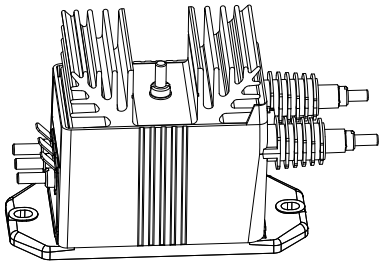
Voltage Transducer LV 100-4000/SP2

U_{PN} = 4000 V

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



Electrical data

U_{PN}	Primary nominal RMS voltage		4000		V
U_{PM}	Primary voltage, measuring range		0 … ±6000		V
I_{PN}	Primary nominal RMS current		2.5		mA
R_M	Measuring resistance		$R_{M\,min}$	$R_{M\,max}$	
	with ±15 V	@ ±4000 V $_{max}$	0	210	Ω
		@ ±6000 V $_{max}$	0	120	Ω
	with ±24 V	@ ±4000 V $_{max}$	0	410	Ω
		@ ±6000 V $_{max}$	110	250	Ω
I_{SN}	Secondary nominal RMS current		50		mA
S	Sensitivity		12.5		µA/V
U_C	Supply voltage (±5 %)		±15 ... 24		V
I_C	Current consumption		< 37 (@ ±24 V) + I_S		mA

Accuracy - Dynamic performance data

ε_{tot}	Total error @ U_{PN}, T_A = 25 °C		±0.9		%
ε_L	Linearity error		< 0.1		%
			Typ	Max	
I_O	Offset current @ U_P = 0, T_A = 25 °C			±0.2	mA
I_{OT}	Temperature variation of I_O	−25 °C … +70 °C	±0.3	±0.6	mA
$t_{D\,90}$	Delay time to 90 % of the final output value for U_{PN} step		200		µs

General data

T_A	Ambient operating temperature		−25 … +70		°C
$T_{A\,st}$	Ambient storage temperature		−40 … +85		°C
N_P/N_S	Turns ratio		40000 : 2000		
P_P	Total primary power loss		10		W
R_P	Resistance of primary winding	@ T_A = 25 °C	1.6		MΩ
R_S	Resistance of secondary winding	@ T_A = 70 °C	55		Ω
m	Mass		790		g
	Standard [1]		EN 50155: 2017		

Note: [1] Additional information available on request.

Features

- Closed loop (compensated) voltage transducer using the Hall effect
- Insulating plastic case recognized according to UL 94-V0
- Primary resistor – incorporated within the housing.

Special features

- U_C = ±15 ... 24 (±5 %) V
- T_A = −25 °C … +70 °C.

Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized delay time
- Wide frequency bandwidth
- High immunity to external interference.

Applications

- Single or three phase inverters
- Proplusion and braking choppers
- Proplusion converters
- Auxiliary converters
- Battery chargers.

Application domain

- Railway (fixed installations and onboard).

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	12 Min	kV
d_{Cp}	Creepage distance	164.8	mm
d_{Cl}	Clearance	47.1	mm
CTI	Comparative tracking index (group I)	600	

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 (e.g. primary connections, 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.

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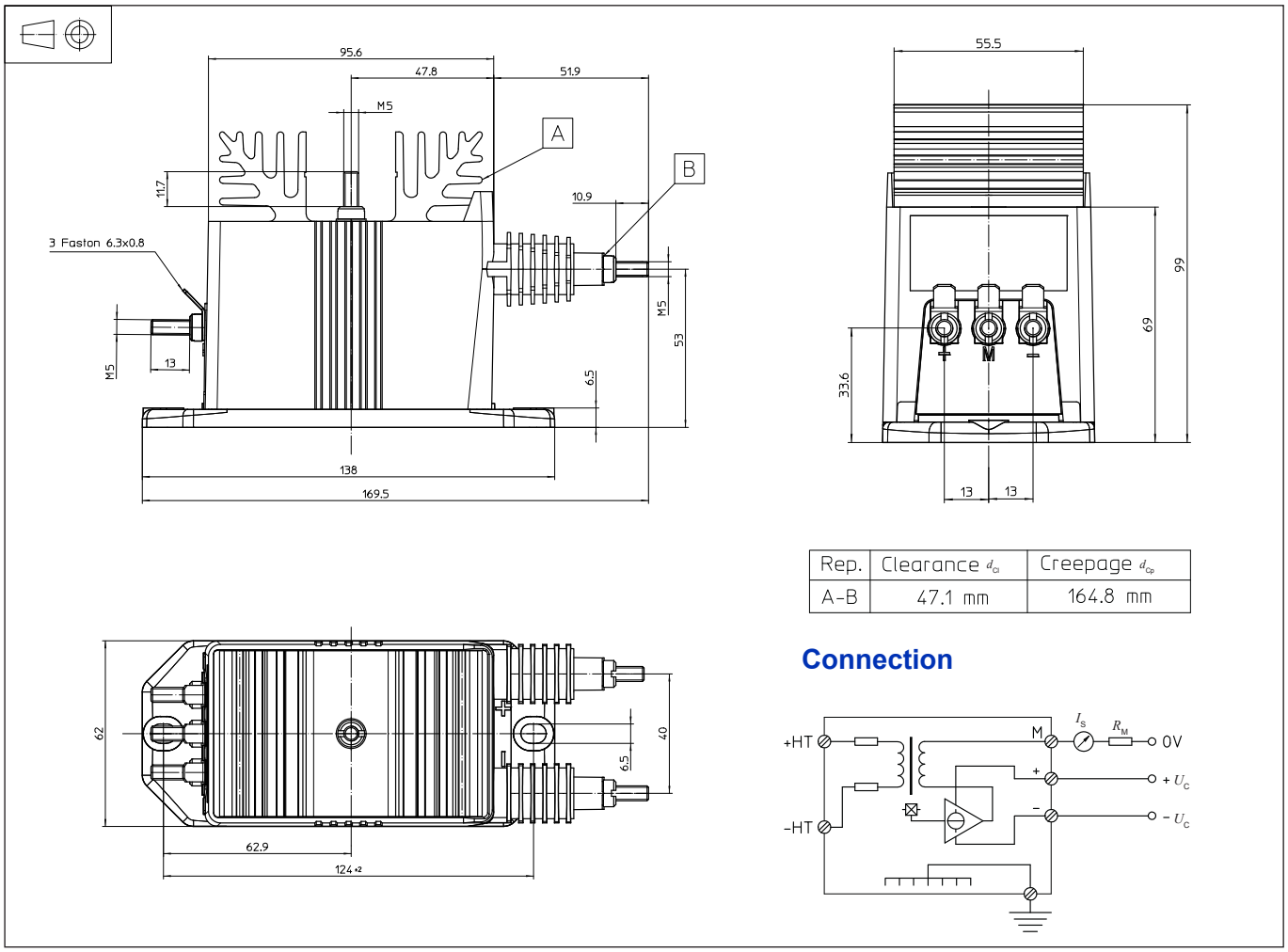
Dimensions LV 100-4000/SP2 (in mm)



Rep.	Clearance d_{Cl}	Creepage d_{Cp}
A-B	47.1 mm	164.8 mm

Connection

Mechanical characteristics

- General tolerance ±0.5 mm
- Transducer fastening 2 holes ⌀ 6.5 mm
  2 M6 steel screws
  Recommended fastening torque 5 N·m
- Connection of primary M5 threaded studs
  Recommended fastening torque 2.2 N·m
- Connection of secondary Faston 6.3 × 0.8 mm
- Connection of ground M5 threaded stud
  Recommended fastening torque 2.2 N·m

Remarks

- I_S is positive when U_P is applied on terminal +HV.
- The primary circuit of the transducer must be linked to the connections where the voltage has to be measured.
- 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/.**

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