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Data Sheet

068.8e

Transducers for Current, Voltage requiring Auxiliary Supply

A1U 2.3
V1U 2.3

transducer case width 22.5 mm

WEIGEL

Application

The transducers of the **2.3 series** convert sinusoidal currents or voltages polarity-true into a load independent DC current or an impressed DC voltage. The output signal can be indicated, recorded and/or used for controlling directly at the test point or in measuring facilities located far away.

It is possible to connect more than one indicator, recorder, controller, computer etc. to the output circuit provided the total impedance does not exceed the rating.

Power supply is effected by a separate auxiliary voltage input. Input, output and auxiliary voltage input are **galvanically isolated from each other**. The outputs are **short-circuit proof** and **safe against idling**.

The transducers comply with safety requirements and are tested for interference immunity.

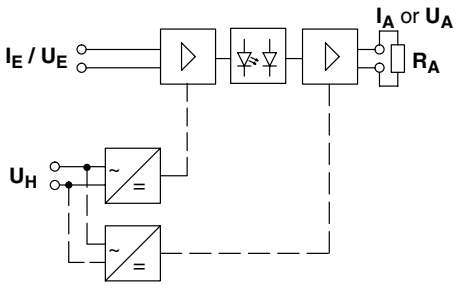
The transducers are designed to be mounted in machines/systems. Regulations for installation of electrical systems and equipment have to be observed.

Operating Principle

Current measurement is effected by means of a shunt, voltage measurement by means of a voltage divider.

The signal will then be galvanically isolated from input via an optical path and converted into a load independent DC current or into an impressed DC voltage proportional to the input signal.

Block Circuit Diagram



General Data

case details	projecting case clamping to TH 35 DIN rail according to DIN EN 60 715
material of case	ABS/PC black self-extinguishing to UL rating 94 V–0
terminals	screw-terminals
wire cross-section	4 mm^2 max.
enclosure code	IP 40 case IP 20 terminals
dielectric test	2210 V all circuits to case, 3536 V all circuits to each other
operating voltage	300 V (rated voltage phase to zero)
class of protection	II
measurement category	CAT III
pollution level	2
dimensions WxHxL	22.5 mm x 80 mm x 115 mm
weight	approx. 0.16 kg

Inputs

Device	input quantities	rated input value
A1U 2.3	sinusoidal AC current	I_{EN} = 1 A*) / 5 A*)
V1U 2.3	sinusoidal AC voltage	U_{EN} = 100 V*) / 250 V / 500 V

*) also for use on transformer

frequency range	48 ... 62 Hz	
input resistance R_E	approx. 2 kΩ/V	
power consumption	$I_E \cdot 0.1$ V on current input U_E^2 / R_E on voltage input	
operating voltage	519 V max.	
	current input	**voltage input**
measuring range	0 ... I_{EN}	0 ... U_{EN}
modulation range	1.2 I_{EN}	1.2 U_{EN}
overload limit	1.2 I_{EN} continuously 10 I_{EN} max. 1 s	1.2 U_{EN} continuously 2 U_{EN} max. 1 s

Outputs

current output

output current	I_A	load independent DC current
rated current	I_{AN}	0 ... 20 mA or 4 ... 20 mA
load range	R_A	0 ... 600 Ω
current limitation		to 120 ... 140% of end value

voltage output

output voltage	U_A	impressed DC voltage
rated voltage	U_{AN}	0 ... 10 V or 2 ... 10 V
load	R_A	≥ 4 kΩ

current/voltage output

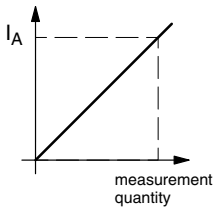
load error	≤ 0.1% based on 50% load change
residual ripple	≤ $1\%_{rms}$
response time	approx. 500 ms
idling voltage	≤ 20 V

Input and outputs are galvanically isolated.

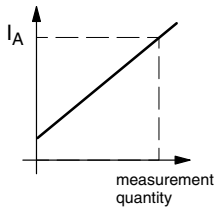
Conversion Characteristics

examples

standard



"live zero"



Auxiliary Supply

power supply unit	auxiliary voltage	power consumption
H1 *)	230 V~ (195 ... 253 V), 48 ... 62 Hz	< 3.5 VA
H2	115 V~ (98 ... 126 V), 48 ... 62 Hz	< 3.5 VA

*) standard

Galvanic isolation between input, output and auxiliary voltage

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Accuracy at Reference Conditions

accuracy	**class 0.5** (±0.5% of end value)
temperature coefficient	≤ 0.01%/K

valid for standard products and a life-period of 1 year maximum

reference conditions

auxiliary voltage	U_{HN} ±5%, (50 Hz)
load	0.5 $R_{A\ max}$ ±1%
frequency	50 ... 60 Hz
wave form	sine curve, distortion factor ≤ 0.1%
ambient temperature	23˚C ±1K
warm-up	≥5 min

Environmental

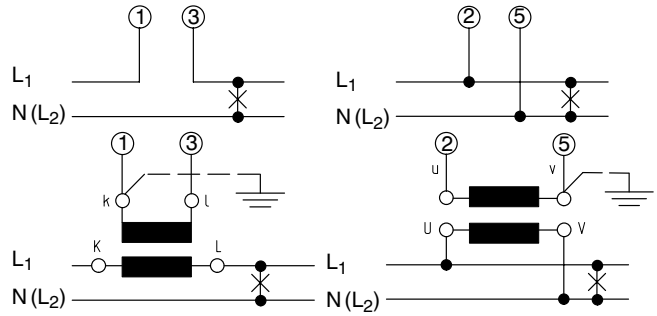
climatic suitability	climatic class 3 to VDE/VDI 3540 sheet 2
operating temperature range	–10 ... +55˚C
storage temperature range	–25 ... +65˚C
relative humidity	≤ 75% annual average, non-condensing

Rules and Standards

DIN EN 60 529	Enclosure codes by housings (IP-code)
DIN EN 60 688	Electrical measuring transducers converting AC quantities into analog or digital signals
DIN EN 60 715	Dimensions of low voltage switching devices: standardized DIN rails for mechanical fixation of electrical devices in switchgears
DIN EN 61 010-1	Safety requirements for electrical measuring, control and laboratory equipment Part 1: General requirements
DIN EN 61 326-1	Electrical equipment for measurement, control and laboratory use – EMC requirements Part 1: General requirements
	(IEC 61 000-4-3 evaluation criterion B)
VDE/VDI 3540 sheet 2	Reliability of measuring and control equipment (classification of climates for equipment and accessories)

Connections

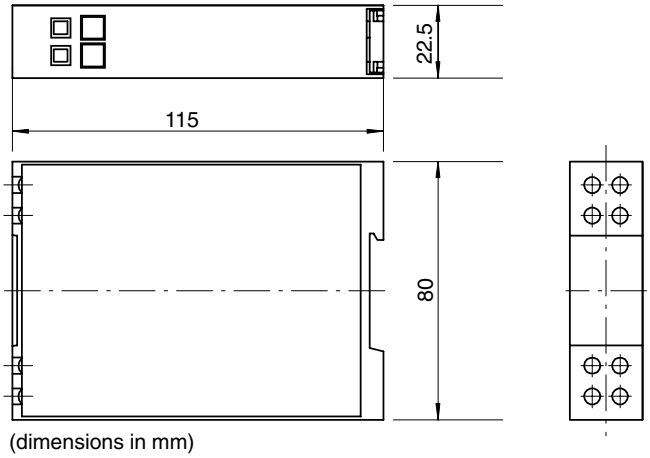
current A1U 2.3 **voltage V1U 2.3**



with transformer

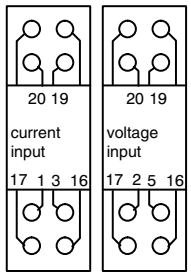
Dimensions

side view front view



(dimensions in mm)

Terminal Assignment



terminal	function
1	I_E
3	I_E
2	U_E
5	U_E
19	U_A, I_A (+)
20	U_A, I_A (–)
16	U_H L1
17	U_H N

I_E current input
U_E voltage input
The terminal numbering correspond to details in the connection diagrams (to DIN 43 807).

I_A current output
U_A voltage output
U_H auxiliary voltage input

Ordering Guide

type	**Transducer for current and voltage**	
A1U 2.3	sinusoidal AC current	
V1U 2.3	sinusoidal AC voltage	
Input	**A1U 2.3**	**V1U 2.3**
13	0 ... 1 A	0 ... 100 V
14	–	0 ... 250 V
15	0 ... 5 A	0 ... 500 V
	Frequency range input	
F50	48 ... 62 Hz (50/60 Hz)	
	Output	
1	0 ... 20 mA	
4	4 ... 20 mA	
7	0 ... 10 V	
8	2 ... 10 V	
	Accuracy	
0.5	⍰0.5% of end value	
	Response time	
T1	500 ms	
	Auxiliary supply	
H1	AC 230 V (195 ... 253 V), 48 ... 62 Hz *)	
H2	AC 115 V (98 ... 126 V), 48 ... 62 Hz	

*) standard

ordering example

V1U 2.3	14	F50	1	0.5	T1	H1

transducer for sinusoidal AC voltage, calibrated to 0 ... 250 V, 50/60 Hz,
output 0 ... 20 mA, accuracy class 0.5,
response time 500 ms, auxiliary voltage 230 V AC

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– specifications subject to change without notice; date of issue 12/10 –