SINEAX U 543
Transducer for AC voltage

CAMILLE BAUER

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 serves 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.

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 electronicy 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.

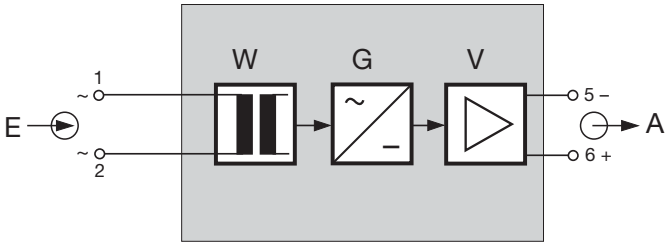


Fig. 2. Block diagram.

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.

*Fig. 1. SINEAX U 543 transducer in housing **P8/35** clipped onto a top-hat rail.*

Technical data

Measuring input E

Nominal frequency: 50 / 60 Hz

Nominal input voltage U_N (measuring range end value): Measuring range limit values 0…20 to 0…600 V

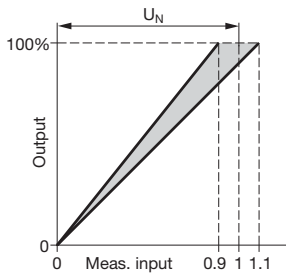
Own consumption at nominal frequency 50 Hz:

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…1.1 · U_N (approx. ± 10%)



Overload capacity:

Measured quantity U_N	Number of applications	Duration of one application	Interval between two successive applications
1,2 × U_N	—	continuously	—
2 × U_N	10	1 s	10 s

Measuring output A

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

Burden voltage: 15 V

External resistance: R_{ext} max. [kΩ] = $\frac{15\ V}{I_{AN}\ [mA]}$

I_{AN} = full output value

Not superimposed DC voltage U_A: 0…10 V
External resistance ≥ 200 kΩ

Current limit under overload: ≤ 1.7 · I_{AN}

Voltage limit under R_{ext} = ∞: ≤ 54 V

Residual ripple: ≤ 1% p.p.

Response time: ≤ 300 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 ± 2 Hz
Output burden	Current: 0.5 · R_{ext} max. Voltage: 2 · R_{ext} min.
Additional error:	
Temperature influence (– 10 … 55 °C)	± 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 ≤ 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 halogen
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:	≤ 4.0 mm² single-wire or 2 × 2.5 mm² fine-wire

Environmental conditions

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

Electrical connections

Connection	Connecting terminals
Measuring input E ⊣►	1~ and 2~
Measuring output A ⊣►	5 – and 6 +

Table 2: Specification and ordering information

(see also Table 1: "Standard versions")

Order Code **543 –**	
Features, Selection	
1. Mechanical design	
4) Housing P8/35 for rail mounting	4 . . . .
2. Measuring range	
A) 0 … 100/√3 V	. A . . .
B) 0 … 110/√3 V	. B . . .
C) 0 … 120/√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 [V] 0…20 to 0…600 V	. Z . . .
Lines M, N, Z: Max. 300 V nominal value of the network against earth (operating voltage acc. to EN 61 010)	
3. Output signal	
1) 0… 5 mA, R_{ext} ≤ 3 kΩ	. . 1 . .
2) 0…10 mA, R_{ext} ≤ 1,5 kΩ	. . 2 . .
3) 0…20 mA, R_{ext} ≤ 750 Ω	. . 3 . .
4) 0… 1 mA, R_{ext} ≤ 15 kΩ	. . 4 . .
A) 0…10 V, R_{ext} ≥ 200 kΩ	. . A . .
Z) Non-standard [V] 0…1 to 0…<10	. . Z . .
4. Measuring range adjustable	
0) Meas. range end value permanently set	. . . 0 .
1) Measuring range can be adjusted approx. ± 10%	. . . 1 .
5. Test records	
0) Without test records	 0
D) Test records in German	. . . . D
E) Test records in English	. . . . E

Dimensional drawing

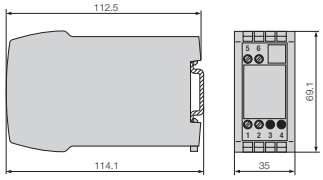


*Fig. 3. SINEAX U 543 in housing **P8/35** clipped onto a top-hat rail (35 × 15 mm or 35 × 7.5 mm, acc. to EN 50 022).*

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