SIMEAS T single-channel

Measuring Transducers for
High-Tension Variables

SIEMENS

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POWER QUALITY
Catalogue 2006

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Inhalt

SIMEAS T, single-channel
Measuring Transducers for High-Tension Variables

Catalogue 2006

SIMEAS T – Measuring Transducers for AC Current/Voltage

SIMEAS T – Measuring Transducers for DC Current/Voltage as Isolating Amplifiers

SIMEAS T
Passive measuring transducers

for AC Current/Voltage

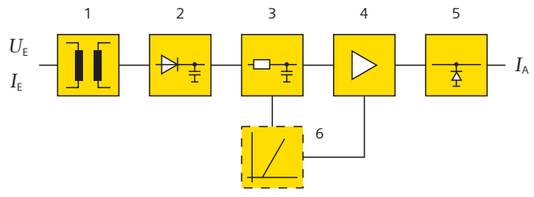
Description

The passive SIMEAS T-measuring transducers convert high-tension input AC voltage or current (45-65 Hz) into impressed DC current at the output.

Several instruments such as recorders, indicators, remote controllers, computers or regulators can be directly or remotely connected to and driven from the output, up to the maximum allowable load. The inputs and outputs are galvanically isolated from each other. Auxiliary power is not required.

Operation

The converter (1) transmits the input signal I_E or U_E via the rectifier and smoother (2) to the signal analyser (3) which controls the output amplifier (4). Fed by the smoothing circuit, the output amplifier delivers an impressed current I_A, which is proportional to the input signal magnitude. The protection circuitry (5) protects the output from open and short-circuits and from transitional overvoltage spikes. The AC-measuring transducer with an extended final range adjusts the measurement range via an expansion circuit (6).

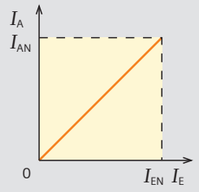


1 *Converter*
2 *Rectification, Smoothing*
3 *Signal analysis*
4 *Output amplifier*
5 *Protection circuit*
6 *Expansion circuit (optional)*

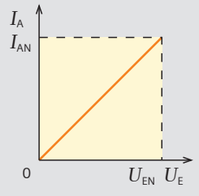
Features

- Small dimensions
- Fast delivery times, standard types from stock
- CE-marking
- Resistant to EMV-interference
- Compliant with the relevant national and international standards
- High quality, long lifetime
- Galvanic isolation with high breakdown voltage
- High measurement accuracy
- Powerful output circuitry
- High equipment safety and reliability

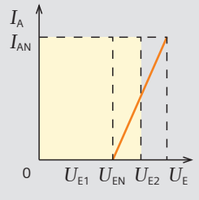
Characteristics



AC current
I_A = output current DC
I_E = input current AC
I_{AN} = nominal output current
I_{EN} = nominal inpt current



AC voltage
I_A = output current DC
U_E = input voltage AC
I_{AN} = nominal output current
U_{EN} = nominal input voltage



AC voltage with extended final range
I_A = output current DC
U_E = input voltage AC
I_{AN} = nominal output current
U_{EN} = nominal input voltage
U_{E1} = start of measurement range
U_{E2} = end of measurement range

Input

	For connection to AC voltage systems only
Maximum nominal supply voltage	Y 230 / △ 400 V und △ 500 V
Power consumption (per channel where $I = I_{EN}$)	0,3 VA where I_{AN} = 2,5 mA 0,4 VA where I_{AN} = 5 mA 0,6 VA where I_{AN} = 10 mA 0,9 VA where I_{AN} = 20 mA
Permissible output range	1,2 I_{EN} or 1,2 U_{EN}
Nominal frequency f_{EN}	50 Hz; 60 Hz
Frequency range f_E	45 Hz bis 65 Hz
Waveform	sine

Measuring transducer input ac-current I_E

Standard nominal current I_{EN}	See ordering data
Constant overload	
where I_{EN} = 1 A, 1,2 A	2 A
where I_{EN} = 1,5 A	3 A
where I_{EN} = 2 A, 2,4 A	4 A
where I_{EN} = 2,5 A	5 A
where I_{EN} = 5 A, 6 A	10 A
where I_{EN} = 7,5 A	12 A
where I_{EN} = 10 A	15 A
Surge overload	
where I_{EN} = 1 A, 1,2 A, 1,5 A	50 A for 1 sec
where I_{EN} = 2 A, 2,4 A, 2,5 A	100 A for 1 sec
where I_{EN} = 5 A, 6 A, 7,5 A, 10	A 200 A for 1 sec

Measuring transducer input AC voltage U_E

Standard nominal voltage U_{EN}	see ordering data
Custom nominal voltage U_{EN}	range 40 to 500 V
Constant overload	1,5 x U_{EN} but max 600 V
Surge overload	≤ 2 x U_{EN} (5 pulses 1 sec, in 5 secs apart)

Output

	impressed DC current open and short circuit protected
Standard nominal current I_{AN}	2,5 mA, 5 mA, 10 mA, 20 mA
Custom nominal current I_{AN}	range 1 to 20 mA
Nominal output range	0 to I_{AN}
Permissible output range	0 to 1,2 I_{AN}
Open-circuit voltage U_{AL}	≤ 30 V
Nominal load R_{BIN}	7,5 V / I_{AN}
Operational load R_B	0 to 15 V / I_{AN}
Residual ripple I_{SS}	≤ 0,5 % SS of I_{AN}
Setting time t_{99}	
Measuring transducer AC current	≤ 1 s
Measuring transducer AC voltage	≤ 0,4 s

Errors and influential effects

	Relative errors with + or - sign
Errors under 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}
Frenquency f_E	f_{EN} ± 1 %
Waveform	sine, distortion factor ≤ 0,2 %
Load R_B	R_{BIN} ± 1 %
Ambient temperature T_U	23 °C ± 1 °C
Warm-up time	≤ 15 min
Extraneous fields	none
Influential effects of	
input voltage from U_{EN} to 1,2 U_{EN}	≤ 0,4 %
input current from 0 to 0,05 I_{EN}	≤ 0,5 %
I_{EN} to 1,2 I_{EN}	≤ 0,1 %
ambient temperature	≤ 0,3 % / 10 K
frequency (45 - 65 Hz)	≤ 0,03 % / Hz
harmonic frequencies (3rd harmonics only)	≤ 0,33 x distortion factor in %
load	≤ 0,2 % when load changes from 0 Ω to 15 V / I_{AN}
warming-up	≤ 0,3 %

Other technical details

Surge voltage VDE 0435 part 303 at type-testing	
input versus output	U = 5 kV, 1,2 / 50 µsec
input and output as differential voltage	R = 500 Ω 3 pulses in each polarity direction
Dielectric strength input versus output	(Test voltage) U_{rms} = 5,5 kV, 50 Hz sine, 1 min (type-testing)
Permissible ambient temperature according to IEC 68-2 / 1-3	
working temperature range	- 10 °C to + 60 °C
functional temperature range	- 25 °C to + 70 °C
storage temperature range	- 40 °C to + 85 °C
Climatic application class	EN 60721-3-3 (seldom slight condensation) Environment class IR 2
Mechanical resistance	
against dropping, vibration and shock	to DIN EN 61010 part 1
Fire resistance class	V0

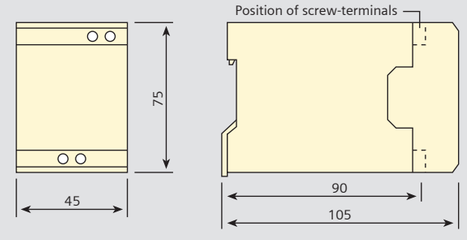
Safety to DIN EN 61010 part 1

Safety measures	
Overvoltage category	III
Pollution category	2

Electromagnetic compatibility

Interference emission	to DIN EN 50081-1
Radio interference field strength	to DIN EN 55022 class B
Interference immunity	to EN 50082-2
Interference immunity to electromagnetic fields 10 V / m	to IEC 801-3
Static electricity discharge ESD 8 kV	to IEC 801-2
Fast transients unsymmetrical burst 2 kV with cap. coupling	to IEC 801-4

Dimensions



Selection and Ordering Data

Measuring transducer for AC Voltage 7KG6101- | Order no. | | | | 1 | |

Nominal frequency f_{EN}					
50 Hz	2				
60 Hz	3				
Input voltage U_{EN}					
40 V		K			
100 / √3 V		A			
60 V		L			
110 / √3 V		B			
120 / √3 V		C			
132 / √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			
Other input voltages according to the details supplied in plain text		Z[1]			J1Y
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		
Other output signal ranges ≥ 1mA DC (however not live-zero) according to the details supplied in plain text			Z[1]		K1Y
Measurement range					
0 bis U_{EN}				0	

Measuring transducer for AC Current 7KG6111- | Order no. | | | | 1 | 0 |

Nominal frequency f_{EN}			
50 Hz	2		
60 Hz	3		
Input current I_{EN}			
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}			
DC 0 to 1 mA			E
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

Operating instructions[2] **for 7KG6101 and 7KG6111** German, English, French, Spanish and Italian	**7KG4000-8AA**

1) Only after consulting with the suppliers
2) One set of operating instructionsis supplied with each unit

SIMEAS T
Active measuring transducers

for AC Current/Voltage (effective value)

Features

- Small dimensions
- Fast delivery times, standard types from stock
- CE-marking
- Resistent to EMV-interference
- Compliant with the relevant national and international standards
- High quality, long lifetime
- Galvanic isolation with high breakdown voltage
- High measurement accuracy
- Powerful output circuitry
- High equipment safety and reliability

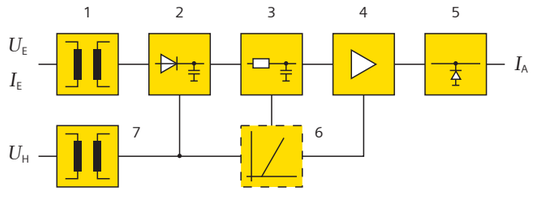
Application area

The active SIMEAS T-measuring transducers with an auxiliary power supply convert the effective value of high-tension input AC voltage or current into impressed DC current or voltage at the output.

Several instruments such as recorders, indicators, remote controllers, computers or regulators can be directly or remotely connected to and driven from the output, up to the maximum allowable load. The input, output and auxiliary power supply are galvanically dependent on each other.

Operation (see overview circuit diagram)

The converter (1) transfers the input signal I_E or U_E via the rectifier and smoother (2) to the signal analyser (3), which controls the output amplifier (4). Fed by the smoothing circuit, the output amplifier delivers an impressed current I_A that is proportional to the input value I_E. The protection circuitry (5) protects the output from an open-circuit and from transitional overvoltage spikes.
The AC measuring transducers with an extended final range or extended initial range or with a knee-characteristic all adjust their measurement range via an expansion circuit (6).
The auxiliary AC or DC power is converted into an internal power supply via an AC or a DC auxiliary power module (7).



1 *Converter*
2 *Rectification, Smoothing*
3 *Signal analysis*
4 *Output amplifier*
5 *Protection circuit*
6 *Expansion circuit (optional)*
7 *Auxiliary power supply*

Construction

The measuring transducers are hard-wired and tested functional units. A snap-fitting is provided for a 35mm mounting rail to DIN EN 50022.

The inputs, outputs and auxiliary power can be reliably connected with screw-terminals.

The units are free from silicon and halogens, and are of low-flammability.

Adjustment potentiometer and test points are accessible after the removal of the housing cover.

Input

	For connection to AC voltage systems only
Maximum nominal supply voltage	Y 230 / △ 400 V and △ 500 V
Permissible output range	0 - 1,2 I_{EN} or 1,2 U_{EN}
Nominal frequency f_{EN}	50 Hz; 60 Hz
Frequency range f_E	45 Hz to 65 Hz
Waveform	Sine, pulse, triangular or phase-angle
Peak factor	i/I_{rms} or $\hat{u}/U_{rms} \leq 2$

Measuring transducer input AC current I_{EN}

Standard nominal current I_{EN}	See ordering data
Measurement range in I_{EN}	0 to I_{EN}
Constant overload	2 I_{EN}
Surge overload	
where I_{EN} = 1 A	100 A for 1 sec
where I_{EN} = 5 A	200 A for 1 sec

Measuring transducer input AC voltage U_{EN}

Standard nominal voltage U_{EN}	siehe Bestelltabelle
Custom nominal voltage U_{EN}	within range 40 to 500 V
Measurement range in nominal value U_{EN}	0 to U_{EN}
Constant overload	1,5 x U_{EN} but max. 600 V
Surge overload	≤ 2 x U_{EN} (5 pulses 1 s, 5 secs apart)

Output I_A

	impressed DC current or impressed DC voltage open and short circuit protected
Standard nominal current I_{AN}	2,5 mA, 5 mA, 10 mA, 20 mA
Custom nominal current I_{AN}	within range 1 to 20 mA
Nominal output range	0 to I_{AN} or 4 - 20 mA
Permissible output range	0 to 1,2 I_{AN}
Zero displacement	range 0 o I_{AN}
Open-circuit voltage U_{AL}	≤ 30 V
Nominal load R_{BIN}	7,5 V / I_{AN}
Operational load R_B	0 to 15 V / I_{AN}
Standard nominal voltage U_{AN}	1 V; 10 V
Nominal output range	0 to U_{AN}
Permissible output range	0 to 1,2 U_{AN}
Zero displacement	within range 0 to U_{AN}
Short-circuit current	≤ 25 mA
Nominal load R_{BUN}	U_{AN} / 1 mA
Load current I_B	≤ 5 mA
Residual ripple I_{SS}	≤ 0,5 % SS of I_{AN} or U_{AN}
Setting time t_{99}	≤ 350 ms

Auxiliary Power U_H

Input voltage U_{HIN}	
DC voltage	DC 24 - 60 V; 110 - 200 V
AC voltage	AC 100/115/230 V; 45 - 65 Hz
Input range	± 20 %
Power consumption	where $U_H = U_{AN}$, typical value
DC voltage	2,5 W
AC voltage	2,5 W / 4 VA

Errors an influential effects

	Relative errors with + or - sign
Error under reference 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} ± 0,5 %
Waveform	sine, distortion factor ≤ 5 %
Auxiliary AC voltage U_H	U_{HIN} ± 1 %, distortion factor 5 % frequency f_{EN} ± 2 %
Auxiliary DC voltage U_H	U_{HIN} ± 1 %, ripple ± 2 %
Load R_B	R_{BIN} ± 1 %, U_{BUN} ± 1 %
Ambient temperature T_u	23 °C ± 1 °C
Warm-up time	≥ 15 min
Extraneous fields	none
Influential effect of	
ambient temperature	≤ 0,2 % / 10 K
frequency (45 bis 65 Hz)	≤ 0,04 % / Hz
waveform	≤ 0,02 % je 10 % distortion factor, (peak factor ≤ 2)
load with current output for R_B = 15 V / I_{AN}	≤ 0,1 %
load with voltage output for R_B = to I_{AN} / 20 mA	≤ 10 mV
auxiliary power U_H = 0,8 to 1,2 U_{HIN}	≤ 0,1 %
warming-up	≤ 0,3 %

Other technical details

Basic standard	1EC 60688
Surge voltage VDE 0435 part 303 at type-testing	input versus output input versus auxiliary power output versus auxiliary power as differential voltage
at input	$\hat{U}$ = 5 kV, 1,2 / 50 µsec, Ri = 500 Ω
at output	$\hat{U}$ = 5 kV, 1,2 / 50 µsec, Ri = 500 Ω 3 pulses in each polarity direction
Dielectic strength	(Test voltage)
input versus output	U_{off} = 5,5 kV, 50 Hz, sine, 1 min
input versus auxiliary power	U_{off} = 5,5 kV, 50 Hz, sine, 1 min
output versus auxliary power	U_{off} = 3,7 kV, 50 Hz, sine, 1 min
Permissible ambient temperature	to IEC 68-2 / 1-3 (typ-testing)
working temperature range	- 10 °C to + 60 °C
functional temperature range	- 25 °C to + 70 °C
storage temperature range	- 40 °C to + 85 °C
Climatic application class	EN 60721-3-3 temperature 3K8H, humidity 3K5 (seldom slight condensation)
Mechanical resistance	to DIN EN 61010 Teil 1
against dropping, vibration and shock	
Fire resistance class	V0

Safety

Safety	to DIN EN 61010 part 1
Overvoltage category	III
Pollution grade	2

Electromagnetic compatibility

Interference emission	to DIN EN 50081-1
Radio interference field strength	to DIN EN 55022 class B
Network feedback effect	to DIN EN 55011 class B
Interference immunity	to EN 50082-2
Interference immunity to electromagnetic fields 40 V / m	to IEC 801-3
Static electricity discharge ESD 8 kV	to IEC 801-2
Fast transients, unsymmetrical burst 2 kV with cap. coupling	to IEC 801-4
Surge	to IEC 801-5
HF Power supply	to IEC 801-6

Selection and Ordering Details

Measuring transducer for AC Voltage 7KG6106- Order no. [ ][ ][ ][ ][ ]-[ ] B

Nominal frequency f_{EN}		
50 Hz	2	
60 Hz	3	
Other nominal frequency[1]	9	H1Y
Input current AC		
40 V	K	
100 / √3 V	A	
60 V	L	
110 / √3 V	B	
120 / √3 V	C	
132 / √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	
Other input voltages up to max. 500 V [1]	Z[2]	J1Y
Output signal		
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) DC 4 to 20 mA	N	
DC 0 to 1 V	L	
DC 0 to 10 V	M	
Other output ranges ≥ 1mA [1]	Z[2]	K1Y
Zero position		
Measurement zone zero = signal zone zero	1	
Measurement zone zero at any position in the signal zone[1]	9[2]	L2Y
Auxiliary power		
DC 19,2 - 72 V	1	
DC 88 - 264 V	4	
AC 45 to 65 Hz, 100 V	5	
AC 45 to 65 Hz, 115 V	6	
AC 45 to 65 Hz, 230 V	7	

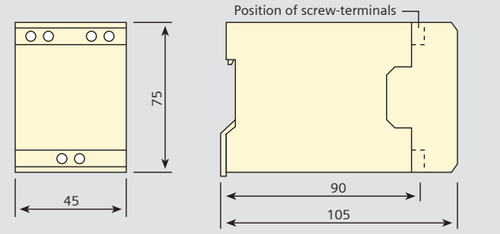
Continued

Measuring transducer for AC Voltage 7KG6106- Oder no. [ ][ ][ ][ ][ ]-[ ] B

Measurement range		
Measurement range linear 0 to U_{EN}	0	
Extended initial range		
0 to 0,05 U_{EN} ≅ 0 to 0,8 I_{AN}	1	
0 to 0,1 U_{EN} ≅ 0 to 0,8 I_{AN}	2	
Extended final range		
0 to 0,9 to 1,1 U_{EN} ≅ 0 to 0,2 I_{AN}	3	
0 to 0,85 to 1,15 U_{EN} ≅ 0 to 0,2 I_{AN}	4	
0 to 0,8 to 1,2 U_{EN} ≅ 0 to 0,2 I_{AN}	5	
Suppressed initial range		
0 to 0,9 to 1,1 U_{EN} ≅ 0 to 0 I_{AN}	6	
0 to 0,85 to 1,15 U_{EN} ≅ 0 to 0 I_{AN}	7	
0 to 0,8 to 1,2 U_{EN} ≅ 0 to 0 I_{AN}	8	
Other measurement ranges	9[2]	N2Y

Operating instructions[3] for 7KG6106 and 7KG6113
German, English, French, Spanish and Italian — **7KG4000-8BA**

Dimensions



1) Order with ashort description in plain text.
2) Only after consultation with suppliers
3) One set of operating instructions is supplied with each unit

Selection and Ordering Data

Measurement transducer for AC current — 7KG6113- — Order no.

Nominal frequency f_{EN}		
50 Hz	2	
60 Hz	3	
Other nominal frequency[1]	9	H1Y
Input current 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	
Other input current[1]	Z[2]	J1Y
Output signal		
DC 0 to 1 mA	E	
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) DC 4 to 20 mA	N	
DC 0 to 1 V	L	
DC 0 to 10 V	M	
Other output signal ranges[1]	Z[2]	K1Y
Zero position		
Measurement zone zero = signal zone zero	1	
Measurement zone zero at any position in the signal zone[1]	9[2]	L2Y
Auxiliary power		
DC 19,2 - 72 V	1	
DC 88 - 264 V	4	
AC 45 to 65 Hz, 100 V	5	
AC 45 to 65 Hz, 115 V	6	
AC 45 to 65 Hz, 230 V	7	
Measurement range		
Measurement range linear 0 to U_{EN}		0
Extended start-zone		
0 to I_{E1} to $I_{E2} \cong A_0$ to A_1 to A_2 [1]		9[2]
Extended end-zone		
0 to I_{E1} to $I_{E2} \cong A_0$ to A_1 to A_2 [1]		9[2]

Operating instructions[3] for 7KG6106 and 7KG6113 German, English, French, Spanish and Italian — **7KG4000-8BA**

1) Order with a short description in plain text
2) Only after consultation with suppliers
3) One set of operating instructions is supplied with each unit

SIMEAS T
Active measuring transducers Preferred models in a double-pack

for AC Current/Voltage

Technical Data and Dimensions	
Output signal	4 bis 20 mA
Nominal frequency	50 bis 60 Hz
Setting time t_{gg} from 10 % of UI_{EN}	500 ms
Error under reference conditions	≤ 0,5 %

Selection and Ordering Data

Measuring transducer for AC Voltage — 7KG6104- — Order no.

Input voltage AC		
100 V	E	
110 V	F	
120 V	J	
Auxiliary power		
DC 100 - 125 V	3	
AC 230 V	7	

Measuring transducer for AC current — 7KG6114- — Order no.

Input current AC		
1 A	A	
5 A	B	
Auxiliary power		
DC 100 - 125 V	3	
AC 230 V	7	

SIMEAS T
DC measuring transducers Isolating amplifiers

for DC current or AC voltage or as isolating amplifiers

Features

- Small dimensions
- Fast delivery times, standard types from stock
- CE-marking
- Resistent to EMV-interference
- Compliant with the relevant national and international standards
- High quality, long lifetime
- Galvanic isolation with high breakdown voltage
- High measurement accuracy
- Powerful output circuitry
- High equipment safety and reliability

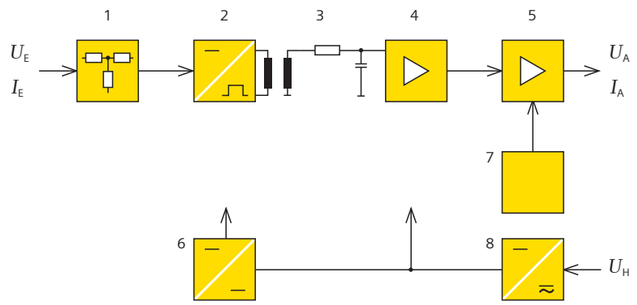
Description

SIMEAS T-measuring transducers for DC voltage or DC current with auxiliary power convert the input DC voltage or DC current into impressed DC current or impressed DC voltage at the output.

Several instruments such as recorders, indicators, remote controllers, computers, or regulators can be directly or remotely connected to and driven from the output, up to the maximum permissible load. The input, output, and auxiliary power supply are galvanically isolated from each other.

Operation

The input signal is calibrated via resistors (1) to the voltage ratio converter (2). The pulse-wave signal from the voltage ratio converter is filtered and transferred to the output side via the transducer (3), and conditioned by the amplifier (4). According to the characteristic curve, the output amplifier (5) delivers an impressed DC current I_A or impressed DC voltage U_A, which is proportional to the input value. The reference current I can be used to displace the zero of the characteristic curve.
The auxiliary power isolator (6) produces the galvanically isolated supply voltage for the input circuitry.
The auxiliary power is converted into an internal voltage supply via an AC or a DC voltage module (8).



1 *Resistor*
2 *Voltage ratio converter*
3 *Transducer, filter*
4 *Amplifier*
5 *Output amplifier*
6 *Auxiliary power isolator*
7 *Constant voltage source*
8 *Auxiliary power module*

Construction

The measuring transducers are hard-wired and tested functional units. A snap-fitting is provided for a 35mm mounting rail to DIN EN 50022.

The inputs, outputs, and external power can be reliably connected with screw-terminals.

The units are free from silicon and halogens and are of low-flammability.

Adjustment potentiometer and test points are accessible after the removal of the housing cover.

Input

For connection only to DC voltage systems with a maximum nominal voltage of 500 / 1000 V, see safety

Input signal E	DC voltage U_E or DC current I_E
Standard nominal current I_{EN}	1 mA, 2,5 mA, 5 mA, 10 mA, 20 mA
Custom nominal current I_{EN}	value within range 1 mA to 100 mA
Nominal output range	$-I_{EN}$ to 0 to $+I_{EN}$
Permissible output range	-1,2 I_{EN} or +1,2 I_{EN}
Voltage-drop at input at I_{EN}	500 mV ± 5 %
Standard nominal 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
Custom nominal voltage U_{EN}	value within range 60 mV to 1000 V
Nominal output range	$-U_{EN}$ to 0 to $+U_{EN}$
Permissible output range	-1,2 U_{EN} to 0 to +1,2 U_{EN} but max. 1000 V

input impedance R_E

U_{EN} = 60 mV bto 1 V	R_E 30 kΩ/V
U_{EN} = 1 V to 100 V	R_E 10 kΩ/V
U_{EN} = 100 V to 1000 V	R_E 2 kΩ/V

Output signal A

Bipolar impressed DC current or impressed DC voltage
Open and short circuit and protected

Standard nominal current I_{AN}	1 mA, 2,5 mA, 5 mA, 10 mA, 20 mA
Custom nominal current I_{AN}	value within range ± 1 to ± 20 mA
Nominal output range	$-I_{AN}$ to 0 to $+I_{AN}$ or 4-20 mA
Permissible output range	-1,2 I_{AN} to 0 to +1,2 I_{AN}
Zero displacement	range $-I_{AN}$ to I_{AN}
Open-circuit voltage U_{AL}	≤ 30 V
Nominal load R_{BIN}	7,5 V / I_{AN}
Optional load R_B	0 to 15 V / I_{AN}
Standard nominal voltage U_{AN}	1 V, 10 V
Nominal output range	0 to U_{AN}
Permissible output range	-1,2 U_{AN} to 0 to +1,2 U_{AN}
Zero displacement	range 0 to U_{AN}
Short-circuit current	≤ 25 mA
Residual ripple I_{SS}	≤ 0,5 % SS of I_{AN} or. U_{AN}
Setting time t_{99}	≤ 50 ms (residual error -1 % of final value)

Auxiliary Power U_H

Nominal input voltage U_{HN}

DC voltage	DC 24 - 60 V; 110 - 220 V
AC voltage	AC 100/115/230 V; 45 - 65 Hz
Input range	± 20 %
Power consumption	where $U_H = U_{HN}$, typical avlue
DC voltage	2 W
AC voltage	1,6 W / 2,5 VA

Errors and influential effects

Relative errors with + or - sign

Error under reference conditions 0,2 % relative to I_{AN}

Reference conditions

Input current I_E	0 to I_{EN}
Input voltage U_{EN}	0 to U_{EN}
Auxiliary AC voltage U_H	U_{HN} ± 1 %, distortion factor ≤ 5%
Auxiliary AC voltage U_H	U_{HN} ± 1 %, ripple ± 5%
Load R_B	R_{BIN} ± 1 %, R_{BUN} ± 1 %
Ambient temperature T_U	23 °C ± 1 °C
Warm-up time	≥ 15 min
Extraneous fields	none

Influential effects of

ambient temperature	≤ 0,2 % / 10 K
load with current output for R_A = 15 V / I_{AN}	≤ 0,1 %
load with voltage output for R_A = bis I_{AN} / 20 mA	≤ 10 mV
auxiliary power U_H = 0,8 bis 1,2 U_{HN}	≤ 0,1 %
warming-up	≤ 0,3 %

Other technical details

Impulse voltage VDE 0435 part 303 at type-testing

imput versus output	U = 5 kV, 1,2 / 50 µs, R=500Ω
input versus auxiliary power	U = 5 kV, 1,2 / 50 µs, R=500Ω
output versus auxiliary power	U = 5 kV, 1,2 / 50 µs, R=500Ω
at input versus auxiliary power	U = 5 kV, 1,2 / 50 µs, R=500Ω
as differential voltage	U = 5 kV, 1,2 / 50 µs, R=500Ω
at output as differential voltage	U = 500 V, 1,2 / 50 µs, R=500Ω 3 pulses in each polarity direction

Dielectric strength (Test voltage) at type-testing

Input versus output	U_{off} = 5,5 kV, 50 Hz, sine, 1 min
Input versus auxiliary power	U_{off} = 5,5 kV, 50 Hz, sine, 1 min
Output versus auxiliary power	U_{off} = 3,7 kV, 50 Hz, sine, 1 min

Permissible ambient temperature to IEC 68-2 / 1-3

working temperature range	-10 °C to + 60 °C
functional temperature range	-25 °C to + 70 °C
storage temperature range	-40 °C to + 85 °C

Climatic application class EN 60721-3-3	Temperature 3K8H Humidity 3K5 (seldom slight condensation)
Mechanical resistance against dropping	
vibration and shock	to DIN EN 61010 part 1

Safety

Safety measures	to DIN EN 61010 part 1
Overvoltage category	to DIN EN 61010 part 1
where U_{EN} = 0 - 500V	III
where U_{EN} = 500 - 1000V	II
Fire resistance class	V0
Pollution grade	2

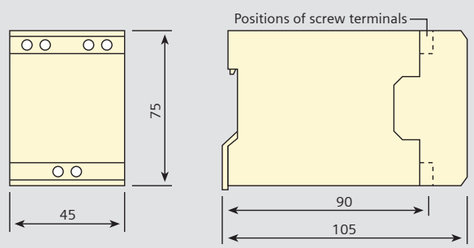
Electromagnetic compatibility

Interference emission	to DIN EN 50081-1
Radio interference field resistance	to DIN EN 55022 Kl. B to EN 50082-2

Interference immunity to electromagnetic

fields 10 V / m	to EN 61000-4-3 (IEC 801-3)
static electricity discharge ESD 8 kV	to EN 61000-4-2 (IEC 801-2)
Fast transients, unsymmetrical burst input and output 2 kV power supply 4kV	to EN 61000-4-4 (IEC 801-4)
Surge	to IEC 801-5
HF Power supply 10 U_{off}	to IEC 801-6

Dimensions



Selection and Ordering Details

DC Voltage, DC Current Isolating Amplifier 7KG6131- Order no. 1 ☐☐☐☐

DC input voltage E_N

- 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	
- 60 V	to	60 V	Z	J1A
- 100 V	to	100 V	Z	J1B
- 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

- 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	
- 4 mA	to	20 mA	N	
Other input signal according to details supplied in plain text			Z [1]	J1Y

DC output signal

- 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	
- 1 V	to	1 V	L	
- 10 V	to	10 V	M	
- 4 mA	to	20 mA	N	
Other input signal according to details supplied in plain text			Z [1]	K1Y

Zero 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	
any position, according to details supplied in plain text			9 [1]	L2Y

DC Voltage, DC Current Isolating Amplifier 7KG6131- Order no. 1 ☐☐☐☐

Auxiliary power

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

Operating instructions [2] 7KG4000-8BA
German, English, French, Spanisch and Italian

1) Only after consultation with suppliers
2) One set of operating instuctions is supllied with each unit

SIMEAS T – Contact Details

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