

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) @ $\pm I_{PN}$, $R_L = 10\text{ k}\Omega$, $T_A = 25\text{ }^\circ\text{C}$ | ± 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} , $T_A = 25\text{ }^\circ\text{C}$ (excluding offset) | $< \pm 1$ | % of I_{PN} |
| ϵ_L | Linearity error ($0 \dots \pm I_{PN}$) | $< \pm 1$ | % of I_{PN} |
| V_{OE} | Electrical offset voltage @ $I_P = 0$, $T_A = 25\text{ }^\circ\text{C}$ | $< \pm 40$ | mV |
| V_{OH} | Hysteresis offset voltage @ $I_P = 0$ after an excursion of $1 \times I_{PN}$ | $< \pm 15$ | mV |
| TCV_{OE} | Temperature coefficient of V_{OE} | $< \pm 1.5$ | 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 .. + 85 | $^\circ\text{C}$ |
| T_S | Ambient storage temperature | - 25 .. + 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).

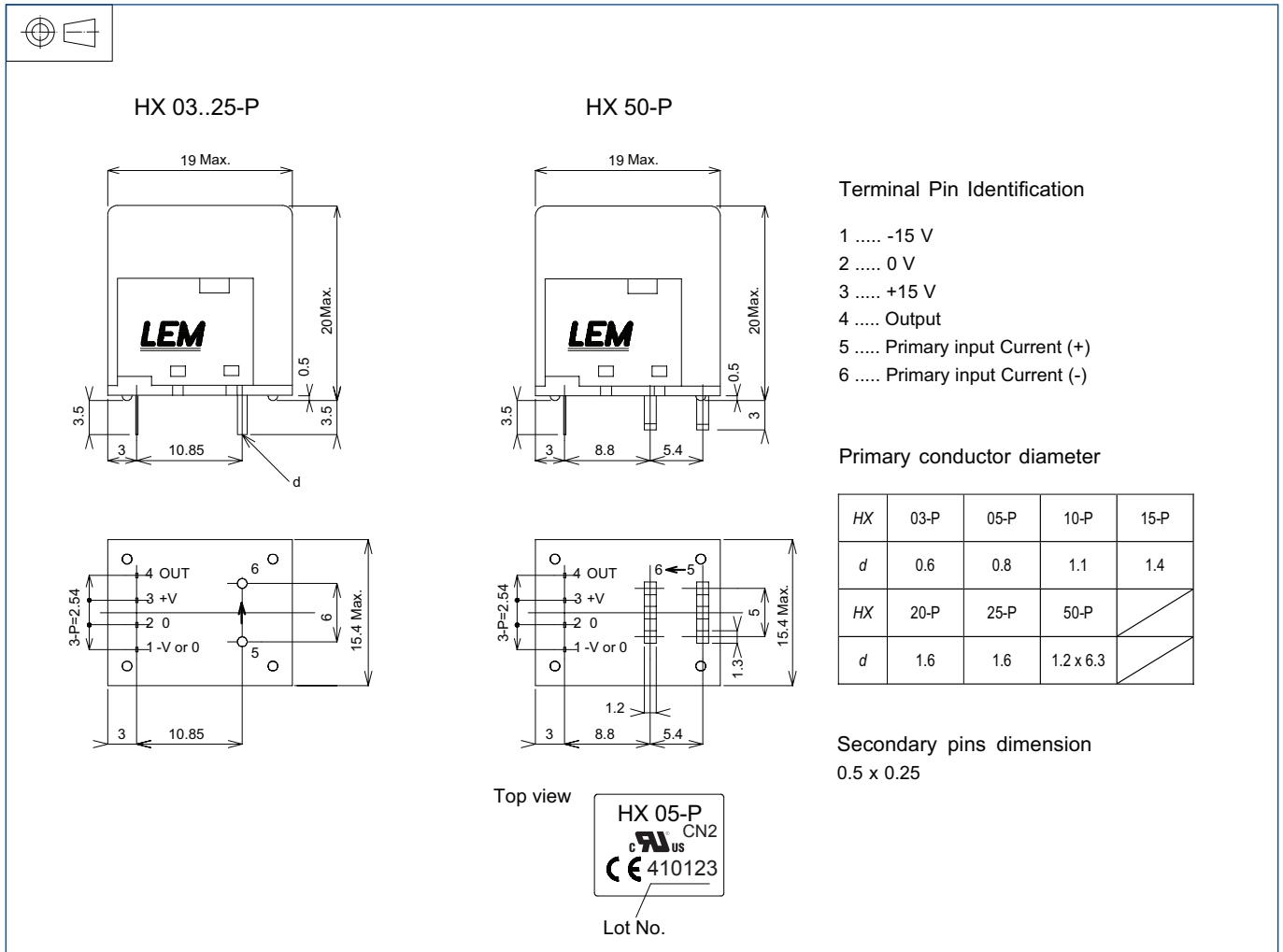
Ignoring this warning can lead to injury and/or cause serious damage.

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