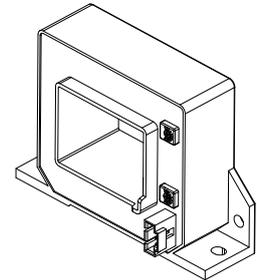


Current Transducer HAT 1000-S/SP23

For the electronic measurement of currents: DC, AC, pulsed,..., with galvanic separation between the primary circuit and the secondary circuit.

$$I_{PN} = 1000 \text{ A}$$

$$U_{out} = \pm 4 \text{ V}$$



Electrical data

I_{PN}	Primary nominal RMS current	1000	A
I_{PM}	Primary current, measuring range ¹⁾	± 2500	A
U_C	Supply voltage ($\pm 5\%$) ¹⁾	± 15	V
I_C	Current consumption	± 20	mA
R_{INS}	Insulation resistance @ 500 V DC	> 1000	M Ω
U_{out}	Output voltage (Analog) @ $\pm I_{PN}$, $R_L = 10 \text{ k}\Omega$, $T_A = 25^\circ\text{C}$	± 4	V
R_{out}	Output internal resistance	100	Ω
R_L	Load resistance	10	k Ω

Accuracy - Dynamic performance data

ϵ_{tot}	Total error @ I_{PN} , $T_A = 25^\circ\text{C}$ (excluding offset)	$\leq \pm 1$	% of I_{PN}
ϵ_L	Linearity error ²⁾ ($0 \dots \pm I_{PN}$)	$\leq \pm 1$	% of I_{PN}
U_{OE}	Electrical offset voltage @ $T_A = 25^\circ\text{C}$	$< \pm 20$	mV
U_{OM}	Magnetic offset voltage @ $I_p = 0$, after an excursion of $1 \times I_{PN}$	$< \pm 10$	mV
TCU_{OE}	Temperature coefficient of U_{OE}	$-40^\circ\text{C} \dots +80^\circ\text{C}$	$< \pm 1$ mV/K
		$+80^\circ\text{C} \dots +105^\circ\text{C}$	$< \pm 1.5$ mV/K
TCU_{out}	Temperature coefficient of U_{out} (% of reading)	$< \pm 0.1$	%/K
t_{D90}	Delay time to 90 % of the final output value for I_{PN} step ³⁾	< 5	μs
BW	Frequency bandwidth ⁴⁾ (-3 dB)	DC ... 25	kHz

General data

T_A	Ambient operating temperature	$-40 \dots +105$	$^\circ\text{C}$
T_{Ast}	Ambient storage temperature	$-40 \dots +105$	$^\circ\text{C}$
m	Mass	300	g
	Standards	IEC 61010-1:2010	
		IEC 61326-1:2012	
		UL 508: 2010 ⁵⁾	

Notes: ¹⁾ Operating at $\pm 12 \text{ V} \leq U_C \leq \pm 15 \text{ V}$ will reduce the measuring range

²⁾ Linearity data exclude the electrical offset

³⁾ For a $di/dt = 50 \text{ A}/\mu\text{s}$

⁴⁾ Please refer to derating curves in the technical file to avoid excessive core heating at high frequency

⁵⁾ UL conform at 85°C .

Features

- Hall effect measuring principle
- Insulating plastic case recognized according to UL 94-V0.

Special features

- Dedicated to customer
- Molex 70543-0003.

Advantages

- Easy installation
- Low power consumption
- Small size and space saving
- Only one design for wide current ratings range
- High immunity to external interference.

Applications

- DC motor drives
- Switched Mode Power Supplies (SMPS)
- AC variable speed drives
- Uninterruptible Power Supplies (UPS)
- Battery supplied applications
- Power supplies for welding applications.

Application domain

- Industrial.

Current Transducer HAT 1000-S/SP23

Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	4.9	kV
U_{Ni}	Impulse withstand voltage 1.2/50 μ s	> 9.9	kV
		Min	
d_{Cp}	Creepage distance	9.6	mm
d_{Ci}	Clearance	17.8	mm
CTI	Comparative tracking index (group IIIa)	275	

Applications examples

According to IEC 61010-1 standard and following conditions:

- Over voltage category III
- Pollution degree PD2
- Non-uniform field

	IEC 61010-1
d_{Cp}, d_{Ci}, U_{Ni}	Nominal voltage
Basic insulation	1100 V
Reinforced insulation	550 V

Safety

This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.



This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the 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, power supply).

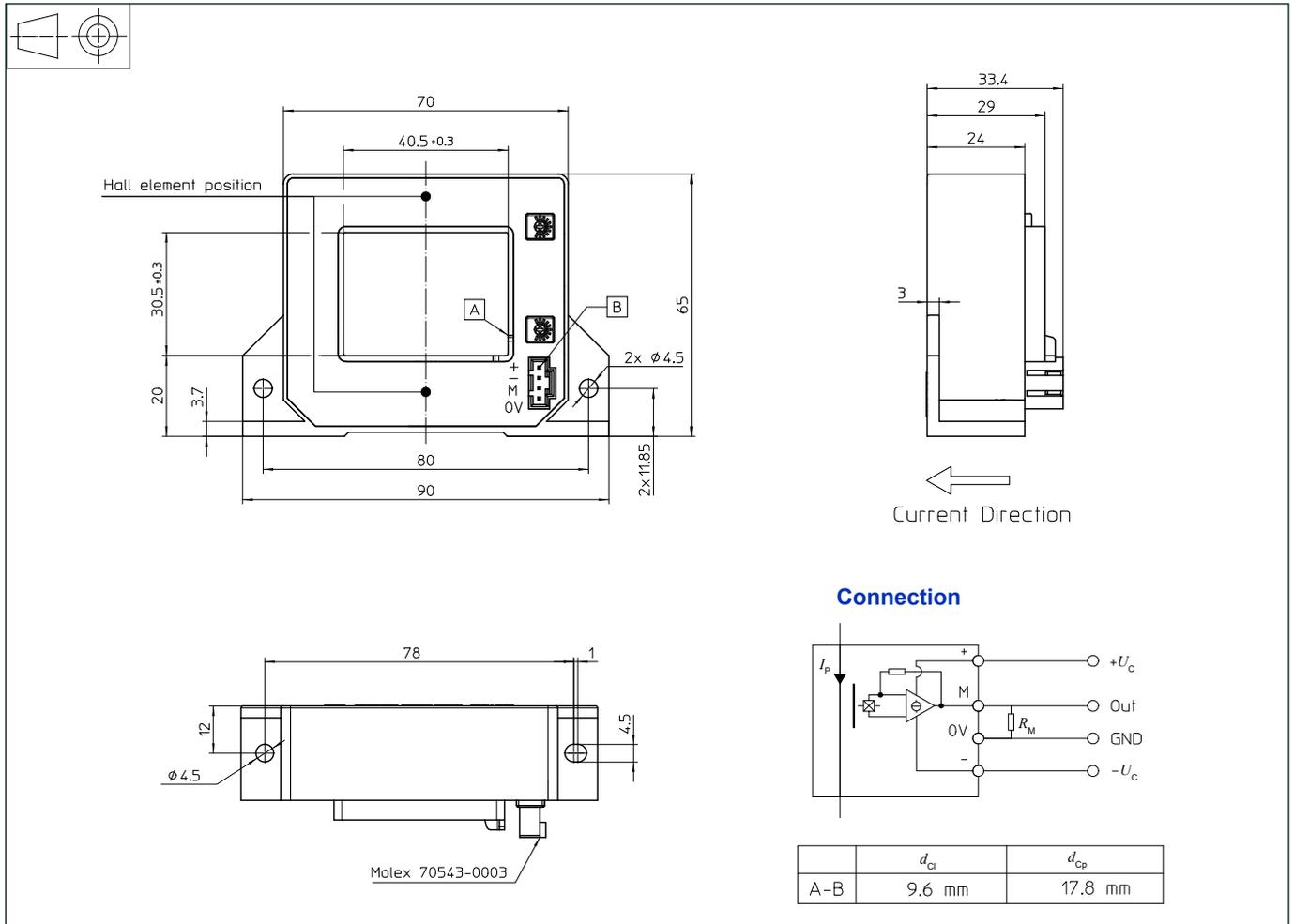
Ignoring this warning can lead to injury and/or cause serious damage.

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

A protective housing or additional shield could be used.

Main supply must be able to be disconnected.

Dimensions HAT 1000-S/SP23 (in mm)



Mechanical characteristics

- General tolerance ± 1 mm
- Transducer fastening:
 - 1 hole
 - and 1 notches $\varnothing 4.5$ mm
 - 2 steel screws M4
- Recommended fastening torque 1.2 N·m (± 10 %)
- Or 2 holes $\varnothing 4.5$ mm
- 2 steel screws M4
- Connection of secondary Molex 70543-0003

Remarks

- U_{out} is positive when I_p flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 105 °C.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: <https://www.lem.com/en/file/3137/download/>.