

# SINEAX U 543

## Transducer for AC voltage

Self-powered  
Carrying rail housing P8/35



### Application

The transducer **SINEAX U 543** (Fig. 1) converts a sinusoidal AC voltage signal into an output signal that can serve several receiving instruments such as indicators, recorders, alarm units etc.

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. SINEAX U 543 transducer in housing P8/35 clipped onto a top-hat rail.

### Features / Benefits

- Self-powered / Less wiring expense
- Low power consumption / Smaller VT's can be used
- Standard version as per Germanischer Lloyd

### Layout and mode of operation

The transducer comprises a transformer W, a rectifier unit G and a low-pass filter T (Fig. 2).

The measured variable is isolated from the electronics by the transformer W, and is rectified and smoothed in the rectifier unit G following. The amplifier amplifies the resultant signal and converts it into the load-independent DC signal.

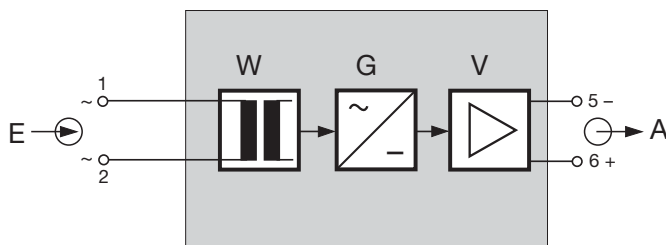


Fig. 2. Block diagram.

### Table 1: Standard versions

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

Description	Measuring range	Output signal	Order No.
Transducer for AC voltage, nominal frequency 50 / 60 Hz in housing P8/35	0...100 V	0... 5 mA	129 769
		0...20 mA	129 785
	0...120 V	0... 5 mA	137 134
		0...20 mA	137 142
0...250 V	0...20 mA	129 842	
0...500 V		136 459	

Please complete the Order Code 543-4... acc. to "Table 2: Specification and ordering information" for versions with user-specific input ranges and/ or variable sensitivity.

### Technical data

#### Measuring input E $\rightarrow$

Nominal frequency: 50 / 60 Hz  
 Nominal input voltage  $U_N$   
 (measuring range end value): Measuring range limit values  
 0...20 to 0...600 V

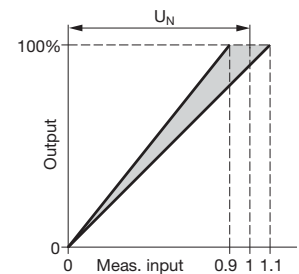
Own consumption at nominal frequency 50 Hz:

$I_{AN}$ [mA]	[VA]
1	1.2
5	1.4
10	1.6
20	2.0

Setting (special feature):

Admissible alteration of full scale output, variable sensitivity, adjustable with potentiometer

Setting range approx.  $0.9 \dots 1.1 \cdot U_N$   
 (approx.  $\pm 10\%$ )



Overload capacity:

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

#### Measuring output A $\rightarrow$

Standard ranges: 0...1, 0...5, 0...10 or 0... 20 mA

Burden voltage: 15 V

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

Not superimposed DC voltage  $U_A$ :

0... 10 V  
 External resistance  $\geq 200 \text{ k}\Omega$

Current limit under overload:  $\leq 1.7 \cdot I_{AN}$

Voltage limit under  $R_{ext} = \infty$ :  $\leq 54 \text{ V}$

Residual ripple:  $\leq 1\% \text{ p.p.}$

Response time:  $\leq 300 \text{ ms}$

# SINEAX U 543

## Transducer for AC voltage

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

Reference value: Output end value  
 Basic accuracy: Class 0.5

### Reference conditions:

Ambient temperature: 15 ... 30 °C  
 Input: 20 ... 100%  
 Frequency:  $f_N \pm 2$  Hz  
 Output burden: Current:  $0.5 \cdot R_{ext}$  max.  
 Voltage:  $2 \cdot R_{ext}$  min.

### Additional error:

Temperature influence  
 (-10 ... 55 °C)  $\pm 0.2\% / 10$  K

### 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)  
 Pollution degree: 2  
 Installation category: III (at  $\leq 300$  V to ground)  
 II (at  $> 300$  V to ground)  
 Test voltage: 50 Hz, 1 min. acc. to EN 61 010-1  
 3700 V, measuring input versus measuring  
 output and outer surface  
 490 V, measuring 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 halo-  
 gen  
 Mounting: For rail mounting  
 Mounting position: Any  
 Weight: Approx. 0.26 kg

### Connecting terminals

Connection elements: Screw-type terminals with indirect wire  
 pressure  
 Permissible cross section  
 of the connection leads:  $\leq 4.0$  mm<sup>2</sup> single-wire or  
 $2 \times 2.5$  mm<sup>2</sup> fine-wire

### Environmental conditions

Operating temperature: -10 à + 55 °C  
 Storage temperature: -40 à + 70 °C  
 Relative humidity of  
 annual mean:  $\leq 75\%$   
 Altitude: 2000 m max.  
 Indoor use statement

### Electrical connections

Connection	Connecting terminals
Measuring input E $\rightarrow$	1~ and 2~
Measuring output A $\rightarrow$	5- and 6+

### Table 2: Specification and ordering information

(see also Table 1: "Standard versions")

Order Code 543 –	
Features, Selection	
<b>1. Mechanical design</b>	
4) Housing P8/35 for rail mounting	4 . . . . .
<b>2. Measuring range</b>	
A) 0 ... 100/ $\sqrt{3}$ V	. A . . . . .
B) 0 ... 110/ $\sqrt{3}$ V	. B . . . . .
C) 0 ... 120/ $\sqrt{3}$ V	. C . . . . .
D) 0 ... 100 V	. D . . . . .
E) 0 ... 110 V	. E . . . . .
F) 0 ... 116.66 V	. F . . . . .
G) 0 ... 120 V	. G . . . . .
H) 0 ... 125 V	. H . . . . .
J) 0 ... 133.33 V	. J . . . . .
K) 0 ... 150 V	. K . . . . .
L) 0 ... 250 V	. L . . . . .
M) 0 ... 400 V	. M . . . . .
N) 0 ... 500 V	. N . . . . .
Z) Non-standard [M] <input type="text"/>	. Z . . . . .
Lines M, N, Z: Max. 300 V nominal value of the network against earth (operating voltage acc. to EN 61 010)	
<b>3. Output signal</b>	
1) 0... 5 mA, $R_{ext} \leq 3$ k $\Omega$	. . . 1 . . .
2) 0...10 mA, $R_{ext} \leq 1,5$ k $\Omega$	. . . 2 . . .
3) 0...20 mA, $R_{ext} \leq 750$ $\Omega$	. . . 3 . . .
4) 0... 1 mA, $R_{ext} \leq 15$ k $\Omega$	. . . 4 . . .
A) 0...10 V, $R_{ext} \geq 200$ k $\Omega$	. . . A . . .
Z) Non-standard [M] <input type="text"/>	. . . Z . . .
Z) 0...1 to 0...<10	. . . Z . . .
<b>4. Measuring range adjustable</b>	
0) Meas. range end value permanently set	. . . . 0 . .
1) Measuring range can be adjusted approx. $\pm 10\%$	. . . . 1 . .
<b>5. Test records</b>	
0) Without test records	. . . . . 0
D) Test records in German	. . . . . D
E) Test records in English	. . . . . E

### Dimensional drawing

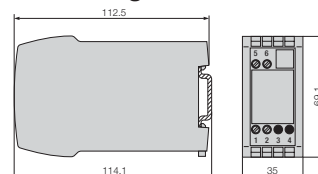


Fig. 3. SINEAX U 543 in housing P8/35 clipped onto a top-hat rail (35 x 15 mm or 35 x 7.5 mm, acc. to EN 50 022).