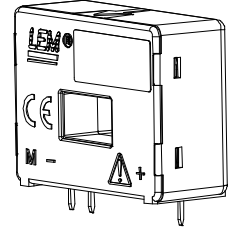


Current Transducer LA 100-P/SP13

For the electronic measurement of currents : DC, AC, pulsed..., with a galvanic isolation between the primary circuit (high power) and the secondary circuit (electronic circuit).

$$I_{PN} = 100 \text{ A}$$



Electrical data

| | | | | | | |
|----------|------------------------------------|--------------------------------|------------------------------------|-------------------------|------------------------------------|----------|
| I_{PN} | Primary nominal r.m.s. current | 100 | A | | | |
| I_P | Primary current, measuring range | 0 .. ± 160 | A | | | |
| R_M | Measuring resistance | $R_{M \text{ min}}$ | $R_{M \text{ max}}$ | | | |
| | | | | with $\pm 12 \text{ V}$ | @ $\pm 100 \text{ A}_{\text{max}}$ | 10 |
| | | | @ $\pm 160 \text{ A}_{\text{max}}$ | 10 | 30 | Ω |
| | | with $\pm 15 \text{ V}$ | @ $\pm 100 \text{ A}_{\text{max}}$ | 40 | 95 | Ω |
| | @ $\pm 160 \text{ A}_{\text{max}}$ | 40 | 50 | Ω | | |
| I_{SN} | Secondary nominal r.m.s. current | 100 | mA | | | |
| K_N | Conversion ratio | 1 : 1000 | | | | |
| V_C | Supply voltage ($\pm 5 \%$) | $\pm 12 \dots 15$ | V | | | |
| I_C | Current consumption | $10(@ \pm 15 \text{ V}) + I_S$ | mA | | | |

Accuracy - Dynamic performance data

| | | | | |
|----------|---|--|------------|------------------|
| X | Accuracy @ $I_{PN}, T_A = 25^\circ\text{C}$ | @ $\pm 15 \text{ V} (\pm 5 \%)$ | ± 0.45 | % |
| | | @ $\pm 12 \dots 15 \text{ V} (\pm 5 \%)$ | ± 0.70 | % |
| e_L | Linearity error | | < 0.15 | % |
| I_O | Offset current @ $I_P = 0, T_A = 25^\circ\text{C}$ | Typ | Max | mA |
| I_{OM} | Residual current ¹⁾ @ $I_P = 0$, after an overload of $3 \times I_{PN}$ | | ± 0.3 | mA |
| I_{OT} | Thermal drift of I_O - $25^\circ\text{C} \dots +70^\circ\text{C}$ | ± 0.1 | ± 0.5 | mA |
| t_{ra} | Reaction time @ 10 % of I_{PN} | < 500 | | ns |
| t_r | Response time ²⁾ @ 90 % of I_{PN} | < 1 | | μs |
| di/dt | di/dt accurately followed | > 200 | | A/ μs |
| f | Frequency bandwidth (-1 dB) | DC .. 200 | | kHz |

General data

| | | | |
|-------|--|----------------|------------------|
| T_A | Ambient operating temperature | - 25 .. + 70 | $^\circ\text{C}$ |
| T_S | Ambient storage temperature | - 40 .. + 85 | $^\circ\text{C}$ |
| R_S | Secondary coil resistance @ $T_A = 70^\circ\text{C}$ | 25 | Ω |
| m | Mass | 18 | g |
| | Standards | EN 50178: 1997 | |

Features

- Closed loop (compensated) current transducer using the Hall effect
- Printed circuit board mounting
- Insulated plastic case recognized according to UL 94-V0.

Special features

- $I_P = 0 \dots \pm 160 \text{ A}$
- $K_N = 1 : 1000$
- $T_A = - 25^\circ\text{C} \dots + 70^\circ\text{C}$.

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.

Notes : ¹⁾ The result of the coercive field of the magnetic circuit

²⁾ With a di/dt of 100 A/ μs .

Current Transducer LA 100-P/SP13

Isolation characteristics

| | | | |
|-------------|--|------|-----|
| V_d | R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn | 2.5 | kV |
| \hat{V}_w | Impulse withstand voltage 1.2/50 μ s | >4.8 | kV |
| | | Min | |
| dCp | Creepage distance ³⁾ | 3.8 | m m |
| dCl | Clearance distance ⁴⁾ | 3.8 | m m |
| CTI | Comparative Tracking Index (Group III a) | 175 | |

Application 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 isolation voltage | Nominal voltage |
| Single isolation | 300 V | 300 V |
| Reinforced isolation | 150 V | 150 V |

Notes : ³⁾ Distance between hole busbar and winding

⁴⁾ Direct distance between hole busbar and winding.

Safety



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



Caution, risk of electrical shock

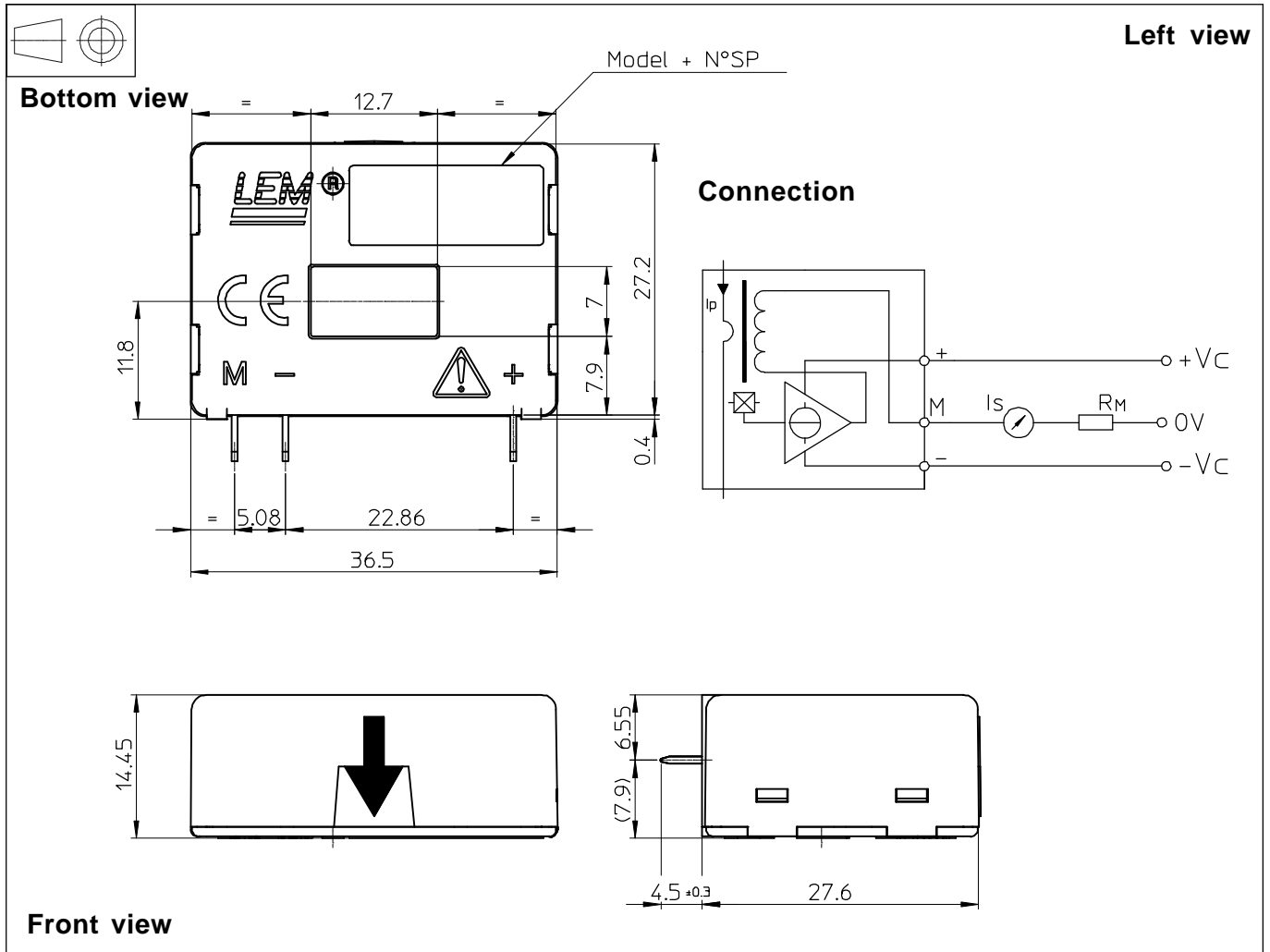
When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply).

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

This transducer is a built-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/SP13 (in mm. 1 mm = 0.0394 inch)

Mechanical characteristics

- General tolerance ± 0.2 mm
- Primary through-hole 12.7 x 7 mm
- Fastening & connection of secondary 3 pins
- 0.63 x 0.56 mm
- Recommended PCB hole 0.9 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 (di/dt and response time) are best with a single bar completely filling the primary hole.
- In order to achieve the best magnetic coupling, the primary windings have to be wound over the top edge of the device.