

# EEM-MA770 - Measuring device



2907945

<https://www.phoenixcontact.com/us/products/2907945>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



Multi-functional energy measuring device with 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	2907945
Packing unit	1 pc
Minimum order quantity	1 pc
Sales key	C446
Product key	CMMC21
GTIN	4055626260389
Weight per piece (including packing)	420.47 g
Weight per piece (excluding packing)	384.56 g
Customs tariff number	90303900
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
--------------	---

### 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 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 61010-2-030

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
------------	-----------------------

### Electrical isolation Digital I/Os

Insulation	Functional insulation
------------	-----------------------

### Electrical isolation Communication interface

Insulation	Functional insulation
------------	-----------------------

### Supply

Supply voltage range	100 V AC ... 400 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

### 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

# EEM-MA770 - Measuring device



2907945

<https://www.phoenixcontact.com/us/products/2907945>

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)
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 <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

## Interfaces

### Data: Network interface

Communication protocol	Modbus/TCP REST
Connection method	RJ45
Transmission speed	10 Mbps 100 Mbps

# EEM-MA770 - Measuring device



2907945

<https://www.phoenixcontact.com/us/products/2907945>

## Dimensions

### Item dimensions

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

## Material specifications

Color	gray (RAL 7042)
-------	-----------------

## Environmental and real-life conditions

### Ambient conditions

Degree of protection	IP20 (Housing)
	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
-------------	--------------

### UL, USA/Canada

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

### UL data

Operating mode	Indoor use
----------------	------------

## Standards and regulations

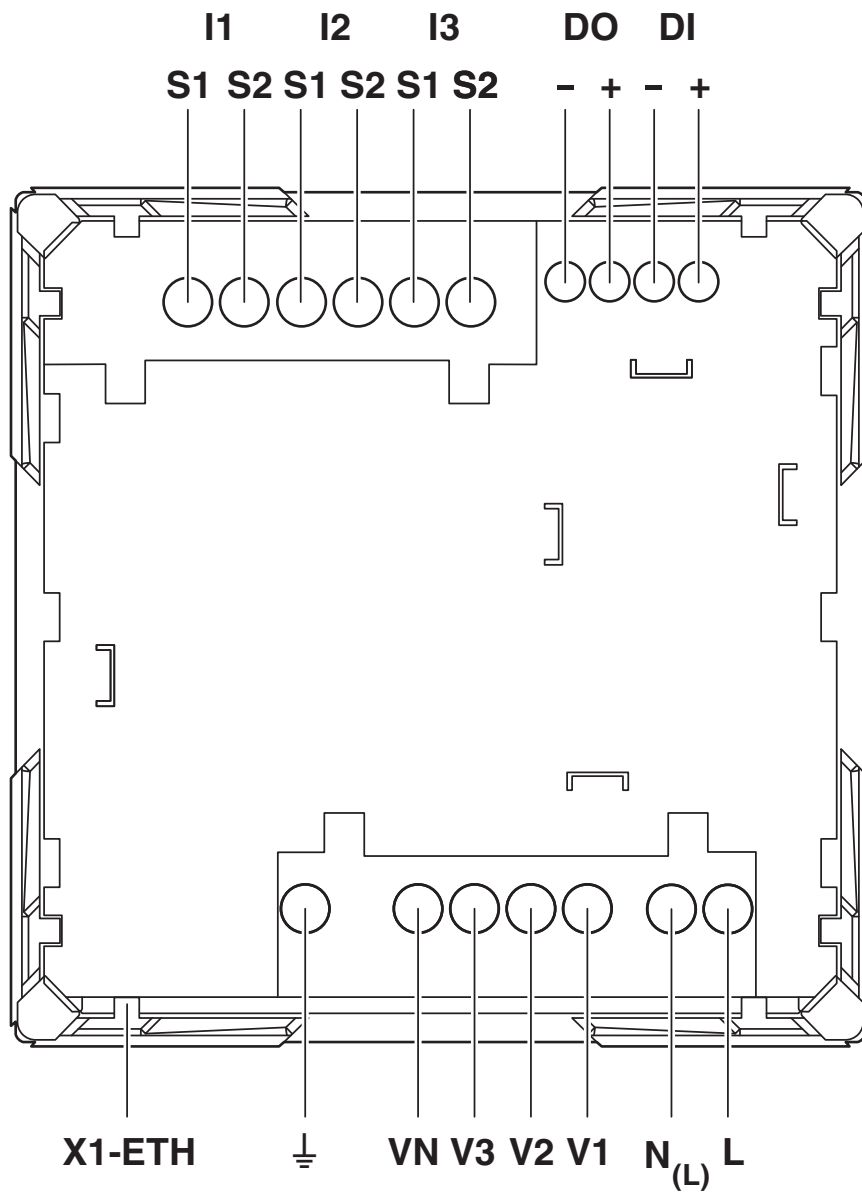
Standards/regulations	IEC 61010-1
	IEC 61326-1
	IEC 61557-12

## Mounting

Mounting type	Panel mount
Mounting position	Front panel installation, horizontal

## Drawings

Connection diagram



Connection assignment

Connection diagram



Network type: 3PH-4W-3CT

Connection diagram



Network type: 3PH-4W-1CT

2907945

<https://www.phoenixcontact.com/us/products/2907945>

Connection diagram



Network type: 3PH-3W-3CT

Connection diagram



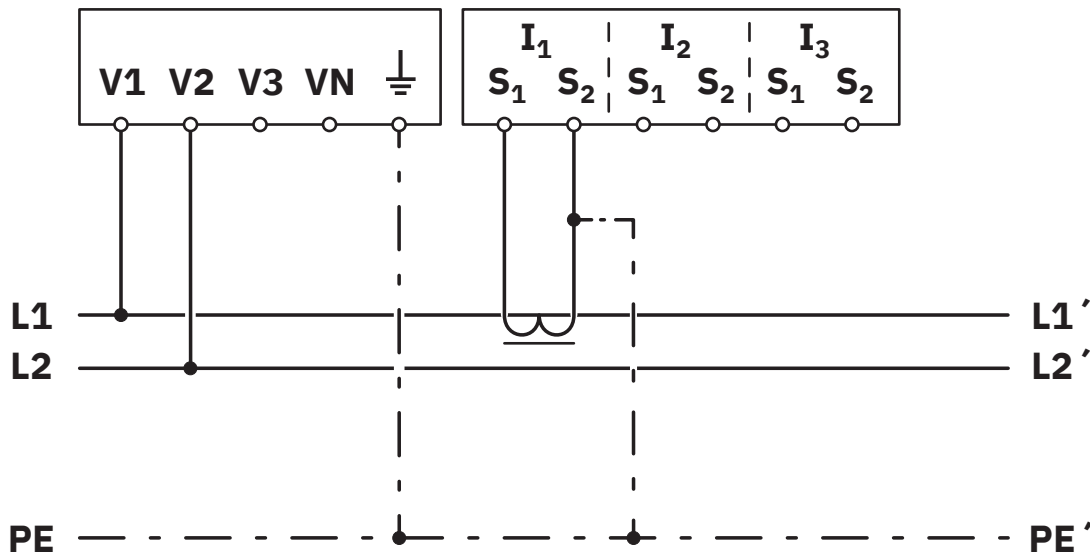
Network type: 3PH-3W-2CT

Connection diagram



Network type: 3PH-3W-1CT

Connection diagram



Network type: 2PH-2W-1CT

Connection diagram



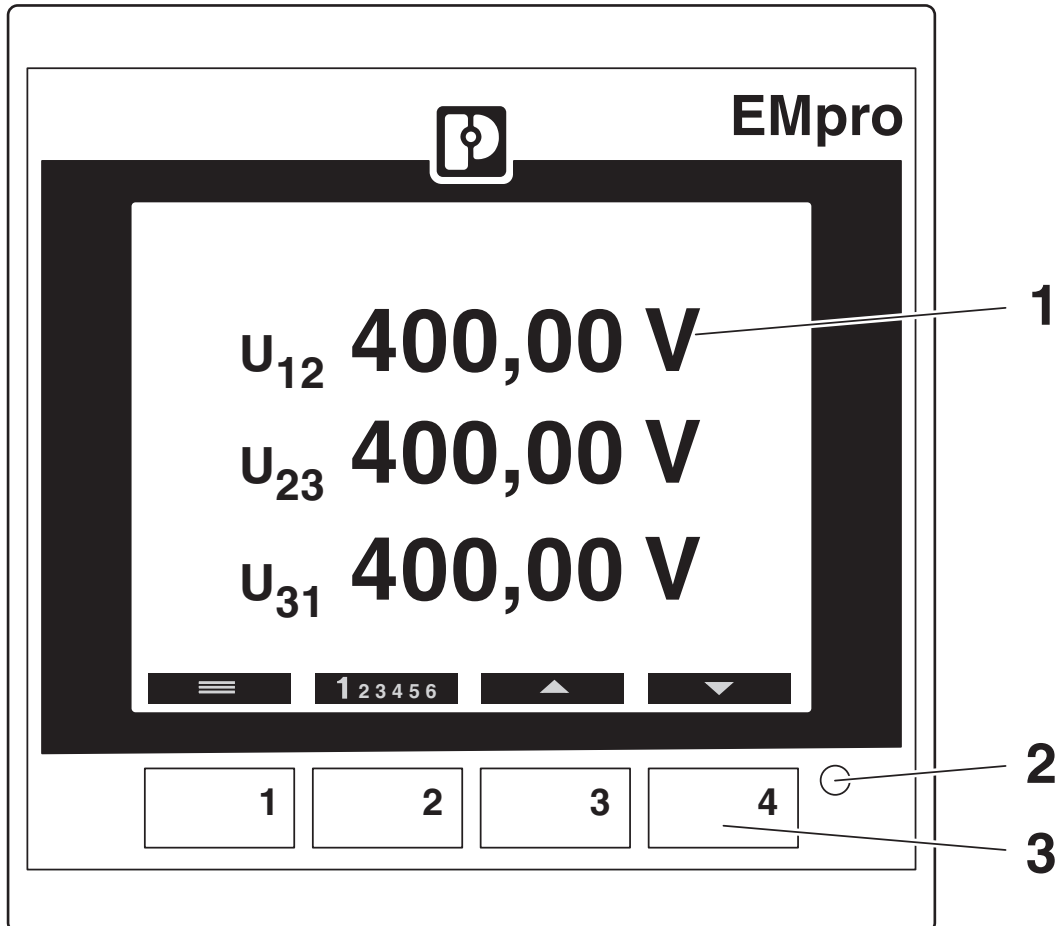
Network type: 2PH-3W-2CT

Connection diagram



Network type: 1PH-2W-1CT

Schematic diagram



Operating and indication elements

1 Backlit LCD

2 Pulse LED

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

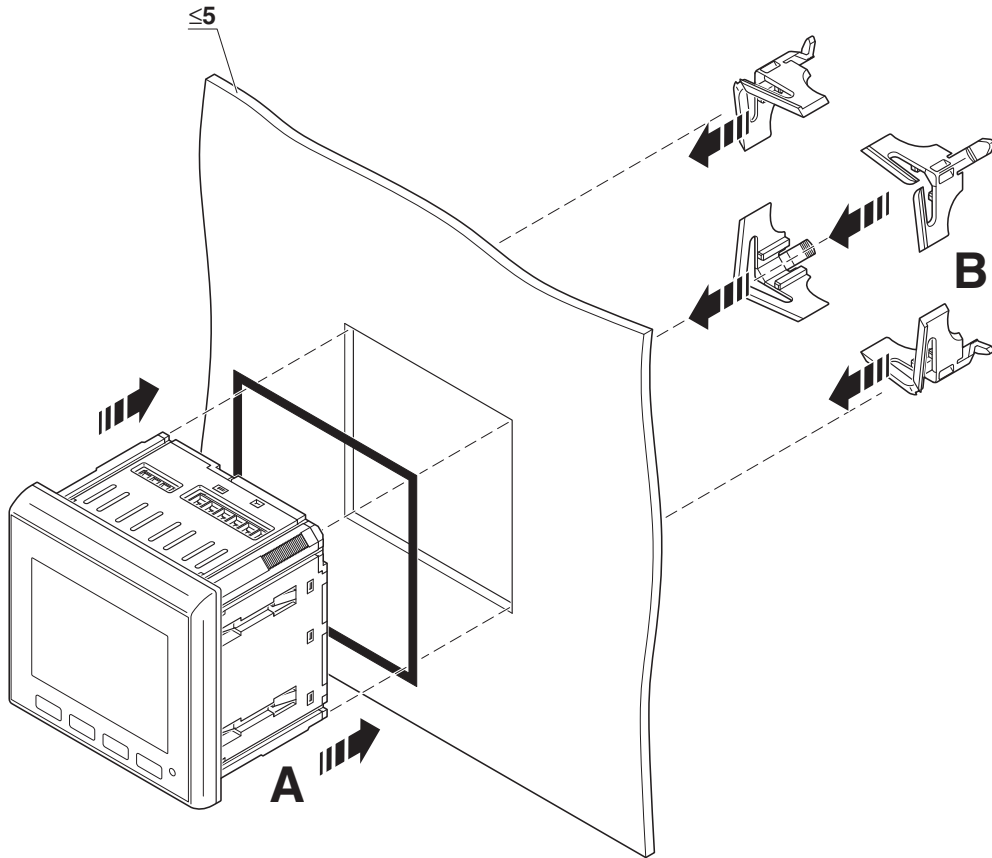
# EEM-MA770 - Measuring device

2907945

<https://www.phoenixcontact.com/us/products/2907945>



Schematic diagram

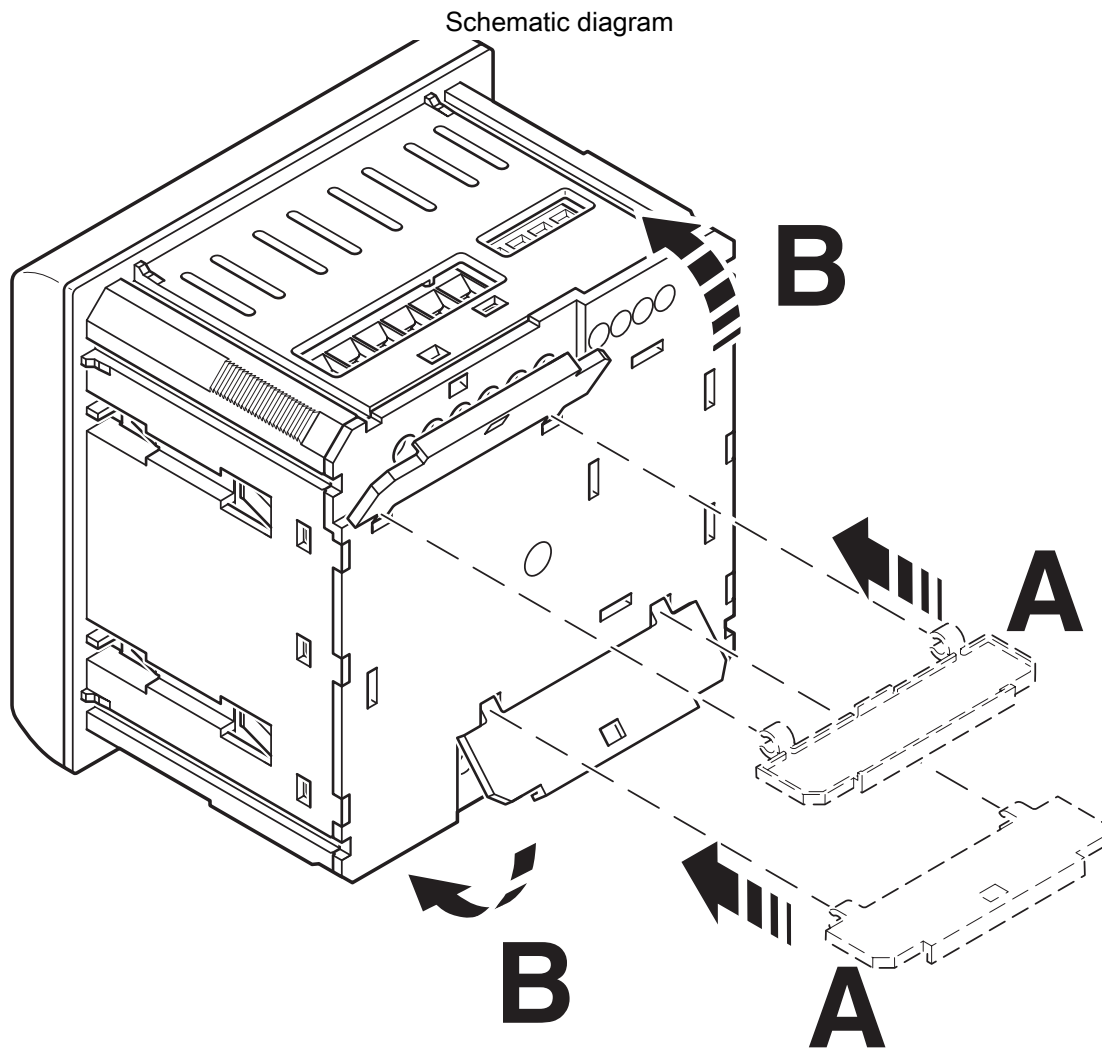


Mounting

# EEM-MA770 - Measuring device

2907945

<https://www.phoenixcontact.com/us/products/2907945>



Mounting

# EEM-MA770 - Measuring device



2907945

<https://www.phoenixcontact.com/us/products/2907945>

## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/2907945>



**cULus Listed**

Approval ID: E357804-20191112

# EEM-MA770 - Measuring device



2907945

<https://www.phoenixcontact.com/us/products/2907945>

## Classifications

### ECLASS

ECLASS-13.0	27142330
ECLASS-15.0	27142330

### ETIM

ETIM 10.0	EC002301
-----------	----------

### UNSPSC

UNSPSC 21.0	41113600
-------------	----------

# EEM-MA770 - Measuring device



2907945

<https://www.phoenixcontact.com/us/products/2907945>

## 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)
	6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: 119-47-1)
SCIP	818a59e0-c99b-42f7-8579-62bd9a8a07e0

Phoenix Contact 2026 © - all rights reserved  
<https://www.phoenixcontact.com>

Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)