

# EMD-SL-PH-400

## Electronic monitoring relay for phase sequence, phase failure, and asymmetry monitoring

Data sheet  
101748\_en\_03

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### 1 Description

Increasingly higher demands are being placed on safety and system availability – across all sectors. Processes are becoming more and more complex, not only in mechanical engineering and the chemical industry, but also in plant and automation technology. Demands on power engineering are also increasing constantly.

Error-free and therefore cost-effective operation can only be achieved through continuous monitoring of important network and system parameters. Electronic monitoring relays in the EMD series are available for a wide range of monitoring tasks to avoid the consequences of errors or to keep them within limits.

The operating states are indicated using colored LEDs, errors that may occur can be sent to a control system via a floating contact or can shut down a part of the system. Some device versions are equipped with startup and response delays in order to briefly tolerate measured values outside the set monitoring range.

### Features

- Phase sequence monitoring
- Phase failure monitoring
- Asymmetry monitoring



**WARNING: Risk of electric shock**

Never carry out work when voltage is present.



Make sure you always use the latest documentation.

It can be downloaded from the product at [www.phoenixcontact.net/products](http://www.phoenixcontact.net/products).

## 2 Ordering data

Description	Type	Order No.	Pcs. / Pkt.
Electronic monitoring relay for phase sequence, phase failure, and asymmetry monitoring	EMD-SL-PH-400	2866077	1

## 3 Technical data

Input data	
Input name	Measuring input
Measured value	AC sine (48 Hz ... 63 Hz)
Nominal input voltage $U_N$	400 V (3 N ~ 400/230 V)
Maximum input voltage	(3 N ~ 457/264 V)
Input resistance of voltage input	15 k $\Omega$
Setting range for response delay	$\leq$ 350 ms (fixed setting)
Setting range for starting delay	$\leq$ 500 ms (fixed setting)
Min setting range of the voltage threshold value	342 V AC ... 477 V AC
Function	Phase sequence, phase failure, asymmetry
Asymmetry	Fixed, approx. 30 %
Recovery time	< 100 ms
Output data	
Contact type	2 floating PDT contacts
Nominal insulation voltage	250 V AC (in acc. with IEC 60664-1)
Interrupting rating (ohmic load) max.	750 VA (3 A/250 V AC, module aligned, $\leq$ 5 mm spacing) 1250 VA (5 A/250 V AC, module not aligned, $\geq$ 5 mm spacing)
Output fuse	5 A (fast-blow)
Supply	
Supply voltage	(From the measured voltage)
Frequency range	48 Hz ... 63 Hz
Nominal power consumption	9 VA
General data	
Mains type	3-phase (sinus)
Mechanical service life	Approx. $2 \times 10^7$ cycles
Service life, electrical	$2 \times 10^5$ cycles at ohmic load, 1000 VA
Switching frequency	max. 60 (per minute at 100 VA ohmic load) max. 6 (per minute at 1000 VA ohmic load)
Voltage drop	> 20 % (Relative to the supply voltage)
Operating mode	100% operating factor
Degree of protection	IP40 (housing) / IP20 (connection terminal blocks)
Pollution degree	2 (according to EN 50178)
Surge voltage category	III, basic insulation (as per EN 50178)
Rated insulation voltage	300 V (According to EN 50178)
Mounting	on standard DIN rail NS 35 in accordance with EN 60715
Mounting position	Any
Width	22.5 mm
Height	90 mm

**General data [...]**

Type of housing	Polyamide PA, self-extinguishing
Color	green
Weight	130 g

**Connection data**

Conductor cross section, solid	0.5 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Conductor cross section, stranded	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>
Stripping length	8 mm
Connection method	Screw connection
Tightening torque	1 Nm

**Ambient conditions**

Ambient temperature (operation)	-25 °C ... 55 °C -25 °C ... 40 °C (corresponds to UL 508)
Ambient temperature (storage/transport)	-25 °C ... 70 °C
Permissible humidity (operation)	15 % ... 85 %
Climatic class	3K3 (in acc. with EN 60721)

**Conformance / approvals**

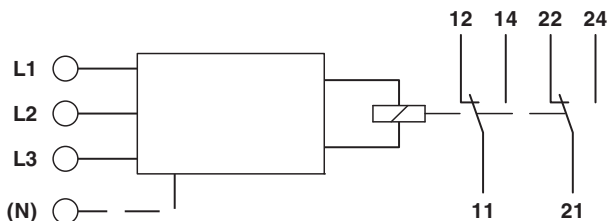
Conformance	CE-compliant
UL, USA / Canada	UL/C-UL listed UL 508

**Conformance with EMC Directive 2004/108/EC**

Noise immunity according to	EN 61000-6-2
Noise emission according to	EN 61000-6-3

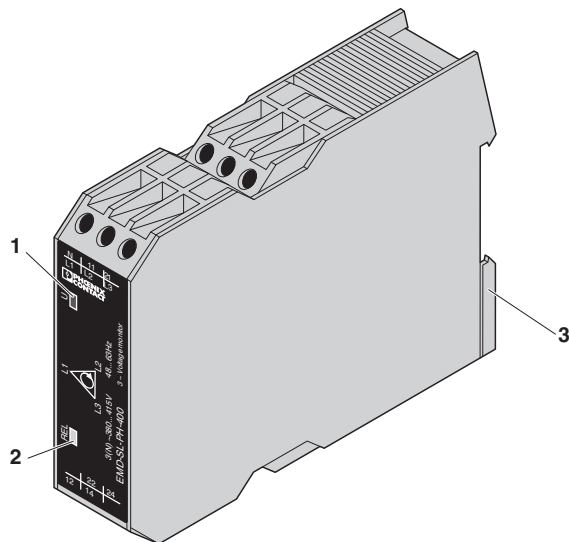
**Conformance with LV directive 2006/95/EC**

Electronic equipm. for electrical power installations according to	EN 50178
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**4 Block diagram****5 Safety notes**

**WARNING: Risk of electric shock**  
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## 6 Structure



- 1 "U" LED: Supply voltage
- 2 "REL" LED: Output relay
- 3 Universal snap-on foot for EN DIN rails

## 7 Installation



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The module can be snapped onto all 35 mm DIN rails according to EN 60715.

## 8 Diagnostics

The LEDs indicate the following error states:

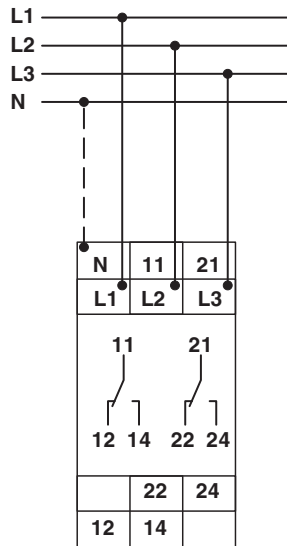
### "U" LED (Green)

- LED ON: Supply voltage present

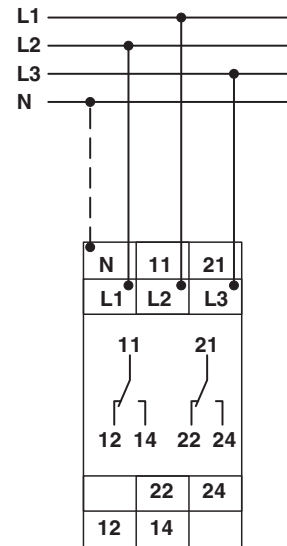
### "REL" LED (Yellow)

- LED ON: Output relay has picked up
- LED OFF: Output relay has dropped out

## 9 Connection examples

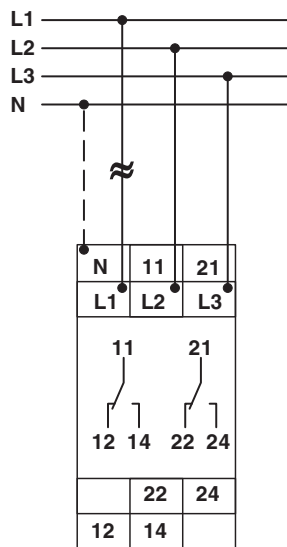


Correct phase connection: Output relay "R" picks up and yellow "REL" LED is ON

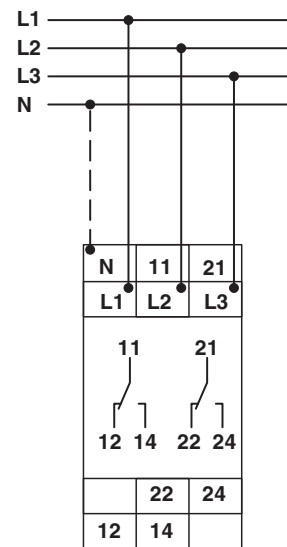


Modified phase sequence: Output relay "R" drops out and yellow "REL" LED is OFF

## 10



Phase failure: Output relay "R" drops out and yellow "REL" LED is OFF



Asymmetry: Output relay "R" drops out if the asymmetry between the phase voltages exceeds the fixed value (30%). The yellow "REL" LED is OFF.



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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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