

# EEM-MA371-R - Measuring instrument



2907985

<https://www.phoenixcontact.com/us/products/2907985>

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Multi-functional energy measuring device with direct Rogowski connection and integrated Modbus RTU/TCP 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	2907985
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C446
Product key	CK4C21
Catalog page	Page 203 (C-5-2019)
GTIN	4055626476094
Weight per piece (including packing)	415 g
Weight per piece (excluding packing)	415 g
Customs tariff number	90303100
Country of origin	DE

## Technical data

### Product properties

Product type	Energy measuring device
Product family	EMpro

### 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 IEC 61010-1

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

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

#### 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 ... 230 V AC ( $\pm 20\%$ ) 150 V DC ... 250 V DC ( $\pm 20\%$ )
Power consumption	$\leq 4$ W
Nominal frequency	50 Hz ... 60 Hz (AC sine)

## Input data

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## General

Measuring principle	True r.m.s. value measurement
Measured value	AC sine (50/60 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	< 2 VA

## Measurement: Current

Input name	Current measurement RC1, RC2, RC3
Input current	≤ 400 A (Measurement level 1) ≤ 4000 A (Measurement level 2)
Input measuring range voltage	500 μV ... 400 mV (1000 A)
Response threshold from measuring range nominal value	5 A
Operate threshold	500 μV (5 A)
Precision	0.5 %

## Measurement: Power

Precision	1 %
Real energy (IEC 62053-21)	Class 1
Reactive power (IEC 62053-23)	Class 2

## Output data

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

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Connection method	Screw connection
Stripping length	8 mm
Screw thread	M3
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 6 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>
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 <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible	0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>
Conductor cross section AWG	26 ... 14
Tightening torque	0.5 Nm ... 0.6 Nm

## RS-485

Connection method	Screw connection
Stripping length	7 mm
Screw thread	M3
Conductor cross section rigid	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section flexible	0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section AWG	24 ... 12
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	Modbus/RTU
Communication standard	RS-485
Connection method	Screw connection
Transmission speed range	2.4 kbps ... 115.2 kbps
Resistance	120 Ω (integrated)

## Dimensions

Width	90 mm
Height	80 mm
Depth	64 mm

## Environmental and real-life conditions

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## Ambient conditions

Degree of protection (Housing)	IP20 (Housing)
Degree of protection (Display)	IP40 (Display)
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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### 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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Operating mode	Indoor use
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## Mounting

Mounting type	DIN rail mounting
Mounting position	Horizontal DIN rail

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2907985>



**EAC**

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



**UL Listed**

Approval ID: FILE E 357804



**cUL Listed**

Approval ID: FILE E 357804

**cULus Listed**

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## Classifications

### ECLASS

ECLASS-11.0	27142330
ECLASS-12.0	27142330
ECLASS-13.0	27142330

### ETIM

ETIM 9.0	EC002301
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### UNSPSC

UNSPSC 21.0	41113600
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## Environmental product compliance

REACH SVHC	Lead 7439-92-1
China RoHS	Environmentally Friendly Use Period = 50 years
	For information on hazardous substances, refer to the manufacturer's declaration available under "Downloads"



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## Accessories

### PACT RCP-D95 - Coil

2904890

<https://www.phoenixcontact.com/us/products/2904890>

300 mm long Rogowski coil. The measuring coil diameter when installed is 95 mm. The Rogowski coil is used for AC current measurement for busbars and power lines.



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### PACT RCP-D140 - Coil

2904891

<https://www.phoenixcontact.com/us/products/2904891>

450 mm long Rogowski coil. The measuring coil diameter when installed is 140 mm. The Rogowski coil is used for AC current measurement for busbars and power lines.



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## PACT RCP-D190 - Coil

2904892

<https://www.phoenixcontact.com/us/products/2904892>

600 mm long Rogowski coil. The measuring coil diameter when installed is 190 mm. The Rogowski coil is used for AC current measurement for busbars and power lines.



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## PACT RCP-CLAMP - Holder

2904895

<https://www.phoenixcontact.com/us/products/2904895>



The optional holding device ensures the Rogowski coil is securely seated on busbars with a thickness of 10 ... 15 mm. During installation, the coil housing is pushed onto the flange of the holding device and snaps in automatically.

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## PACT RCP-D95-5M - Coil

2910322

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300 mm long Rogowski coil. The measuring coil diameter when installed is 95 mm. The Rogowski coil is used for AC current measurement for busbars and power lines.



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## PACT RCP-D95-10M - Coil

2910323

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300 mm long Rogowski coil. The measuring coil diameter when installed is 95 mm. The Rogowski coil is used for AC current measurement for busbars and power lines.



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## PACT RCP-D190-10M - Coil

2910324

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600 mm long Rogowski coil. The measuring coil diameter when installed is 190 mm. The Rogowski coil is used for AC current measurement for busbars and power lines.



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