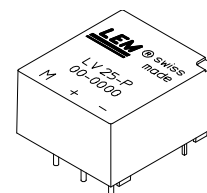# Voltage Transducer LV 25-P

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

$I_{PN}$ **= 10 mA**

$V_{PN}$ **= 10 .. 500 V**

## Electrical data

| | | | | | |
|---|---|---|---|---|---|
| $I_{PN}$ | Primary nominal r.m.s. current | | 10 | | mA |
| $I_P$ | Primary current, measuring range | | 0 .. ± 14 | | mA |
| $R_M$ | Measuring resistance | | $R_{M\,min}$ | $R_{M\,max}$ | |
| | with ± 12 V | @ ± 10 mA $_{max}$ | 30 | 190 | Ω |
| | | @ ± 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 r.m.s. current | | 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 |
| $V_d$ | R.m.s. voltage for AC isolation test [1], 50 Hz, 1 mn | | 2.5 | | kV |

## Accuracy - Dynamic performance data

| | | | Typ | Max | |
|---|---|---|---|---|---|
| $X_G$ | Overall Accuracy @ $I_{PN}$ , $T_A$ = 25°C  @ ± 12 .. 15 V | | ± 0.9 | | % |
| | @ ± 15 V (± 5 %) | | ± 0.8 | | % |
| $e_L$ | Linearity | | < 0.2 | | % |
| $I_O$ | Offset current @ $I_P$ = 0, $T_A$ = 25°C | | | ± 0.15 | mA |
| $I_{OT}$ | Thermal drift 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 [2] @ 90 % of $V_{P\,max}$ | | 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°C | | 250 | Ω |
| $R_S$ | Secondary coil resistance @ $T_A$ = 70°C | | 110 | Ω |
| $m$ | Mass | | 22 | g |
| | Standards [3] | | EN 50178 | |

## Features

- Closed loop (compensated) voltage transducer using the Hall effect
- Insulated 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)
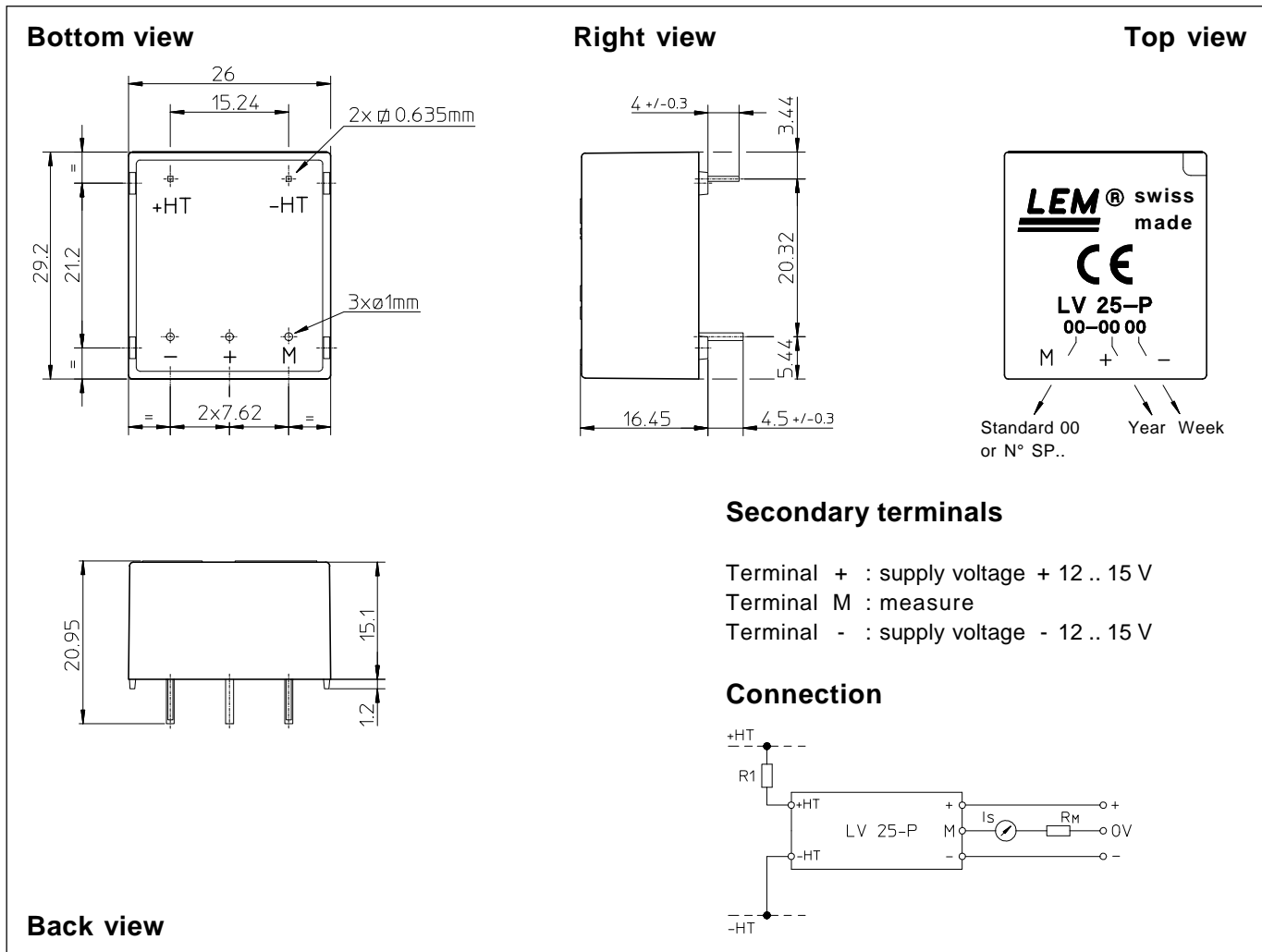- Power supplies for welding applications.

Notes : [1] Between primary and secondary
[2] $R_1$ = 25 kΩ (L/R constant, produced by the resistance and inductance of the primary circuit)
[3] A list of corresponding tests is available

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# Dimensions LV 25-P (in mm. 1 mm = 0.0394 inch)

### Bottom view



### Right view



### Top view



Standard 00 or N° SP..

Year   Week

### Secondary terminals

Terminal  +  : supply voltage + 12 .. 15 V
Terminal  M  : measure
Terminal  -  : supply voltage - 12 .. 15 V

### Connection



### Back view



## Mechanical characteristics

- General tolerance — ± 0.2 mm
- Fastening & connection of primary — 2 pins 0.635 x 0.635 mm
- Fastening & connection of secondary — 3 pins ⌀ 1 mm
- Recommended PCB hole — 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.

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**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 kΩ / 2.5  W, $I_P$ = 10 mA       Accuracy = ± 0.8 % of $V_{PN}$ (@ $T_A$ = + 25°C)
b) $R_1$ = 50 kΩ / 1.25 W, $I_P$ =  5 mA       Accuracy = ± 1.6 % of $V_{PN}$ (@ $T_A$ = + 25°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.

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LEM  reserves the right to carry out modifications on its transducers, in order to improve them, without previous notice.