

EEM-MA770-EIP - Measuring device



2907953

<https://www.phoenixcontact.com/us/products/2907953>

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Multifunctional energy measuring device with integrated Modbus/TCP and EtherNet/IP™ interface for measuring electrical parameters in low-voltage installations up to 690 V.
([phoenixcontact.com/empro-help](https://www.phoenixcontact.com/empro-help))

Commercial data

Item number	2907953
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C446
Product key	CMMC21
GTIN	4055626261096
Weight per piece (including packing)	516.84 g
Weight per piece (excluding packing)	520.1 g
Customs tariff number	90303100
Country of origin	DE

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Technical data

Product properties

Product type	Energy measuring device
Product family	EMpro
Number (Ethernet ports)	3

Display

Display type	LCD display, backlit, 2-color, multi-line
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Electrical properties

Maximum power dissipation for nominal condition	10 VA
Mains type	3-phase (3 or 4-conductor), 2-phase (2-conductor), and single-phase (1-conductor)

Electrical isolation

Test voltage	4 kV AC (50 Hz, 60 s)
Pollution degree	2

Electrical isolation Housing against all potentials IEC 61010-1

Standards/regulations	IEC 61010-1
Overvoltage category	III (300 V AC) II (600 V AC)
Insulation	Reinforced insulation

Electrical isolation Supply against all other potentials IEC 61010-1

Standards/regulations	IEC 61010-1
Overvoltage category	III (300 V AC) II (600 V AC)
Insulation	Reinforced insulation

Electrical isolation Voltage measurement input against all other potentials IEC 61010-1

Standards/regulations	IEC 61010-1
Measuring category	III (300 V AC) II (600 V AC)
Insulation	Reinforced insulation

Electrical isolation Current measurement input against all other potentials

Insulation	Functional insulation
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Electrical isolation Digital I/Os

Insulation	Functional insulation
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Electrical isolation Communication interface

Insulation	Functional insulation
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Supply

Supply voltage range	100 V AC ... 400 V AC ($\pm 20\%$)
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	150 V DC ... 250 V DC (± 20 %)
Power consumption	≤ 4 W
Nominal frequency	50 Hz ... 60 Hz (AC sine)

Input data

General

Measuring principle	True RMS value measurement (TRMS)
Measured value	AC sine (50 Hz/60 Hz)
Acquisition of harmonics	up to 63rd harmonic
Description of the input	Digital input in accordance with IEC/EN 61131-2 (type 3)
Number	1
Voltage input signal	24 V DC 0 V DC ... 30 V DC
Current input signal	2 mA ... 15 mA
Protection	250 mA (fast-blow)

Measurement: Voltage

Input name	Voltage measuring input V1, V2, V3
Input voltage range direct	35 V AC ... 690 V AC (Phase/Phase) 20 V AC ... 400 V AC (Phase/neutral conductor)
Input voltage range via external transformers	60 V AC ... 2000000 V AC (primary) 60 V AC ... 400 V AC (secondary)
Surge voltage capacity	760 V AC (Phase/Phase)
Precision	0.2 %
Power consumption	< 0.5 VA

Measurement: Current

Input name	Current measurement I1, I2, I3
Input current	1 A (secondary) 5 A (secondary)
Measuring range	1 A ... 20000 A (primary)
Overload capacity	6 A ($I_{\max}$)
Response threshold from measuring range nominal value	10 mA (1 A) 50 mA (5 A)
Precision	0.2 %
Current overload	50 A for 1 s
Power consumption	< 0.5 VA

Measurement: Power

Precision	0.5 %
Active energy (IEC 62053-22)	Class 0.5 S
Reactive power (IEC 62053-23)	Class 2
ANSI C12.20	Class 0.5 S

Output data

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Output description	Digital output in accordance with IEC/EN 61131-2 (type 3)
Number	1
Current output signal	≤ 100 mA
Voltage output signal	24 V DC
Protection	250 mA (fast-blow)

Connection data

Current / voltage / supply

Connection method	Screw connection
Stripping length	8 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm² ... 6 mm²
Conductor cross-section flexible	0.2 mm² ... 4 mm²
Conductor cross-section AWG	24 ... 10
Tightening torque	0.5 Nm ... 0.6 Nm

Digital I/O / communication

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross-section rigid	0.14 mm² ... 2.5 mm²
Conductor cross-section flexible	0.14 mm² ... 1.5 mm²
Conductor cross-section AWG	26 ... 14
Tightening torque	0.5 Nm ... 0.6 Nm

Interfaces

Data: Network interface

Communication protocol	Modbus/TCP
	REST
Connection method	RJ45

Data: Network interface

Communication protocol	EtherNet/IP™
Connection method	RJ45
Number of connections	2
Note	DLR ready

Dimensions

Item dimensions

Width	96 mm
Height	96 mm
Depth	89.8 mm
	74.8 mm (Installation depth)

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Material specifications

Color	gray (RAL 7042)
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Environmental and real-life conditions

Ambient conditions

Degree of protection (Housing)	IP20 (Housing)
Degree of protection (Display)	IP54 (Display (+ EEM-MA-IP))
Ambient temperature (operation)	-10 °C ... 55 °C
Ambient temperature (storage/transport)	-40 °C ... 70 °C
Altitude	≤ 2000 m
Max. permissible relative humidity (operation)	≤ 95 % (non-condensing)

Approvals

CE

Certificate	CE-compliant
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UKCA

Certificate	UKCA-compliant
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UL, USA/Canada

Identification	UL/C-UL Listed UL 61010-1
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UL data

Operating mode	Indoor use
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UL data

Operating mode	Indoor use
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Mounting

Mounting type	Panel mount
Mounting position	Front panel installation, horizontal

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Approvals

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EAC

Approval ID: RU*DE*08.B.00734/19



UL Listed

Approval ID: E357804



cUL Listed

Approval ID: FILE E 357804



cULus Listed

Approval ID: E357804

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Classifications

ECLASS

ECLASS-13.0	27142330
ECLASS-15.0	27142330

ETIM

ETIM 9.0	EC002301
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UNSPSC

UNSPSC 21.0	41113600
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Environmental product compliance

EU RoHS	
Fulfills EU RoHS substance requirements	Yes
Exemption	7(a), 7(c)-I
China RoHS	
Environment friendly use period (EFUP)	EFUP-50
	An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required.
EU REACH SVHC	
REACH candidate substance (CAS No.)	Lead(CAS: 7439-92-1)
	Perfluorobutane sulfonic acid (PFBS) and its salts(CAS: n/a)
SCIP	c8b3a755-c8b3-4165-94bf-7ccd82f73c1a

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