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E220-AMxD

E220

Technical Data

[STATUS]

The E220 standalone meter meets all the requirements set by the Digitisation Act. It is designed to meet most of the FNN requirements for base meters and suits both 3-phase 4-wire and 1-phase 2-wire applications. The E220 is an SLP meter that also delivers GRID values. Optional modules available include a Dual Tariff Module or an LMN interface (alternatively RS-485 or wireless M-Bus).

Revision history

Version	Date	Comments
a.01	18.12.2017	First draft.
a	08.01.2018	First edition.
B	16.02.2018	Correction in MID

Residential Meter

The E220 is a standalone meter ("moderne Messeinrichtung") according to the Digitisation Act. The meter is suitable for both 3-phase 4-wire and 1-phase 2-wire applications.

The E220 is an SLP (Standard Load Profile) meter that measures active energy (A+ and/or A-) and shows the recorded values on display. If enabled, instantaneous power is displayed on the second line of the display.

According to the Digitalisation Act, the following historical values can be accessed through the main menu by entering the PIN code:

- daily consumption   730 days
- weekly consumption   104 weeks
- monthly consumption   24 months (30 days)
- annual consumption   2 years (365 days)

GRID functions

GRID values are available in each meter.

Configuration

The E220 can be ordered in four different measurement mode configurations:

- +A with return stop
- -A with return stop
- +A/-A
- -A balanced

Options

The E220 has a module slot for options. There are several optional modules:

- Dual Tariff Module
- RS-485 LMN interface
- Wireless M-Bus LMN interface (from June 2018)

E220-AMxD – Technical Data

General

Functions

Measurement	
E220-AM1D	direct connected meter, 60A
Measurement system	shunt

Control/operation	
Optical interface/flashlight operation	according to FNN requirements

Outputs	
Optical information and customer interface	
INFO DSS	unidirectional data push every second

Optical pulse output	according to DIN EN 62056-21
E220-AM1D, 60 A	10000 imp/kWh

Display	
LCD display	according to FNN
Number of lines	2 lines
Height of characters (values)	8 mm

FNN compliance

Meets the FNN requirements regarding: display and operation, INFO-DSS interface, terminal and terminal cover.

Voltage and Frequency

Nominal voltage U_n	
E220-AM1D	3x230/400 VAC

Extended operating voltage range	
E220-AM1D	80% – 115% U_n

Nominal frequency f_n	
E220-AM1D	50 Hz (± 2%)

MID-specific Data

Current

Reference current I_{ref}	
E220-AM1D	5 A

Minimum current I_{min}	
E220-AM1D	≤ 0.05 x I_{ref}

Maximum current I_{max}	
E220-AM1D	60 A

Measurement Accuracy

E220-AM1D	according EN 50470-3
Active energy	class A

General Data

Power Consumption

Power consumption	
Voltage path per phase	< 1.0 W
Current path per phase	< 0.05 VA

Environmental Influences

Temperature range	
Operation (ambient temperature)	–25 °C to +55 °C
Operation LCD display	–25 °C to +70 °C
Storage (ambient temperature)	–40 °C to +70 °C

Ingress protection	according to IEC 60529
	IP54

Environmental conditions according to Measuring Instruments Directive (2014/32/EU)

Electromagnetic Compatibility

Electrostatic discharges	according to IEC 61000-4-2
Contact discharge	8 kV
Air discharge	15 kV

Electromagnetic RF fields	according to IEC 61000-4-3
80 MHz to 2 GHz	10 and 30 V/m

Radio interference suppression	according IEC/CISPR 22
	class B

Fast transient burst test	according to IEC 61000-4-4
Current and voltage circuits under load according to IEC 62053-21	4 kV

Surge immunity test	according to IEC 61000-4-5
Current and voltage circuits	4 kV

Insulation Strength

Insulation strength	
	4 kV AC at 50 Hz during 1 min.

Impulse voltage 1.2/50 μs	according to EN 50470-1
	4 kV

Impulse voltage 0.1/2000 μs	
	7 kV

Protection class	according to IEC 62052-11
Isolation	□ II

Safety Approval	IEC62052-31
Overvoltage category	III
Test Voltage	6kV
Utilisation Category	UC1

Material

Case	
Case material	polycarbonate (GF)
UV stabilised, fire retardant and self-extinguishing	
Housing	class V2
Terminal block	class V0

Weight and Dimensions

Weight	
	1.040 kg

Dimensions	
Width	170 mm
Height incl. terminal cover	236 mm

Depth	65 mm

Options

Hardware Options

RS-485 LMN (Local Metrological Network) interface	
Wired LMN (RS-485)	LMN-1
Transmission speed	921.6 kBits/s
Connector	RJ-12 / 6p6c

Isolation Auxiliary	
Inputs	SELV
Open circuit voltage	12VDC
Max. circuit current	100mA
Outputs	SELV
Voltage	12VDC
Max. current for each output	10mA

Dual Tariff Module	
Terminals	13/15
Control voltage	U_s=230V

Module B2T/L2T 230V (x.8.1)
 Export 2 tariff, import 2 tariff
 U_s=230V → 1.8.1/2.8.1, U_s=0 V → 1.8.2/2.8.2

Module B2T/L2T 230V (x.8.2)
 Export 2 tariff, import 2 tariff
 U_s=230V → 1.8.2/2.8.2, U_s=0 V → 1.8.1/2.8.1

Module B2T/L1T 230V (1.8.1)
 Export 2 tariff, import 1 tariff
 U_s=230V → 1.8.1/2.8.0, U_s=0 V → 1.8.2/2.8.0

Module B2T/L1T 230V (1.8.2)
 Export 2 tariff, import 1 tariff
 U_s=230V → 1.8.2/2.8.0, U_s=0 V → 1.8.1/2.8.0

Isolation Auxiliary	
Inputs	HLV
reinforced insulation by optocoupler	
Passive Inputs, external voltage required for activation	
Control Voltage	230VAC
Max. input current	0.8mA

Firmware Options / Parameterisation

Measurement modes
+A with return stop; active plus only
-A with return stop; active minus only
+A / -A; active plus and active minus
-A balanced without return stop; active totalised

PIN protection
With PIN protection
Without PIN protection

Instantaneous power display
Displayed on 2nd line
Not displayed

Customer settings at power fail	
Keep customer settings	
Reset to factory settings	

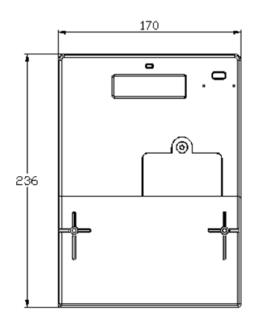## License Declarations

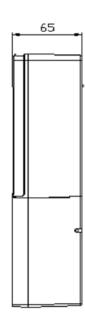### Third-Party / Open Source Modules
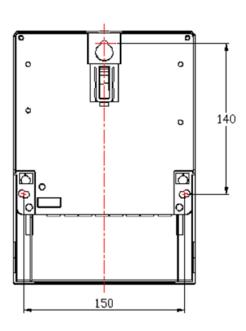
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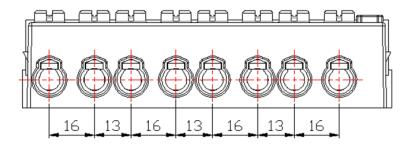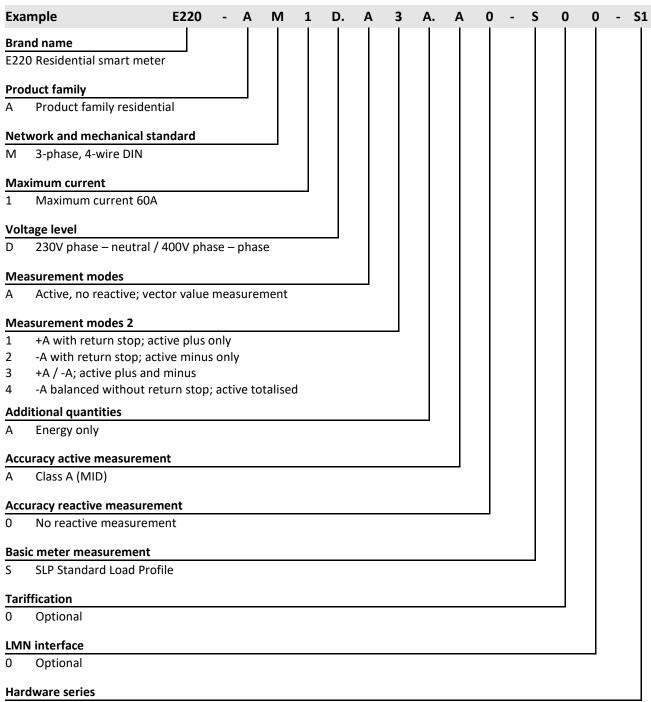## Case Dimensions (with Terminal Cover and Module Cover)

Dimensions of Connection Terminals

E220-AM1D 60 A direct connected

Example	E220	- A	M	1	D.	A	3	A.	A	0	- S	0	0	- S1

Brand name
E220 Residential smart meter

Product family
A   Product family residential

Network and mechanical standard
M   3-phase, 4-wire DIN

Maximum current
1   Maximum current 60A

Voltage level
D   230V phase – neutral / 400V phase – phase

Measurement modes
A   Active, no reactive; vector value measurement

Measurement modes 2
1   +A with return stop; active plus only
2   -A with return stop; active minus only
3   +A / -A; active plus and minus
4   -A balanced without return stop; active totalised

Additional quantities
A   Energy only

Accuracy active measurement
A   Class A (MID)

Accuracy reactive measurement
0   No reactive measurement

Basic meter measurement
S   SLP Standard Load Profile

Tariffication
0   Optional

LMN interface
0   Optional

Hardware series
S1   Series 1