Current Transducer LA 100-TP

For the electronic measurement of currents: DC, AC, pulsed..., with galvanic separation between the primary circuit and the secondary circuit.

Electrical data

- \( I_{PN} \): Primary nominal rms current = 100 A
- \( I_{PM} \): Primary current, measuring range = 0 ... ±150 A
- \( R_{M} \): Measuring resistance @
  - \( T_A = 70 \) °C: \( R_{M min} \) = 50 Ω, \( R_{M max} \) = 42 Ω
  - \( T_A = 85 \) °C: \( R_{M min} \) = 22 Ω, \( R_{M max} \) = 14 Ω
- \( I_{SN} \): Secondary nominal rms current = 50 mA
- \( K_N \): Conversion ratio = 1 : 2000
- \( U_C \): Supply voltage (±5 %) = ±12 ... ±15 V
- \( I_C \): Current consumption = 10 mA (±15 V) + \( I_S \) mA

Accuracy - Dynamic performance data

- \( X \): Accuracy @ \( I_{PN} \), \( T_A = 25 \) °C = 0.45 \% @ ±15 V (±5 %) = 0.70 \% @ ±12 ... ±15 V (±5 %)
- \( \epsilon_L \): Linearity error = < 0.15 \% Typ Max
- \( IO \): Offset current @ \( I_p = 0, T_A = 25 \) °C = ±0.10 mA
- \( IOM \): Magnetic offset current 1) @ \( I_p = 0 \) and specified \( R_M \) after an overload of 3 \times \( I_{PN} \) = ±0.15 mA
- \( IOT \): Temperature variation of \( IO \)
  - ±25 °C ... ±85 °C = ±0.05 ±0.30 mA
  - ±40 °C ... ±25 °C = ±0.10 ±0.50 mA
- \( t_w \): Reaction time = < 500 ns
- \( t_s \): Step response time 2) to 90 % of \( I_{PN} \) = < 1 μs
- \( di/dt \): di/dt accurately followed = > 200 A/μs
- \( BW \): Frequency bandwidth (−1 dB) = DC ... 200 kHz

General data

- \( T_A \): Ambient operating temperature = −40 ... +85 °C
- \( T_S \): Ambient storage temperature = −40 ... +90 °C
- \( R_S \): Resistance of secondary winding @ \( T_A = 70 \) °C = 120 Ω, @ \( T_A = 85 \) °C = 128 Ω
- \( m \): Mass = 24 g

Notes: 1) Result of the coercive field of the magnetic circuit
2) With a \( di/dt \) of 100 A/μs.

Features

- Closed loop (compensated) current transducer using the Hall effect
- Insulating plastic case recognized according to UL 94-V0.

Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized response time
- Wide frequency bandwidth
- No insertion losses
- High immunity to external interference
- Current overload capability.

Applications

- AC variable speed drives and servo motor drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications.

Application domain

- Industrial.

N° 97.10.34.000.0
Current Transducer LA 100-TP

Insulation coordination

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>( U_d )</td>
<td>Rms voltage for AC insulation test, 50 Hz, 1 min</td>
<td>2.5 kV</td>
<td>kV</td>
</tr>
<tr>
<td>( U_W )</td>
<td>Impulse withstand voltage 1.2/50 ( \mu )s</td>
<td>7.5 kV</td>
<td>kV</td>
</tr>
<tr>
<td>( d_{cp} )</td>
<td>Creepage distance</td>
<td>8.3 mm</td>
<td></td>
</tr>
<tr>
<td>( d_{cl} )</td>
<td>Clearance</td>
<td>8.3 mm</td>
<td></td>
</tr>
<tr>
<td>CTI</td>
<td>Comparative tracking index (group I)</td>
<td>600</td>
<td></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>( d_{cp}, d_{cl}, U_W )</td>
<td>Rated insulation voltage</td>
</tr>
<tr>
<td>Basic insulation</td>
<td>1000 V</td>
</tr>
<tr>
<td>Reinforced insulation</td>
<td>600 V</td>
</tr>
</tbody>
</table>

Safety

This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.

⚠️ 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 (e.g. 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 LA 100-TP (in mm)

#### Mechanical characteristics
- General tolerance: ±0.2 mm
- Fastening & connection of primary bus bar: 6.4 × 1.6 mm
- Recommended PCB hole: 3.8 mm
- Fastening & connection of secondary pins: 0.6 × 0.7 mm
- Recommended PCB hole: φ 1.2 mm

#### Remarks
- $I_S$ is positive when $I_P$ flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 100 °C.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: [Products/Product Documentation](https://www.lem.com).
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.