

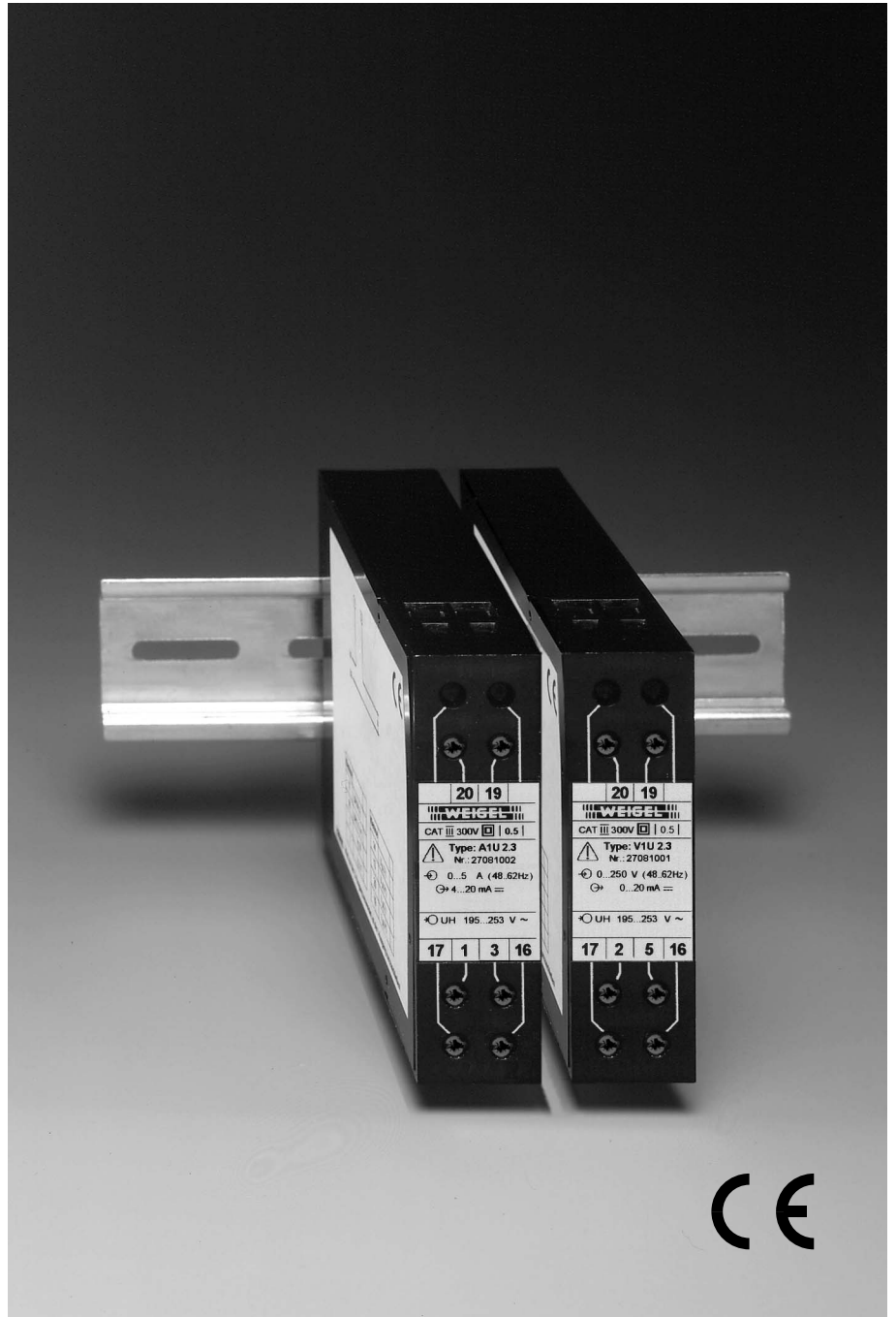
Data Sheet

068.3e

Transducers for Current, Voltage requiring Auxiliary Supply

A1U 2.3
V1U 2.3

transducer case width 22.5 mm



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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.

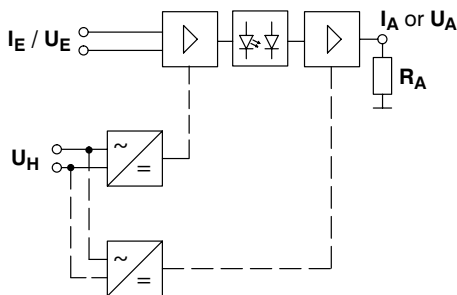
The transducers are designed to be mounted in machines/systems. Regulations for installation of electrical systems and equipment have to be observed.

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	2.2 kV all circuits to case, 3.7 kV 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	$I_{EN} = 1 \text{ A}^*) / 5 \text{ A}^*)$
V1U 2.3	sinusoidal AC voltage	$U_{EN} = 100 \text{ V}^*) / 250 \text{ V} / 500 \text{ V}$

*) also for use on transformer

frequency range	48 ... 62 Hz
input resistance	approx. 2 kΩ/V
load voltage	60 mV
power consumption	≤ 0.4 VA
operating voltage	600 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

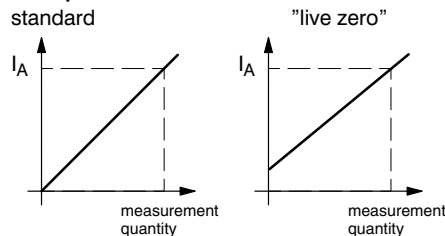
current/voltage output

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

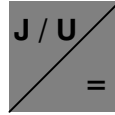


Auxiliary Supply

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



Transducers for Current, Voltage requiring Auxiliary Supply

Accuracy at Reference Conditions

accuracy	class 0.5 ($\pm 0.5\%$ of end value)
temperature coefficient	$\leq 0.01\%/K$
valid for standard products and a life-period of 1 year maximum	
reference conditions	
auxiliary voltage	$U_{HN} \pm 5\%$, (50 Hz)
load	$0.5 R_{A \max} \pm 1\%$
frequency	50 ... 60 Hz
wave form	sine curve, distortion factor $\leq 0.1\%$
ambient temperature	$23^\circ C \pm 1K$
warm-up	≥ 5 min

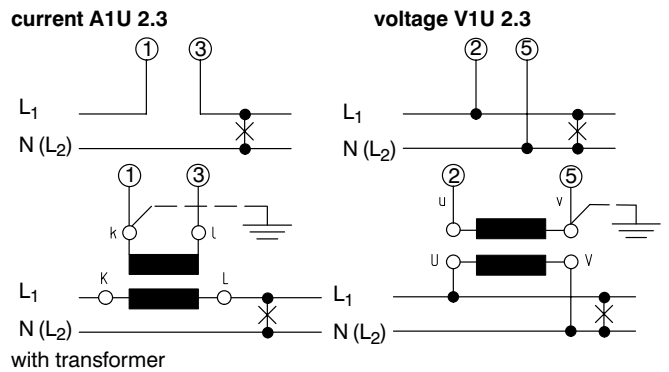
Environmental

climatic suitability	climatic class 3 to VDE/VDI 3540 sheet 2
operating temperature range	$-10 \dots +55^\circ C$
storage temperature range	$-25 \dots +65^\circ C$
relative humidity	$\leq 75\%$ annual average, non-condensing

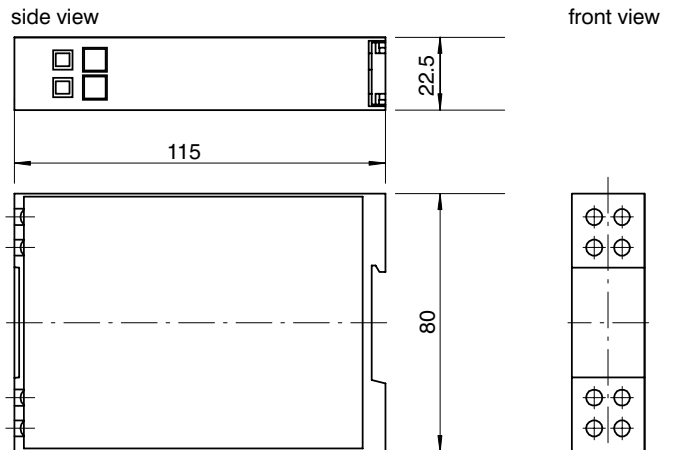
Rules and Standards

DIN EN 60 715	dimensions of low voltage switching devices: standardized DIN rails for mechanical fixation of electrical devices in switchgears
DIN EN 60 688	electrical measuring transducers converting AC quantities into analog or digital signals
DIN EN 61 010	safety requirements for electrical measuring-, control- and laboratory equipment
DIN EN 61 326	electrical accessories for control technology and laboratory use
	mains feedback, electromagnetic compatibility (EMC), interference immunity, interference emittance (IEC 61 000-4-3 feature B)
DIN EN 60 529	enclosure codes by housings (IP-code)
VDE/VDI 3540 sheet 2	reliability of measuring and control equipment (classification of climates for equipment and accessories)

Connections



Dimensions



(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

WEIGEL – MESSGERÄTE GmbH

P.O.B. 720154 • D-90241 Nürnberg • Telephone: 0911/42347-0
Erlenstraße 14 • D-90441 Nürnberg • Fax: 0911/42347-39
Internet: <http://www.weigel-messgeraete.de>
e-mail: vertrieb@weigel-messgeraete.de

– specifications subject to change without notice; date of issue 12/07 –

