



SIMEAS T (single channel)

Measuring Transducers for High-Tension Variables

SIEMENS



Performance features

- Extremely small dimensions
- Fast delivery times
- Standard models from stock
- CE mark
- EMC immunity
- Compliance with relevant national and international standards
- High quality, long service life
- Electrical isolation at high test voltage
- High measuring precision
- High-performance output signal circuits
- High plant safety and reliability

SIMEAS T

Passive transducer

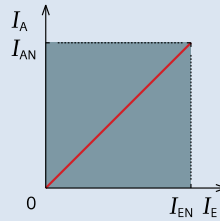
for alternating current/voltage

Description

The passive SIMEAS-T transducers convert the input alternating voltage or the input alternating current from the high-voltage power network (45 to 65 Hz) into a load-independent output direct current.

Up to the maximum permissible load, multiple devices – such as recorders, displays, remote control systems, computers and controllers – can be connected and operated directly or via long-distance lines at the output. The inputs and outputs are electrically isolated. Auxiliary power is not needed.

Characteristics

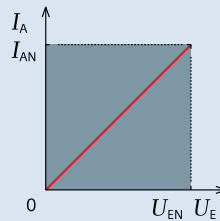


Alternating current

- I_A = Output current DC
- I_E = Input current AC
- I_{AN} = Rated output current
- I_{EN} = Rated input current

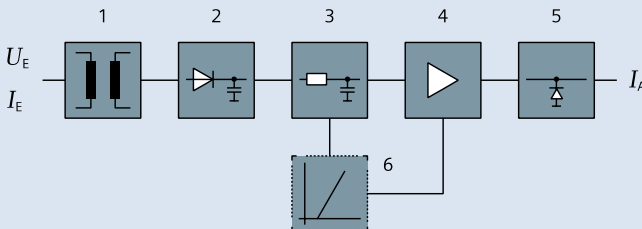
Principle of operation (see Overview circuit diagram)

The transformer (1) transfers the input signal via the rectification and smoothing (2) to the signal evaluation (3), which drives the output amplifier (4). Fed by filtering, the output amplifier provides load-independent current proportional to the input value. The protective circuit (5) protects the output against no-load, short-circuits and transient overvoltage. With an alternating voltage transducer with expanded end range, the expansion circuit (6) of the measuring range is adjusted

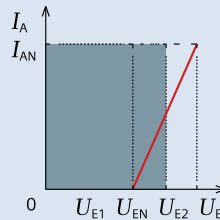


Alternating voltage

- I_A = Output current DC
- U_E = Input voltage AC
- I_{AN} = Rated output current
- U_{EN} = Rated input voltage



- 1. Transformer
- 2. Rectification, filtering
- 3. Signal evaluation
- 4. Output amplifier
- 5. Protective circuit
- 6. Expansion circuit (optional)



Alternating voltage with expanded end range

- I_A = Output current DC
- U_E = Input voltage AC
- I_{AN} = Rated output current
- U_{EN} = Rated input voltage
- U_{E1} = Start of scale
- U_{E2} = End of scale

Input

	Only for connecting to alternating voltage systems
Maximum rated line voltage	Y 230 / Δ 400 V and Δ 500 V
Power consumption (per channel with $I = I_{EN}$)	0.3 VA with $I_{AN} = 2.5$ mA 0.4 VA with $I_{AN} = 5$ mA 0.6 VA with $I_{AN} = 10$ mA 0.9 VA with $I_{AN} = 20$ mA
Permissible modulation range	$1.2 I_{EN}$ or $1.2 U_{EN}$
Rated frequency f_{EN}	50 Hz; 60 Hz
Frequency range f_E	45 Hz to 65 Hz
Waveform	sine

Input transducer alternating current I_E

Standard rated currents I_{EN}	see ordering table
Continuous overload capacity	
for $I_{EN} = 1$ A, 1.2 A	2 A
for $I_{EN} = 1.5$ A	3 A
for $I_{EN} = 2$ A, 2.4 A	4 A
for $I_{EN} = 2.5$ A	5 A
for $I_{EN} = 5$ A, 6 A	10 A
for $I_{EN} = 7.5$ A	12 A
for $I_{EN} = 10$ A	15 A
Surge overload capacity	
for $I_{EN} = 1$ A, 1.2 A, 1.5 A	50 A for 1 s
for $I_{EN} = 2$ A, 2.4 A, 2.5 A	100 A for 1 s
for $I_{EN} = 5$ A, 6 A, 7.5 A, 10 A	200 A for 1 s

Input transducer alternating voltage U_E

Standard rated voltage U_{EN}	see ordering table
Special rated voltage U_{EN}	in the range of 40 to 500 V
Continuous overload capacity	$1.5 \times U_{EN}$ but max. 600 V
Surge overload capacity	$\leq 2 \times U_{EN}$ (5 surges 1 s, at intervals of 5 s)

Output

	Load-independent direct current, short-circuit proof and resistant to no-load operation
Standard rated current I_{AN}	2.5 mA, 5 mA, 10 mA, 20 mA
Special rated current I_{AN}	in the range of 1 to 20 mA
Rated modulation range	0 to I_{AN}
Permissible modulation range	0 to $1.2 I_{AN}$
No-load voltage U_{AL}	≤ 30 V
Rated load R_{BIN}	$7.5 V / I_{AN}$
Operating load R_B	0 to $15 V / I_{AN}$
Residual ripple I_{SS}	$\leq 0.5\%$ SS from I_{AN}
Transducer setting time t_{99}	
Alternating current	≤ 1 s
Alternating voltage	≤ 0.4 s

Errors and influencing effects

	The relative error information with signs + and -
Error in reference conditions	0.5% relative to I_{AN}
Reference conditions	
Input current I_E	$0.05 I_{EN}$ to I_{EN}
Input voltage U_E	$0.2 U_{EN}$ to U_{EN}
Frequency f_E	$f_{EN} \pm 1\%$
Waveform	sine, THD $\leq 0.2\%$
Load R_B	$R_{BIN} \pm 1\%$
Ambient temperature T_U	$23^\circ\text{C} \pm 1^\circ\text{C}$
Warm-up period	≤ 15 min
Interfering fields	none

Influencing effects	
of the input voltage of U_{EN} to $1.2 U_{EN}$	$\leq 0.4\%$
of the input current of I_{EN} to 0 to $0.05 I_{EN}$ to $1.2 I_{EN}$	$\leq 0.5\%$ $\leq 0.1\%$
of the ambient temperature	$\leq 0.3\%$ / 10 K
of the frequency (45 to 65 Hz)	$\leq 0.03\%$ / Hz
of the harmonics (only 3rd harmonic)	≤ 0.33 THD in %
of the load	$\leq 0.2\%$ with a change of the load from 0Ω to $15 V / I_{AN}$
of the warm-up	$\leq 0.3\%$

Other technical specifications

Surge voltage VDE 0435 Part 303 with type test	
Input relative to output at input and output As normal mode voltage	$U = 5$ kV, $1.2 / 50 \mu\text{s}$ $R = 500 \Omega$ each 3 surges in both polarity directions

Dielectric strength Input relative to output	(test voltage) $U_{rms} = 5.5$ kV, 50 Hz, sine 1 min (type test)
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Permissible ambient temperature according to IEC 68-2 / 1-3	
Working temperature range	- 10°C to + 60°C
Functional temperature range	- 15°C to + 70°C
Storage temperature range	- 40°C to + 85°C
Climatic application class	EN 60721-3-3 (rare slight condensation) environmental class IR 2

Mechanical strength against falling Vibration and shock	according to DIN EN 61010 Part 1 Impact resistance class IK06 (1 J)
Fire resistance class	VO

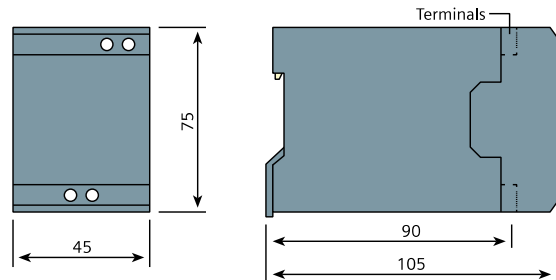
Safety according to DIN EN 61010 Part 1

Overvoltage category	II
Measuring category	II
Pollution degree	2

Electromagnetic compatibility

Emitted interference according to DIN EN 50081-1	
RFI field strength according to DIN EN 55022	Cl. B
Interference immunity according to EN 50082-2	
Immunity against electromagnetic fields (EN61000-4-3)	10 V / m
Discharge of static electricity ESD (EN61000-4-2)	8 kV
Quick transients, asymmetrical burst with cap. coupling line (EN61000-4-4)	2 kV 4 kV

Dimensions



Selection and ordering data

Transducer for		Order number			
Alternating voltage		7KG6101- [] [] [] 1 []			
Rated frequency					
f_{EN}					
50 Hz		2			
60 Hz		3			
Input voltage U_{EN}					
40 V		K			
100 / $\sqrt{3}$ V		A			
60 V		L			
110 / $\sqrt{3}$ V		B			
120 / $\sqrt{3}$ V		C			
132 / $\sqrt{3}$ V		D			
100 V		E			
110 V		F			
120 V		J			
132 V		N			
150 V		P			
220 V		G			
230 V		W			
240 V		V			
250 V		Q			
300 V		U			
380 V		H			
400 V		R			
500 V		S			
Output signal I_{AN}					
DC 0 to	2.5 mA	G			
DC 0 to	5 mA	H			
DC 0 to	10 mA	J			
DC 0 to	20 mA	K			
Measuring range					
0 to U_{EN}					0

Transducer for		Order number			
Alternating current		7KG6111- [] [] [] 1 0			
Rated frequency					
f_{EN}					
50 Hz		2			
60 Hz		3			
Input rated current I_{EN}					
1.0 A		A			
1.2 A		B			
1.5 A		K			
2.0 A		C			
2.4 A		D			
2.5 A		L			
5.0 A		E			
6.0 A		F			
7.5 A		G			
10 A		J			
Output signal I_{AN}					
DC 0 to	2.5 mA	G			
DC 0 to	5 mA	H			
DC 0 to	10 mA	J			
DC 0 to	20 mA	K			

Note:
Not all combination possibilities
are available for order



Performance features

- Extremely small dimensions
- Fast delivery times
- Standard models from stock
- CE mark
- EMC immunity
- Compliance with relevant national and international standards
- High quality, long service life
- Electrical isolation at high test voltage
- High measuring precision
- High-performance output signal circuits
- High plant safety and reliability

SIMEAS T Active transducer

for alternating current/voltage (RMS value)

Area of application

The SIMEAS T transducers for alternating current and alternating voltage with auxiliary power convert the RMS value of the input alternating current or the input alternating voltage from the high-voltage network to a load-independent output direct current or voltage.

Up to the maximum permissible load, multiple devices – such as recorders, indicators, remote control systems, computers and controllers – can be connected and operated directly or via long-distance lines at the output. Input, output and auxiliary power are electrically dependent on each other.

Principle of operation (see Overview circuit diagram)

The transformer (1) transfers the input signal I_E or U_E via the rectification and smoothing (2) to the signal evaluation (3), which drives the output amplifier (4). Fed by smoothing, the output amplifier provides load-independent current I_A proportional to the input value I_E . The protective circuit (5) protects the output against no-load and transient overvoltage.

An expansion circuit (6) is used to adapt the measuring range for transducers with an expanded end range, expanded start range or non-linear characteristic curve.

The AC or DC auxiliary power is transformed by a direct or alternating voltage auxiliary power module (7) into the internal supply voltages.

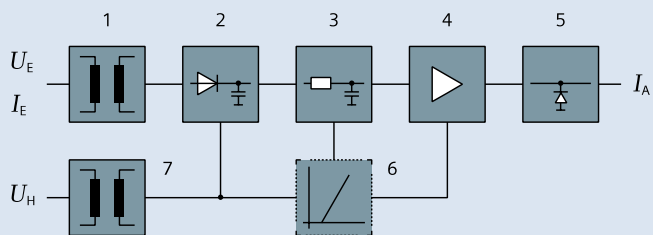
Design

The transducers are permanently wired and tested functional units. They have a snap-on fastening for a 35 mm standard mounting rail according to DIN EN 50022.

The inputs/outputs and auxiliary power can be safely connected with screw terminals.

The devices are silicone-free, halogen-free and flame-resistant.

The balancing potentiometers and test points can be accessed after removing the enclosure cover.



- | | |
|-----------------------------|---------------------------------|
| 1. Transformer | 5. Protective circuit |
| 2. Rectification, smoothing | 6. Expansion circuit (optional) |
| 3. Signal evaluation | 7. Auxiliary power |
| 4. Output amplifier | |

Input

	Only for connecting to alternating voltage systems
Maximum rated line voltage	Y 230 / Δ 400 V and Δ 500 V
Permissible modulation range	0 - 1.2 I_{EN} or 1.2 U_{EN}
Rated frequency f_{EN}	50 Hz; 60 Hz
Frequency range f_E	45 Hz to 65 Hz
Waveform	sine, square, triangle, phase control
Crest factor	iI_{rms} or $\hat{u}/U_{rms} \leq 2$

Input transducer alternating current I_{EN}

Standard rated currents I_{EN}	see ordering table
Measuring range in rated value I_{EN}	0 to I_{EN}
Continuous overload capacity	2 I_{EN}
Surge overload capacity	
for $I_{EN} = 1$ A	100 A for 1 s
for $I_{EN} = 5$ A	200 A for 1 s

Input transducer alternating voltage U_E

Standard rated voltage U_{EN}	see ordering table
Special rated voltage U_{EN}	in the range of 40 to 500 V
Measuring range in rated value U_{EN}	0 to U_{EN}
Continuous overload capacity	1.5 x U_{EN} but max. 600 V
Surge overload capacity	$\leq 2 \times U_{EN}$ (5 surges 1 s, at intervals of 5 s)

Output

	Load-independent direct current or load-independent direct voltage, short-circuit proof and resistant to no-load operation
Standard rated current I_{AN}	2.5 mA, 5 mA, 10 mA, 20 mA
Special rated current I_{AN}	in the range of 1 to 20 mA
Rated modulation range	0 to I_{AN} or 4 – 20 mA
Permissible modulation range	0 to 1.2 I_{AN}
Zero adjustment	in the range of 0 to I_{AN}
No-load voltage U_{AL}	≤ 30 V
Rated load R_{BIN}	7.5 V / I_{AN}
Operating load R_B	0 to 15 V / I_{AN}
Standard rated voltage U_{AN}	1 V; 10 V
Rated modulation range	0 to U_{AN}
Permissible modulation range	0 to 1.2 U_{AN}
Zero adjustment	in the range of 0 to U_{AN}
Short-circuit current	≤ 25 mA
Rated load R_{BUN}	$U_{AN} / 1$ mA
Load current I_B	≤ 5 mA
Residual ripple I_{SS}	$\leq 0.5\%$ SS from I_{AN} or U_{AN}
Setting time t_{99}	≤ 350 ms transducer

Auxiliary power U_H

Input voltage U_{HIN}	
Direct voltage	24 – 60 V; 110 – 200 V DC
Alternating voltage	100/115/230 V AC; 45 – 65 Hz
Input range	$\pm 20\%$
Power consumption	with $U_H = U_{AN}$, typical value
Direct voltage	2.5 W
Alternating voltage	2.5 W / 4 VA

Errors and influencing effects

The relative error information with signs + and -

Error in ref. conditions 0.3% relative to I_{AN}

Reference conditions

Input current I_E	0 to I_{EN}
Input voltage U_E	0 to U_{EN}
Frequency f_E	$f_{EN} \pm 1\%$
Waveform	sine, THD $\leq 0.2\%$
Load R_B	$R_{BIN} \pm 1\%$
Ambient temperature T_U	23 °C ± 1 °C
Warm-up period	≤ 15 min
Interfering fields	none

Influencing effects

of the ambient temperature	$\leq 0.2\% / 10$ K
of the frequency (45 bis 65 Hz)	$\leq 0.04\% / \text{Hz}$
of the waveform	$\leq 0.02\%$ per 10% THD (crest factor ≤ 2)
of the load for current output	
for $R_B = 15$ V / I_{AN}	$\leq 0.1\%$
of the load with voltage output	
for $R_B =$ to $I_{AN} / 20$ mA	≤ 10 mV
of the auxiliary power	
$U_H = 0.8$ to $1.2 U_{HIN}$	$\leq 0.1\%$
of the warm-up	$\leq 0.3\%$

Other technical specifications

Basic standard	IEC 60688
Surge voltage VDE 0435	Input relative to output
Part 303 with type test	Input relative to auxiliary power
	Output relative to auxiliary power
	As normal mode voltage
To input	$\hat{U} = 5$ kV, 1.2 / 50 μ s, $R_i = 500 \Omega$
To output	$\hat{U} = 5$ kV, 1.2 / 50 μ s, $R_i = 500 \Omega$
	In each case, 3 surges in both directions of polarity
	(test voltage)
Dielectric strength	
Input relative to output	$U_{off} = 5.5$ kV, 50 Hz, sine 1 min
Input relative to auxiliary power	$U_{off} = 5.5$ kV, 50 Hz, sine 1 min
Output relative to auxiliary power	$U_{off} = 3.7$ kV, 50 Hz, sine 1 min
Permissible ambient temperature	according to IEC 68-2 / 1-3 (type test)
Working temperature range	- 10 °C to + 60 °C
Functional temperature range	- 15 °C to + 70 °C
Storage temperature range	- 40 °C to + 85 °C
Climatic application class	EN 60721-3-3
	Temperature 3K8H, humidity 3K5 (rare slight condensation)
Mechanical strength	according to DIN EN 61010 Part 1
against falling and vibration and impact	Impact resistance class IK06 (1J)
Fire resistance class	V0

Safety

according to DIN EN 61010 Part 1	
Overvoltage category	II
Measuring category	II
Pollution degree	2

Electromagnetic compatibility

Emitted interference according to EN 50081-1	
RFI field strength EN 55022	Cl. B
RFI voltage EN 55022	Cl. B
Interference immunity according to EN 50082-2	
Immunity to electromagnetic fields (EN61000-4-3)	10 V / m
Discharge of static electricity ESD (EN61000-4-2)	8 kV
Quick transients, asymmetrical burst (EN61000-4-4)	
Inputs and outputs	2 kV
Power supply	4 kV
Surge (IEC 801-5)	
HF current (IEC 801-6)	10 V rms

Selection and ordering data

Transducer for alternating voltage

Order number: 7KG6106- [] [] [] [] [] - [] B

Rated frequency f_{EN}	
50 Hz	2
60 Hz	3

Input voltage U_{EN} (AC)	
40 V	K
100 / $\sqrt{3}$ V	A
60 V	L
110 / $\sqrt{3}$ V	B
120 / $\sqrt{3}$ V	C
132 / $\sqrt{3}$ V	D
100 V	E
110 V	F
120 V	J
132 V	N
150 V	P
220 V	G
230 V	W
240 V	V
250 V	Q
300 V	U
380 V	H
400 V	R
500 V	S

Output signal I_{AN} / U_{AN}	
DC 0 to 2.5 mA	G
DC 0 to 5 mA	H
DC 0 to 10 mA	J
DC 0 to 20 mA	K
(Live zero) 4 to 20 mA DC	N 2
DC 0 to 1 V	L
DC 0 to 10 V	M

Zero point position	
Measuring range zero = Signal range zero point	1

Auxiliary power	
19.2 - 72 V DC	1
88 - 234 V DC	4
45 to 65 Hz, 100 V AC	5
45 to 65 Hz, 115 V AC	6
45 to 65 Hz, 230 V AC	7

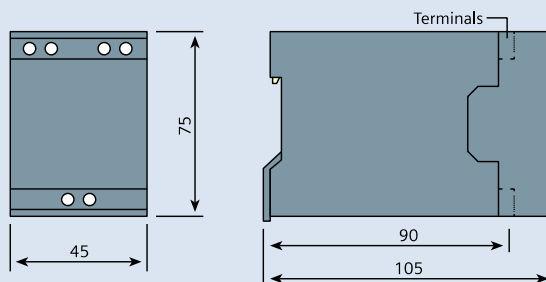
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Transducer for alternating voltage

Order number: 7KG6106- [] [] [] [] [] - [] B

Measuring range	
Linear 0 to U_{EN}	0
Expanded start range	
0 to 0.05 to U_{EN} \triangleq 0 to 0.8 to I_{AN} / U_{AN}	1
0 to 0.1 to U_{EN} \triangleq 0 to 0.8 to I_{AN} / U_{AN}	2
Expanded end range	
0 to 0.9 to 1.1 U_{EN} \triangleq 0 to 0.2 to I_{AN} / U_{AN}	3
0 to 0.85 to 1.15 U_{EN} \triangleq 0 to 0.2 to I_{AN} / U_{AN}	4
0 to 0.8 to 1.2 U_{EN} \triangleq 0 to 0.2 to I_{AN} / U_{AN}	5
Suppressed start range	
0 to 0.9 to 1.1 U_{EN} \triangleq 0 to 0 to I_{AN} / U_{AN}	6
0 to 0.85 to 1.15 U_{EN} \triangleq 0 to 0 to I_{AN} / U_{AN}	7
0 to 0.8 to 1.2 U_{EN} \triangleq 0 to 0 to I_{AN} / U_{AN}	8

Dimensions



Note:
Not all combination possibilities are available for order

Selection and ordering data

Transducer for alternating current

Order number: **7KG6113-**

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	B
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Rated frequency f_{EN}			
50 Hz	2		
60 Hz	3		
Input current I_{EN} (AC)			
1 A	A		
1.2 A	B		
1.5 A	K		
2 A	C		
2.4 A	D		
2.5 A	L		
5 A	E		
6 A	F		
7.5 A	G		
10 A	J		
Output signal I_{AN} / U_{AN}			
DC 0 to 2.5 mA	G		
DC 0 to 5 mA	H		
DC 0 to 10 mA	J		
DC 0 to 20 mA	K		
(Live zero) 4 to 20 mA DC	N	2	
DC 0 to 1 V	L		
DC 0 to 10 V	M		
Zero point position			
Measuring range zero = Signal range zero point		1	
Auxiliary power			
19.2 - 72 V DC		1	
88 - 234 V DC		4	
45 to 65 Hz, 100 V AC		5	
45 to 65 Hz, 115 V AC		6	
45 to 65 Hz, 230 V AC		7	
Measuring range			
Linear 0 to I_{EN}			0

Note:
Not all combination possibilities
are available for order



Performance features

- Extremely small dimensions
- Fast delivery times
- Standard models from stock
- CE mark
- EMC immunity
- Compliance with relevant national and international standards
- High quality, long service life
- Electrical isolation at high test voltage
- High measuring precision
- High-performance output signal circuits
- High plant safety and reliability

SIMEAS T DC transducer isolation amplifier

for direct current and direct voltage or as an isolation amplifier

Description

The SIMEAS T transducers for direct current or direct voltage with auxiliary power convert the input current or input voltage into a load-independent direct output current or a load-independent direct output voltage.

Up to the maximum permissible load, multiple devices – such as recorders, indicators, remote control systems, computers and controllers – can be connected and operated directly or via long-distance lines at the output. Input, output and auxiliary power supply are electrically isolated from each other.

Principle of operation

The input variable E is adapted to the voltage duty cycle transformer (2) by resistors (1). The square wave signal it generates is transferred to the output side by the transformer (3), filtered, and processed with the amplifier (4). Corresponding to the characteristic curve, the output amplifier (5) supplies a load-independent direct current I_A or a load-independent direct voltage U_A proportional to the input value. Zero adjustment of the characteristic curve can be performed with the reference current.

The auxiliary power isolator (6) generates the electrically isolated power supply for the input circuit.

The auxiliary power is transformed by an alternating or direct voltage module (8) into the internal supply voltages.

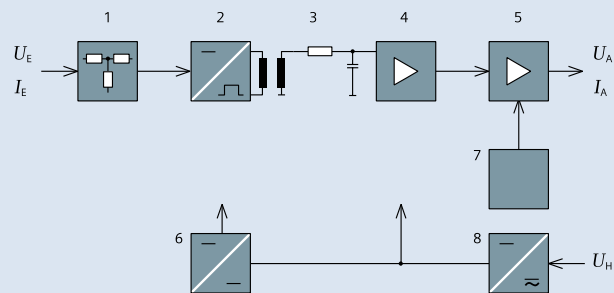
Design

The transducers are permanently wired and tested functional units. They have a snap-on fastening for a 35 mm standard mounting rail according to DIN EN 50022.

The inputs/outputs and auxiliary power can be safely connected with screw terminals.

The devices are silicone-free, halogen-free and flame-resistant.

The balancing potentiometers and test points can be accessed after removing the enclosure cover.



1. Input compensation using resistors
2. Voltage duty cycle transformer
3. Transformer
4. Amplifier
5. Output amplifier
6. Auxiliary power isolator
7. Constant voltage source
8. Auxiliary power module

SIMEAS-T – DC Transducer Isolation Amplifier

Input

Only for connection to direct voltage systems with a maximum rated voltage of 500 / 1000 V (see Safety)	
Input signal	direct voltage U_E or direct current I_E
Standard rated current I_{EN}	1 mA, 2.5 mA, 5 mA, 10 mA, 20 mA
Special rated current I_{EN}	A value in the range of 1 mA to 100 mA
Rated modulation range	- I_{EN} to 0 to + I_{EN}
Permissible modulation range	-1.2 I_{EN} to +1.2 I_{EN}
Voltage drop at input with I_{EN}	500 mV \pm 5%
Standard rated voltage U_{EN}	60 mV, 150 mV, 300 mV, 1 V, 10 V, 15 V, 25 V, 30 V, 60 V, 100 V, 150 V, 250 V, 300 V, 400 V, 500 V, 600 V, 800 V, 1000 V
Special rated voltage U_{EN}	A value in the range of 60 mV to 1000 V
Rated modulation range	- U_{EN} to 0 to + U_{EN}
Permissible modulation range	-1.2 U_{EN} to 0 to +1.2 U_{EN} but max. 1000 V
Input resistance R_E	
$U_{EN} = 60 \text{ mV to } 1 \text{ V}$	$R_E = 30 \text{ k}\Omega / V$
$U_{EN} = 1 \text{ V to } 100 \text{ V}$	$R_E = 10 \text{ k}\Omega / V$
$U_{EN} = 100 \text{ V to } 1000 \text{ V}$	$R_E = 2 \text{ k}\Omega / V$

Output signal A

Bipolar load-independent direct current or load-independent direct voltage, short-circuit proof and resistant to no-load operation

Standard rated current I_{AN}	1 mA, 2.5 mA, 5 mA, 10 mA, 20 mA
Special rated current I_{AN}	in the range of ± 1 to ± 20 mA
Rated modulation range	- I_{AN} to 0 to + I_{AN} or 4 – 20 mA
Permissible modulation range	-1.2 I_{AN} to 0 to +1.2 I_{AN}
Zero adjustment	in the range of - I_{AN} to + I_{AN}
No-load voltage U_{AL}	$\leq 30 \text{ V}$
Rated load R_{BIN}	$7.5 \text{ V} / I_{AN}$
Operating load R_B	0 to $15 \text{ V} / I_{AN}$
Standard rated voltage U_{AN}	1 V; 10 V
Rated modulation range	0 to U_{AN}
Permissible modulation range	-1.2 U_{AN} to +1.2 U_{AN}
Zero adjustment	in the range of 0 to U_{AN}
Short-circuit current	$\leq 25 \text{ mA}$
Residual ripple I_{SS} or U_{SS}	$\leq 0.5\%$ SS from I_{AN} or U_{AN}
Setting time t_{99}	$\leq 50 \text{ ms}$ (residual error 1% of steady-state value)

Auxiliary power U_H

Rated input voltage U_{HN}	
Direct voltage	24 – 60 V; 110 – 200 V DC
Alternating voltage	100/115/230 V AC; 45 – 65 Hz
Input range	$\pm 20\%$
Power consumption	with $U_H = U_{HN}$, typical value
Direct voltage	2.0 W
Alternating voltage	1.6 W / 2.5 VA

Errors and influencing effects

The relative error information with signs + and -

Error in ref. conditions	0.2% relative to I_{AN}
Reference conditions	
Input current I_E	0 to I_{EN}
Input voltage U_E	0 to U_{EN}
Aux. alternating voltage U_H	$U_{HN} \pm 1\%$, THD $\leq 5\%$
Auxiliary direct voltage U_H	$U_{HN} \pm 1\%$, AC component $\leq 5\%$
Load R_B	$R_{BIN} \pm 1\%$; $R_{BLIN} \pm 1\%$
Ambient temperature T_U	$23 \text{ }^\circ\text{C} \pm 1 \text{ }^\circ\text{C}$
Warm-up period	$\leq 15 \text{ min}$
Interfering fields	none

Influencing effects of the ambient temperature of the load for current output	$\leq 0.2\% / 10 \text{ K}$
for $R_B = 15 \text{ V} / I_{AN}$	$\leq 0.1\%$
of the load with voltage output	
for $R_B = \text{to } I_{AN} / 20 \text{ mA}$	$\leq 10 \text{ mV}$
of the auxiliary power	
$U_H = 0.8 \text{ to } 1.2 U_{HN}$	$\leq 0.1\%$
of the warm-up	$\leq 0.3\%$

Other technical specifications

Basic standard	IEC 60688
Surge voltage VDE 0435	Part 303 with type test
Input relative to output	$\hat{U} = 5 \text{ kV}$, 1.2 / 50 μs , $R_i = 500 \Omega$
Input relative to auxiliary power	$\hat{U} = 5 \text{ kV}$, 1.2 / 50 μs , $R_i = 500 \Omega$
Output relative to auxiliary power	$\hat{U} = 5 \text{ kV}$, 1.2 / 50 μs , $R_i = 500 \Omega$
at input and auxiliary power	$\hat{U} = 5 \text{ kV}$, 1.2 / 50 μs , $R_i = 500 \Omega$
from output as normal mode voltage	$\hat{U} = 500 \text{ V}$, 1.2/50 μs , $R_i = 500 \Omega$ 3 surges each in '+' and '-' direction
Voltage strength (test voltage) for type test	
Input relative to output	$U_{off} = 5.5 \text{ kV}$, 50 Hz, sine 1 min
Input relative to auxiliary power	$U_{off} = 5.5 \text{ kV}$, 50 Hz, sine 1 min
Output relative to auxiliary power	$U_{off} = 3.7 \text{ kV}$, 50 Hz, sine 1 min
Permissible ambient temperature	acc. to IEC 68-2 / 1-3 (type test)
Working temperature range	- 10 $^\circ\text{C}$ to + 60 $^\circ\text{C}$
Functional temperature range	- 15 $^\circ\text{C}$ to + 70 $^\circ\text{C}$
Storage temperature range	- 40 $^\circ\text{C}$ to + 85 $^\circ\text{C}$
Climatic application class	EN 60721-3-3
Temperature 3K8H, humidity 3K5 (rare slight condensation)	
acc. to DIN EN 61010 Part 1	
Mechanical strength against falling and vibration and impact	Impact resistance class IK06 (1J)

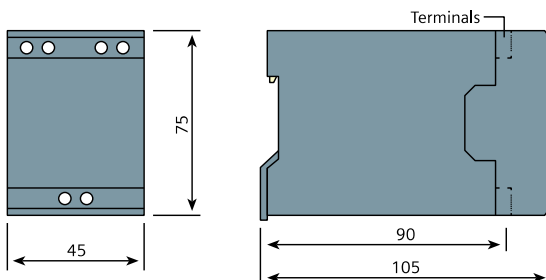
Safety

Protective measures	according to DIN EN 61010 Part 1
Overvoltage category	II, according to DIN EN 61010 Part 1
Measuring category	II, according to DIN EN 61010 Part 1
Fire resistance class	V0
Pollution degree	2

Electromagnetic compatibility

Emitted interference	according to EN 50081-1
RFI field strength	EN 55022, Cl. B
RFI voltage	EN 55022, Cl. B
Interference immunity	according to EN 50082-2
Immunity to electromagnetic fields (EN61000-4-3)	10 V / m
Discharge of static electricity ESD (EN61000-4-2)	8 kV
Quick transients, asymmetrical burst (EN61000-4-4)	
Inputs and outputs	2 kV
Power supply	4 kV
Surge (IEC 801-5)	
HF current (IEC 801-6)	10 V rms

Dimensions



Selection and ordering data

**Direct voltage,
direct current
isolation amplifier**

Order number 7KG6131- 1

DC input voltage U_{EN}

- 60 mV	to 60 mV	A
- 150 mV	to 150 mV	B
- 300 mV	to 300 mV	C
- 1 V	to 1 V	L
- 10 V	to 10 V	M
- 15 V	to 15 V	D
- 25 V	to 25 V	F
- 30 V	to 30 V	X
- 150 V	to 150 V	P
- 250 V	to 250 V	Q
- 300 V	to 300 V	U
- 400 V	to 400 V	R
- 500 V	to 500 V	S
- 600 V	to 600 V	T
- 800 V	to 800 V	V
- 1000 V	to 1000 V	W

DC input current I_{EN}

- 1 mA	to 1 mA	E
- 2.5 mA	to 2.5 mA	G
- 5 mA	to 5 mA	H
- 10 mA	to 10 mA	L
- 20 mA	to 20 mA	K
4 mA	to 20 mA	N

DC output signal I_{AN} or U_{AN}

- 1 mA	to 1 mA	E
- 2.5 mA	to 2.5 mA	G
- 5 mA	to 5 mA	H
- 10 mA	to 10 mA	J
- 20 mA	to 20 mA	K
- 1V	to 1 V	L
- 10 V	to 10 V	M
4 mA	to 20 mA	N

**Zero point
position**

Input	Output	
0 mA, V	= 0 mA, V	1
0 mA, V	= 4 mA	2
0 mA, V	= 12 mA	3
4 mA	= 0 mA, V	4
12 mA	= 0 mA, V	5

Continued:

**Direct voltage,
direct current
isolation amplifier**

Order number 7KG6131- 1

Auxiliary power

24 V DC	to 60 V	1
110 V DC	to 220 V	4
100 V AC,	45 to 65 Hz	5
115 V AC,	45 to 65 Hz	6
220 V AC,	45 to 65 Hz	7

Note:Not all combination possibilities
are available for order

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