

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 CT'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 an amplifier V (Fig. 2).

The measured variable is isolated from the electronic 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.

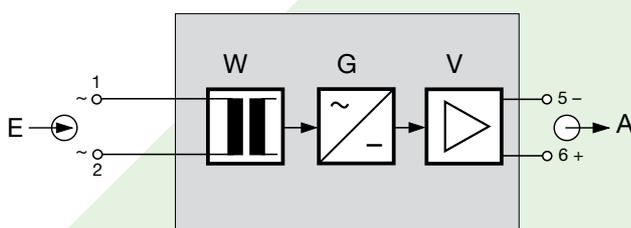


Fig. 2. Block diagram.

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...20 mA | 129 785 |
| | 0...120 V | | 137 142 |
| | 0...250 V | | 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

Nominal frequency: 50 / 60 Hz

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

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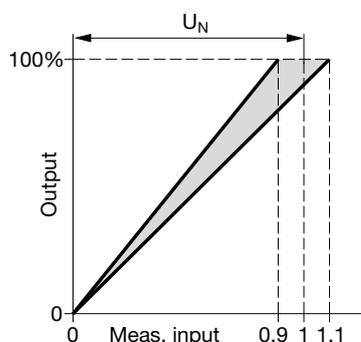
Own consumption at nominal frequency 50 Hz:

| 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 $\oplus \rightarrow$

| | |
|--|---|
| Standard ranges: | 0 ... 1, 0 ... 5, 0 ... 10 or 0 ... 20 mA |
| Burden voltage: | 15 V |
| External resistance: | $R_{ext} \text{ max. [k}\Omega] = \frac{15 \text{ V}}{I_{AN} \text{ [mA]}}$ 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: | $\leq 300 \text{ ms}$ |

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: $f_N \pm 2 \text{ Hz}$
Output burden: Current: $0.5 \cdot R_{ext} \text{ max.}$
Voltage: $2 \cdot R_{ext} \text{ min.}$

Additional error:

Temperature influence (– 10 ... 55 °C): $\pm 0.2\% / 10 \text{ K}$

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 $\leq 300 \text{ V}$ to ground)
II (at $> 300 \text{ V}$ to ground)
Test voltage: 50 Hz, 1 min. acc. to EN 61 010-1

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: $\leq 4.0 \text{ mm}^2$ single-wire or $2 \times 2,5 \text{ mm}^2$ fine-wire

Environmental conditions

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

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Ambient tests

| | | | |
|-------------------|--|----------------------------|-------------------------------|
| EN 60 068-2-6: | Vibration | EN 60 068-2-1/-2/-3: | Cold, dry heat, damp heat |
| Acceleration: | ± 2 g | IEC 1000-4-2/-3/-4/-5/-6 | Electromagnetic compatibility |
| Frequency range: | 10 ... 150 ... 10 Hz, rate of frequency sweep: 1 octave/minute | EN 55 011: | |
| Number of cycles: | 10, in each of the three axes | Germanischer Lloyd | |
| EN 60 068-2-27: | Shock | Type approval certificate: | No. 12 259-98 HH |
| Acceleration: | 3 x 50 g 3 shocks each in 6 directions | 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 543 | Order Code 543 - xxxx x | | 543 – |
| Features, Selection | | | |
| 1. Mechanical design | | | |
| Housing P8/35 for rail mounting | | | 4 |
| 2. Measuring range | | | |
| 0 ... 100 V | | | D |
| 0 ... 110 V | | | E |
| 0 ... 120 V | | | G |
| 0 ... 125 V | | | H |
| 0 ... 150 V | | | K |
| 0 ... 250 V | | | L |
| 0 ... 500 V | | | N |
| Non-standard 0 ... 20 to 0 ... 600 V [M] | | | Z |
| Lines M, N and Z: Max. 346 V nominal value of the network against earth (operating voltage acc. to EN 61 010) | | | |
| 3. Output signal | | | |
| 0 ... 5 mA, $R_{ext} \leq 3 \text{ k}\Omega$ | | | 1 |
| 0 ... 10 mA, $R_{ext} \leq 1.5 \text{ k}\Omega$ | | | 2 |
| 0 ... 20 mA, $R_{ext} \leq 750 \Omega$ | | | 3 |
| 0 ... 1 mA, $R_{ext} \leq 15 \text{ k}\Omega$ | | | 4 |
| 0 ... 10 V, $R_{ext} \geq 200 \text{ k}\Omega$ | | | A |
| Non-standard 0 ... 1 to 0 ... < 10 [M] | | | Z |
| 4. Measuring range adjustable | | | |
| Measuring range end value permanently set | | | 0 |
| Measuring range can be adjusted approx. ± 10% | | | 1 |

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|----------------------------|--------------------------------|--------------------------|----------------------|
| SINEAX U 543 | Order Code 543 - xxxx x | | 543 - |
| Features, Selection | | | |
| 5. Test records | | | |
| Without test records | | | 0 |
| Test records in German | | | D |
| Test records in English | | | E |

Electrical connections

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

Standard accessories

1 Operating Instructions in three languages: German, French, English

Dimensional drawing

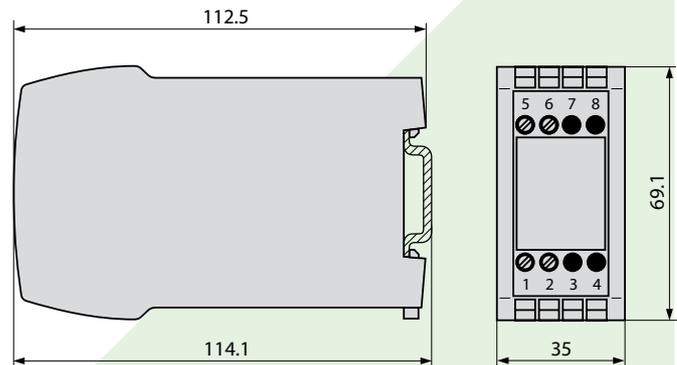


Fig. 3. SINEAX U 543 in housing **P8/35** clipped onto a top-hat rail (35 × 15 mm or 35 × 7.5 mm, acc. to EN 50 022).