

EURAX G 537

Transducer for Phase Angle Difference

EURAX plug-in module in Euro format



Application

The transducer **EURAX G 537** (Fig. 1) converts the phase angle difference of two synchronised supplies 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.



Fig. 1. EURAX G 537 as plug-in module for 19" rack-mounted case, front plate width 7 TE.

Features / Benefits

- **Measuring inputs: Sine, rectangular or distorted wave forms of nominal input voltages with dominant fundamental waves**

Measured variables	Nominal input voltages	Measuring range limits
Phase angle difference	10 to 690 V	± 10 to $< \pm 180$ °el

- **Measuring output: Unipolar, bipolar or live zero output variables**
- **Measuring principle: Measurement of the zero crossing interval**
- **Wide DC, AC power pack tolerance / Universal**
- **Plug-in module (front plate width 7 TE) for 19" rack-mounted case / Ease of mounting in rack system**

Sensitivity: 10 ... 120% U_N
 Own consumption: $< U_N \cdot 1.5$ mA per measuring input
 Overload capacity:

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

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

Technical data

General

Measured quantity: Phase angle difference
 Measuring principle: Measurement of the zero crossing interval

Measuring inputs

Measuring range: See section "Specification and ordering information"
 Nominal frequency f_N : 50 or 60 Hz
 Nominal input voltage U_N : General and bus bar
 10 ... 230 V or 230 ... 690 V
 (max. 230 V with power supply from voltage measuring input)

Measuring output

Load independent DC current: 0 ... 1 to 0 ... 20 mA
 resp. live-zero
 0.2 ... 1 to 4 ... 20 mA
 ± 1 to ± 20 mA
 Burden voltage: + 15 V, resp. - 12 V
 Load independent DC voltage: 0 ... 1 to 0 ... 10 V
 resp. live-zero
 0.2 ... 1 to 2 ... 10 V
 ± 1 to ± 10 V
 Load capacity: Max. 4 mA

EURAX G 537

Transducer for Phase Angle Difference

Voltage limit under $R_{\text{ext}} = \infty$: $\leq 25 \text{ V}$

Current limit under overload:
Approx. $1.3 \times I_{\text{AN}}$ at current output
Approx. 30 mA at voltage output

Residual ripple in output current:
 $< 0.5\% \text{ p.p.}$

Nominal value of response time:
4 periods of the measuring frequency

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

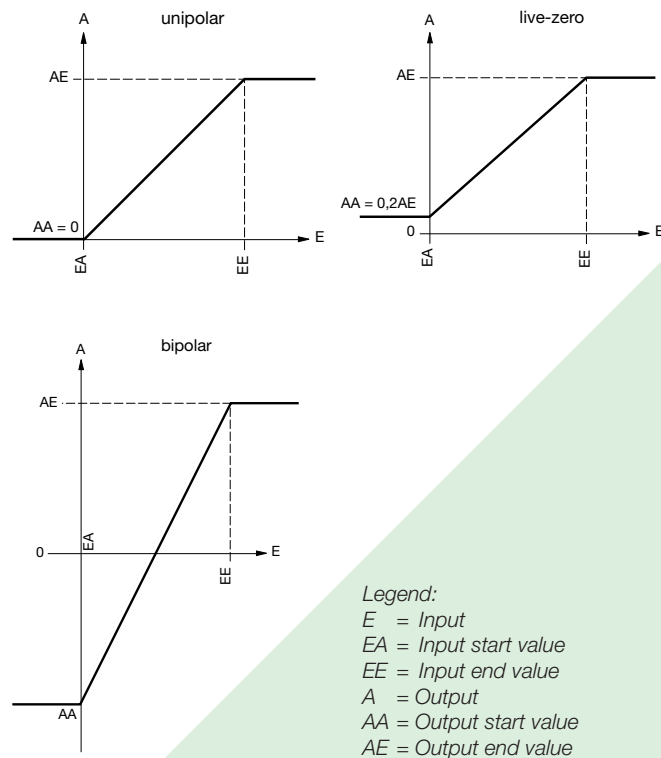
Behaviour of output current in different operating states:

Operating state ¹		Output	
Generator voltage U_G	Bus bar voltage U_S	unipolar	bipolar
leading ($f_G = f_S$)		$> I_{\text{AN}} / 2$	positive
missing ²	nominal value	indefinite	indefinite
nominal value	missing ²		
missing ²	missing ²		

¹ With power supply switched on

² e.g. switched off or fault condition

Output characteristic



Accuracy (acc. to EN 60 688)

Reference value: $\Delta\varphi = 90^\circ$

Basic accuracy: Class 0.5

Reference conditions

Ambient temperature: 15 ... 30 °C
 Input voltage: $U_G = 0.8 \dots 1.2 U_S$
 Frequency $f_N \pm 10\%$
 Wave form: Sine
 Power supply: At nominal range
 Output burden: $\Delta R_{\text{ext}} \text{ max.}$

Safety

Protection class: II (protection isolated, EN 61 010)
 Pollution degree: 2
 Installation category: III
 Rated insulation voltage (against earth): 230 resp. 400 V, inputs
 230 V, power supply
 40 V, output
 Test voltage: 50 Hz, 1 min. acc. to EN 61 010-1
 3700 resp. 5550 V, inputs versus all other circuits
 3250 V, inputs versus each other
 3700 V, power supply versus output

Power supply

DC, AC 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%
24 ... 60 V DC, AC	AC $\pm 15\%$

or

Power supply from voltage measuring input: 24 ... 60 V AC or 85 ... 230 V AC
 Power consumption: Approx. 2 W resp. 4 VA

Installation data

Mechanical design: Plug-in module for 19" rack-mounted case, Euro format 100 x 160 mm
 Space requirements: 7 TE (35.26 mm) (see section "Dimensional drawing")
 Front plate colour: Grey RAL 7032
 Designation: EURAX G 537
 Mounting position: Any
 Electrical connections: 32-pole plug acc. to DIN 41 612, pattern F
 Contact fitting see section "Electrical connections"

EURAX G 537

Transducer for Phase Angle Difference

Coding:	By coding pins, removed / not removed, see section "Electrical connections"	Ambient tests	
		EN 60 068-2-6:	Vibration
Weight:	Approx. 0.21 kg	Acceleration:	± 2 g
		Frequency range:	10 ... 150 ... 10 Hz, rate of frequency sweep: 1 octave/minute
Environmental conditions		Number of cycles:	10, in each of the three axes
Operating temperature:	- 10 to + 55 °C	EN 60 068-2-27:	Shock
Storage temperature:	- 40 to + 70 °C	Acceleration:	3 x 50 g, 3 shocks each in 6 directions
Relative humidity of annual mean:	≤ 75%	EN 60 068-2-1/-2/-3:	Cold, dry heat, damp heat
Altitude:	2000 m max.		
Indoor use statement!			

Table 2: Specification and ordering information

Description	*Blocking code	no-go with blocking code	Article No./ Feature
EURAX G 537 Order code 537 - xxxx xxxx			537 -
Features, Selection			
1. Mechanical design Plug-in module for 19" rack-mounted case			2
2. Nominal input frequency 50 Hz			1
60 Hz			2
Non-standard [Hz] ≥ 10 to 1500; With power supply from measuring input min. 40 Hz, max. 400 Hz			9
3. Nominal input voltage Generator and bus bar: U_N : 100 V	A		1
U_N : 230 V	A		2
Non-standard [V] ≥ 10.00 to 690; 3 phase system: Input voltage = phase to phase voltage With power supply from measuring input min. 24 V, max. 230 V, see feature 6, lines 3 and 4			9
4. Measuring range - 120 ... 0 ... 120 °el			1
Non-standard [°el] Measuring range - 180 ... 0 ... 180, but unambiguous output value up to - 175 ... 0 ... 175 °el; measuring span ≤ 20 °el			9
5. Output signal 0 ... 20 mA			1
4 ... 20 mA			2
Non-standard 0 ... 1.00 to 0 ... < 20, - 1.00 ... 0 ... 1.00 to - 20 ... 0 ... 20 (symmetrical) [mA]			9
0.2 ... 1 to < (4 ... 20) (AA/AE = 1/5)			
0 ... 10 V			A
Non-standard 0 ... 1.00 to 0 ... < 10, - 1.00 ... 0 ... 1.00 to - 10 ... 0 ... 10 (symmetrical) [V]			Z
0.2 ... 1 to 2 ... 10 (AA/AE = 1/5)			
AA = Output start value, AE = Output end value			

EURAX G 537

Transducer for Phase Angle Difference

Description	*Blocking code	no-go with blocking code	Article No./ Feature
EURAX G 537	Order code 537 - xxxx xxxx		537 -
Features, Selection			
6. Power supply			
85 ... 230 V DC, AC			1
24 ... 60 V DC, AC			2
Internal from measuring input (24 ... 60 V AC)		A	3
Internal from measuring input (85 ... 230 V AC)			4
7. 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
8. 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

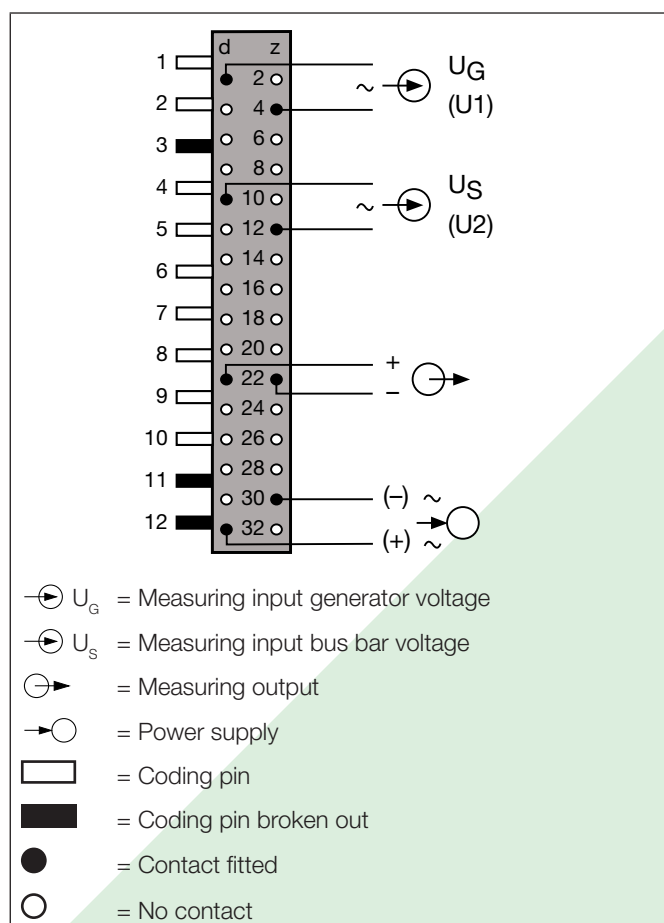


Fig. 2. EURAX G 537, view of the rear of plug-in module.

Dimensional drawing

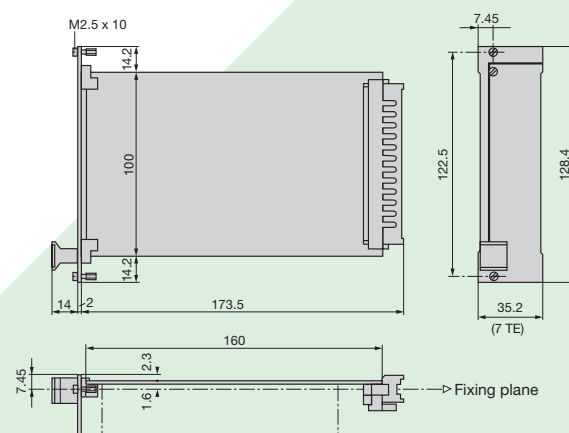


Fig. 3. EURAX G 537, front plate width 7 TE.

CAMILLE BAUER

Rely on us.

Camille Bauer Ltd
 Aargauerstrasse 7
 CH-5610 Wohlen / Switzerland
 Phone: +41 56 618 21 11
 Fax: +41 56 618 35 35
 e-Mail: info@camillebauer.com
 www.camillebauer.com