

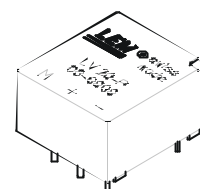
## Voltage Transducer LV 20-P

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).



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

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



### Electrical data

$I_{PN}$	Primary nominal r.m.s. current	10	mA
$I_P$	Primary current, measuring range	0 .. $\pm 14$	mA
$R_M$	Measuring resistance	$R_{M \min}$ $R_{M \max}$	
	with $\pm 12 \text{ V}$	@ $\pm 10 \text{ mA}_{\max}$	30 190 $\Omega$
		@ $\pm 14 \text{ mA}_{\max}$	30 100 $\Omega$
	with $\pm 15 \text{ V}$	@ $\pm 10 \text{ mA}_{\max}$	100 350 $\Omega$
		@ $\pm 14 \text{ mA}_{\max}$	100 190 $\Omega$
$I_{SN}$	Secondary nominal r.m.s. current	25	mA
$K_N$	Conversion ratio	2500 : 1000	
$V_C$	Supply voltage ( $\pm 5 \%$ )	$\pm 12 \dots 15$	V
$I_C$	Current consumption	10 (@ $\pm 15 \text{ V}$ ) + $I_S$	mA
$V_d$	R.m.s. voltage for AC isolation test <sup>1)</sup> , 50 Hz, 1 mn	2.5	kV

### Accuracy - Dynamic performance data

$X_G$	Overall Accuracy @ $I_{PN}$ , $T_A = 25^\circ\text{C}$	@ $\pm 12 \dots 15 \text{ V}$	$\pm 1.1$	%
		@ $\pm 15 \text{ V} (\pm 5 \%)$	$\pm 1.0$	%
$e_L$	Linearity		< 0.2	%
$I_O$	Offset current @ $I_P = 0$ , $T_A = 25^\circ\text{C}$		Typ Max	
$I_{OT}$	Thermal drift of $I_O$	0°C .. + 25°C	$\pm 0.10$ $\pm 0.30$	mA
		+ 25°C .. + 70°C	$\pm 0.14$ $\pm 0.40$	mA
$t_r$	Response time <sup>2)</sup> @ 90 % of $V_{P \max}$		40	$\mu\text{s}$

### 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	$\Omega$
$R_S$	Secondary coil resistance @ $T_A = 70^\circ\text{C}$	110	$\Omega$
$m$	Mass	22	g
	Standards <sup>3)</sup>	EN 50178	

### Features

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

### 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.

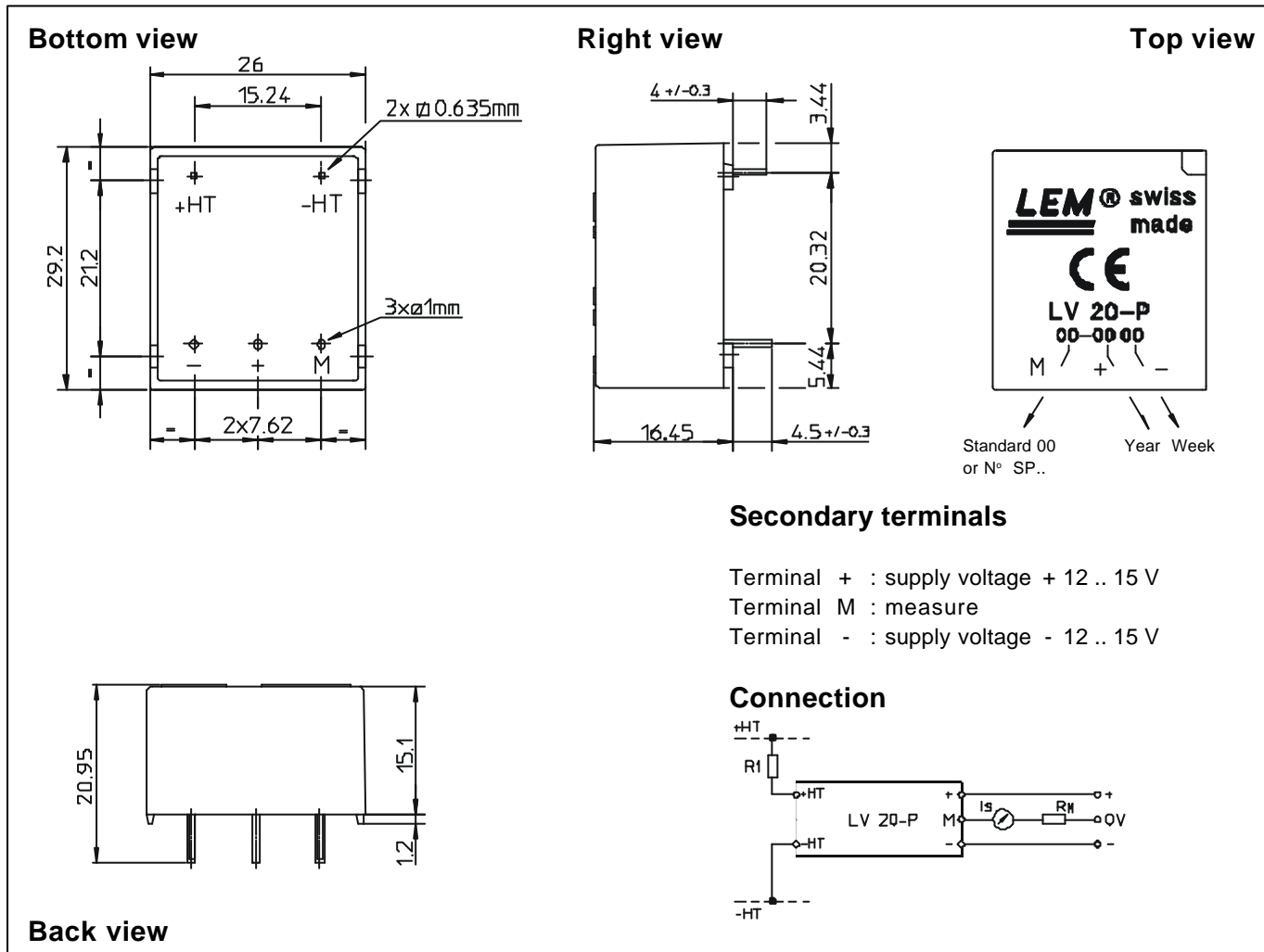
**Notes :** <sup>1)</sup> Between primary and secondary

<sup>2)</sup>  $R_1 = 25 \text{ k}\Omega$  (L/R constant, produced by the resistance and inductance of the primary circuit)

<sup>3)</sup> A list of corresponding tests is available

010802/0

## Dimensions LV 20-P (in mm. 1 mm = 0.0394 inch)



## Mechanical characteristics

- General tolerance  $\pm 0.2$  mm
- Fastening & connection of primary 2 pins  
0.635 x 0.635 mm
- Fastening & connection of secondary 3 pins  $\varnothing 1$  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.

## Instructions for use of the voltage transducer model LV 20-P

Primary resistor  $R_1$  : the transducer's optimum accuracy is obtained at the nominal primary current. As much 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)  $R_1 = 25 \text{ k}\Omega / 2.5 \text{ W}$ ,  $I_p = 10 \text{ mA}$  Accuracy =  $\pm 1 \%$  of  $V_{PN}$  (@  $T_A = +25^\circ\text{C}$ )  
b)  $R_1 = 50 \text{ k}\Omega / 1.25 \text{ W}$ ,  $I_p = 5 \text{ mA}$  Accuracy =  $\pm 2 \%$  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.

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