

# SINEAX I 538

## Transducer for AC current

With power supply  
Carrying rail housing P8/35



### Application

The transformer **SINEAX I 538** (Fig. 1) converts a sinusoidal AC current into a **load independent** DC current or a **load independent** DC voltage proportional to the measured value.

The transducer fulfils all the important requirements and regulations concerning electromagnetic compatibility **EMC** and **Safety** (IEC 1010 resp. EN 61 010). It was developed and is manufactured and tested in strict accordance with the **quality assurance standard** ISO 9001.



Fig. 1. Transducer SINEAX I 538 in housing P8/35 clipped onto a top-hat rail.

### Features

- Measuring input: AC current, sine wave forms

Measured variable	Measuring range limits
AC current	0 ... 0.8 to 0 ... 1.2 A or 0 ... 4 to 0 ... 6 A

- Measuring output: Unipolar and live zero output variables
- Also available with output signal 4...20 mA in 2-wire connection
- Measuring principle: Rectifier method
- Standard as marine version per Lloyd's Register of Shipping

### Technical data

#### Measuring input E $\rightarrow$

Nominal frequency  $f_N$ : 50 / 60 Hz

Nominal input current  $I_N$   
(measuring range end value): Measuring range limit value  
0 ... 0.8 to 0 ... 1.2 A or  
0 ... 4 to 0 ... 6 A

Own consumption:  $\leq 5 \text{ mV} \cdot I_N$  with input end value

Overload capacity:

Measured quantity $I_N$	Number of applications	Duration of one application	Interval between two successive applications
$1.2 \cdot I_N$	—	continuously	—
$20 \cdot I_N$	10	1 s	100 s

#### Measuring output A $\rightarrow$

Load-independent

DC current: 0 ... 1.0 to 0 ... 20 mA  
resp. live zero  
0.2 ... 1 to 4 ... 20 mA

Burden voltage: 15 V

External resistance:  $R_{\text{ext max.}} [\text{k}\Omega] \leq \frac{15 \text{ V}}{I_{\text{AN}} [\text{mA}]}$

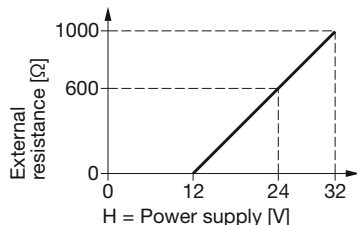
$I_{\text{AN}}$  = Output current end value

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### With 2-wire connection

Standard ranges 4 ... 20 mA  
External resistance  $R_{\text{ext}}$  dependent on power supply H (12...32 V DC)



$$R_{\text{ext max.}} [\text{k}\Omega] = \frac{H [\text{V}] - 12 \text{ V}}{20 \text{ mA}}$$

Load-independent  
DC voltage:

0 ... 1 to 0 ... 10 V resp.  
live-zero 0.2 ... 1 to 2 ... 10 V

External resistance:

$$R_{\text{ext min.}} [\text{k}\Omega] \geq \frac{U_A [\text{V}]}{10 \text{ mA}}$$

Current limit  
under overload:

< 30 mA

Voltage limit under  $R_{\text{ext}} = \infty$ :

< 40 V

Residual ripple in  
output current:

≤ 1% p.p.

Setting time:

< 300 ms

### Power supply H → ○

AC voltage:

230 V, ± 15%, 50 / 60 Hz  
Power consumption approx. 3 VA

DC voltage:

24 V, - 15 / + 33%,  
Power consumption  
approx. 1.5 W  
or  
24 V, - 50 / + 33% at 2-wire con-  
nection and output 4...20 mA

DC or AC voltage:

DC, AC power pack  
(DC or 40 - 400 Hz)  
85 - 230 V or 24 - 60 V  
DC - 15/+ 33%, AC ± 15%  
Power consumption  
≤ 1.5 W resp. ≤ 3 VA

### Accuracy (acc. to EN 60 688)

Reference value:

Output end value

Accuracy:

Class 0.5

### Reference conditions:

Ambient temperature

15 ... 30 °C

Input frequency

50 Hz

Curve shape

Sine-wave,  
Distortion factor < 1%

Output burden

Current:  $0.5 \cdot R_{\text{ext max.}}$   
Voltage:  $2 \cdot R_{\text{ext min.}}$

Power supply

in rated range

### Safety

Protection class:

II (protection isolated, EN 61 010)

Housing protection:

IP 40, housing  
(test wire, EN 60 529)  
IP 20, terminals  
(test finger, EN 60 529)

Contamination level:

2

Overvoltage category:

III

Rated insulation voltage  
(versus earth):

300 V input  
300 V power supply AC  
50 V power supply 24 V DC  
50 V output

Test voltage:

50 Hz, 1 min. acc. to EN 61 010-1  
3700 V, input versus all other circuits  
as well as outer surface  
3700 V, power supply AC versus  
output as well as outer surface  
490 V, power supply 24 V DC versus  
output as well as outer surface  
490 V, output versus outer surface

### Installation data

Mechanical design:

Housing **P8/35**

Material of housing:

Lexan 940 (polycarbonate),  
flammability Class V-0 acc. to UL 94,  
self-extinguishing, non-dripping,  
free of halogen

Mounting:

For rail mounting

Weight:

Approx. 280 g  
with AC power supply  
Approx. 210 g  
with DC power supply  
Approx. 125 g  
with 2-wire connection  
Approx. 220 g  
with DC, AC power pack

### Connecting terminals

Connection element:

Screw-type terminals with indirect  
wire pressure

Permissible cross section  
of the connection leads:

≤ 4.0 mm<sup>2</sup> single wire or  
2 × 2.5 mm<sup>2</sup> fine wire

### Environmental conditions

Operating temperature:

- 10 to + 55 °C

Storage temperature:

- 40 to + 70 °C

Relative humidity of  
annual mean:

≤ 75%

Altitude:

2000 m max.

Indoor use statement

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### Ambient tests

EN 60 068-2-6:	Vibration
Acceleration:	± 2 g
Frequency range:	10 ... 150 ... 10 Hz, rate of frequency sweep: 1 octave/minute
Number of cycles:	10, in each of the three axes
EN 60 068-2-27:	Shock
Acceleration:	3 × 50 g 3 shocks each in 6 directions
EN 60 068-2-1/-2/-3:	Cold, dry heat, damp heat

IEC 1000-4-2/-3/-4/-5/-6

EN 55 011:

Electromagnetic compatibility

### Germanischer Lloyd

Type approval certificate:	No. 12 258-98 HH
Ambient category:	C
Vibration:	0.7 g

### Specification and ordering information

Description	*Blocking code	No-go with blocking code	Article No./ Feature
<b>SINEAX I 538</b>	<b>Order Code 538 - xxxx xxx</b>		538 –
<b>Features, Selection</b>			
<b>1. Mechanical design</b>			
Housing P8/35 for rail mounting			4
<b>2. Nominal input frequency</b>			
50 / 60 Hz			1
<b>3. Measuring range</b>			
0 ... 1 A			A
0 ... 5 A			B
Non-standard 0 ... 0.8 to 0 ... 1.2 or 0 ... 4 to 0 ... 6 [A]			Z
<b>4. Output signal</b>			
0 ... 20 mA, $R_{ext} \leq 750 \Omega$	A		1
4 ... 20 mA, $R_{ext} \leq 750 \Omega$	A		2
4 ... 20 mA, 2-wire connection, $R_{ext}$ dependent on power supply	B		3
Non-standard 0 ... 1 to 0 ... < 20 [mA] 0.2 ... 1 to < (4 ... 20)	A		9
0 ... 10 V, $R_{ext} \geq 1 k\Omega$	A		A
Non-standard 0 ... 1.00 to 0 ... < 10 [V] 0.2 ... 1 to 2 ... 10	A		Z
<b>5. Power supply</b>			
230 V, 50/60 Hz	C	B	5
24 V DC	C	B	A
24 V DC via output circuit at 2-wire connection	C	A	B
24 ... 60 V DC, AC (DC, AC power pack)		B	C
85 ... 230 V DC, AC (DC, AC power pack)		B	D
<b>6. Measuring range adjustable</b>			
Measuring range end value permanently set (standard)			0
Measuring range can be adjusted approx. ± 10% Only in combination with DC, AC power pack, feature 5, line C or D!		C	1

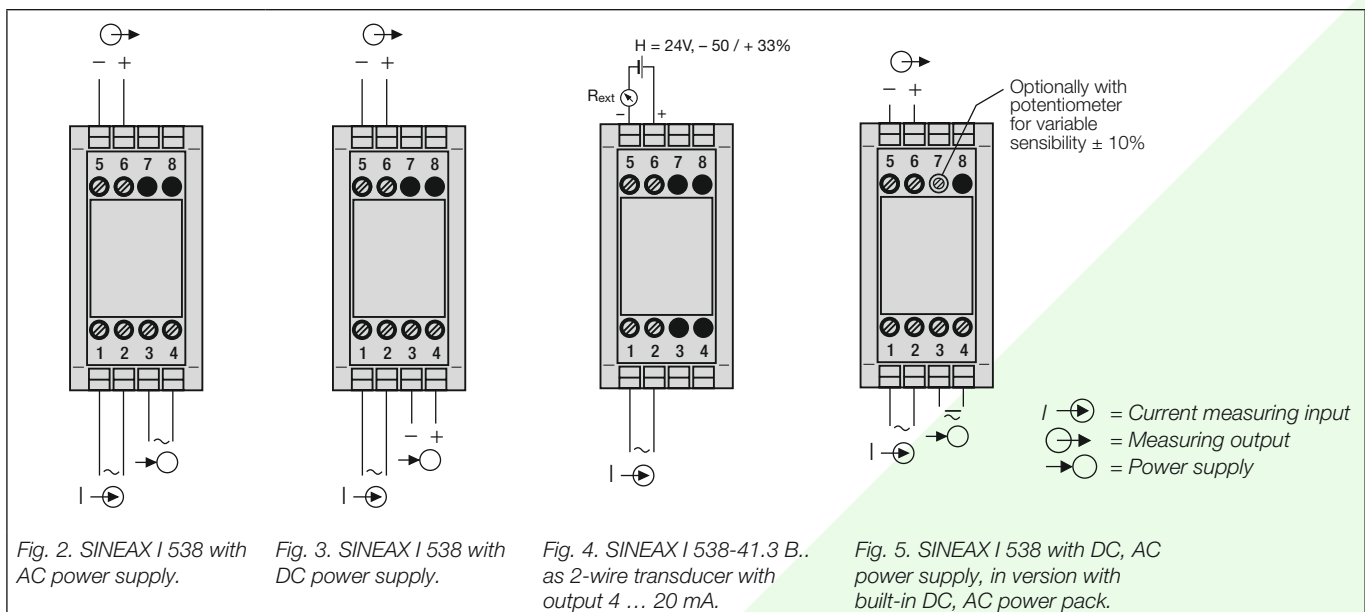
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<b>SINEAX I 538</b>	<b>Order Code 538 - xxxx xxx</b>		538 -
<b>Features, Selection</b>			
<b>7. Test certificate</b>			
Without test certificate			0
Test certificate in German			D
Test certificate in English			E

\* Lines with "letter(s)" under «No-go» cannot be combined with preceding lines having the same letter under "Blocking code".

### Electrical connections



### Dimensional drawing

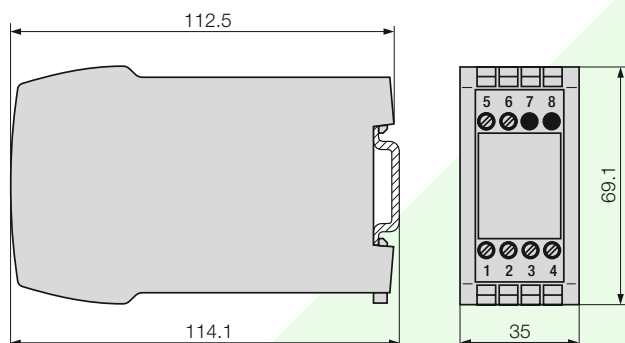


Fig. 6. SINEAX I 538 in housing **P8/35** clipped onto a top-hat rail (35 x 15 mm or 35x7.5 mm, acc. to EN 50 022).

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