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).

I_{PN} = 3 .. 50 A

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

All data are given with R_L = 10 kΩ

Features
- Galvanic isolation between primary and secondary circuit
- Hall effect measuring principle
- Isolation voltage 3000V
- Low power consumption
- Extended measuring range (3 x I_{PN})
- Power supply from ±12V to ±15V
- 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

**Electrical data**

- V_{OUT} Output voltage (Analog) @ ± 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)
- V_C Current consumption < ± 15 mA

**Accuracy - Dynamic performance data**

- X Accuracy @ I_{PN}, T_A = 25°C (excluding offset) < ± 1 % of I_{PN}
- ξ_L Linearity error (0 .. ± I_{PN}) < ± 1 % of I_{PN}
- V_{OE} Electrical offset voltage @ I_p = 0, T_A = 25°C < ± 40 mV
- V_{OH} Hysteresis offset voltage @ I_p = 0 of after an excursion of 1 x 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 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

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

LEM reserves the right to carry out modifications on its transducers, in order to improve them, without prior notice.

www.lem.com
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Isolation characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_d$ Rms voltage for AC isolation test, 50 Hz, 1 min</td>
<td>$&gt; 3$ kV</td>
</tr>
<tr>
<td>$V_e$ Partial discharge extinction voltage rms @ 10 pC</td>
<td>$\geq 1$ kV</td>
</tr>
<tr>
<td>$V_w$ Impulse withstand voltage 1.2/50 µs</td>
<td>$\geq 6$ kV</td>
</tr>
<tr>
<td>$dC_p$ Creepage distance</td>
<td>$\geq 5.5$ mm</td>
</tr>
<tr>
<td>$dC_l$ Clearance distance</td>
<td>$\geq 5.5$ mm</td>
</tr>
<tr>
<td>CTI Comparative Tracking Index (group I)</td>
<td>$\geq 600$</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>EN 50178</th>
<th>IEC 61010-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated insulation voltage</td>
<td>Nominal voltage</td>
</tr>
<tr>
<td>Basic insulation</td>
<td>600 V</td>
</tr>
<tr>
<td>Reinforced insulation</td>
<td>300 V</td>
</tr>
</tbody>
</table>

Safety

Caution, risk of electrical shock

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.

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