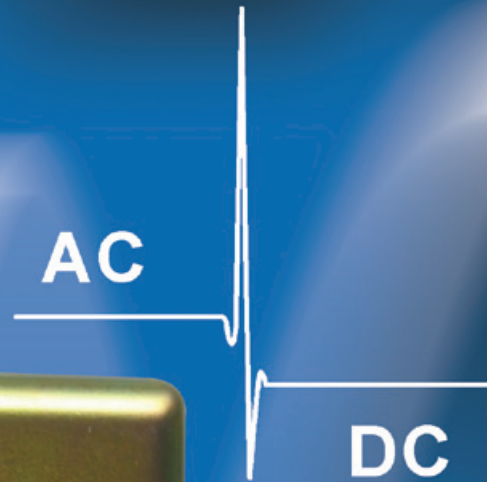
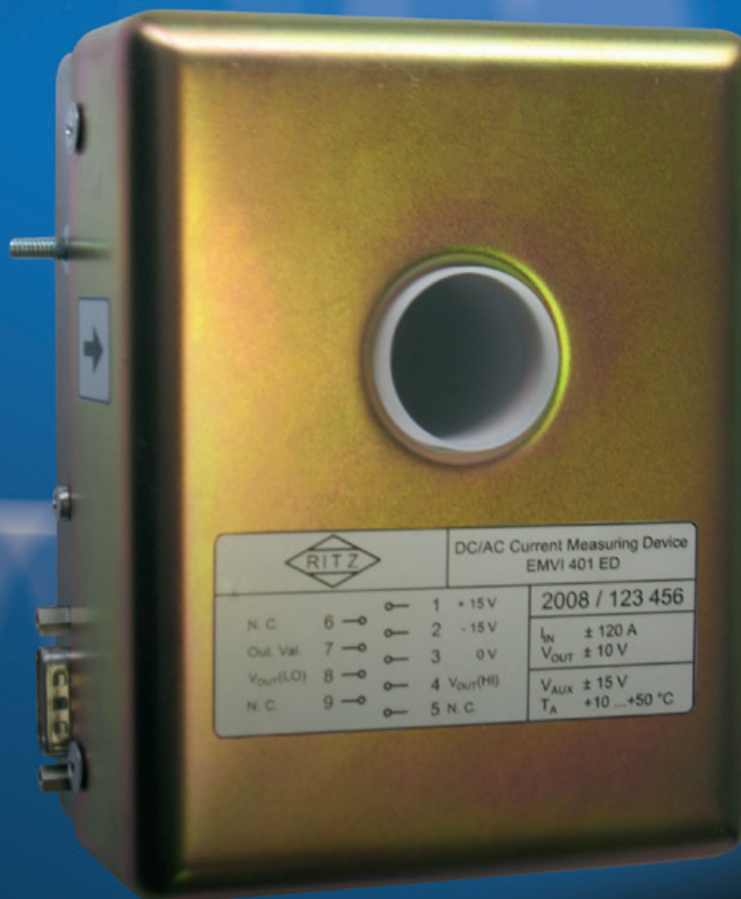




Instrument Transformers

DC and AC Sensor Type EMVI 401ED (zero-flux transducer)

Measurement of Direct and Alternating Currents
High Accuracy
Low Voltage Applications



RITZ		DC/AC Current Measuring Device EMVI 401 ED	
N.C.	6	1	+15 V
Out. Vol.	7	2	-15 V
V _{out(LD)}	8	3	0 V
N.C.	9	4	V _{out(HI)}
		5	N.C.
		2008 / 123 456	
		I _N ± 120 A	
		V _{OUT} ± 10 V	
		V _{AUX} ± 15 V	
		T _A +10 ... +50 °C	



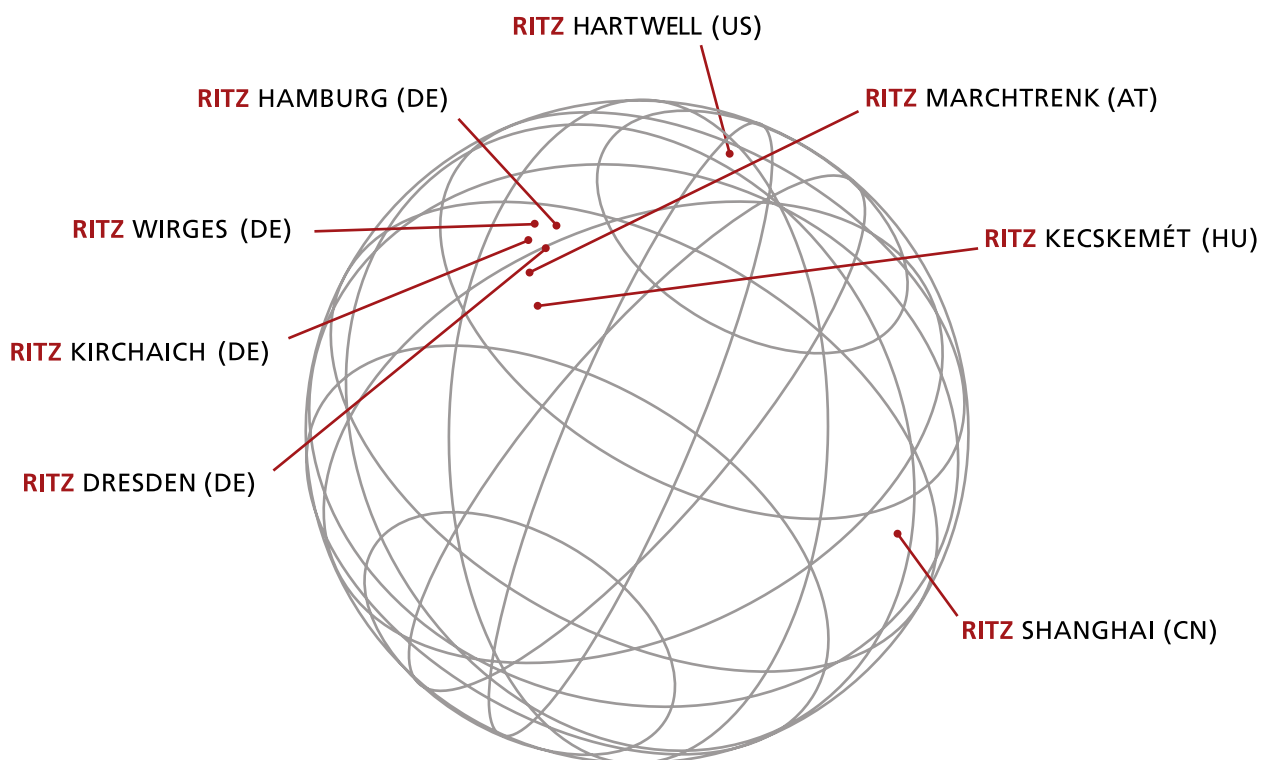
RITZ Instrument Transformers GmbH – Core competency

Under the trading name „RITZ Instrument Transformers GmbH“ RITZ has been pooling its activities to gather new strengths since 01.08.2007.

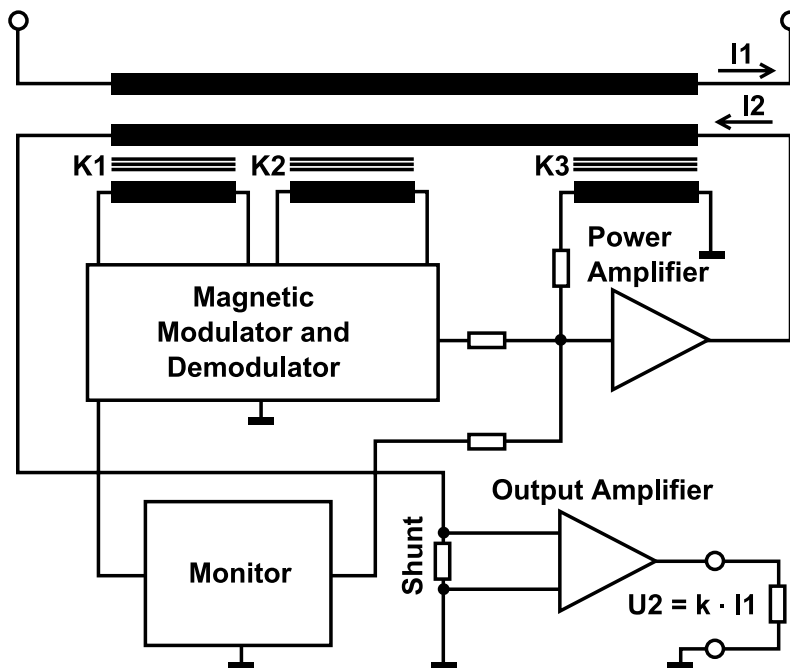
The tradition and knowledge of the parent company „RITZ Messwandler Hamburg“ and the subsidiary „RITZ Messwandler Dresden (TuR)“ has been united with the companies “Wandler- und Transformatoren-Werk Wirges (WTW) and “Messwandlerbau Bamberg (MWB)” under this name. This merger unites a total of more than two hundred years of know-how in instrument transformers production.

In addition, RITZ has decided to concentrate on the core business of medium voltage and low voltage transformers in which the high voltage division is sold. The resources gained through this shall now be applied for additional innovations and quality standards in the medium and low voltage products. RITZ is therefore securing its position on the global market.

The overseas corporations of RITZ Instrument Transformers GmbH in Austria (Marchtrenk), Hungary (Kecskemét), China (Shanghai) and USA (Hartwell) strengthen the company’s position on the international market.



DC and AC Sensor Type EMVI 401ED



Application

Compact current sensor for accurate and potential-free measurement of direct and alternating currents in low voltage installations.

Principle of operation

The direct and alternating current transformer operates on the principle of compensation. That means that the magnetic field caused by the primary current I_1 is compensated by an inverse field of the secondary current I_2 . This principle is maintained by an electronic control circuit which detects the residual field caused by the two currents and regulates it to a minimum by altering the secondary current.

The secondary current then is a very exact image of the primary current. An output voltage U_2 is produced by a differential amplifier measuring the voltage drop across a high precision shunt resistor in four-wire technique placed in the secondary current loop.

The control unit consists of a magnetic modulator and demodulator circuit, a control and power amplifier, an output stage and a protection unit. The core and coil assembly K1, K2 and K3 is used to detect the respective magnetic field

conditions. Core K3 detects the alternating component of the residual magnetic field. The direct component is obtained by demodulating the excitation current of core K1 and K2. Both signals are fed to the summing input of the control and power amplifier, which generates the secondary current I_2 .

Features

The complete measurement system is mounted in a metal housing due to EMC requirements. The housing incorporates a primary conductor window. Output voltage, power supply and status information are available via a 9-pin Sub-D male connector.

This type of current sensor can be used for DC and / or AC applications due to its excellent frequency characteristics.

The operation point of the current sensor is stabilised by a control unit. In case of core saturation caused by primary currents outside the measuring range the operating point is re-established automatically.

A design with separate components (magnetic head and electronic part) or with a higher insulation level is available on request.

Data sheet

Rated primary current (I_{1r})	± 120 A _{dc}
Overload (related to I_{1r})	110 %
Rated output voltage (U_{2r})	± 10 V _{dc}
Rated burden	10 k Ω
Permissible error related to I_{1r} :	
Gain error	100 ppm
Gain temperature coefficient	5 ppm/°C
Gain drift per month	20 ppm
Output offset error	100 ppm
Output offset temperature coefficient	3 ppm/°C
Output offset drift per month	20 ppm
Stability over 30 minutes (step 0 to I_{1r})	10 ppm
Output noise (0 to 10kHz)	0,1 mV _{rms}
Induced voltage into primary conductor	0,3 mV _{p-p}

Frequency characteristics (small signal):

Amplitude (-3dB)	10 kHz
Phase (@2kHz)	2 deg. typ.
Slew rate	> 5 V/ms

Auxiliary voltage (bipolar)	± 15 V
Operating range	± 5 %
Power consumption ($I_1 = 0A$)	± 60 mA
max. ($I_1 = 1,1 \cdot I_{1r}$)	± 170 mA

Test voltage (primary-to-output)	2 kV _{dc}
Test voltage (primary-to-housing)	2 kV _{dc}

Ambient temperature	5...23...40 °C
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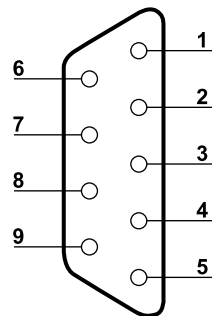
Outputs:

Analogue	2-wire connection
Status information	open collector

Other measuring ranges are available on request.

Pin connection

9-pin D-Sub-connector:



1	Auxiliary voltage +15V
2	Auxiliary voltage - 15V
3	Auxiliary voltage 0V
4	Output HI
5	N. c.
6	N. c.
7	Status information (open collector)
8	Output LO
9	N. c.

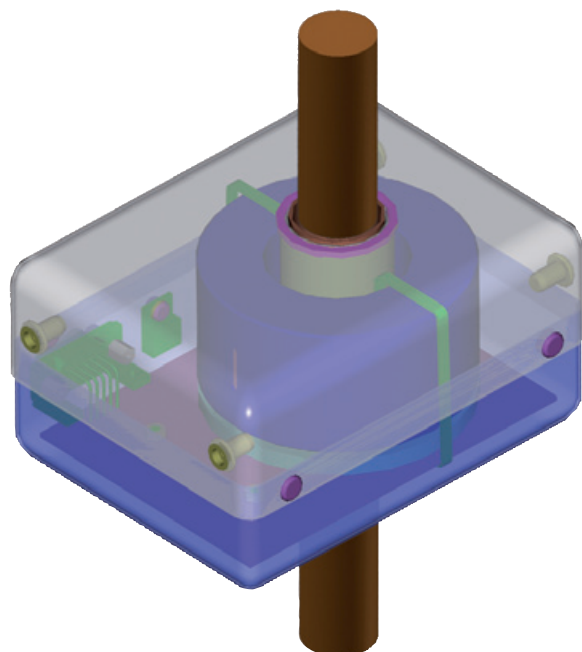
Dimension drawing and primary conductor

Dimensions of housing:

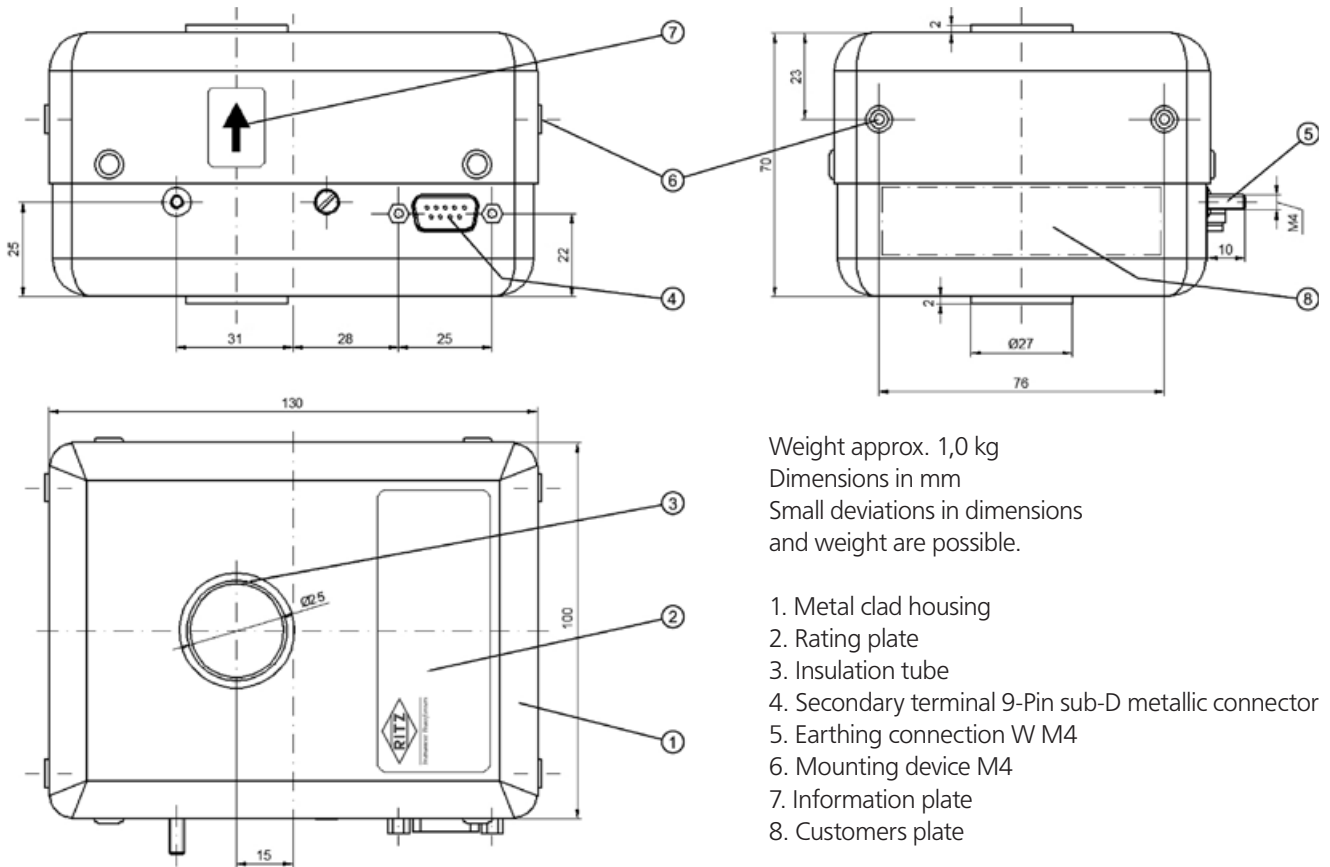
L	130 mm
W	100 mm
H	70 mm

Window for primary conductor:

D	25 mm
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Outline drawing



Weight approx. 1,0 kg

Dimensions in mm

Small deviations in dimensions
and weight are possible.

1. Metal clad housing
2. Rating plate
3. Insulation tube
4. Secondary terminal 9-Pin sub-D metallic connector
5. Earthing connection W M4
6. Mounting device M4
7. Information plate
8. Customers plate



Sales

RITZ HAMBURG RITZ Instrument Transformers GmbH Wandsbeker Zollstraße 92-98 22041 Hamburg GERMANY Tel +49 40 51123-0 Fax +49 40 51123-333 Medium Voltage Fax +49 40 51123-111 Low Voltage	Low Voltage Instrument Transformers		Medium Voltage Instrument Transformers	Cast Resin Insulated Bus Bar Systems	Cast Resin Power Transformers	Electronic Instrument Transformers and Sensor	Customised Cast Resin Parts
RITZ WIRGES RITZ Instrument Transformers GmbH Siemensstraße 2 56422 Wirges GERMANY Tel +49 2602 679-0 Fax +49 2602 9436-00							
RITZ DRESDEN RITZ Instrument Transformers GmbH Bergener Ring 65-67 01458 Ottendorf-Okrilla GERMANY Tel +49 35205 62-0 Fax +49 35205 62-216							
RITZ KIRCHAICH RITZ Instrument Transformers GmbH Mühlberg 1 97514 Oberaurach-Kirchaich GERMANY Tel +49 9549 89-0 Fax +49 9549 89-11							
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