

Current Transducer HAS 100 ... 200-S/SP31

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



$I_{P_N} = 100 \dots 200 \text{ A}$

Electrical data

Type	Primary nominal RMS current	Primary current, measuring range	
	$I_{P_N} \text{ (A)}$	$I_{P_M} \text{ (A)}$	
HAS 100-S/SP31	100	± 300	
HAS 150-S/SP31	150	± 450	
HAS 200-S/SP31	200	± 600	
U_C	Supply voltage ($\pm 5 \%$) ¹⁾	± 15	V
I_C	Current consumption	± 15	mA
R_{INS}	Insulation resistance @ 500 V DC	> 1000	M Ω
U_{out}	Output voltage (Analog) @ $\pm I_{P_N}$, $R_L = 10 \text{ k}\Omega$, $T_A = 25^\circ \text{C}$	± 4	V
R_{out}	Output internal resistance	approx	Ω
R_L	Load resistance ²⁾	> 1	k Ω

Accuracy - Dynamic performance data

ε_{tot}	Total error @ I_{P_N} , $T_A = 25^\circ \text{C}$ (excluding offset)	$< \pm 1$	% of I_{P_N}
ε_L	Linearity error ³⁾ ($0 \dots \pm I_{P_N}$)	$< \pm 1$	% of I_{P_N}
U_{OE}	Electrical offset voltage, $T_A = 25^\circ \text{C}$	$< \pm 20$	mV
U_{OM}	Magnetic offset voltage @ $I_{P_N} = 0$, after an excursion of $1 \times I_{P_N}$	$< \pm 20$	mV
TCU_{OE}	Temperature coefficient of U_{OE}	$< \pm 1$	mV/K
TCU_{out}	Temperature coefficient of U_{out} (% of reading)	$< \pm 0.1$	/%/K
$t_{D\ 90}$	Delay time to 90 % of I_{P_N} ⁴⁾	< 3	μs
BW	Frequency bandwidth (-3 dB) ⁵⁾	DC ... 50	kHz

General data

T_A	Ambient operating temperature	$-10 \dots +80$	°C
T_S	Ambient storage temperature	$-25 \dots +80$	°C
m	Mass	approx	g
	Standards	UL EMC	UL 508:2010 IEC 61000-6-2:2016 IEC 61800-3:2017 ⁶⁾
	Safety		IEC 61010-1:2010
	Environmental		IEC 61477-1:2012 IEC 61800-2:2012

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

²⁾If the customer uses 1 k Ω of the load resistor, the primary current has to be limited as the nominal. To measure the full defined measuring range, the load resistor should be at minimum 10 k Ω

³⁾Linearity data exclude the electrical offset

⁴⁾For a $dI/dt = 50 \text{ A}/\mu\text{s}$

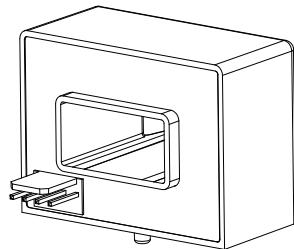
⁵⁾Under small signals condition

⁶⁾Regarding compliance towards IEC 61000-4-3 (IEC 61800-3:2017):
variation of the offset between 390 MHz and 400 MHz with a field intensity of 10 [V/m].

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LEM reserves the right to carry out modifications on its transducers, in order to improve them, without prior notice



Features

- Hall effect measuring principle
- Insulating plastic case made of polycarbonate PBT recognized according to UL 94-V0.

Special feature

- Dedicated to customer.

Advantages

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

Applications

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

Application domain

- Industrial.

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz/1 min	3.6	kV
U_{Ni}	Impulse withstand voltage 1.2/50 μ s	> 6.6	kV
		Min	
d_{Cp}	Creepage distance	7.08	mm
d_{Cl}	Clearance	6.23	mm
CTI	Comparative tracking index (group IIIa)	275	

Applications examples

According to IEC 61010-1 standard and following conditions:

- Over voltage category OV 3
- Pollution degree PD2
- Non-uniform field

IEC 61010-1	
d_{Cp}, d_{Cl}, U_{Ni}	Nominal voltage
Basic insulation	600 V
Reinforced insulation	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).

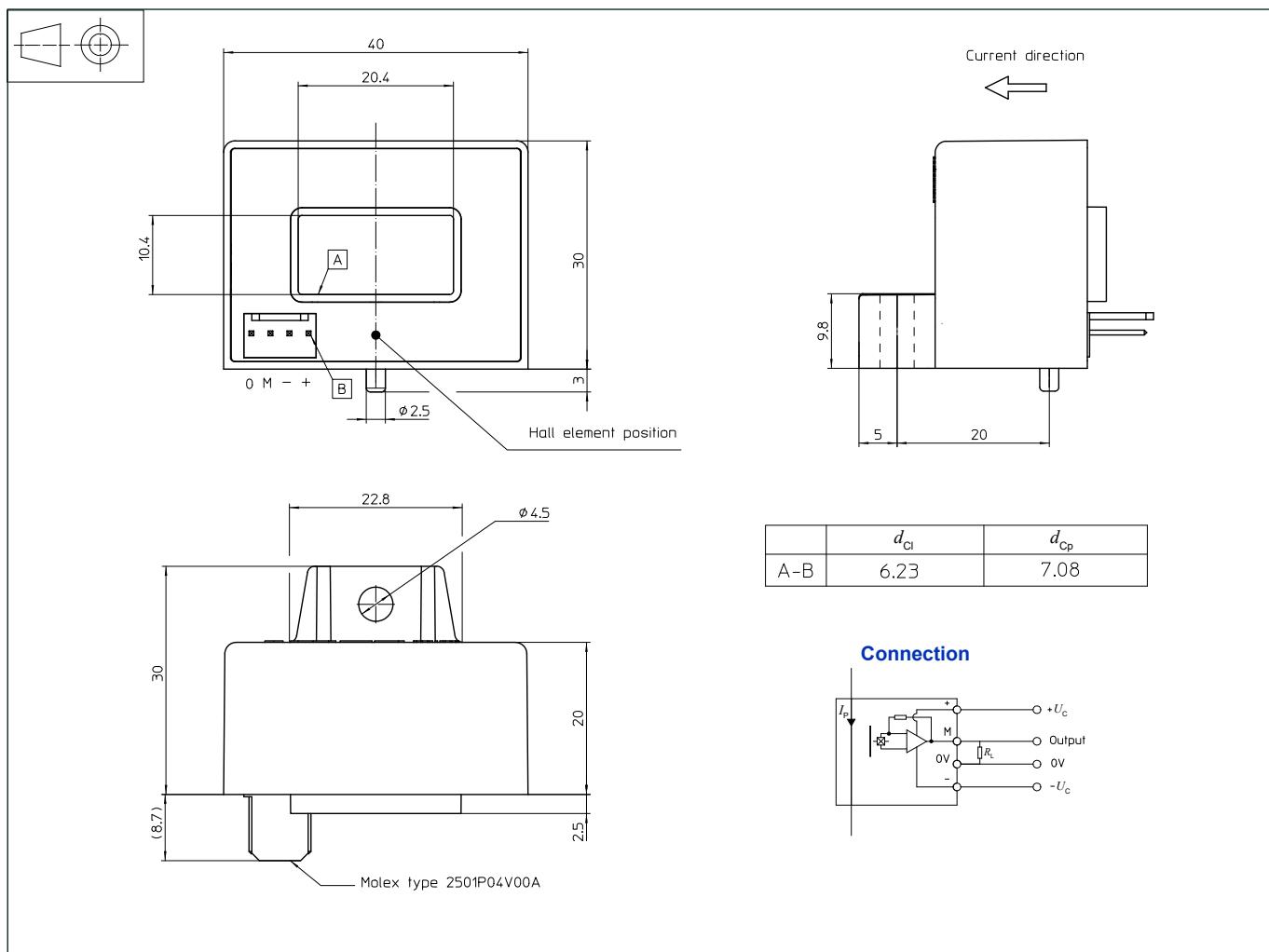
Ignoring this warning can lead to injury and/or cause serious damage.

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 HAS 100 ... 200-S/SP31 (in mm)



Mechanical characteristics

- General tolerance ± 0.5 mm
- Transducer fastening 1 hole $\varnothing 4.5$ mm
- 1 M4 steel screw
- Recommended fastening torque $0.75 \text{ N}\cdot\text{m} (\pm 10\%)$
- Connection of secondary Molex type 2501P04V00A¹⁾

Note: ¹⁾ Recommended mating connector : Molex 511910400 (housing) and 508029101 (contact).

Remarks

- U_{out} is positive when I_p flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 100°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/>.
- Dynamic performances (di/dt and delay time) are best with a single bar completely filling the primary hole.