

Current Transducer HAS 50 ... 600-S/SP50

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 I_{PM} (A) ¹⁾	
HAS 50-S/SP50	50	±150	
HAS 100-S/SP50	100	±300	
HAS 200-S/SP50	200	±600	
HAS 300-S/SP50	300	±900	
HAS 400-S/SP50	400	±900	
HAS 500-S/SP50	500	±900	
HAS 600-S/SP50	600	±900	
U_C	Supply voltage (±5 %) ¹⁾	±15	V
I_C	Current consumption	±15	mA
R_{INS}	Insulation resistance @ 500 V DC	> 1000	MΩ
U_{out}	Output voltage (Analog) @ $\pm I_{PN}$, $R_L = 10$ kΩ, $T_A = 25$ °C	±4	V
R_{out}	Output internal resistance approx	100	Ω
R_L	Load resistance	10	kΩ

Accuracy –Dynamic performance data

ε_{tot}	Total error @ I_{PN} , $T_A = 25$ °C (excluding offset)	< ±1	% of I_{PN}
ε_L	Linearity error ²⁾ (0 ... ± I_{PN})	< ±1	% of I_{PN}
U_{OE}	Electrical offset voltage, $T_A = 25$ °C HAS 50-S/SP50	< ±40	mV
	HAS 100 ... 600-S/SP50	< ±20	mV
U_{OH}	Hysteresis offset voltage @ $I_{PN} = 0$, after an excursion of $1 \times I_{PN}$	< ±20	mV
TCU_{OE}	Temperature coefficient of U_{OE} HAS 50-S/SP50	< ±2	mV/K
	HAS 100 ... 600-S/SP50	< ±1	mV/K
TCU_{out}	Temperature coefficient of U_{out} (% of reading)	< ±0.1	%/K
t_{D90}	Delay time to 90 % of the final output value for I_{PN} step ³⁾	< 3	μs
BW	Frequency bandwidth (–3 dB) ⁴⁾	DC ... 50	kHz

General data

T_A	Ambient operating temperature	–10 ... +80	°C
T_{Ast}	Ambient storage temperature	–25 ... +80	°C
m	Mass approx	60	g
	Standard	UL	UL 508:2010 ⁵⁾
		EMC	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 ± 12 V ≤ U_C < ±15 V will reduce the measuring range

²⁾ Linearity data exclude the electrical offset

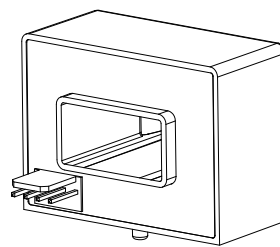
³⁾ For a $di/dt = 50$ A/μs

⁴⁾ Under small signals condition

⁵⁾ UL conform at +80 °C

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].

$$I_{PN} = 50 \dots 600 \text{ A}$$



Features

- Hall effect measuring principle
- Extended measuring range ($3 \times I_{PN}$)
- Insulating plastic case recognized according to UL 94-V0.

Special feature

- Counter bored hole for transducer fastening.

Advantages

- Easy mounting
- 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 drivers and servo 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).

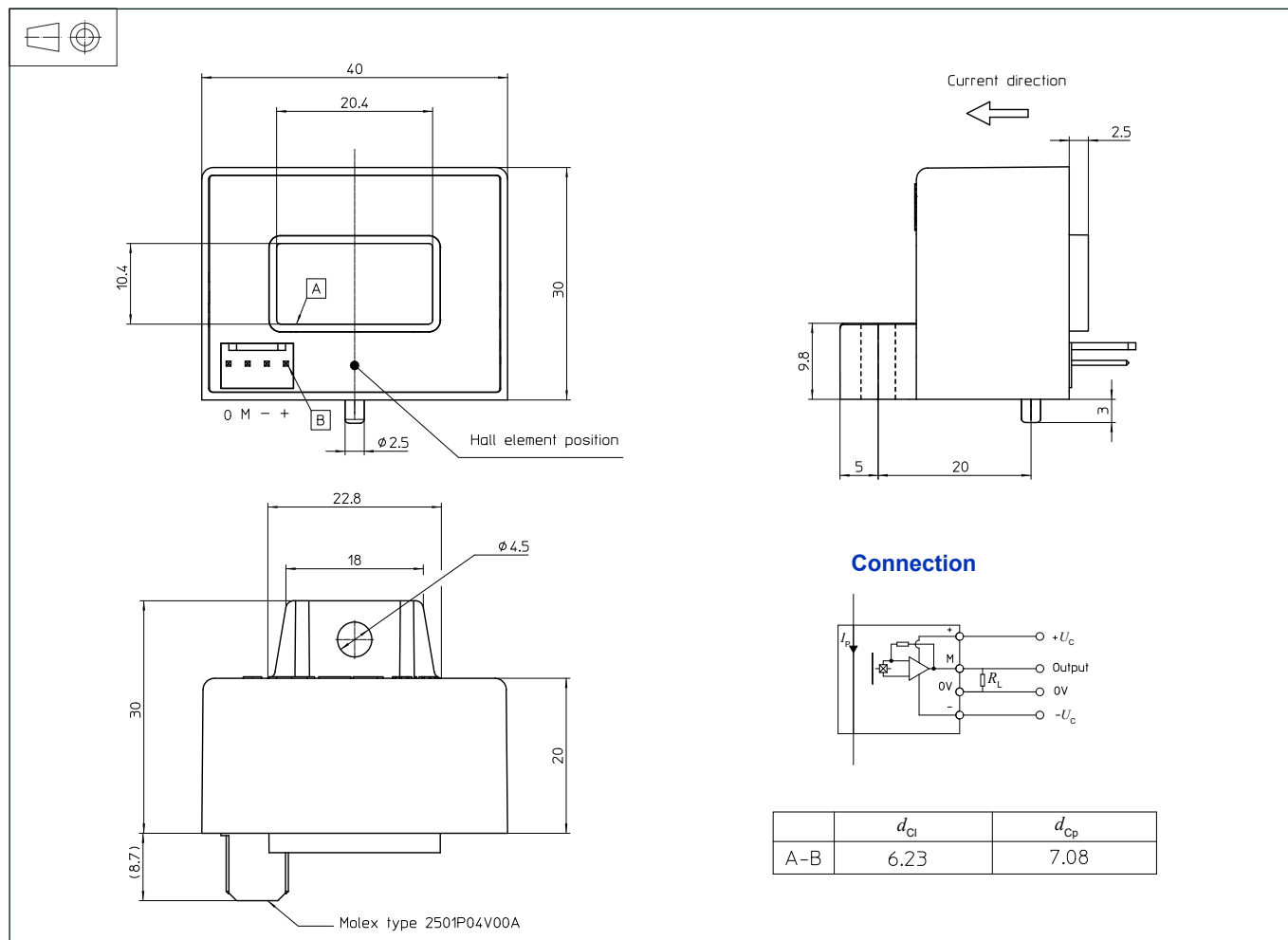
Ignoring this warning can lead to injury and/or cause serious damage.

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 50 ... 600-S/SP50 (in mm)



Mechanical characteristics

- General tolerance ± 0.5 mm
- Transducer fastening
 - 1 hole $\phi 4.5$ mm
 - 1 M4 steel screw
- Recommended fastening torque 0.75 N·m (± 10 %)
- Connection of secondary Molex type 2501P04V00A ¹⁾

Note: ¹⁾ Recommended mating connector: Molex 22011042/511910400 (housing) and 08500113/508029101 (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.