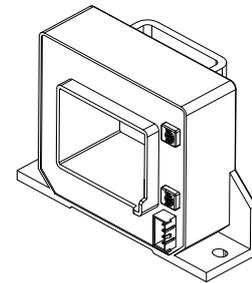


# Current Transducer HAT 500 ... 1500-S/ SP24

$$I_{PN} = 500 \dots 1500 \text{ A}$$

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

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



## Electrical data

Type	Primary nominal RMS current $I_{PN}$ (A)	Primary current, measuring range <sup>1)</sup> $I_{PM}$ (A)	RoHS since date code
HAT 500-S/SP24	500	$\pm 1500$	46129
HAT 1000-S/SP24	1000	$\pm 2500$	46097
HAT 1500-S/SP24	1500	$\pm 2500$	46158
$U_C$	Supply voltage ( $\pm 5\%$ ) <sup>1)</sup>	$\pm 15$	V
$I_C$	Current consumption	$\pm 20$	mA
$R_{INS}$	Insulation resistance @ 500 V DC	$> 1000$	M $\Omega$
$U_{out}$	Output voltage (Analog) @ $\pm I_{PN}$ , $R_L = 10 \text{ k}\Omega$ , $T_A = 25^\circ\text{C}$	$\pm 4$	V
$R_{out}$	Output internal resistance	100	$\Omega$
$R_L$	Load resistance	$> 10$	k $\Omega$

## Accuracy - Dynamic performance data

$\varepsilon$	Error @ $I_{PN}$ , $T_A = 25^\circ\text{C}$ (excluding offset)	$\leq \pm 1$	% of $I_{PN}$	
$\varepsilon_L$	Linearity error <sup>2)</sup> ( $0 \dots \pm I_{PN}$ )	$\leq \pm 1$	% of $I_{PN}$	
$U_{OE}$	Electrical offset voltage @ $T_A = 25^\circ\text{C}$	$< \pm 20$	mV	
$U_{OH}$	Hysteresis offset voltage @ $I_p = 0$ , after an excursion of $1 \times I_{PN}$	$< \pm 10$	mV	
$TCU_{OE}$	Temperature coefficient of $U_{OE}$	$-40^\circ\text{C} \dots +80^\circ\text{C}$ $+80^\circ\text{C} \dots +105^\circ\text{C}$	$< \pm 1$ $< \pm 1.5$	mV/K mV/K
$TCU_{out}$	Temperature coefficient of $U_{out}$ (% of reading)	$< \pm 0.1$	%/K	
$t_{D90}$	Delay time to 90 % of $I_{PN}$ <sup>3)</sup>	$< 5$	$\mu\text{s}$	
$BW$	Frequency bandwidth <sup>4)</sup> (-3 dB)	DC ... 25	kHz	

## General data

$T_A$	Ambient operating temperature	$-40 \dots +105$	$^\circ\text{C}$
$T_S$	Ambient storage temperature	$-40 \dots +105$	$^\circ\text{C}$
$m$	Mass	300	g
	Standards	EN 50178: 1997 UL 508: 2013 <sup>5)</sup>	

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

<sup>2)</sup> Linearity data exclude the electrical offset

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

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

<sup>5)</sup> UL conform is only applicable @  $T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$ .

## Features

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

## Special Feature

- Molex 35312-0460.

## 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 500 ... 1500-S/SP24

### 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 $\mu$ s	> 9.9	kV
		Min	
$d_{CP}$	Creepage distance	25.4	mm
$d_{CI}$	Clearance	9	mm
$CTI$	Comparative tracking index (group IIIa)	275	

### Applications examples

According to EN 50178 and IEC 61010-1 standards and following conditions:

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

	EN 50178	IEC 61010-1
$d_{CP}, d_{CI}, U_{Ni}$	Rated insulation voltage	Nominal voltage
Basic insulation	1000 V	1000 V
Reinforced insulation	600 V	300 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).

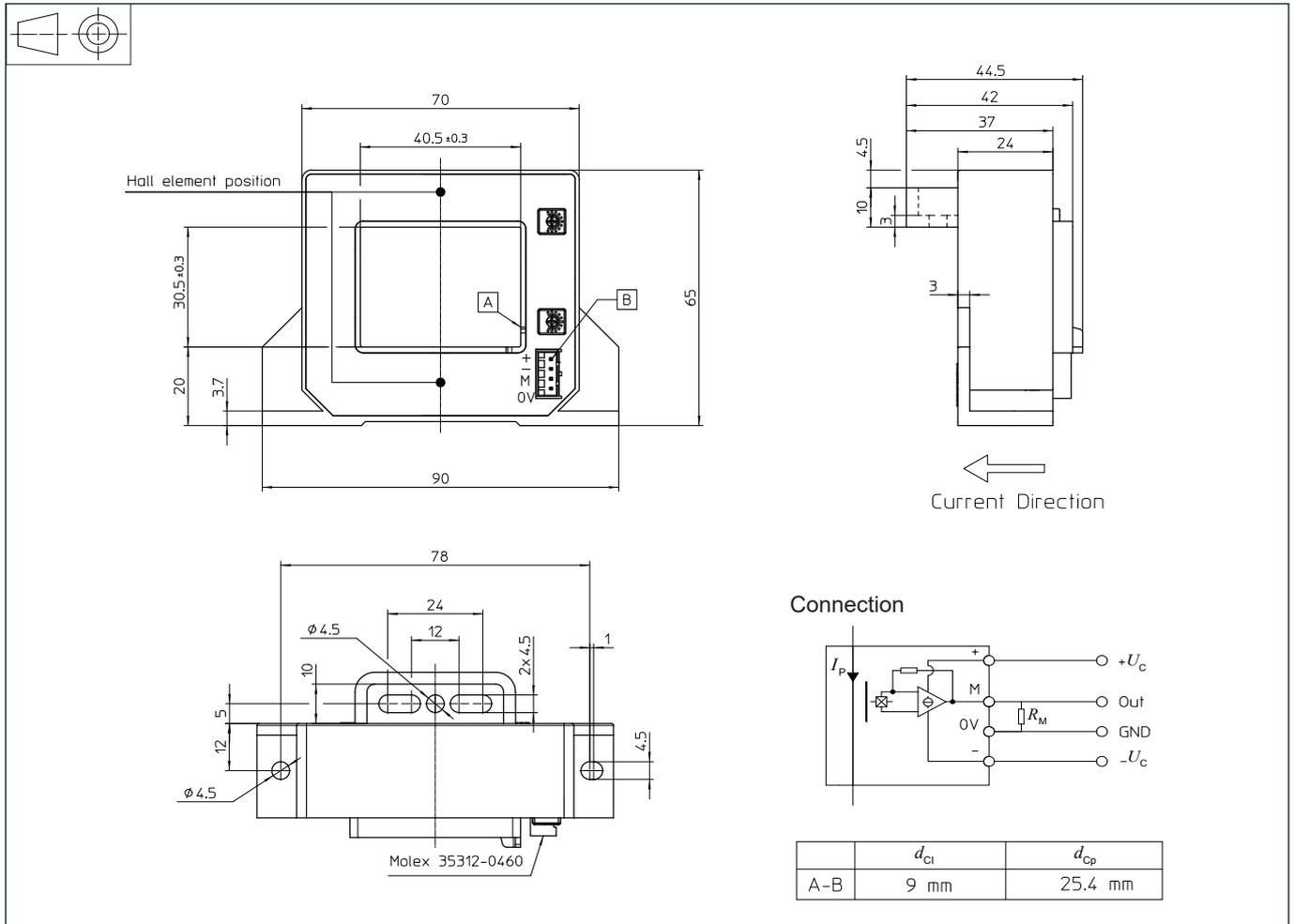
Ignoring this warning can lead to injury and/or cause serious damage.

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 500 ... 1500-S/SP24 (in mm)



### Mechanical characteristics

- General tolerance  $\pm 1$  mm
- Transducer fastening  
By base-plate  
or on busbar  
with M4 screws  
All holes  $\varnothing 4.5$  mm
- Recommended fastening torque 1.2 N·m ( $\pm 10$  %)
- Connection of secondary Molex 35312-0460.

### 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/>.