

Transducer for Measuring Frequency

Carrying rail housing P13/70







Application

The transducer SINEAX F 534 (Fig. 1) is intended for frequency measurement. The instrument change the measured value into a proportional load independent DC current or DC voltage.

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 F 534 in housing P13/70 clipped onto a top-hat rail.

Features / Benefits

Measuring input: Sine, rectangular or distorted wave forms of nominal input voltage with dominant fundamental waves

Measured variable	Nominal input voltage	Measuring range limits
Frequency	10 to 690 V	\geq 10 Hz to \leq 1.5 kHz

- Measuring output: Unipolar, bipolar or live zero output variables
- Measuring principle: Digital period measurement
- AC/DC power supply / Universal
- Standard as marine version per Lloyd's Register of Shipping

Overload capacity:

Input quantity U _N	Number of applications	Duration of one application	Interval between two successive applications	
1.2 x U _N 1		continuously		
2 x U _N 1	10	1 s	10 s	

¹ But max. 264 V with power supply from voltage measuring input

Wave form: Any; fundamental wave only taken into account

Technical data

General

Measured quantity: Frequency

Measuring principle: Digital period measurement

Measuring input →

Selectable between fu = 10 Hz and Measuring ranges:

fo = 1500 Hz

Min. span: fu / (fo - fu) < 50

Nominal input voltage

 U_{N} :

10 ... 230 V or 230 ... 690 V (max. 230 V with power supply from

voltage measuring input)

 $< U_N \cdot 1.5 \text{ mA}$ Own consumption:

Measuring output →

Load-independent

DC current: 0 ... 1 to 0 ... 20 mA

resp. live zero 1 ... 5 to 4 ... 20 mA

 \pm 1 to \pm 20 mA

Burden voltage: + 15 V, resp. - 12 V

Load-independent

0 ... 1 to 0 ... 10 V DC voltage:

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

 \pm 1 to \pm 10 V

Load capacity: Max. 4 mA

Transducer for Measuring Frequency

Voltage limit under R_{ovt} = ∞: ≤ 25 V

Current limit under

voltage output: Approx. 30 mA

Residual ripple in

output current: < 0.5% p.p.

Nominal value of response

time:

4 periods of the measuring

frequency

2, 8 or 16 periods of the measuring Other ranges:

frequency

Accuracy (acc. to EN 60 688)

Reference value: Output span

Basic accuracy: Class 0.2

Reference conditions

Ambient temperature 15 ... 30 °C Input voltage U_{min} to U_{max}

Within the measuring span Input frequency

Distortion factor No influence

Power supply At nominal range

Output burden ΔR_{ext} max.

Safety

Protection class: II (protection isolated, EN 61 010)

IP 40 Housing protection:

(test wire, EN 60 529)

IP 20, terminals (test finger, EN 60 529)

Contamination level: Ш Overvoltage category:

Rated insulation voltage

(against earth):

230 resp. 400 V, input

230 V, power supply

40 V, output

50 Hz. 1 min. acc. to EN 61 010-1 Test voltage:

> 3700 resp. 5550 V, input versus all other circuits as well as outer

surface

3700 V, power supply versus output

as well as outer surface

490 V, output versus outer surface

Power supply → AC/DC power pack (DC or 40 ... 400 Hz)

Table 1: Rated voltages and permissible variations

Rated voltage Tolerance 85 ... 230 V DC / AC DC - 15 ... + 33% $AC \pm 15\%$ 24 ... 60 V DC / AC

Power supply from

24 ... 60 V AC or 85 ... 230 V AC, voltage measuring input:

Note: 40 Hz < f < 400 Hz

Option: Connect to the low tension to ter-

minals 12 and 13

24 V AC or 24 ... 60 V DC

Approx. 2 W resp. 4 VA Power consumption:

Installation data

Mechanical design: Housing P13/70

Material of housing: Lexan 940 (polycarbonate),

flammability Class acc. to UL 94,

self-extinguishing, non-dripping,

free of halogen

For rail mounting Mounting:

Mounting position: Any

Weight: Approx. 0.23 kg

Connecting terminals

Connection element: Screw-type terminals with indirect

wire pressure

Permissible cross section

≤ 4.0 mm2 single wire or of the connection leads:

2 x 2.5 mm2 fine wire

Environmental conditions

Operating temperature: -10 to +55 °C

 $-40 \text{ to} + 70 ^{\circ}\text{C}$ Storage temperature:

Relative humidity of

annual mean: < 75%

2000 m max. Altitude:

Indoor use statement!

Ambient tests

EN 60 068-2-6: Vibration

Acceleration: $\pm 2a$

10 ... 150 ... 10 Hz, rate of frequency Frequency range:

sweep: 1 octave/minute

Number of cycles: 10, in each of the three axes

EN 60 068-2-27: Shock Acceleration:

 $3 \times 50 \text{ a}$

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

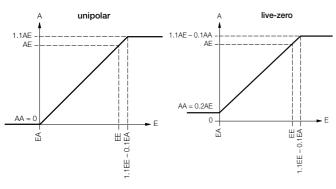
Germanischer Lloyd

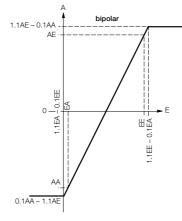
No. 12 261-98 HH Type approval certificate:

Ambient category: С 0.7 g Vibration:

Transducer for Measuring Frequency

Output characteristic





Legend:

E = Input EA = Input start value

EE = Input end value

A = Output

AA = Output start value

AE = Output end value

Table 2: Specification and ordering information

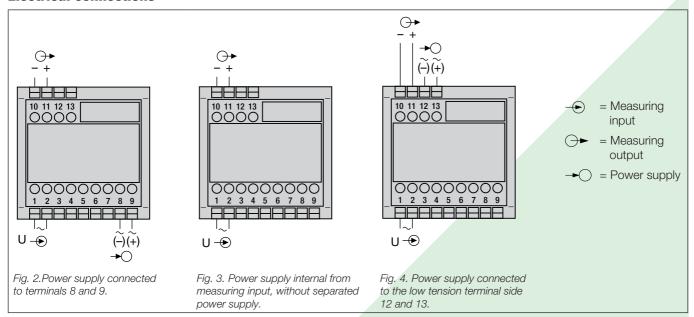
SINEAX F 534 Order code 534 - xxxx xx 534 - Features, Selection	Description		*Blocking code	no-go with blocking code	Article No./ Feature
1. Mechanical design 4 2. Nominal input voltage 2 U _N : 10 230 V 1 U _N : > 230 690 V 1 Not possible with power supply from measuring input A 3 phase system: Input voltage = phase to phase voltage 2 3. Measuring range 45 50 55 Hz 1 47 49 51 Hz 2 47.5 50 52 Hz 3 48 50 52 Hz 3 58 60 62 Hz 5 Non-standard limit values [Hz] Start value fa ≥ 10 Hz, end value fe ≤ 1.5 kHz 9 With power supply from measuring input min. 40 Hz, max. 400 Hz 9 4. Output signal 9 0 20 mA 1 4 20 mA 1 Non-standard 0 1.00 to 0 < 20, [mA] 9 1 5 to < (4 20) (AA/AE = 1/5) 9 0 1.00 to - 20 0 20 (symmetrical) 9 1 5 to < (4 20) (AA/AE = 1/5) 2 0 20 1 to 2 10 (AA/AE = 1/5) 2 0 20 1 to 2 10 (AA/AE = 1/5) 2 0 20 V DC / AC 1 2 4 60	SII	NEAX F 534 Order code 534 - xxxx xx			534 –
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Internal from measuring input (85 230 V AC) A 4				Δ	
	Connect to the low tension 24 V AC / 24 60 V DC			/٦	5

Transducer for Measuring Frequency

Description		*Blocking code	no-go with blocking code	Article No./ Feature
SINEAX F 534 Order code 534 - xxxx xx				534 –
Features, Selection				
6. Response time				
4 periods of the input frequency (standard)				1
2 periods of the input frequency				2
8 periods of the input frequency				3
16 periods of the input frequency				4

^{*} Lines with letter(s) under "no-go" cannot be combined with preceding lines having the same letter under "Blocking code".

Electrical connections



Dimensional drawing

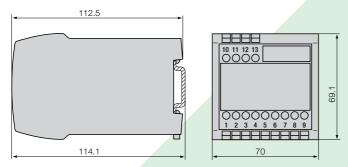


Fig. 5. Housing **P13/70** clipped onto a top-hat rail (35 x 15 mm or 35 x 7.5 mm, acc. to EN 50 022).

Standard accessories

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



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