Current Transducer HX 03 ... 50-P

I_{PN} = 3 ... 50 A

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



Electrical data

Type	Primary nominal RMS current I_{PN} (A)	Primary current, measuring range I_{PM} (A)	Primary conductor diameter × turns (mm)
HX 03-P	3	±9	0.6 d × 20 T
HX 05-P	5	±15	0.8 d × 12 T
HX 10-P	10	±30	1.1 d × 6 T
HX 15-P	15	±45	1.4 d × 4 T
HX 20-P	20	±60	1.6 d × 3 T
HX 25-P	25	±75	1.6 d × 2 T
HX 50-P	50	±150	1.2 × 6.3 × 1 T

U_{out}	Output voltage (Analog) @ $\pm I_{PN}$, R_L = 10 kΩ, T_A = 25 °C	±4	V
R_L	Load resistance	≥ 10	kΩ
R_{out}	Output internal resistance	< 50	Ω
U_C	Supply voltage (±5 %) [1]	±15	V
I_C	Current consumption	< ±15	mA

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	< ±40	mV
U_{OH}	Hysteresis offset voltage @ I_P = 0, after an excursion of 1 × I_{PN}	±15 (typ)	mV
TCU_{OE}	Temperature coefficient of U_{OE}	< ±1.5	mV/K
TCU_{out}	Temperature coefficient of U_{out} (% of reading)	±0.1	%/K
$t_{D\,90}$	Delay time to 90 % of I_{PN}	≤ 3	µs
BW	Frequency bandwidth (−3 dB) [2]	50	kHz

General data

T_A	Ambient operating temperature	−25 ... +85	°C
T_S	Ambient storage temperature	−25 ... +85	°C
m	Mass	8	g
	Standard	EN 50178: 1997	

Notes: [1] Also operate at U_C = ±12 V, with measuring range reduced to ±2.5 × I_{PN}
[2] Small signal only to avoid excessive heating of the magnetic cores.

Features

- Open loop technology current transducer using the Hall effect
- Insulated voltage 3000 V
- Extended measuring range (3 x I_{PN})
- Power supply from ±12 V to ±15 V
- Insulating plastic case recognized according to UL 94-V0.

Advantages

- Low insertion losses
- Low power consumption
- Easy to mount with automatic handling system
- 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 drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications.

Application domain

- Industrial.

N° 74.79.06.000.0, N° 74.79.08.000.0, N° 74.79.13.000.0, N° 74.79.15.000.0
N° 74.79.17.000.0, N° 74.79.19.000.0, , N° 74.79.25.000.0

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz/1 min	> 3	kV
U_{Ni}	Impulse withstand voltage 1.2/50 µs	≥ 6	kV
U_e	Partial discharge extinction RMS voltage @ 10 pC	≥ 1	kV
		Min	
d_{Cp}	Creepage distance	5.5	mm
d_{Cl}	Clearance	5.5	mm
CTI	Comparative tracking index (group I)	600	

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	600 V	600 V
Reinforced insulation	300 V	150 V

Safety

This tran*sducer* 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.



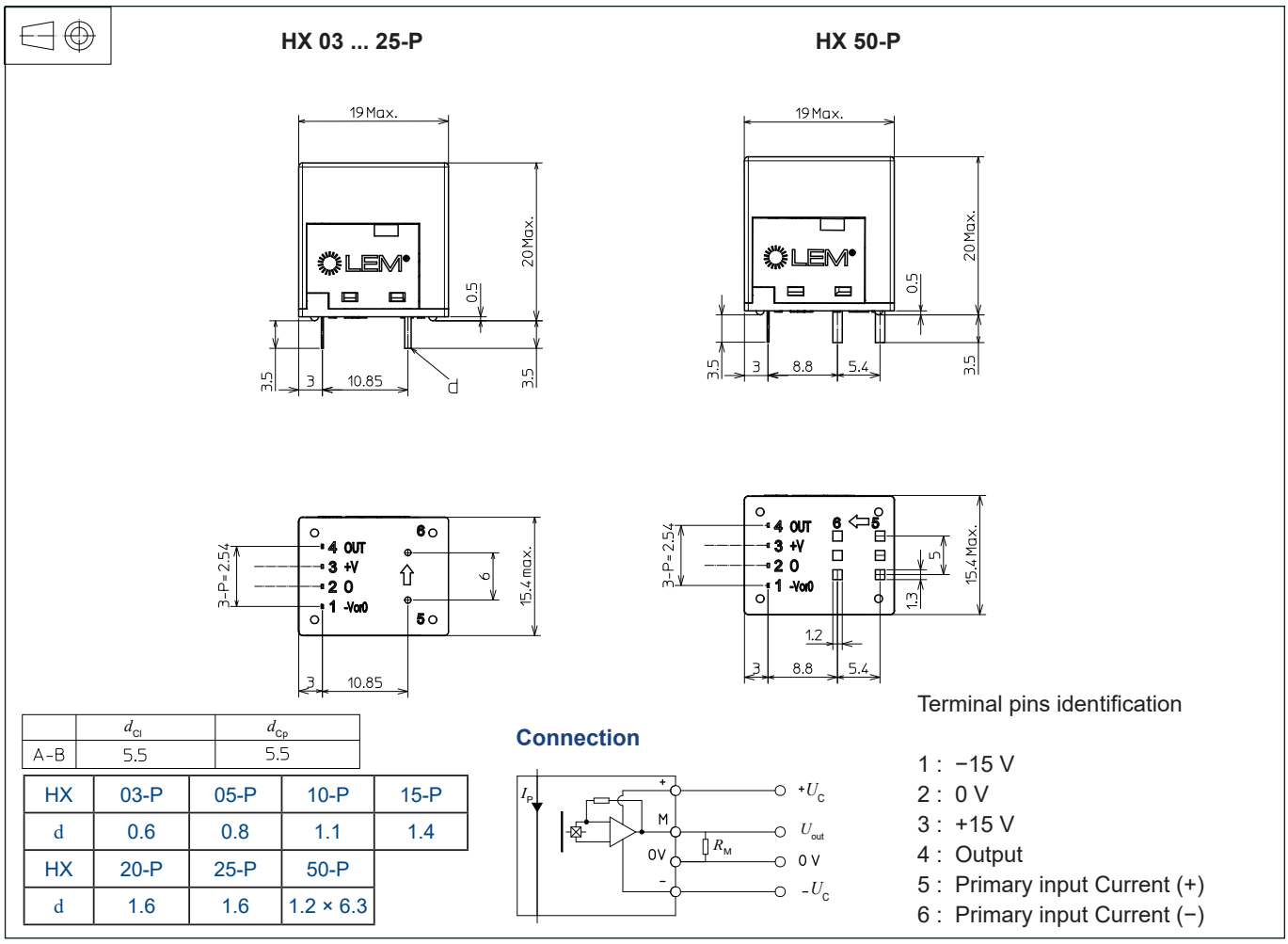
Caution, risk of electrical shock
When operating the transducer, certain parts of the module can carry hazardous voltage (e.g. primary busbar, power supply). Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a build-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used.
Main supply must be able to be disconnected.

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Dimensions HX 03 ... 50-P (in mm)



	d_{Cl}	d_{Cp}
A-B	5.5	5.5

HX	03-P	05-P	10-P	15-P
d	0.6	0.8	1.1	1.4
HX	20-P	25-P	50-P	
d	1.6	1.6	1.2 × 6.3	

Connection

Terminal pins identification

1 : −15 V
2 : 0 V
3 : +15 V
4 : Output
5 : Primary input Current (+)
6 : Primary input Current (−)

Mechanical characteristics

- General tolerance ±0.5 mm
- Connection of secondary 4 pins
  0.5 × 0.25 mm

Remarks

- U_{out} is positive when I_P flows in the direction of the arrow.
- Temperature of the primary busbar should not exceed 100 °C.
- Please do not apply any extra forces to both primary and secondary terminals when mounting onto printed circuit board. Insertion forces apply to HX 50-P primary terminal should be limited to below 10 N.
- 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/**.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.

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