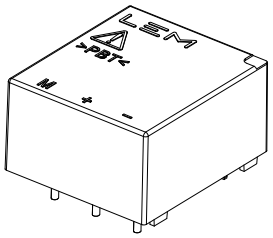
Voltage Transducer LV 25-P/SP10

I_{PN} = 100 mA

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



Electrical data

I_{PN}	Primary nominal RMS current		100		mA
I_{PM}	Primary current, measuring range		0 ... ±150		mA
R_M	Measuring resistance		$R_{M\,min}$	$R_{M\,max}$	
	with ±12 V	@ ±100 mA $_{max}$	30	230	Ω
		@ ±150 mA $_{max}$	30	110	Ω
	with ±15 V	@ ±100 mA $_{max}$	100	350	Ω
		@ ±150 mA $_{max}$	100	190	Ω
I_{SN}	Secondary nominal RMS current		25		mA
N_P/N_S	Turns ratio		250 : 1000		
U_C	Supply voltage (±5 %)		±12 ... 15		V
I_C	Current consumption		10 + I_S		mA

Accuracy - Dynamic performance data

ε_{tot}	Total error @ I_{PN}, T_A = 25 °C		±0.8		%
ε_L	Linearity error		<0.2		%
			Typ	Max	
I_O	Offset current [1] @ I_P = 0, T_A = 25 °C			±0.15	mA
I_{OT}	Temperature variation of I_O	−25 °C ... +85 °C	±0.20	±0.60	mA

General data

T_A	Ambient operating temperature		−25 ... +85	°C
T_{Ast}	Ambient storage temperature		−40 ... +85	°C
R_P	Resistance of primary (winding)	@ T_A = 85 °C	3.3	Ω
R_S	Resistance of secondary winding	@ T_A = 85 °C	117	Ω
m	Mass		22	g
	Standard		EN 50155: 2017 [2]	

Notes: [1] Measurement carried out after 15 min functioning
[2] Additional information available on request.

Features

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

Special features

- N_P/N_S = 250 : 1000
- U_d = 4.1 kV AC/1 min
  4 kV DC/5 min
- T_A = −25 °C ... +85 °C.

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 inverters
- Propulsion and braking choppers
- Propulsion converters
- Auxiliary converters
- Battery chargers.

Application Domain

- Railway (fixed installations and onboard).

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Voltage Transducer LV 25-P/SP10

Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz/1 min	4.1	kV
	RMS voltage for DC insulation test, 50 Hz/5 min	4	kV
U_{Ni}	Impulse withstand voltage 1.2/50 µs	16	kV
		Min	
d_{Cp}	Creepage distance	19.5	mm
d_{Cl}	Clearance	19.5	mm
CTI	Comparative tracking index (group IIIa)	175	

Safety

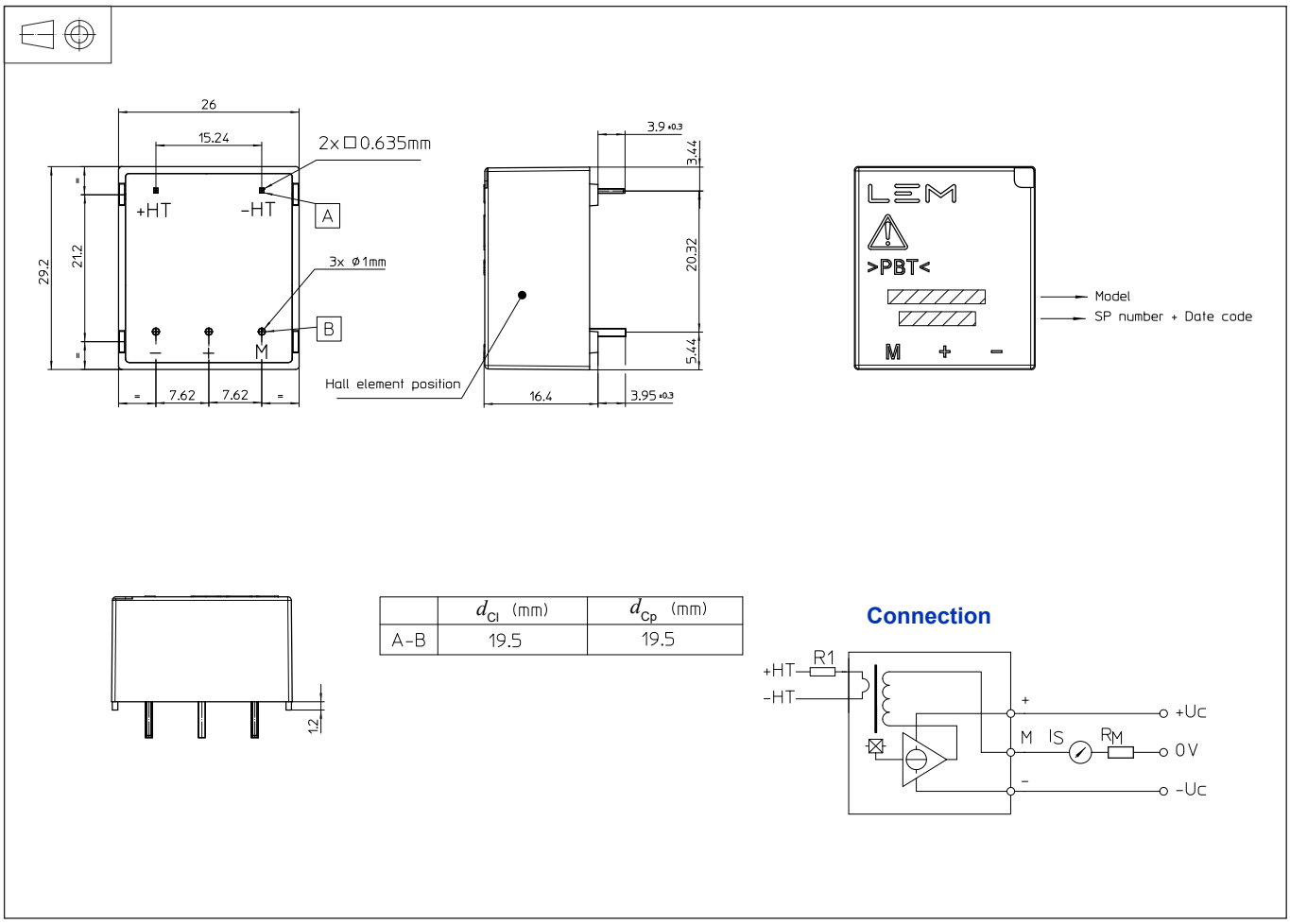
This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.

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/SP10 (in mm)



	d_{Cl} (mm)	d_{Cp} (mm)
A-B	19.5	19.5

Connection

Mechanical characteristics

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

Remark

- I_S is positive when I_P is applied on terminal +HV.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: **https://www.lem.com/en/file/3137/download/.**

Instructions for use of the voltage transducer model LV 25-P/SP10

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 U_{PN} = 250 V a) R_1 = 25 kΩ / 2.5 W, I_P = 10 mA Total error = ±0.8 % of U_{PN} (@ T_A= +25 °C)
b) R_1 = 50 kΩ / 1.25 W, I_P = 5 mA Total error = ±1.6 % of U_{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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