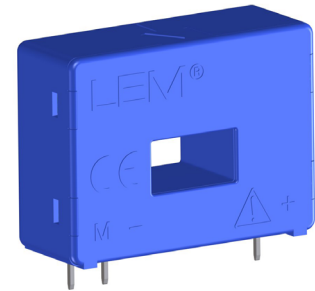


Current Transducer LA 55-P

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

$$I_{PN} = 50 \text{ A}$$



Electrical data

| | | | | | | | |
|----------|----------------------------------|------------------------------------|-----------------------------|--------------------------|-------------------|-------------------|------------------|
| I_{PN} | Primary nominal rms current | 50 | A | | | | |
| I_{PM} | Primary current, measuring range | 0 .. ± 70 | 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 $\pm 12 \text{ V}$ | @ $\pm 50 \text{ A}_{\max}$ | 10 | 100 | 60 | 95 |
| | | | @ $\pm 70 \text{ A}_{\max}$ | 10 | 50 | 60 ¹⁾ | 60 ¹⁾ |
| | with $\pm 15 \text{ V}$ | @ $\pm 50 \text{ A}_{\max}$ | 50 | 160 | 135 | 155 | |
| | | @ $\pm 70 \text{ A}_{\max}$ | 50 | 90 | 135 ²⁾ | 135 ²⁾ | |
| I_{SN} | Secondary nominal rms current | 50 | mA | | | | |
| K_N | Conversion ratio | 1 : 1000 | | | | | |
| U_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} , $T_A = 25^\circ\text{C}$ | @ $\pm 15 \text{ V}$ ($\pm 5\%$) | ± 0.65 | % |
| | | @ $\pm 12 \dots 15 \text{ V}$ ($\pm 5\%$) | ± 0.90 | % |
| ϵ_L | Linearity error | | <0.15 | % |
| I_O | Offset current @ $I_P = 0$, $T_A = 25^\circ\text{C}$ | Typ | | Max |
| | | | | ± 0.2 |
| I_{OM} | Magnetic offset current ³⁾ @ $I_P = 0$ and specified R_M , after an overload of $3 \times I_{PN}$ | | ± 0.1 | ± 0.6 |
| | | | ± 0.2 | ± 1.0 |
| I_{OT} | Temperature variation of I_O | $-25^\circ\text{C} \dots +85^\circ\text{C}$ | ± 0.1 | ± 0.6 |
| | | $-40^\circ\text{C} \dots -25^\circ\text{C}$ | ± 0.2 | ± 1.0 |
| t_{ra} | Reaction time | <500 | | ns |
| t_r | Step response time 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 | $-40 \dots +85$ | $^\circ\text{C}$ |
| T_S | Ambient storage temperature | $-40 \dots +90$ | $^\circ\text{C}$ |
| R_S | Resistance of secondary winding | @ $T_A = 70^\circ\text{C}$ | 80 |
| | | @ $T_A = 85^\circ\text{C}$ | 85 |
| m | Mass | 18 | g |
| | Standards | EN 50178: 1997 UL 508: 2010 | |

Notes: ¹⁾ Measuring range limited to $\pm 60 \text{ A}_{\max}$

²⁾ Measuring range limited to $\pm 55 \text{ A}_{\max}$

³⁾ Result of the coercive field of the magnetic circuit.

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.

Current Transducer LA 55-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 μ s | 5.7 | kV |
| | | Min | |
| d_{cp} | Creepage distance | 5 | mm |
| d_{cl} | Clearance | 5 | 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).

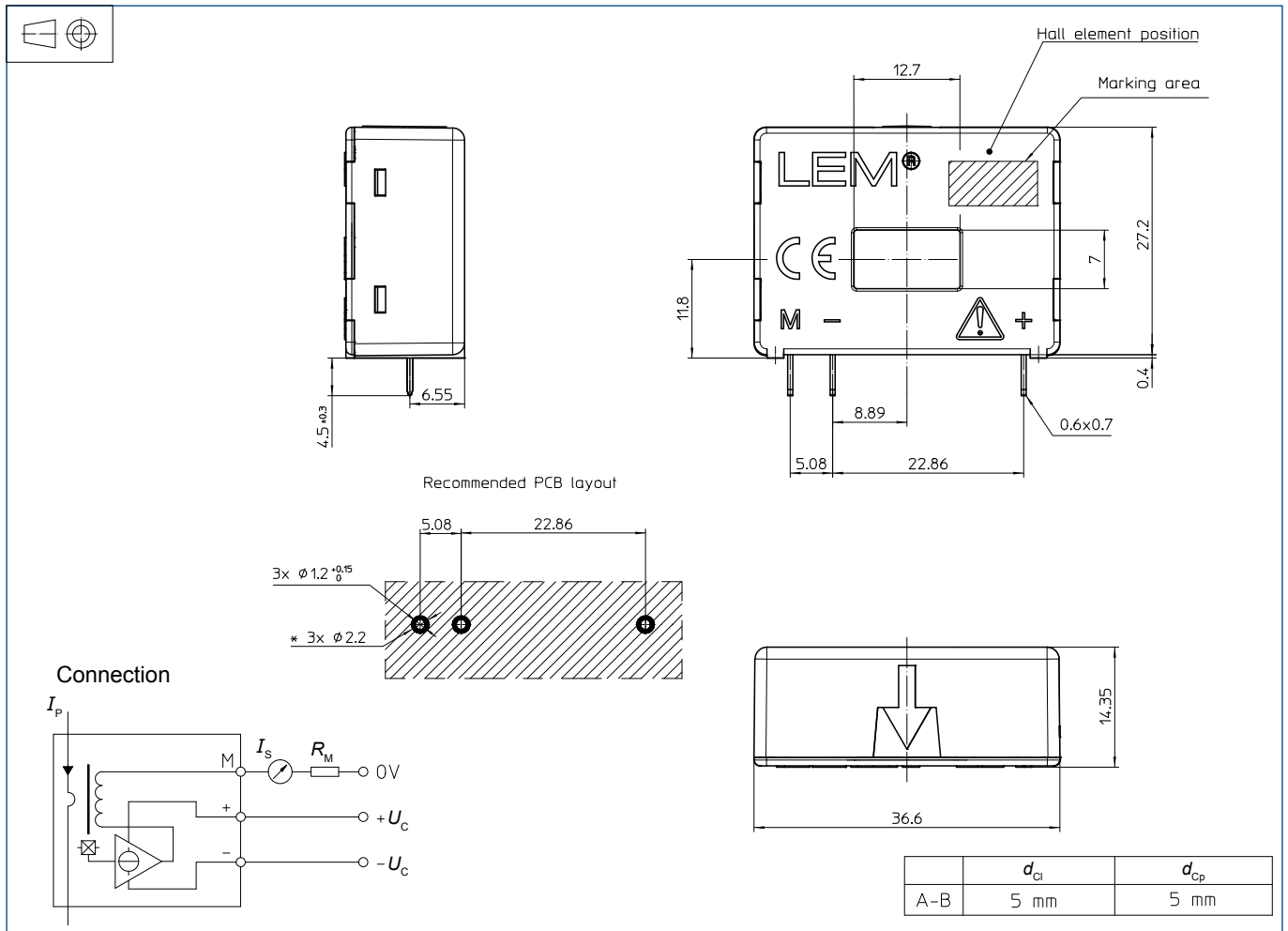
Ignoring this warning can lead to injury and/or cause serious damage.

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 55-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 $\phi 1.2$ mm

Remarks

- I_s is positive when I_p flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 90°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](#).
- 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.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.