CAMILLE BAUER

SINEAX U 539
Transducer for AC voltage

With power supply
Carrying rail housing P8/35

*Fig. 1. Transducer SINEAX U 539 in housing **P8/35** clipped onto a top-hat rail.*

Application

The transducer **SINEAX U 539** (Fig. 1) converts a sinusoidal AC voltage 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.

Features

- **Measuring input: AC voltage, sine wave forms**

Measured variable	Measuring range limits
AC voltage	0 … 50 to 0 … 600 V

- **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**

Table 1: Standard versions

The following transducer versions are available as standard versions. It is only necessary to quote the **Order No.:**

Nominal frequency	Measuring range	Output signal	Power supply	**Order No.**
50/60 Hz	0 … 100 V	4 … 20 mA	230 V AC 4-wire connection	146 995
	0 … 250 V	4 … 20 mA		147 000
	0 … 500 V	4 … 20 mA		147 018
	0 … 100 V	4 … 20 mA	24 V DC 2-wire connection	136 699
	0 … 500 V	4 … 20 mA		126 971

Please complete the Order Code 539-41.. ... according to "Table 2: Specification and Ordering Information" for versions with user-specific input and/or output ranges.

Technical data

Measuring input E

Nominal frequency f_N: 50 / 60 Hz

Nominal input voltage U_N (measuring range end value): Measuring range limit values 0 … 50 to 0 … 600 V

Own consumption: $< U_N \cdot 50\ \mu A$ at $U_N \leq 150$ V
$< U_N \cdot 20\ \mu A$ at $U_N > 150$ V to ≤ 400 V
$< U_N \cdot 5\ \mu A$ at $U_N > 400$ V

Operating voltage: Max. 300 V acc. to EN 61 010

Overload capacity:

Measured quantity U_N	Number of applications	Duration of one application	Interval between two successive applications
$1.2 \cdot U_N$	—	continuously	—
$2 \cdot U_N$	10	1 s	10 s

Measuring output A

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_{ext} max. [kΩ] $\leq \frac{15\ V}{I_{AN}\ [mA]}$

I_{AN} = Output current end value

SINEAX U 539
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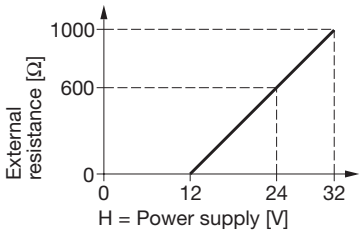
With 2-wire connection

Standard ranges 4 … 20 mA
External resistance R_{ext}, dependent on power supply H (12…32 V DC)



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

Load-independent DC voltage: 0 … 1 to 0 … 10 V resp. live zero 0.2 … 1 to 2 … 10 V

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

Current limit under overload: < 30 mA

Voltage limit under $R_{ext} = \infty$: < 40 V

Residual ripple in output current: ≤ 1% p.p.

Setting time: < 300 ms

Power supply H →○

AC voltage: 24, 110, 115, 120, 230 or 400 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 connection 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 (U_N ≤ 500 V)
Class 1 (U_N > 500 V)

Reference conditions:

Ambient temperature: 15 … 30 °C

Input frequency: 50 Hz

Curve shape: Sine-wave,
Distortion factor < 1%

Output burden: Current: 0.5 · R_{ext} max.
Voltage: 2 · R_{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 (at ≤ 300 V)
II (at > 300 V)

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 mm² single wire or
2 × 2.5 mm² 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!

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. 12 259-98 HH
Ambient category:	C
Vibration:	0.7 g

Table 2: Specification and ordering information (see also Table 1: Standard versions)

Description	*Blocking code	No-go with blocking code	Article No./ Feature
SINEAX U 539 **Order Code 539 - xxxx xxx**			539 –
Features, Selection			
1. Mechanical design			
Housing P8/35 for rail mounting			4
2. Nominal input frequency			
50 / 60 Hz			1
3. Measuring range			
0 … 100 V			A
0 … 250 V			B
0 … 500 V			C
Non-standard 0 … 50 to 0 … 600 V [V]			Z
4. Output signal			
0 … 20 mA, R_{ext} ≤ 750 Ω	A		1
4 … 20 mA, R_{ext} ≤ 750 Ω	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} ≥ 1 kΩ	A		A
Non-standard 0 … 1.00 to 0 … < 10 [V] 0.2 … 1 to 2 … 10	A		Z
5. Power supply			
24 V, 50/60 Hz	C	B	1
110 V, 50/60 Hz	C	B	2
115 V, 50/60 Hz	C	B	3
120 V, 50/60 Hz	C	B	4
230 V, 50/60 Hz	C	B	5
400 V, 50/60 Hz, max. 300 V versus earth	C	B	6
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

SINEAX U 539
Transducer for AC voltage

Description	*Blocking code	No-go with blocking code	Article No./ Feature
SINEAX U 539 **Order Code 539 - xxxx xxx**			539 –
Features, Selection			
6. Measuring range adjustable			
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
7. Test certificate			
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

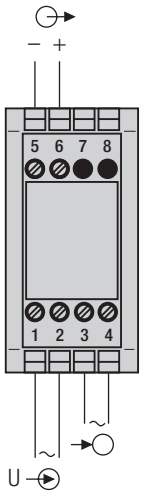


Fig. 2. SINEAX U 539 with AC power supply.

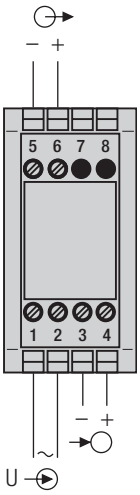


Fig. 3. SINEAX U 539 with DC power supply.

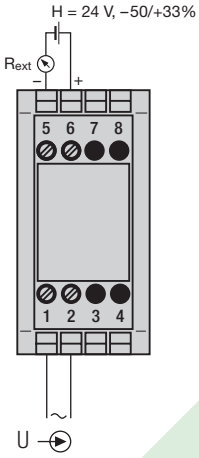


Fig. 4. SINEAX U 539-41.3 B.. as 2-wire transducer with output 4…20 mA.

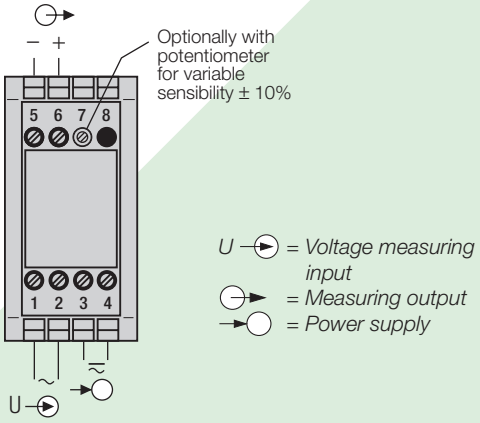


Fig. 5. SINEAX U 539 with DC, AC power supply, in version with built-in DC, AC power pack.

Dimensional drawing

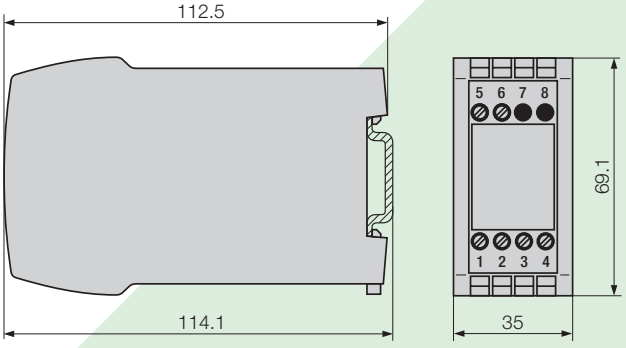


*Fig. 6. SINEAX U 539 in housing **P8/35** clipped onto a top-hat rail (35×15 mm or 35×7.5 mm, acc. to EN 50 022).*

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