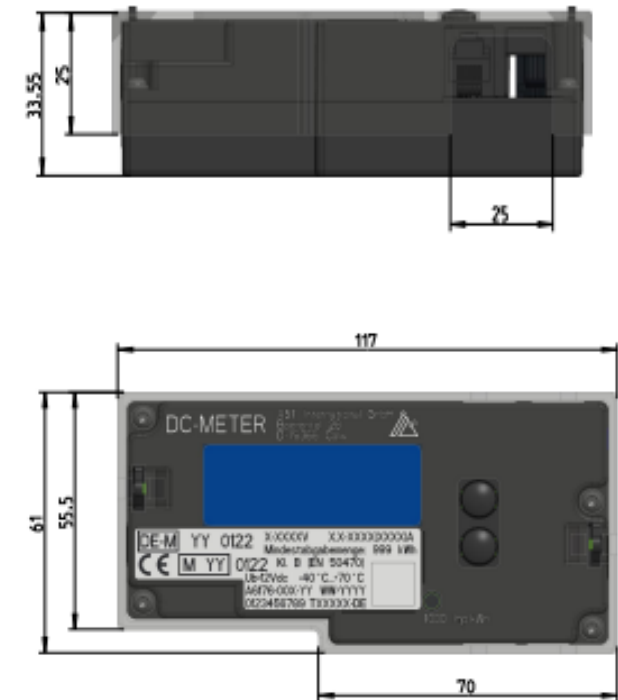


Dimensions **without** housing DC650 / DC1000 - **Detached Display Version**

Sensor Unit



Meter Unit



Key features

- ▲ Compact and robust design
- ▲ Bi-directional meter
- ▲ EN 50470, EN 61000, IEC 62052
- ▲ IEC 62053-41:2021
- ▲ According to VDE-AR-E-2418-3-100
- ▲ Charging cable resistance compensation Class Accuracy B
- ▲ Supply Voltage: 12V DC (24V DC possible)
- ▲ Meter Unit operating temperature range: -30°C to +80°C
- ▲ Sensor Unit operating temperature range: -30°C to +80°C
- ▲ Instantaneous data provided with a fresh rate at 1Hz, current, voltage, energy positive and negative
- ▲ Communication via Ethernet, RS485 or CAN
- ▲ Encapsulated with OCMF protocol (S.A.F.E., transparency software) and signed data
- ▲ Rated insulated voltage at 1000V DC

Description

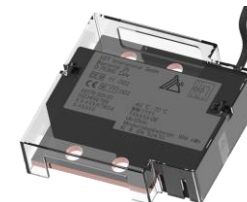
- ▲ **Meter Unit:** interface between the charging station (via Ethernet, RS485, CAN) and sensor unit as well as presenting the measuring data to the client.



- ▲ **Cable:** transmits data from the sensor unit to the meter unit. Capable to reach length up to 5 meters.



- ▲ **Sensor Unit:** measures the current and voltage. The calculated kWh are transmitted to the meter unit.



Communication protocol

Transaction dataset is provided by JSON file format. This file is populated following the [OCMF formatting](#). The DC-Meter handles both export and import energy in individual JSON file. The public key is retrieved from the meter by a specific command dissociation from the command to get the transaction dataset. The manufacturer must associate the DC-Meter public key to any transaction dataset to validate the content integrity by independent organisation.

<pre>"FV": "1.0", "GI": "AST DC-Meter 1000A", "GS": "00000000", "GV": "APPL_FW_0_0_0", "PG": "T31", "MV": "AST international", "MM": "DC Meter 1000A", "MS": "00000000", "MF": "APPL_FW_0_0_0", "IS": "true", "IT": "ISO14443", >ID": "test_vehicle", "CT": "EVSEID", "CI": "ChargePointID", "RD": [{ "TM": "2000-01-01T00:00:45,000+0000 I", "TX": "B", "RV": 1000.0, "RI": "1-0:1.8.0.FF", "RU": "Wh", "RT": "DC", "EF": "", "ST": "G" }, { "TM": "2000-01-01T00:00:63,000+0000 I", "TX": "E", "RV": 1015.6, "RI": "1-0:1.8.0.FF", "RU": "Wh", "RT": "DC", "EF": "", "ST": "G" }]</pre>	General Information Pagination Meter Identification User Assignment Allocation of Charging Point Readings	Identification of the Gateway. AST factory Gateway Unique number assigned for each transaction. Meter self-generation data at transaction start. Details of the meter. Similar to general information. AST factory settings. Information regarding the User involved by this transaction. Supplier custom settings at transaction start. Identification of the allocated charging point. Supplier custom settings once or several time during the product lifespan. Transaction information and status. Meter self-generation data at transaction start and stop. Supplier timestamp refresh at transaction start.
<pre>"SA": "ECDSA-secp256k1-SHA256", "SD": "3045022066AD7460B556EE1010706DCA4B..."</pre>	Signature Data	Validation of the transaction content. Meter self-generation data at transaction read.



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