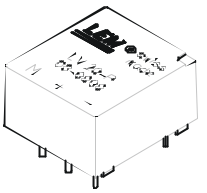
Voltage Transducer LV 20-P

I_{PN} = 10 mA
V_{PN} = 10 .. 500 V

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).



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 (@±15V) + 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

X_G	Overall Accuracy @ I_{PN} , T_A = 25°C	@ ± 12 .. 15 V	± 1.1		%
		@ ± 15 V (± 5 %)	± 1.0		%
ε_L	Linearity		< 0.2		%
			Typ	Max	
I_O	Offset current @ I_P = 0, T_A = 25°C			± 0.20	mA
I_{OT}	Thermal drift of I_O	0°C .. + 25°C	± 0.10	± 0.30	mA
		+ 25°C .. + 70°C	± 0.14	± 0.40	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	

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

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.

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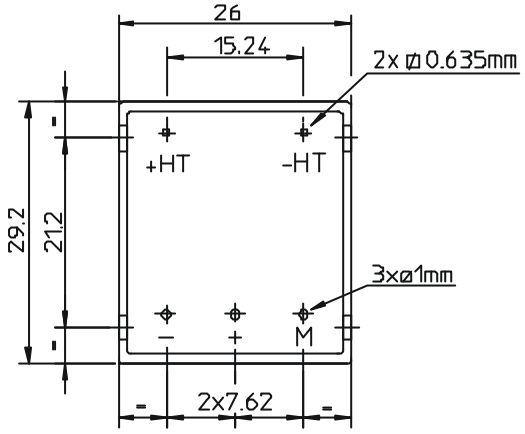
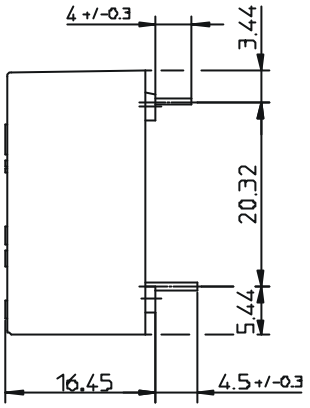
Dimensions LV 20-P (in mm. 1 mm = 0.0394 inch)

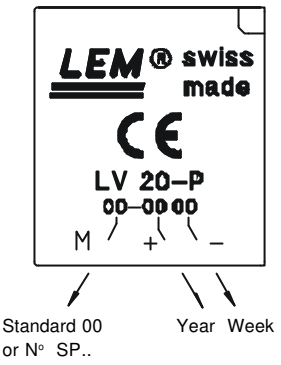
Bottom view



Right view

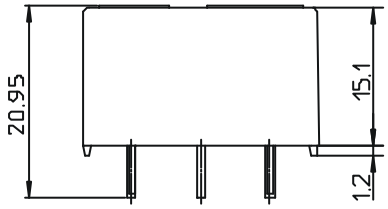


Top view



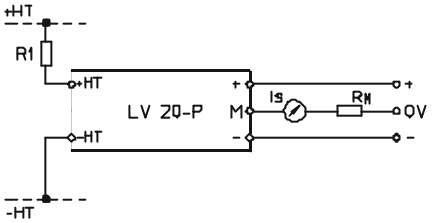
Secondary terminals

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



Back view

Connection



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

- $\mathbf{I}_S$ is positive when $\mathbf{V}_P$ 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 $\mathbf{R}_1$: the transducer's optimum accuracy is obtained at the nominal primary current. As much as possible, $\mathbf{R}_1$ should be calculated so that the nominal voltage to be measured corresponds to a primary current of 10 mA.

Example: Voltage to be measured $\mathbf{V}_{PN}$ = 250 V
a) $\mathbf{R}_1$ = 25 kΩ / 2.5 W, $\mathbf{I}_P$ = 10 mA Accuracy = ± 1 % of $\mathbf{V}_{PN}$ (@ $\mathbf{T}_A$ = +25°C)
b) $\mathbf{R}_1$ = 50 kΩ / 1.25 W, $\mathbf{I}_P$ = 5 mA Accuracy = ± 2 % of $\mathbf{V}_{PN}$ (@ $\mathbf{T}_A$ = +25°C)

Operating range (recommended) : taking into account the resistance of the primary windings (which must remain low compared to $\mathbf{R}_1$ 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.