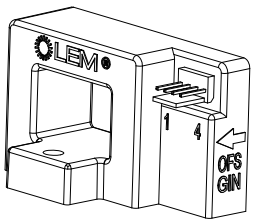
Current Transducer HAC 100 ... 800-S

I_{PN} = 100 ... 800 A

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)
HAC 100-S	100	±300
HAC 200-S	200	±600
HAC 300-S	300	±900
HAC 400-S	400	±1200
HAC 500-S	500	±1500
HAC 600-S	600	±1800
HAC 800-S	800	±1800

U_C	Supply voltage (±5 %) [1]		±15	V
I_C	Current consumption	HAC 100 ... 300-S	< ±18	mA
		HAC 400 ... 800-S	< ±25	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		100	Ω
R_L	Load resistance		> 10	kΩ

Accuracy - Dynamic performance data

ε	Error @ I_{PN}, T_A = 25 °C (excluding offset)	< ±1	% of I_{PN}
ε_L	Linearity error (0 ... $\pm I_{PN}$)	< ±1	% of I_{PN}
U_{OE}	Electrical offset voltage @ T_A = 25 °C	< ±30	mV
U_{OH}	Hysteresis offset voltage @ I_P = 0, after an excursion of 1 × I_{PN}	< ±35	mV
TCU_{OE}	Temperature coefficient of U_{OE}	< ±1	mV/K
TCU_{out}	Temperature coefficient of U_{out} (% of reading)	< ±0.1	%/K
$t_{D\,90}$	Delay time to 90 % of I_{PN}	< 7	µs
BW	Frequency bandwidth (−3 dB) [2]	DC ... 50	kHz

General data

T_A	Ambient operating temperature	−10 ... +80	°C
T_S	Ambient storage temperature	−15 ... +85	°C
m	Mass	70	g
	Standards	EN 50178: 1997 [3]	
		UL 508: 2010	

Notes: [1] Operating at ±12 V < U_C < ±15 V will reduce the measuring range
[2] Derating is needed to avoid excessive core heating at high frequency
[3] For HAC 100 ... 300-S, regarding compliance towards IEC 61000-4-3 (EN61000-6-2 (2005)): Variation of the offset between 250 to 400 MHz.

Features

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

Advantages

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

Applications

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

Application domain

- Industrial.

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UL 508:Ratings and assumptions of certification HAC 100 ... 800-S

File # E189713 Volume: 2 Section: 1

Standards

- CSA C22.2 NO. 14 - 10 INDUSTRIAL CONTROL EQUIPMENT - Edition 11 - Revision Date 2011/08/01
- UL 508 STANDARD FOR INDUSTRIAL CONTROL EQUIPMENT - Edition 17 - Revision Date 2010/04/15.

Parameter	Symbol	Unit	Value
Primary involved potential		V AC/DC	600
Ambient operating temperature	T_A	°C	80
Primary current	I_P	A	According to series primary currents
Supply voltage	U_C	V DC	0 to ±15
Output voltage	U_{out}	V	0 to 4

Conditions of acceptability

When installed in the end-use equiment, consideration shall be given to the following:

1 - These devices must be mounted in a suitable end-use enclosure.

2 - The terminals have not been evaluated for field wiring.

3 - Low voltage circuits are intended to be powered by a circuit derived from an isolating source (such as a transformer,optical isolator, limiting impedance or electro-mechanical relay) and having no direct connection back to the primary circuit (other than through the grounding means).

4 - Base on results of temperature tests, int he end use application, a maximum of 100 °C cannot be exceeded at soldering point between primary coil pin and soldering point of on the primary bus bar (corrected to the appropriate evaludated max. surrounding air).

Marking

Only those products bearing the UL or UR Mark should be considered to be Listed or Recognized and covered under UL's Follow-Up Service.Always look for the Mark on the product.

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Current Transducer HAC 100 ... 800-S

Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz/1 min	2.5 [1] Min	kV
d_{Cp}	Creepage distance	5	mm
d_{Cl}	Clearance	5	mm
CTI	Comparative tracking index (group IIIa)	220	

Note: [1] Between primary and secondary.

Applications examples

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

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

	EN 50178	IEC 61010-1
d_{Cp}, d_{Cl}, U_{Ni}	Rated insulation voltage	Nominal voltage
Basic insulation	500 V	Cat III 500 V RMS
Reinforced insulation	150 V	Cat III 250 V RMS

Safety

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



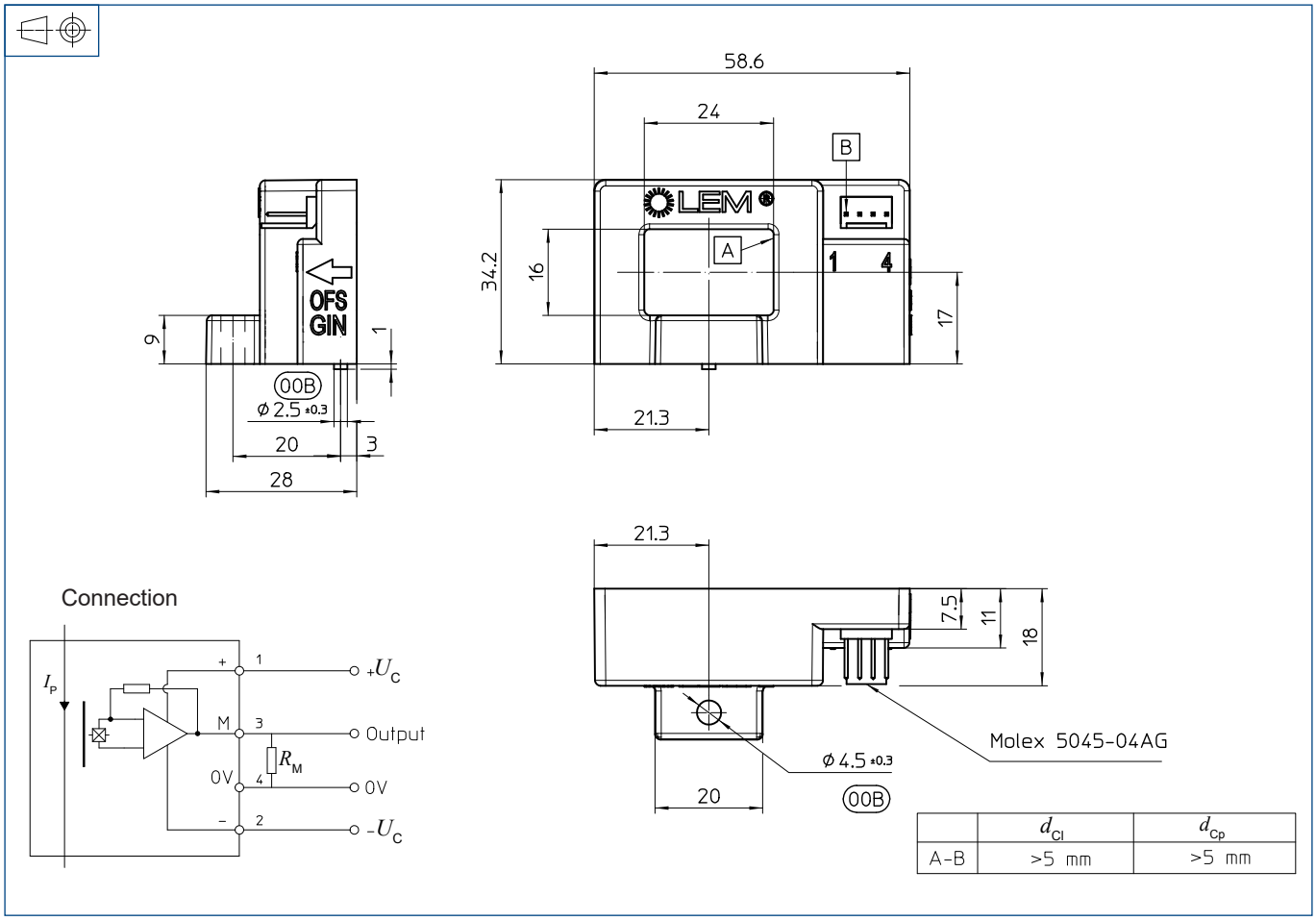
This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.



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 HAC 100 ... 800-S (in mm)



	d_{Cl}	d_{Cp}
A-B	>5 mm	>5 mm

Mechanical characteristics

- General tolerance ±0.5 mm
- Transducer fastening 1 hole ⌀ 4.5
  1 M4 steel screw
  Recommended fastening torque 1.2 N·m
- Primary through-hole 24 × 16 mm
- Connection of secondary Molex 5045-04AG

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.

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