Voltage Transducer LV 25-P/SP5

I_{PN} = 10 mA

V_{PN} = 10 .. 1500 V

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

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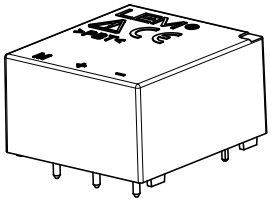

Electrical data

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 ± 15 V	@ ± 10 mA $_{max}$		100 340	Ω
		@ ± 14 mA $_{max}$		100 180	Ω
I_{SN}	Secondary nominal current rms			25	mA
K_N	Conversion ratio			2500 : 1000	
V_C	Supply voltage (± 5 %)			± 15	V
I_C	Current consumption			10 + I_S	mA

Accuracy - Dynamic performance data

			Typ	Max	
X_G	Overall accuracy @ I_{PN}, T_A = 25°C		± 0.8		%
ε_L	Linearity error		< 0.2		%
I_O	Offset current @ I_P = 0, T_A = 25°C			± 0.15	mA
I_{OT}	Temperature variation of I_O	- 25°C .. + 85°C	± 0.25	± 0.50	mA
		- 40°C .. + 85°C	± 0.30	± 0.80	mA
t_r	Response time [1] to 90 % of V_{PN} step		25		µs

General data

T_A	Ambient operating temperature	- 40 .. + 85	°C
T_S	Ambient storage temperature	- 50 .. + 90	°C
R_P	Primary coil resistance @ T_A = 85°C	300	Ω
R_S	Secondary coil resistance @ T_A = 85°C	117	Ω
m	Mass	22	g
	Standard	EN 50155: 1995	

Note: [1] R_1 = 25 kΩ (L/R constant, produced by the resistance and inductance of of the primary circuit).

Features

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

Special features

- T_A = - 40°C .. + 85°C
- V_d = 4.2 kV (4 kV DC / 5 mn).

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 temperature drift
- Optimized response time
- Wide frequency bandwidth
- High immunity to external interference.

Applications

- Single or three phase inverter
- Propulsion and braking chopper
- Propulsion converter
- Auxiliary converter
- Battery charger.

Application Domain

- Traction.

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Isolation characteristic

V_d	Rms voltage for AC insulation test, 50 Hz, 1 min	4.2	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 µs	16	kV
		Min	
dCp	Creepage distance	19.5	mm
dCl	Clearance	19.5	mm
CTI	Comparative Tracking Index (group IIIa)	175	

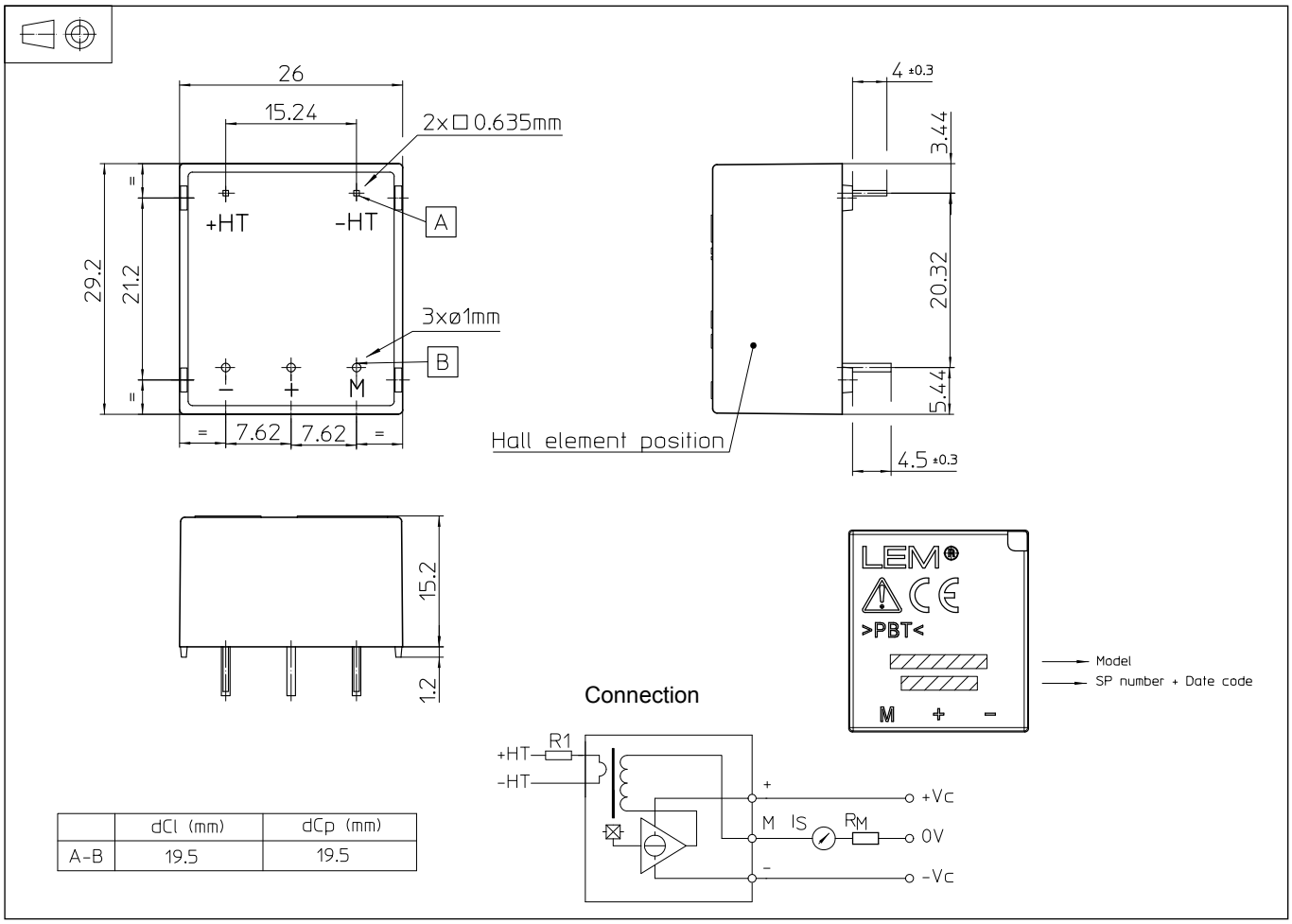
Safety

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/SP5 (in mm)



	dCl (mm)	dCp (mm)
A-B	19.5	19.5

Mechanical characteristics

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

Remark

- $\mathbf{I}_S$ is positive when $\mathbf{V}_P$ is applied on terminal + HT.

Instructions for use of the voltage transducer model LV 25-P/SP5

Primary resistor $\mathbf{R}_1$: the transducer's optimum accuracy is obtained at the nominal primary current. As far 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 = ± 0.8 % of $\mathbf{V}_{PN}$ (@ $\mathbf{T}_A$= + 25°C)
b) $\mathbf{R}_1$ = 50 kΩ / 1.25 W, $\mathbf{I}_P$ = 5 mA Accuracy = ± 1.6 % 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 1500 V.