# Current Transducer HX 03..50-P/SP30

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).

$I_{PN}$ = 3 .. 50 A

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 |
|---|---|---|---|
| 3 | ± 9 | 0.6d x 20T | **HX 03-P/SP30** |
| 5 | ± 15 | 0.8d x 12T | **HX 05-P/SP30** |
| 10 | ± 30 | 1.1d x 6T | **HX 10-P/SP30** |
| 15 | ± 45 | 1.4d x 4T | **HX 15-P/SP30** |
| 20 | ± 60 | 1.6d x 3T | **HX 20-P/SP30** |
| 25 | ± 75 | 1.6d x 2T | **HX 25-P/SP30** |
| 50 | ± 150 | 1.2 x 6.3 x 1T | **HX 50-P/SP30** |

| | | | |
|---|---|---|---|
| $V_{OUT}$ | 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 | < ± 15 | mA |

## Accuracy - Dynamic performance data

| | | | |
|---|---|---|---|
| **X** | Accuracy @ $I_{PN}$ , $T_A$ = 25°C (xcluding offset) | < ± 1 | % of $I_{PN}$ |
| $\varepsilon_L$ | Linearity error (0 .. ± $I_{PN}$) | < ± 1 | % of $I_{PN}$ |
| $V_{OE}$ | Electorical offset voltage @ $I_P$ = 0, $T_A$ = 25°C | < ± 40 | mV |
| $V_{OH}$ | Hysteresis offset voltage @ $I_P$ = 0 after an excursion of 1 x $I_{PN}$ | < ± 25 | mV |
| $TCV_{OE}$ | Temperature coefficient of $V_{OE}$ | < ± 1.5 | mV/K |
| $TCV_{OUT}$ | Temerature 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 .. + 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

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

## Special features

- Special core material for low magnetic loses

## 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 interference

## Application domain

- Industrial.

## Current Transducer HX 03..50-P/SP30

### 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

| | EN 50178 | IEC 61010-1 |
|---|---|---|
| **dCp**, **dCl**,$\hat{V}_w$ | Rated insulation voltage | Nominal voltage |
| Basic insulation | 600 V | 600 V |
| Reinforced insulation | 300 V | 150 V |

### Safety

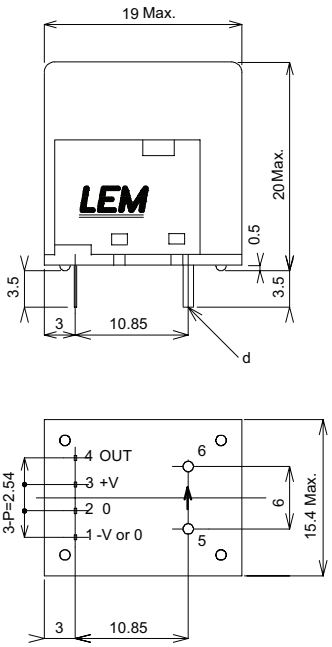
This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.

Caution, risk of electrical shock

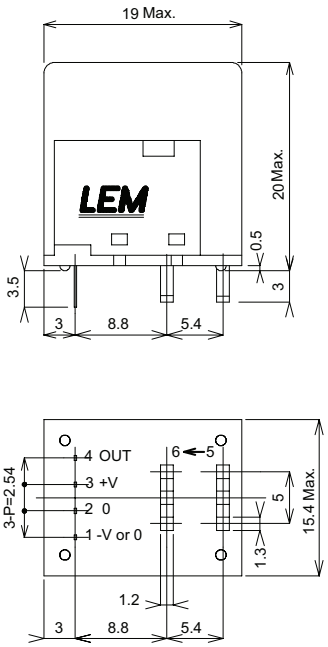
When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply).
Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a build-in device, whose conducting parts must be inaccessible after installation.
A protective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

## Dimensions HX 03..50-P/SP30 (in mm. 1 mm = 0.0394 inch)

HX 03 .. 25-P/SP30




HX 50-P/SP30




Terminal Pin Identification

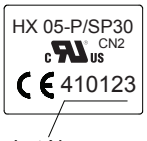
1 ..... -15 V
2 ..... 0 V
3 ..... +15 V
4 ..... Output
5 ..... Primary input Current (+)
6 ..... Primary input Current (-)

Primary conductor diameter

| *HX* | 03-P /SP30 | 05-P /SP30 | 10-P /SP30 | 15-P /SP30 |
|---|---|---|---|---|
| *d* | 0.6 | 0.8 | 1.1 | 1.4 |
| *HX* | 20-P /SP30 | 25-P /SP30 | 50-P /SP30 | |
| *d* | 1.6 | 1.6 | 1.2 x 6.3 | |

Secondary pins dimension
0.5 x 0.25

Top view




Lot No.

## Mechanical characteristics

- General tolerance ± 0.5 mm