Current Transducer HX 2.5..50-P/SP31

I_{PN} = 2.5 .. 50 A

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 kΩ

Electrical data

Primary nominal current rms I_{PN} (A)	Primary current measuring range I_{PM} (A)	Primary conductor diameter x turns (mm)	Type
2.5	± 7.5	0.6d x 12T	**HX 2.5-P/SP31**
4	± 12	0.8d x 8T	**HX 04-P/SP31**
5	± 15	1.0d x 6T	**HX 05-P/SP31**
6	± 18	1.0d x 5T	**HX 06-P/SP31**
7	± 21	1.1d x 4T	**HX 07-P/SP31**
7.5	± 22.5	1.1d x 4T	**HX 7.5-P/SP31**
10	± 30	1.1d x 3T	**HX 10-P/SP31**
12	± 36	1.2d x 3T	**HX 12-P/SP31**
12.5	± 37.5	1.2d x 3T	**HX 12.5-P/SP31**
15	± 45	1.4d x 2T	**HX 15-P/SP31**
20	± 50	1.4d x 2T	**HX 20-P/SP31**
25	± 75	1.2 x 6.3 x 1T	**HX 25-P/SP31**
50	± 100	1.2 x 6.3 x 1T	**HX 50-P/SP31**

V_{OUT}	Output voltage (Anarog) @ ± I_{PN}, R_L = 10 kΩ, T_A = 25 °C		± 4	V
R_{OUT}	Output internal resistance		< 50	Ω
R_L	Load resistance		≥ 10	kΩ
V_C	Supply voltage (± 5 %) [1]		± 15	V
V_C	Current consumption		< ± 20	mA

Accuracy - Dynamic performance data

X	Accuracy @ I_{PN} , T_A = 25°C (xcluding offset)		< ± 1.5	% of I_{PN}
ε_L	Linearity error (0 .. ± I_{PN})		< ± 1	% of I_{PN}
V_{OE}	Electorical offset voltage @ I_P = 0, T_A = 25°C		< ± 80	mV
V_{OH}	Hysteresis offset voltage @ I_P = 0			
	after an excursion of 1 x I_{PN}		< ± 50	mV
TCV_{OE}	Temperature coefficient of V_{OE}	max.	< ± 4	mV/K
TCV_{OUT}	Temerature coefficient of V_{OUT} (% of reading)		± 0.2	%/K
t_r	Response time to 90% of I_{PN} step		≤ 5	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
	Standards	EN 50178: 1997	

Note: [1] Also operate at ±12V power supples, measuring range reduced to ± 2.5 x I_{PN}.
[2] Small signal only to avoid excssive heating of the magnetic cores.

Features

- Galvanic isolation between primary and secondary circuit
- Hall effect measuring principle
- Isolation voltage 3000V
- Low power consumption
- Extended measuring range
- Power supply from ±12V to ±15V
- Isolated plastic case recognized according to UL 94-V0.

Special features

- Designed with ferrite core to avoid heating

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

- Switched Mode Power Supplies (SMPS)
- AC variable speed drives
- Uninterruptible Power Supplies (UPS)
- Electrical appliances
- Battery supplied applications
- DC motor drives

Application domain

- Industrial

![LEM logo]

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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 µs	≥ 6	kV
dCp	Creepage distance	≥ 5.5	mm
dCl	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

dCp, dCl,$\hat{V}_w$	EN 50178 Rated insulation voltage	IEC 61010-1 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).
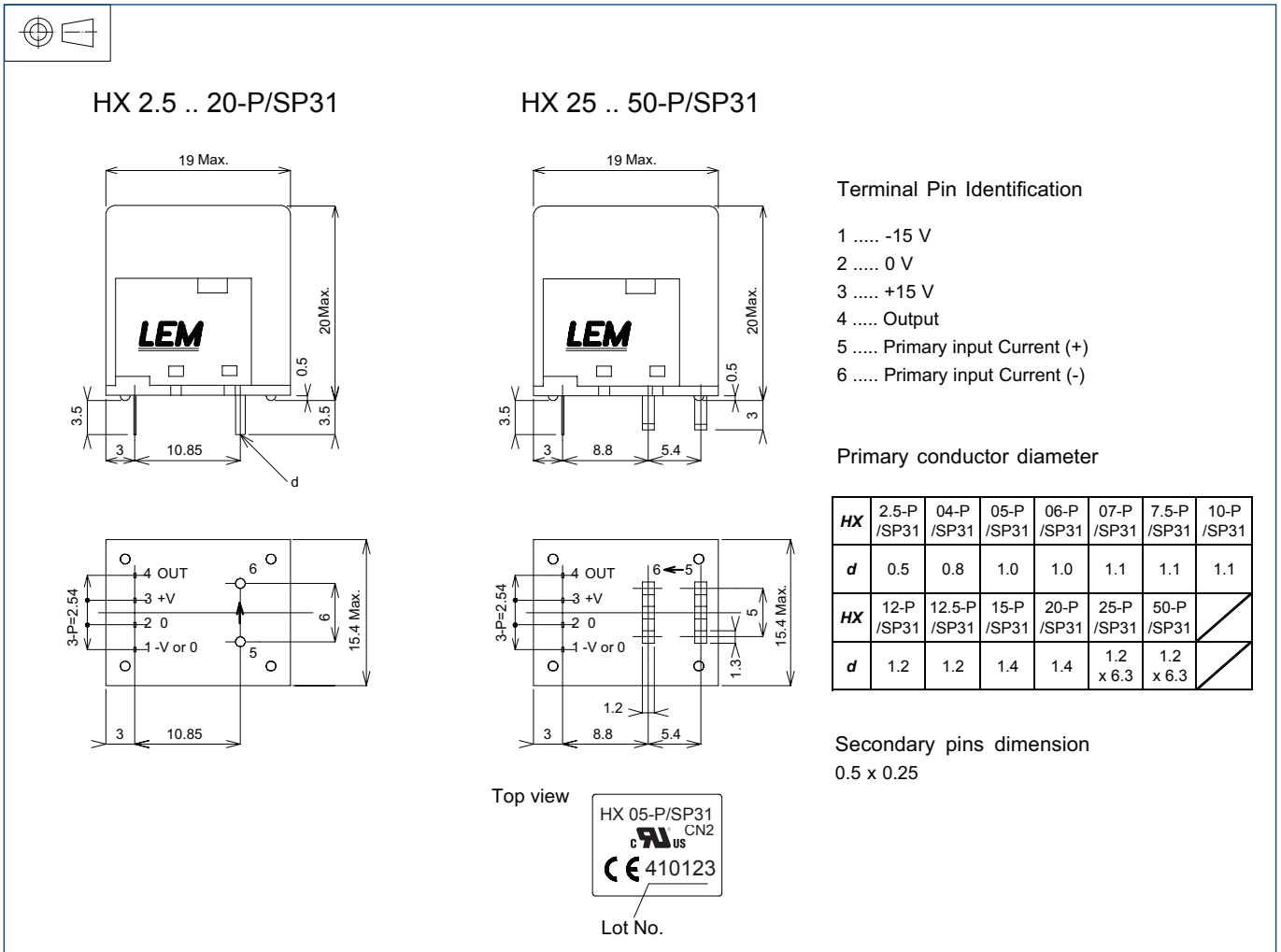Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a build-in device, whose conducting parts must be inaccessible after installation.
A protective housing or additional shield could be used.
Main supply must be able to be disconnected.

Dimensions HX 2.5..50-P/SP31. (in mm. 1 mm = 0.0394 inch)

HX 2.5 .. 20-P/SP31

19 Max.

20 Max.

0.5

3.5 | 3.5

3 | 10.85

d

3-P=2.54

4 OUT
3 +V
2 0
1 -V or 0

6

6

5

15.4 Max.

3 | 10.85

HX 25 .. 50-P/SP31

19 Max.

20 Max.

0.5

3.5 | 3

3 | 8.8 | 5.4

3-P=2.54

4 OUT
3 +V
2 0
1 -V or 0

6 ← 5

5

1.3

15.4 Max.

1.2

3 | 8.8 | 5.4

Top view

HX 05-P/SP31
cRUus CN2
CE 410123

Lot No.

Terminal Pin Identification

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

Primary conductor diameter

HX	2.5-P /SP31	04-P /SP31	05-P /SP31	06-P /SP31	07-P /SP31	7.5-P /SP31	10-P /SP31
d	0.5	0.8	1.0	1.0	1.1	1.1	1.1

HX	12-P /SP31	12.5-P /SP31	15-P /SP31	20-P /SP31	25-P /SP31	50-P /SP31	
d	1.2	1.2	1.4	1.4	1.2 x 6.3	1.2 x 6.3	

Secondary pins dimension
0.5 x 0.25

Mechanical characteristics

● General tolerance   ± 0.5 mm

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