

Current Transducer RA 1005-S

$I_{PDC} < 1000 \text{ A}$

For the measurement of alternating components in a determined bandwidth, contained in a continuous primary current up to 1000 A.



Electrical data

I_{PDC}	Continuous primary current	< 1000	A
M	Transfer ratio	$3.98 \cdot 10^{-6}$	H
V_{OUT}	Output voltage (instantaneous) ¹⁾	$V_{OUT} = M \cdot \frac{dI_P}{dt}$	V
V_{OUT}	Output voltage (sinusoidal wave) ¹⁾	$V_{OUT} = 2 \cdot \pi \cdot M \cdot f \cdot I_{PAC}$ with $2 \cdot \pi \cdot M = 25 \cdot 10^{-6}$	V H
	Example: @ 50 Hz, 20 A	$V_{OUT} = 2 \cdot \pi \cdot 3.98 \cdot 10^{-6} \cdot 50 \cdot 20 = 25$	mV
L_S	Inductance of secondary circuit ($\pm 3 \%$)	5.9	mH
N_S	Number of secondary turns	1480	
R_S	Secondary coil resistance @ $T_A = 85^\circ\text{C}$, ($\pm 4 \%$)	312	Ω

Accuracy - Dynamic performance data

f	Frequency bandwidth	20 .. 3000	Hz
X	Accuracy @ $I_{PAC} = 0.1 \dots 20\text{A}$, $T_A = 25^\circ\text{C}$ $f = 20 \dots 3000 \text{ Hz}$	< ± 3	%
$j V_{OUT}$	Phase shift of output voltage $V_{OUT}^{(1)}$, I_P sinusoidal	$f = 20 \dots 100 \text{ Hz}$ $f = 100 \dots 3000 \text{ Hz}$	$-90^\circ \pm 5^\circ$ $-90^\circ \pm 2.5^\circ$
$\frac{\Delta M}{M} T_{100}$	Thermal drift of M	$T_A = -40 \dots +85^\circ\text{C}$	< $\pm 0.3\%$
$\frac{\Delta L}{L} T_{100}$	Thermal drift of L_S and L_T	$T_A = -40 \dots +85^\circ\text{C}$	< $\pm 0.3\%$

Test circuit

L_T	Inductance of test circuit ($\pm 4 \%$)	6	mH
N_T	Number of turns	1440	
R_T	Test circuit resistance @ $T_A = 85^\circ\text{C}$, ($\pm 5 \%$)	307	Ω
I_T	R.m.s. test current	< 40	mA

General data

T_A	Ambient operating temperature	- 40 .. + 85	$^\circ\text{C}$
T_S	Ambient storage temperature	- 45 .. + 90	$^\circ\text{C}$
m	Mass	760	g
	Standards	EN 50155 : 2001	

Note: ¹⁾ Without load resistance.

Feature

- Insulated plastic case recognized according to UL 94-V0.

Advantages

- No insertion losses
- Current overload capability.

Application

- Railway security system.

Application Domain

- Traction.

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Isolation characteristics

V_d	R.m.s. voltage for AC isolation test, 50 Hz, 1 mn	12 ²⁾	kV
		1.5 ³⁾	kV
		0.5 ⁴⁾	kV
V_e	R.m.s. voltage for partial discharge extinction @ 10pC	> 2.8 ⁵⁾	kV
dCp	Creepage distance ⁶⁾	88	mm
dCl	Clearance distance ⁶⁾	71	mm
CTI	Comparative tracking index (Group I)		600

- Notes :
- ²⁾ Between primary and secondary + test turns + shield
 - ³⁾ Between secondary + test turns and shield
 - ⁴⁾ Between secondary and test turns
 - ⁵⁾ Test carried out with a busbar \varnothing 40mm centred in the through-hole
 - ⁶⁾ See details figure 1.

Dimensions RA 1005-S (in mm. 1 mm = 0.0394 inch)

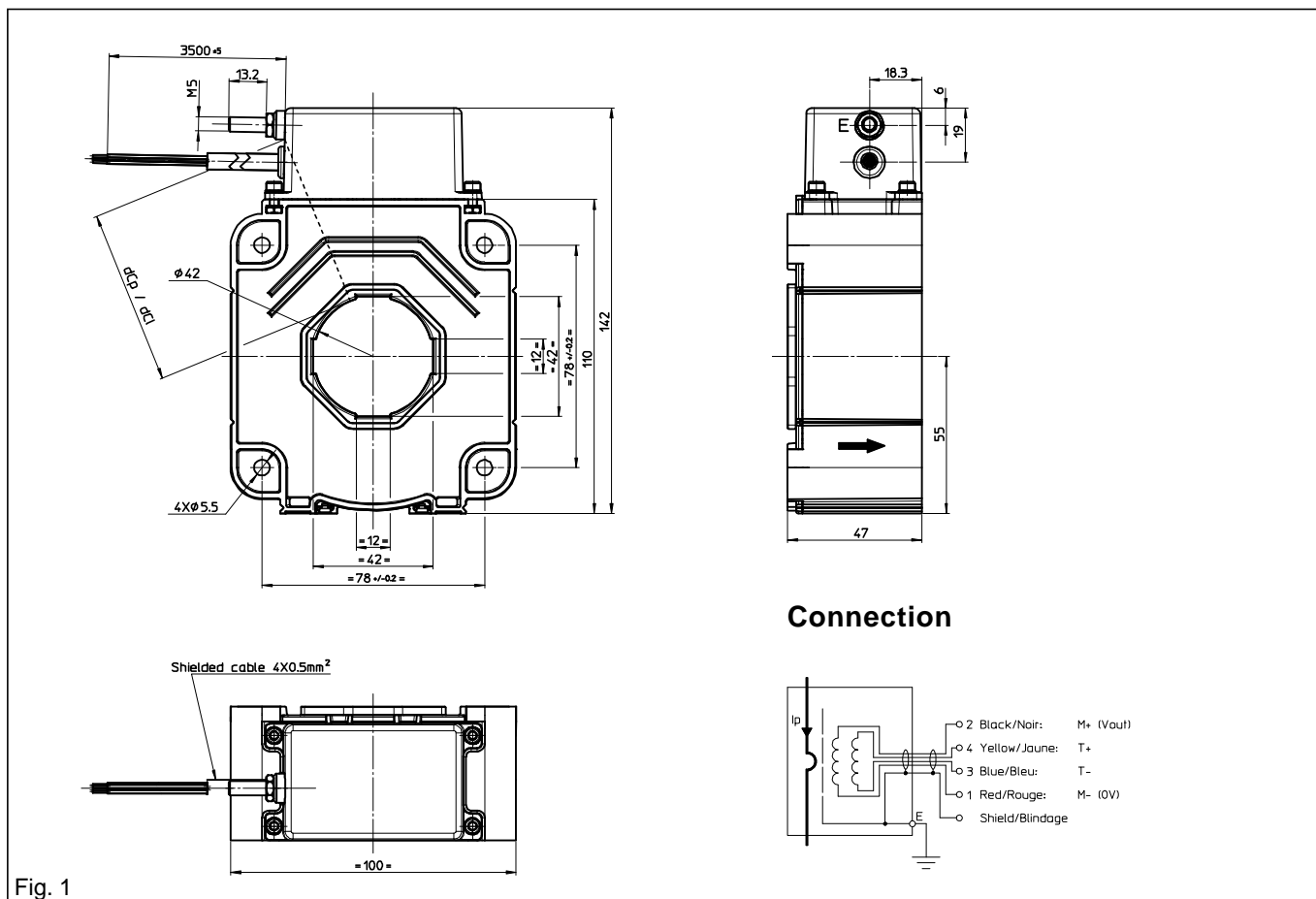


Fig. 1

Mechanical characteristics

- | | |
|------------------------------|---|
| • General tolerance | ± 1 mm |
| • Transducer fastening | 4 holes $\varnothing 5.5$ mm
4 steel screws M5 |
| Recommended fastening torque | 4 Nm or 2.92 Lb. - Ft. |
| • Primary through-hole | $\varnothing 42$ mm |
| • Secondary connection | screened cable
4 x 0.5 mm ² |
| • Connection of screen | M5 threaded studs |
| Recommended fastening torque | 2 Nm or 1.47 Lb. - Ft. |

Remarks

- V_{OUT} is positive when positive di_p/dt flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 100°C.

Safety



This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacturer's operating instructions.



Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar) Ignoring this warning can lead to injury and/or cause serious damage.

This transducer is a built-in device, whose conducting parts must be inaccessible after installation.