

Voltage Transducer LV 25-P

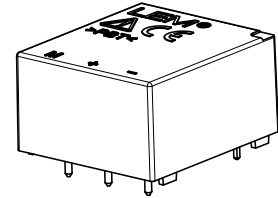
For the electronic measurement of currents: DC, AC, pulsed..., with galvanic isolation between the primary circuit and the secondary circuit.



16084

$$I_{PN} = 10 \text{ mA}$$

$$V_{PN} = 10 \dots 500 \text{ V}$$



Electrical data

| | | | | | | |
|----------|----------------------------------|-----------------------|--------------------------|-------------|--------------------------|----|
| I_{PN} | Primary nominal current rms | 10 | mA | | | |
| I_{PM} | Primary current, measuring range | 0 .. ± 14 | mA | | | |
| R_M | Measuring resistance | $R_{M \min}$ | $R_{M \max}$ | | | |
| | | | | with ± 12 V | @ ± 10 mA _{max} | 30 |
| | | | @ ± 14 mA _{max} | 30 | 100 | Ω |
| | | with ± 15 V | @ ± 10 mA _{max} | 100 | 350 | Ω |
| | @ ± 14 mA _{max} | 100 | 190 | Ω | | |
| I_{SN} | Secondary nominal current rms | 25 | mA | | | |
| K_N | Conversion ratio | 2500 : 1000 | | | | |
| V_C | Supply voltage (± 5 %) | ± 12 .. 15 | V | | | |
| I_C | Current consumption | 10 (@ ± 15 V) + I_S | mA | | | |

Accuracy - Dynamic performance data

| | | | | | |
|--------------|--|------------------|--------|--------|----|
| X_G | Overall accuracy @ I_{PN} , $T_A = 25^\circ\text{C}$ | @ ± 12 .. 15 V | ± 0.9 | % | |
| | | @ ± 15 V (± 5 %) | ± 0.8 | % | |
| ϵ_L | Linearity error | | < 0.2 | % | |
| I_O | Offset current @ $I_P = 0$, $T_A = 25^\circ\text{C}$ | Typ | ± 0.15 | mA | |
| | | Max | ± 0.15 | mA | |
| I_{OT} | Temperature variation of I_O | 0°C .. + 25°C | ± 0.06 | ± 0.25 | mA |
| | | + 25°C .. + 70°C | ± 0.10 | ± 0.35 | mA |
| t_r | Response time ¹⁾ to 90 % of I_{PN} step | | 40 | µs | |

General data

| | | | | |
|-------|-------------------------------|----------------------------|----------------|---|
| T_A | Ambient operating temperature | 0 .. + 70 | °C | |
| T_S | Ambient storage temperature | - 25 .. + 85 | °C | |
| R_P | Primary coil resistance | @ $T_A = 70^\circ\text{C}$ | 250 | Ω |
| R_S | Secondary coil resistance | @ $T_A = 70^\circ\text{C}$ | 110 | Ω |
| m | Mass | | 22 | g |
| | Standard | | EN 50178: 1997 | |

Note: ¹⁾ $R_1 = 25 \text{ k}\Omega$ (L/R constant, produced by the resistance and inductance of the primary circuit).

Features

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

Principle of use

- For voltage measurements, a current proportional to the measured voltage must be passed through an external resistor R_1 which is selected by the user and installed in series with the primary circuit of the transducer.

Advantages

- Excellent accuracy
- Very good linearity
- Low thermal drift
- Low response time
- High bandwidth
- High immunity to external interference
- Low disturbance in common mode.

Applications

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

Application domain

- Industrial.

Voltage Transducer LV 25-P

Isolation characteristics

| | | | |
|-------------|--|-------------------|----|
| V_d | Rms voltage for AC insulation test, 50 Hz, 1 min | 2.5 ¹⁾ | kV |
| \hat{V}_w | Impulse withstand voltage 1.2/50 μ s | 16 | kV |
| | | Min | |
| dCp | Creepage distance | 19.5 | mm |
| dCI | Clearance | 19.5 | mm |
| CTI | Comparative Tracking Index (group IIIa) | 175 | |

Note: ¹⁾ Between primary and secondary.

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 |
|---|--------------------------|-----------------|
| dCp, dCI, \hat{V}_w | Rated insulation voltage | Nominal voltage |
| Basic insulation | 1600 V | 1600 V |
| Reinforced insulation | 800 V | 800 V |

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).

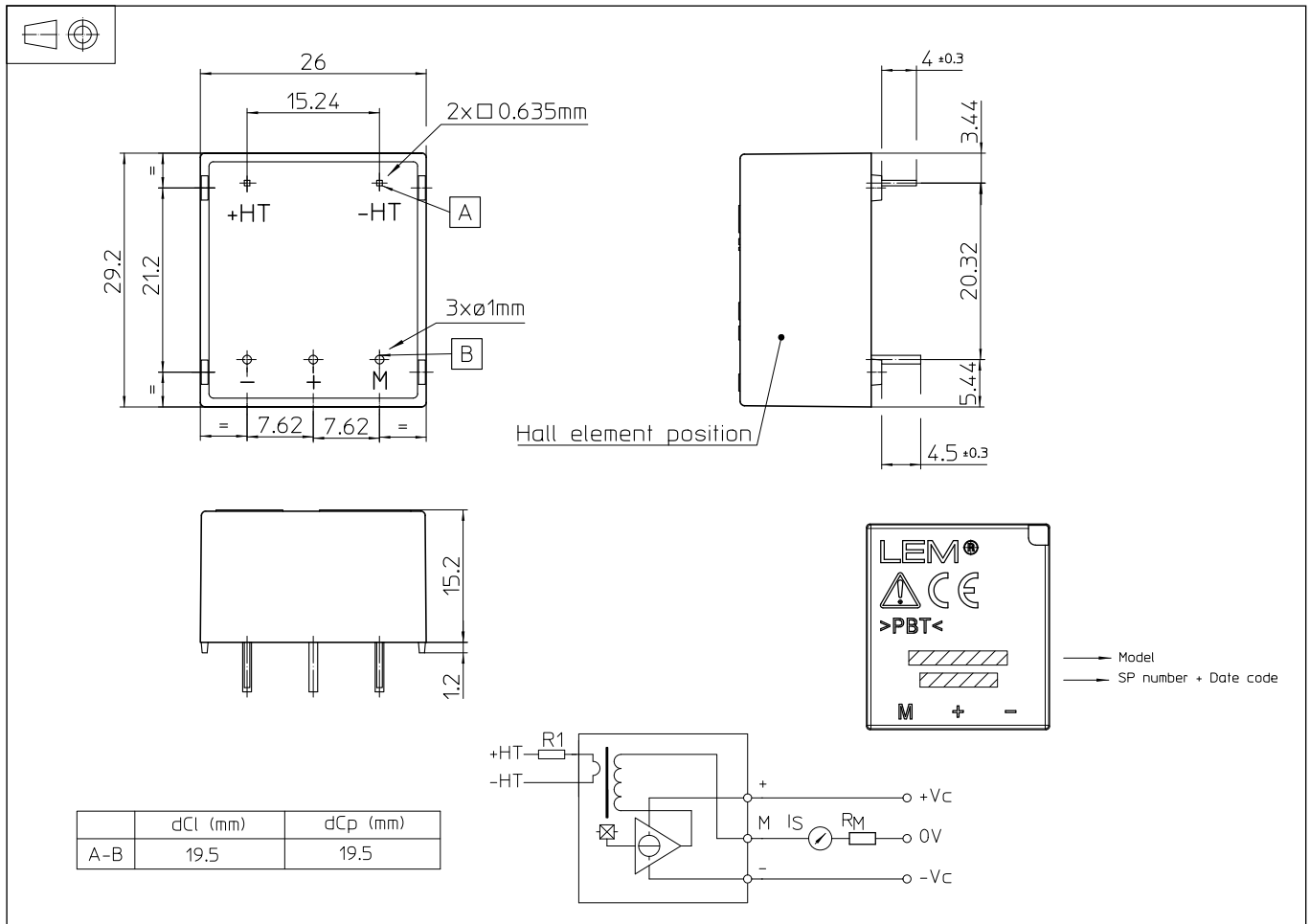
Ignoring this warning can lead to injury and/or cause serious damage.

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 LV 25-P (in mm)



Mechanical characteristics

- General tolerance ± 0.2 mm
- Fastening & connection of primary 2 pins
0.635 × 0.635 mm
- Fastening & connection of secondary 3 pins $\varnothing 1$ mm
- Recommended PCB hole $\varnothing 1.2$ mm

Remarks

- I_S is positive when V_p is applied on terminal + HT.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.

Instructions for use of the voltage transducer model LV 25-P

Primary resistor R_1 : the transducer's optimum accuracy is obtained at the nominal primary current. As far as possible, R_1 should be calculated so that the nominal voltage to be measured corresponds to a primary current of 10 mA.

Example: Voltage to be measured $V_{PN} = 250$ V

a) $R_1 = 25$ k Ω / 2.5 W, $I_p = 10$ mA Accuracy = ± 0.9 % of V_{PN} (@ $T_A = +25^\circ\text{C}$)

b) $R_1 = 50$ k Ω / 1.25 W, $I_p = 5$ mA Accuracy = ± 1.5 % of V_{PN} (@ $T_A = +25^\circ\text{C}$)

Operating range (recommended): taking into account the resistance of the primary windings (which must remain low compared to R_1 , in order to keep thermal deviation as low as possible) and the isolation, this transducer is suitable for measuring nominal voltages from 10 to 500 V.