

Current Transducer HX 03..50-P

For the electronic measurement of currents: DC, AC, pulsed, mixed, with galvanic isolation between the primary circuit (high power) and the secondary circuit (electronic circuit).



All data are given with $R_L = 10\text{ k}\Omega$

Electrical data

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

V_{OUT}	Output voltage (Analog) @ $\pm I_{PN}$, $R_L = 10\text{ k}\Omega$, $T_A = 25^\circ\text{C}$	± 4	V
R_{OUT}	Output internal resistance	< 50	Ω
R_L	Load resistance	≥ 10	$\text{k}\Omega$
V_C	Supply voltage ($\pm 5\%$) ¹⁾	± 15	V
V_C	Current consumption	$< \pm 15$	mA

Accuracy - Dynamic performance data

X	Accuracy @ I_{PN} , $T_A = 25^\circ\text{C}$ (excluding offset)	± 1	% of I_{PN}
ϵ_L	Linearity error ($0 \dots \pm I_{PN}$)	± 1	% of I_{PN}
V_{OE}	Electrical offset voltage @ $I_P = 0$, $T_A = 25^\circ\text{C}$	± 40	mV
V_{OH}	Hysteresis offset voltage @ $I_P = 0$ after an excursion of $1 \times I_{PN}$	± 15	mV
TCV_{OE}	Temperature coefficient of V_{OE}	± 1.5	mV/K
TCV_{OUT}	Temperature coefficient of V_{OUT} (% of reading)	± 0.1	%/K
t_r	Response time to 90% of I_{PN} step	≤ 3	μs
BW	Frequency bandwidth (-3 dB) ²⁾	50	kHz

General data

T_A	Ambient operating temperature	$-25 \dots +85$	$^\circ\text{C}$
T_S	Ambient storage temperature	$-25 \dots +85$	$^\circ\text{C}$
m	Mass	8	g
	Standards	EN 50178: 1997	

Note: ¹⁾ Also operate at $\pm 12\text{V}$ power supplies, measuring range reduced to $\pm 2.5 \times I_{PN}$.

²⁾ Small signal only to avoid excessive heating of the magnetic cores.

$$I_{PN} = 3 \dots 50\text{ A}$$



Features

- Galvanic isolation between primary and secondary circuit
- Hall effect measuring principle
- Isolation voltage 3000V
- Low power consumption
- Extended measuring range ($3 \times I_{PN}$)
- Power supply from $\pm 12\text{V}$ to $\pm 15\text{V}$
- Isolated plastic case recognized according to UL 94-V0.

Advantages

- Low insertion losses
- 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
- DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Electrical appliances

Application domain

- Industrial

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Isolation characteristics

V_d	Rms voltage for AC isolation test, 50 Hz, 1 min	> 3	kV
V_e	Partial discharge extinction voltage rms @ 10 pC	≥ 1	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 μ s	≥ 6	kV
dCp	Creepage distance	≥ 5.5	mm
dCI	Clearance distance	≥ 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
dCp, dCI, $\hat{V}_w$	Rated insulation voltage	Nominal voltage
Basic insulation	600 V	600 V
Reinforced insulation	300 V	150 V

Safety



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).

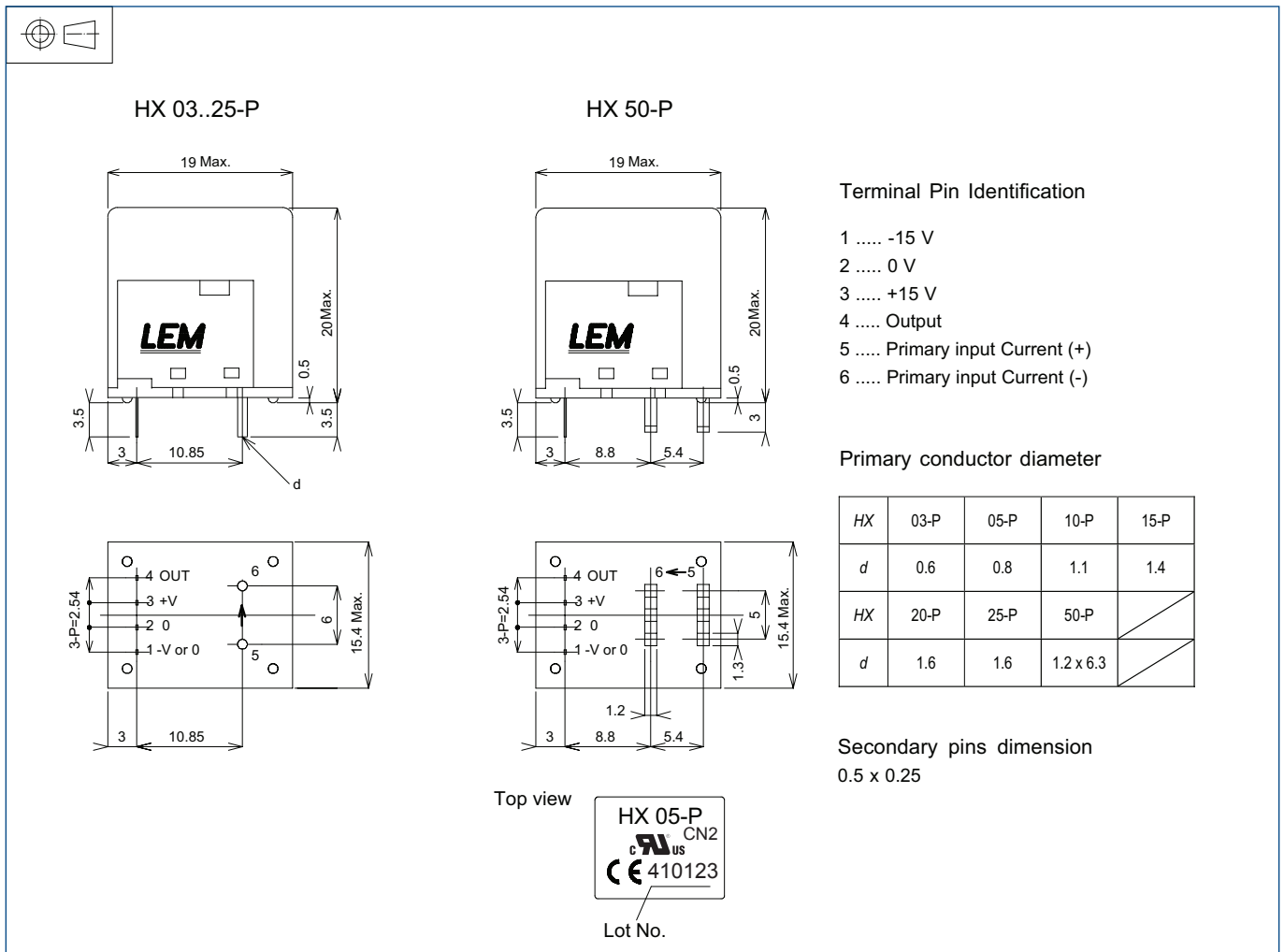
Ignoring this warning can lead to injury and/or cause serious damage.

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 HX 03..50-P.(in mm. 1 mm = 0.0394 inch)



Mechanical characteristics

- General tolerance ± 0.5 mm