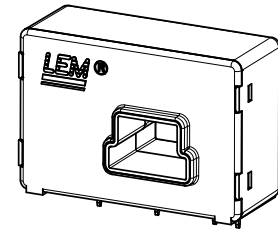


# Current Transducer LA 125-P/SP4

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

$I_{PN} = 125 \text{ A}$



## Electrical data

|          |                                  |                                    |                              |                          |              |              |     |
|----------|----------------------------------|------------------------------------|------------------------------|--------------------------|--------------|--------------|-----|
| $I_{PN}$ | Primary nominal current rms      | 125                                | A                            |                          |              |              |     |
| $I_{PM}$ | Primary current, measuring range | 0 .. $\pm 300$                     | A                            |                          |              |              |     |
| $R_M$    | Measuring resistance             | $T_A = 70^\circ\text{C}$           |                              | $T_A = 85^\circ\text{C}$ |              |              |     |
|          |                                  |                                    | $R_{M \min}$                 | $R_{M \max}$             | $R_{M \min}$ | $R_{M \max}$ |     |
|          |                                  | with $\pm 12 \text{ V}$            | @ $\pm 125 \text{ A}_{\max}$ | 0                        | 89           | 0            | 85  |
|          |                                  |                                    | @ $\pm 200 \text{ A}_{\max}$ | 0                        | 29           | 0            | 25  |
|          |                                  | with $\pm 15 \text{ V}$            | @ $\pm 125 \text{ A}_{\max}$ | 0                        | 134          | 0            | 130 |
|          | @ $\pm 200 \text{ A}_{\max}$     | 0                                  | 54                           | 0                        | 50           |              |     |
|          | @ $\pm 300 \text{ A}_{\max}$     | 0                                  | 11                           | 0                        | 7            |              |     |
| $I_{SN}$ | Secondary nominal current rms    | 62.5                               | mA                           |                          |              |              |     |
| $K_N$    | Conversion ratio                 | 1 : 2000                           |                              |                          |              |              |     |
| $V_C$    | Supply voltage ( $\pm 5 \%$ )    | $\pm 12 \dots 15$                  | V                            |                          |              |              |     |
| $I_C$    | Current consumption              | 16 (@ $\pm 15 \text{ V}$ ) + $I_S$ | mA                           |                          |              |              |     |

## Accuracy - Dynamic performance data

|                                |                                                                                                              |                                               |            |                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------|------------------|
| <b>X</b>                       | Accuracy @ $I_{PN}$ , $T_A = 25^\circ\text{C}$                                                               | @ $\pm 15 \text{ V} (\pm 5 \%)$               | $\pm 0.60$ | %                |
|                                |                                                                                                              | @ $\pm 12 \dots 15 \text{ V} (\pm 5 \%)$      | $\pm 0.80$ | %                |
| <b><math>\epsilon_L</math></b> | Linearity error                                                                                              |                                               | < 0.15     | %                |
| <b><math>I_O</math></b>        | Offset current @ $I_p = 0$ , $T_A = 25^\circ\text{C}$                                                        | Typ                                           |            | Max              |
|                                |                                                                                                              |                                               |            | $\pm 0.20$       |
| <b><math>I_{OM}</math></b>     | Magnetic offset current <sup>1)</sup> @ $I_p = 0$ and specified $R_M$ after an overload of $3 \times I_{PN}$ |                                               |            | $\pm 0.25$       |
| <b><math>I_{OT}</math></b>     | Temperature variation of $I_O$                                                                               | - $25^\circ\text{C} \dots + 85^\circ\text{C}$ | $\pm 0.20$ | $\pm 0.50$       |
|                                |                                                                                                              | - $40^\circ\text{C} \dots - 25^\circ\text{C}$ | $\pm 0.30$ | $\pm 0.80$       |
| <b><math>t_{ra}</math></b>     | Reaction time to 10 % of $I_{PN}$                                                                            |                                               | < 500      | ns               |
| <b><math>t_r</math></b>        | Response time <sup>2) 3)</sup> to 90 % of $I_{PN}$ step                                                      |                                               | < 1        | $\mu\text{s}$    |
| <b>di/dt</b>                   | di/dt accurately followed <sup>4)</sup>                                                                      |                                               | > 200      | A/ $\mu\text{s}$ |
| <b>BW</b>                      | Frequency bandwidth <sup>4)</sup> (-1 dB)                                                                    |                                               | DC .. 100  | kHz              |

## General data

|          |                               |                            |                  |
|----------|-------------------------------|----------------------------|------------------|
| $T_A$    | Ambient operating temperature | - 40 .. + 85               | $^\circ\text{C}$ |
| $T_S$    | Ambient storage temperature   | - 45 .. + 100              | $^\circ\text{C}$ |
| $R_S$    | Secondary coil resistance     | @ $T_A = 70^\circ\text{C}$ | 76               |
|          |                               | @ $T_A = 85^\circ\text{C}$ | 80               |
| <b>m</b> | Mass                          | 55                         | g                |
|          | Standards                     | EN 50155: 1995             |                  |

Notes: <sup>1)</sup> Result of the coercive field of the magnetic circuit

<sup>2)</sup> With a di/dt of 100 A/ $\mu\text{s}$

<sup>3)</sup> The primary conductor is best filling the through-hole and/or the return of the primary conductor is above the top of the transducer.

## Features

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

## Special features

- $K_N = 1 : 2000$
- $T_A = - 40^\circ\text{C} \dots + 85^\circ\text{C}$
- Potted.

## 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

- Traction.

## Current Transducer LA 125-P/SP4

### Isolation characteristics

|                      |                                                 |                   |    |
|----------------------|-------------------------------------------------|-------------------|----|
| <b>V<sub>d</sub></b> | Rms voltage for AC isolation test, 50 Hz, 1 min | 4.5               | kV |
|                      |                                                 | 8.4 <sup>1)</sup> | kV |
|                      |                                                 | Min               |    |
| <b>dCp</b>           | Creepage distance                               | 8.8               | mm |
| <b>dCl</b>           | Clearance distance                              | 8.8               | mm |
| <b>CTI</b>           | Comparative Tracking Index (group IIIa)         | 175               |    |

Note: <sup>1)</sup> Voltage measured with a primary bar in low position in the through hole.

### 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).

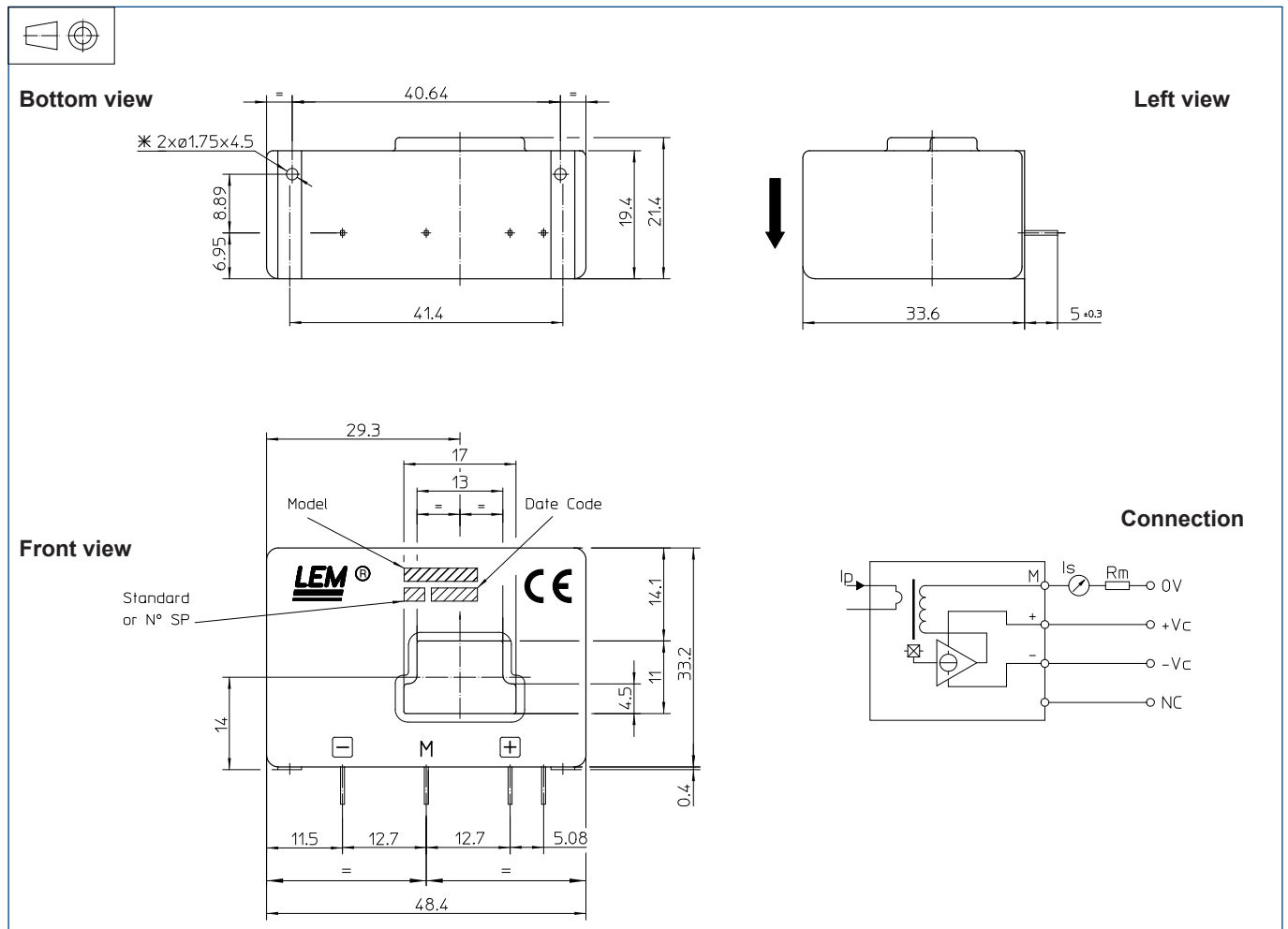
Ignoring this warning can lead to injury and/or cause serious damage.

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 LA 125-P/SP4 (in mm. 1 mm = 0.0394 inch)



### Mechanical characteristics

- General tolerance  $\pm 0.2$  mm
- Primary through-hole 17 x 11 mm
- Fastening & Connection of secondary 4 pins  
0.63 x 0.56 mm
- Recommended PCB hole 0.9 mm
- Supplementary fastening 2 holes  $\varnothing 1.75$  mm
- Recommended PCB hole 2.4 mm
- Recommended screws PT KA 22 x 6
- Recommended fastening torque 0.5 Nm  
or 0.37 Lb. - Ft.

### Remarks

- $I_s$  is positive when  $I_p$  flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 90°C.
- Dynamic performances (di/dt and response time) are best with a primary bar in low position in the through-hole.
- In order to achieve the best magnetic coupling, the primary windings have to be wound over the top edge of the device.