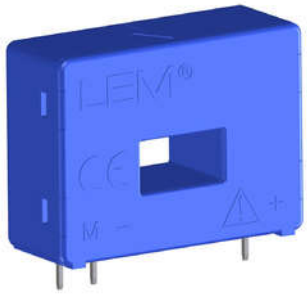
# Current Transducer LA 100-P

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

## $I_{PN}$ = 100 A



## 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 | | $T_A$ = 85 °C | | |
| | | | $R_{M\,min}$ | $R_{M\,max}$ | $R_{M\,min}$ | $R_{M\,max}$ | |
| | with ± 12 V | @ ± 100 A $_{max}$ | 0 | 50 | 0 | 42 | Ω |
| | | @ ± 120 A $_{max}$ | 0 | 22 | 0 | 14 | Ω |
| | with ± 15 V | @ ± 100 A $_{max}$ | 0 | 110 | 20 | 102 | Ω |
| | | @ ± 150 A $_{max}$ | 0 | 33 | 20 | 25 | 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 (@ ± 15 V) + $I_S$ | | | mA |

## Accuracy - Dynamic performance data

| | | | | | |
|---|---|---|---|---|---|
| $X$ | Accuracy @ $I_{PN}$, $T_A$ = 25 °C | @ ± 15 V (± 5 %) | ± 0.45 | | % |
| | | @ ± 12 .. 15 V (± 5 %) | ± 0.70 | | % |
| $\varepsilon_L$ | Linearity error | | < 0.15 | | % |
| | | | Typ | Max | |
| $I_O$ | Offset current @ $I_P$ = 0, $T_A$ = 25 °C | | | ± 0.10 | mA |
| $I_{OM}$ | Magnetic offset current [1] @ $I_P$ = 0 and specified $R_M$, after an overload of 3 × $I_{PN}$ | | | ± 0.15 | mA |
| $I_{OT}$ | Temperature variation of $I_O$ | - 25 °C .. + 85 °C | ± 0.05 | ± 0.30 | mA |
| | | - 40 °C .. - 25 °C | ± 0.10 | ± 0.50 | mA |
| $t_{ra}$ | Reaction time | | < 500 | | ns |
| $t_r$ | Step response time [2] to 90 % of $I_{PN}$ | | < 1 | | µs |
| d$i$/d$t$ | d$i$/d$t$ 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 | | 18 | g |
| | Standards | | EN 50178: 1997 | |
| | | | UL 508: 2010 | |

Notes: [1] Result of the coercive field of the magnetic circuit
[2] With a d$i$/d$t$ of 100 A/µs.

## Features

- Closed loop (compensated) current transducer using the Hall effect
- Insulated 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.

## Current Transducer LA 100-P

### Insulation coordination

| | | | |
|---|---|---|---|
| $U_d$ | Rms voltage for AC insulation test, 50 Hz, 1 min | 2.5 | kV |
| $\hat{U}_W$ | Impulse withstand voltage 1.2/50 µs | 4.5 | kV |
| | | Min | |
| $d_{Cp}$ | Creepage distance | 3.8 | mm |
| $d_{Cl}$ | Clearance | 3.8 | 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 |
|---|---|---|
| $d_{Cp}$, $d_{Cl}$, $\hat{U}_W$ | Rated insulation voltage | Nominal voltage |
| Basic insulation | 300 V | 300 V |
| Reinforced insulation | 150 V | 150 V |

### Safety

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



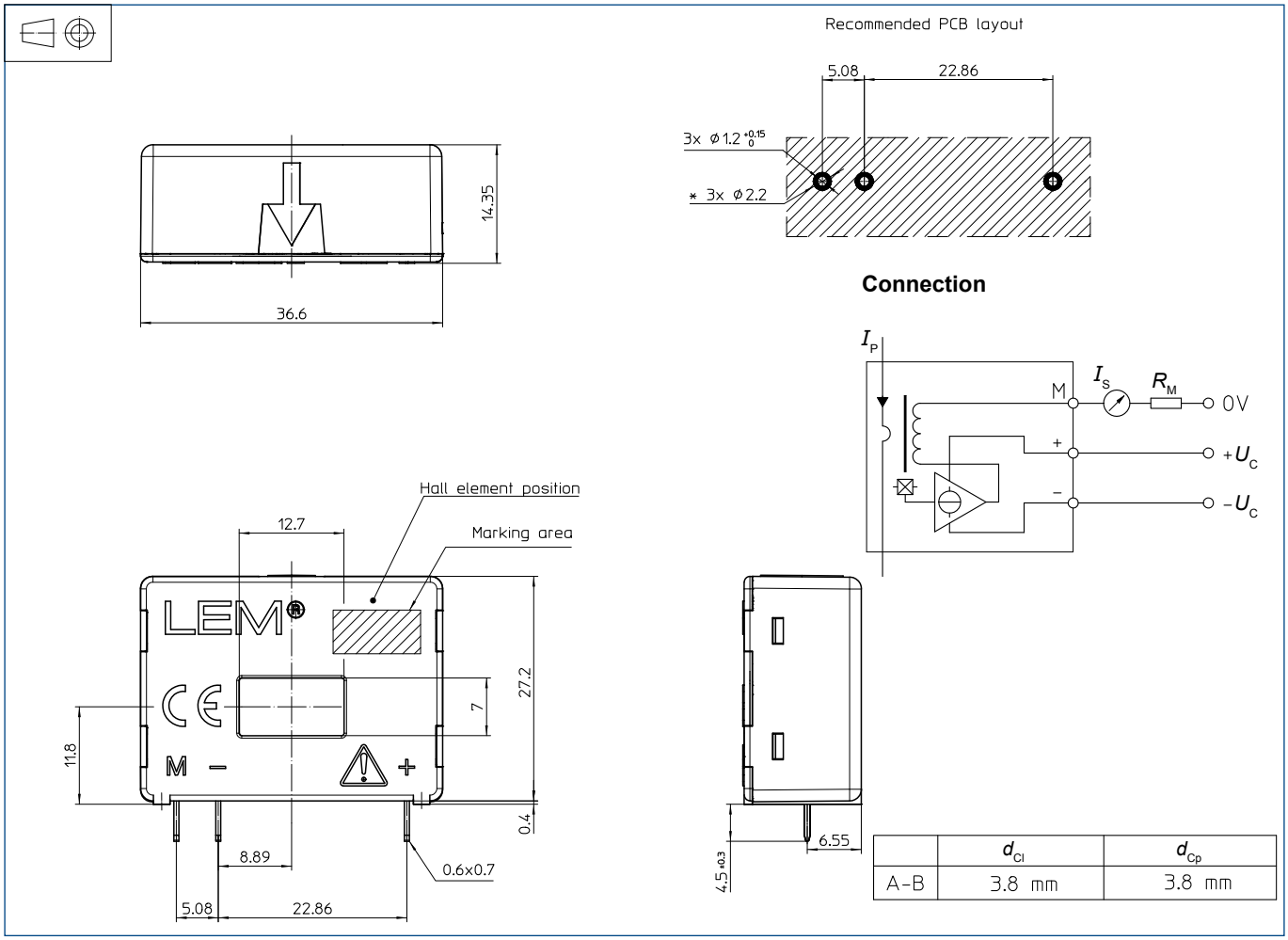
This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.



Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (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 LA 100-P (in mm)




## Mechanical characteristics

- General tolerance ± 0.2 mm
- Primary through-hole 12.7 × 7 mm
- Fastening & Connection of secondary 3 pins
  0.6 × 0.7 mm
- Recommended PCB hole ⌀ 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.
- Dynamic performances (d*i*/d*t* and response time) are best with a single bar completely filling the primary hole.
- 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**.
- In order to achieve the best magnetic coupling, the primary windings have to be wound over the top edge of the device.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.