

EEM-MA770-24DC - Measuring device



1127052

<https://www.phoenixcontact.com/us/products/1127052>

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Multi-functional energy measuring device with 24 V DC supply and integrated Modbus/TCP interface for measuring electrical parameters in low-voltage installations up to 690 V ([phoenixcontact.com/empro-help](https://www.phoenixcontact.com/empro-help))

Product description

The multifunctional EMpro energy measuring devices acquire your energy data and offer numerous options for communicating the data to higher-level control and management systems. Configure and integrate your energy measuring devices in just a few steps using the web-based, user-guided installation wizard. In addition, benefit from many practice-oriented web server and device functions.

Your advantages

- Energy measurement in just three steps with the intuitive installation wizard
- Easy commissioning and service with intelligent web server and display functions
- Data protection through the targeted deactivation of key configuration functions and interfaces
- Fast integration into control and management systems with future-oriented communication solutions and digital services

Commercial data

Item number	1127052
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C446
Product key	CMMC21
GTIN	4063151055226
Weight per piece (including packing)	398.56 g
Weight per piece (excluding packing)	362.24 g
Customs tariff number	90303100
Country of origin	DE

Technical data

Product properties

Product type	Energy measuring device
Product family	EMpro
Number (Ethernet ports)	1

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
Insulation	Reinforced insulation

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 voltage

Insulation	Functional insulation
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Electrical isolation Voltage measurement input against all other potentials IEC 61010-2-030

Standards/regulations	IEC 61010-2-030
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	24 V DC \pm 25 %
Supply voltage range	18 V DC ... 30 V DC
Power consumption	< 4 W

Input data

Measuring data acquisition

Measuring principle	True r.m.s. value measurement (seamless)
Frequency measuring range (Fundamental component)	45 Hz ... 65 Hz
Measured value	AC sine (50 Hz/60 Hz)
Scanning rate	12,8 kHz (50 Hz) / 15,4 kHz (60 Hz)
Number of periods	10 (true RMS value at 50 Hz)
	12 (true RMS value at 60 Hz)
Acquisition of harmonics	up to 63rd harmonic

Measurement: Voltage

Input name	Voltage measuring input V1, V2, V3
Input voltage range direct	18 V AC ... 690 V AC (Phase/Phase)
	11 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
	20 A ($4 \times I_N$, continuous)
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

Digital

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

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Current input signal	2 mA ... 15 mA
Protection	250 mA (fast-blow)
Protective circuit	Protection against incorrect DC connection (max. 30 V)

Output data

Digital

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)
Protective circuit	Protection against incorrect DC connection (max. 30 V)

Connection data

Current / voltage / supply

Connection method	Screw connection
Stripping length	8 mm
Screw thread	M3
Conductor cross-section rigid	0.2 mm ² ... 6 mm ²
Conductor cross-section flexible	0.2 mm ² ... 4 mm ²
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 mm ² ... 2.5 mm ²
Conductor cross-section flexible	0.14 mm ² ... 1.5 mm ²
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
Transmission speed	10 Mbps
	100 Mbps

Dimensions

Item dimensions

Width	96 mm
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Height	96 mm
Depth	73.3 mm
	58.3 mm (Installation depth)

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 with seal (included))
Ambient temperature (operation)	-25 °C ... 70 °C
Ambient temperature (storage/transport)	-30 °C ... 80 °C
Altitude	≤ 2000 m
Max. permissible relative humidity (operation)	≤ 95 % (non-condensing)

Approvals

CE

Certificate	CE-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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Standards and regulations

Standards/regulations	IEC 61010-1
	IEC 61326-1
	IEC 61557-12

Mounting

Mounting type	Panel mount
Mounting position	Front panel installation, horizontal

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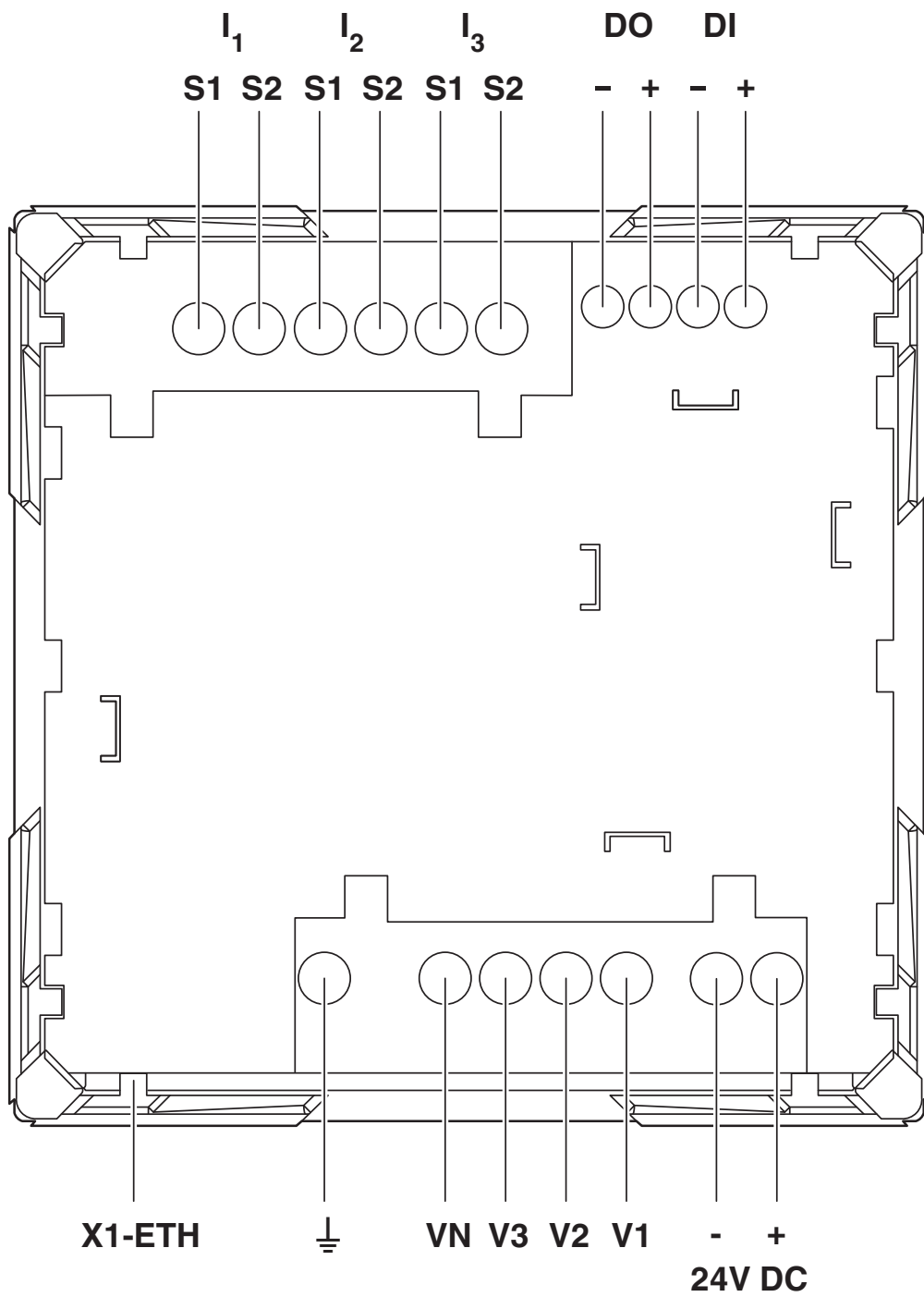


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Drawings

Connection diagram



Connection assignment

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Connection diagram



Network type: 3PH-4W-3CT

Connection diagram



Network type: 3PH-4W-1CT

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Connection diagram



Network type: 3PH-3W-3CT

Connection diagram

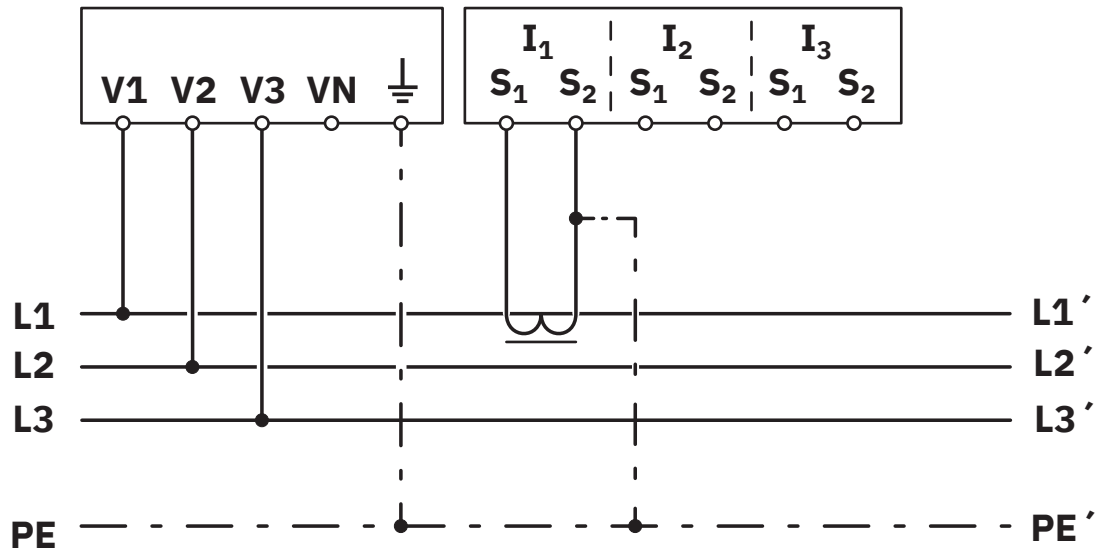


Network type: 3PH-3W-2CT

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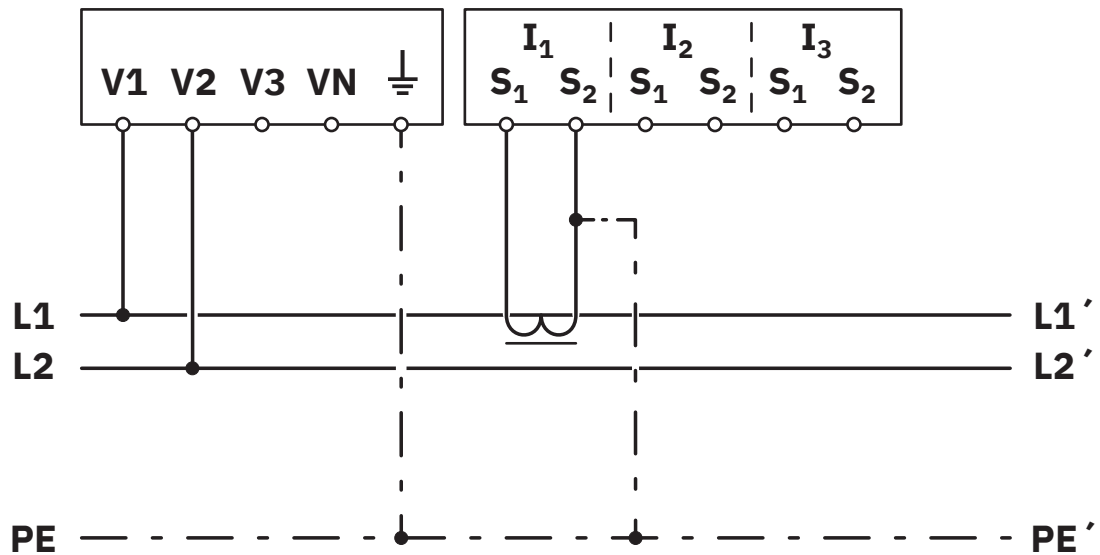
<https://www.phoenixcontact.com/us/products/1127052>

Connection diagram



Network type: 3PH-3W-1CT

Connection diagram



Network type: 2PH-2W-1CT

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Connection diagram



Network type: 2PH-3W-2CT

Connection diagram

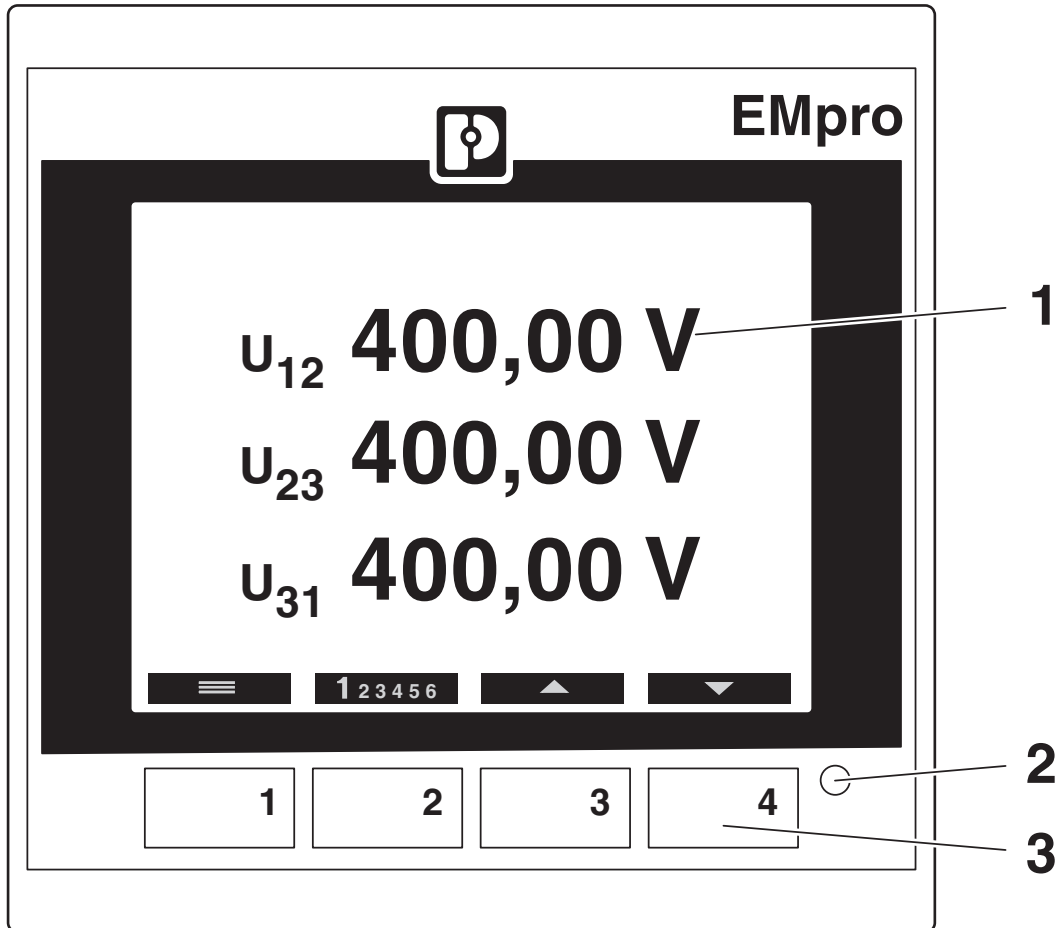


Network type: 1PH-2W-1CT

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Schematic diagram



Operating and indication elements

1 Backlit LCD

2 Pulse LED

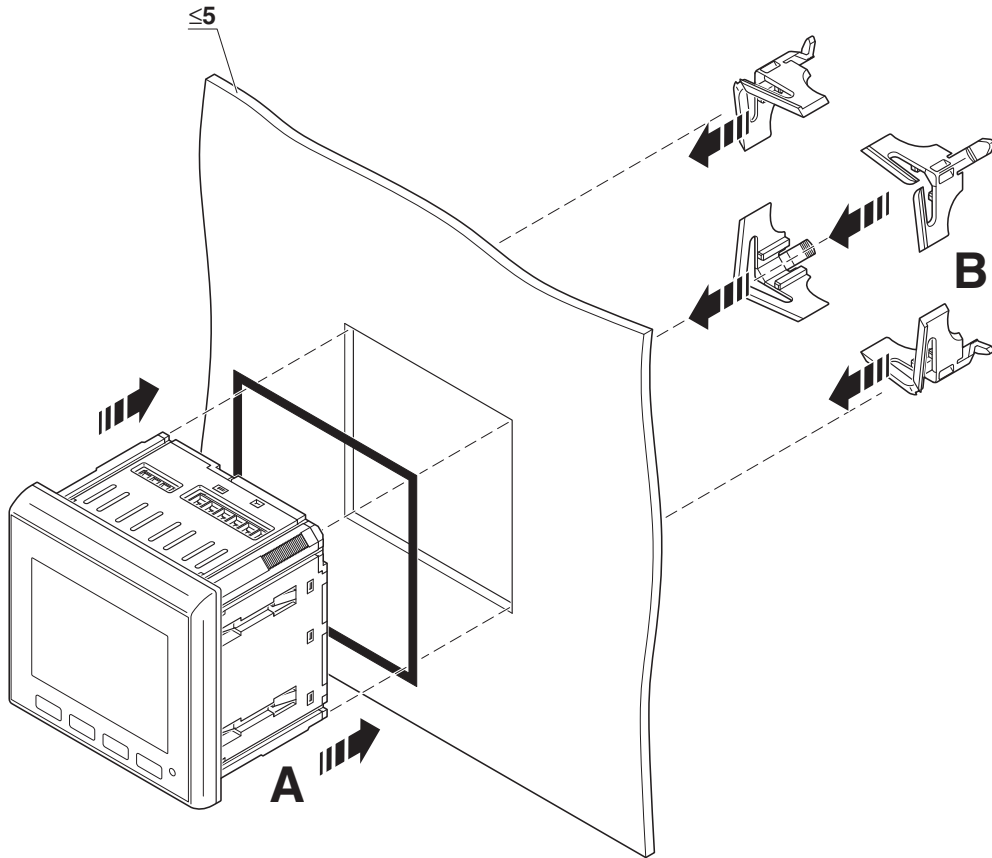
3 Operating buttons for displaying measured values and for changing the configuration

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Schematic diagram

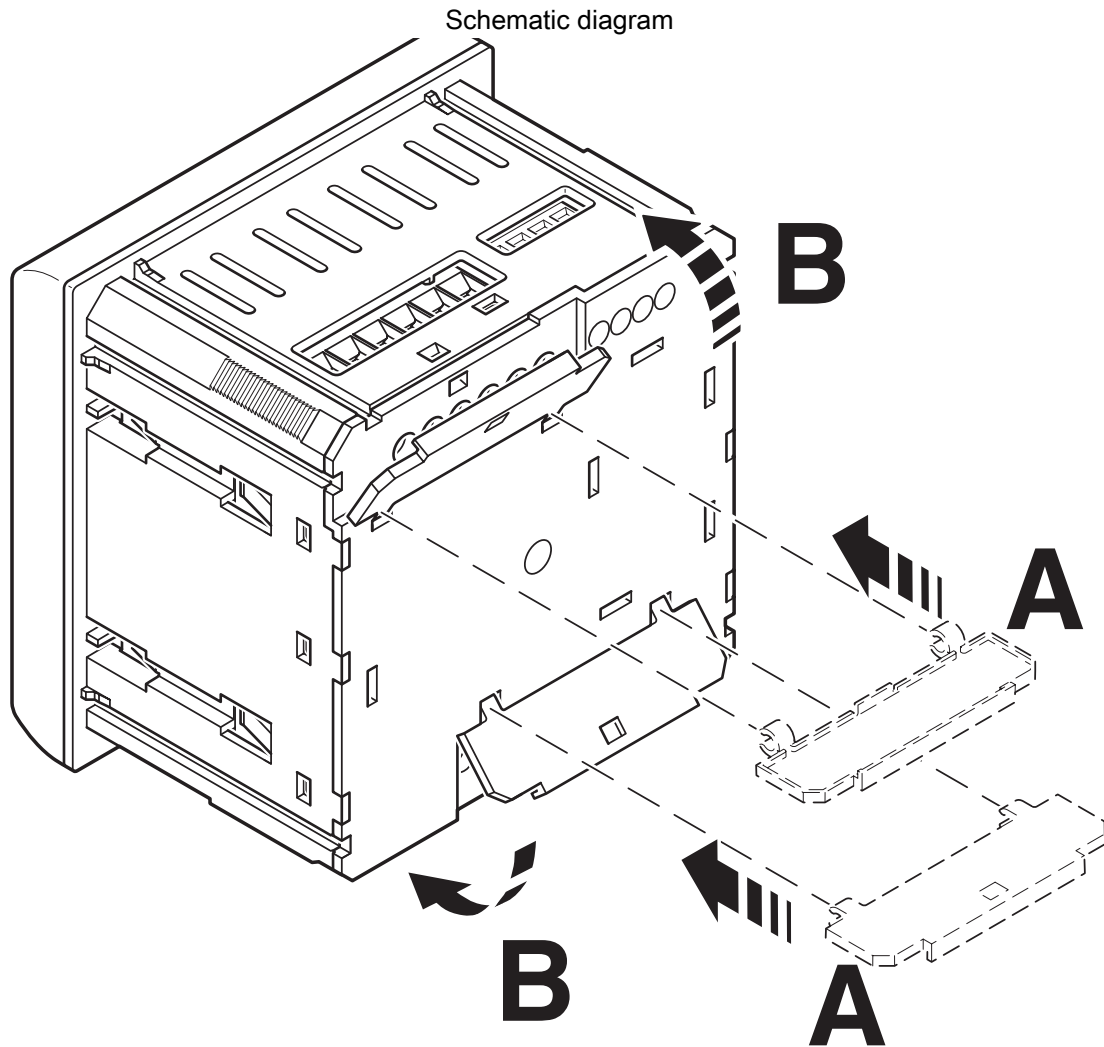


Mounting

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Mounting

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Approvals

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cULus Listed

Approval ID: E357804-20191112



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Classifications

ECLASS

ECLASS-13.0	27142330
ECLASS-15.0	27142330

ETIM

ETIM 10.0	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	606f7732-17fc-43d2-a236-c6e3d1c6364e

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