Current Transducer LV 100

I_{PN} = 10 mA

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



Electrical data

I_{PN}	Primary nominal RMS current		10		mA
I_{PM}	Primary current, measuring range		0 ±20		mA
R_M	Measuring resistance		$R_{M\,min}$	$R_{M\,max}$	
	with ±15 V	@ ±10 mA $_{max}$	0	150	Ω
		@ ±20 mA $_{max}$	0	50	Ω
I_{SN}	Secondary nominal RMS current		50		mA
N_P/N_S	Turns ratio		10000 : 2000		
U_C	Supply voltage (±5 %)		±15		V
I_C	Current consumption		31+I_S		mA

Accuracy - Dynamic performance data

ε_{tot}	Total error @ I_{PN}, T_A = 25 °C		±0.7		%
ε_L	Linearity error		< 0.1		%
			Typ	Max	
I_O	Offset current @ I_P = 0, T_A = 25 °C			±0.2	mA
I_{OT}	Temperature variation of I_O	0 °C … +70 °C	±0.2	±0.3	mA
$t_{D\,90}$	Delay time to 90 % of the final output value for I_{PN} step [1]			< 20 ... 100	µs

General data

T_A	Ambient operating temperature	0 … +70	°C
$T_{A\,st}$	Ambient storage temperature	−25 … +85	°C
R_P	Resistance of primary winding @ T_A = 70 °C	1900	Ω
R_S	Resistance of secondary winding @ T_A = 70 °C	60	Ω
m	Mass	460	g
	Standard	EN 50178: 1997	

Note: [1] R_1 = 100 kΩ (L/R constant, produced by the resistance and inductance of the primary circuit).

Features

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

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 delay time
- Wide frequency 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.

Application domain

- Industrial.

LEM reserves the right to carry out modifications on its transducers, in order to improve them.

LEM International SA
Route du Nant-d'Avril, 152
1217 Meyrin
www.lem.com

Current Transducer LV 100

Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	6 Min	kV
d_{Cp}	Creepage distance	77	mm
d_{Cl}	Clearance	74.1	mm
CTI	Comparative tracking index (group IIIa)	225	

Applications examples

According to EN 50178 and IEC 61010-1 standards and following conditions:

- Over voltage category OV 3
- Pollution degree PD2
- Non-uniform field

	EN 50178	IEC 61010-1
d_{Cp}, d_{Cl}, U_{Ni}	Rated insulation voltage	Nominal voltage
Basic insulation RMS Voltage (kV)	6	6
Reinforced insulation RMS Voltage (kV)	3	3

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.



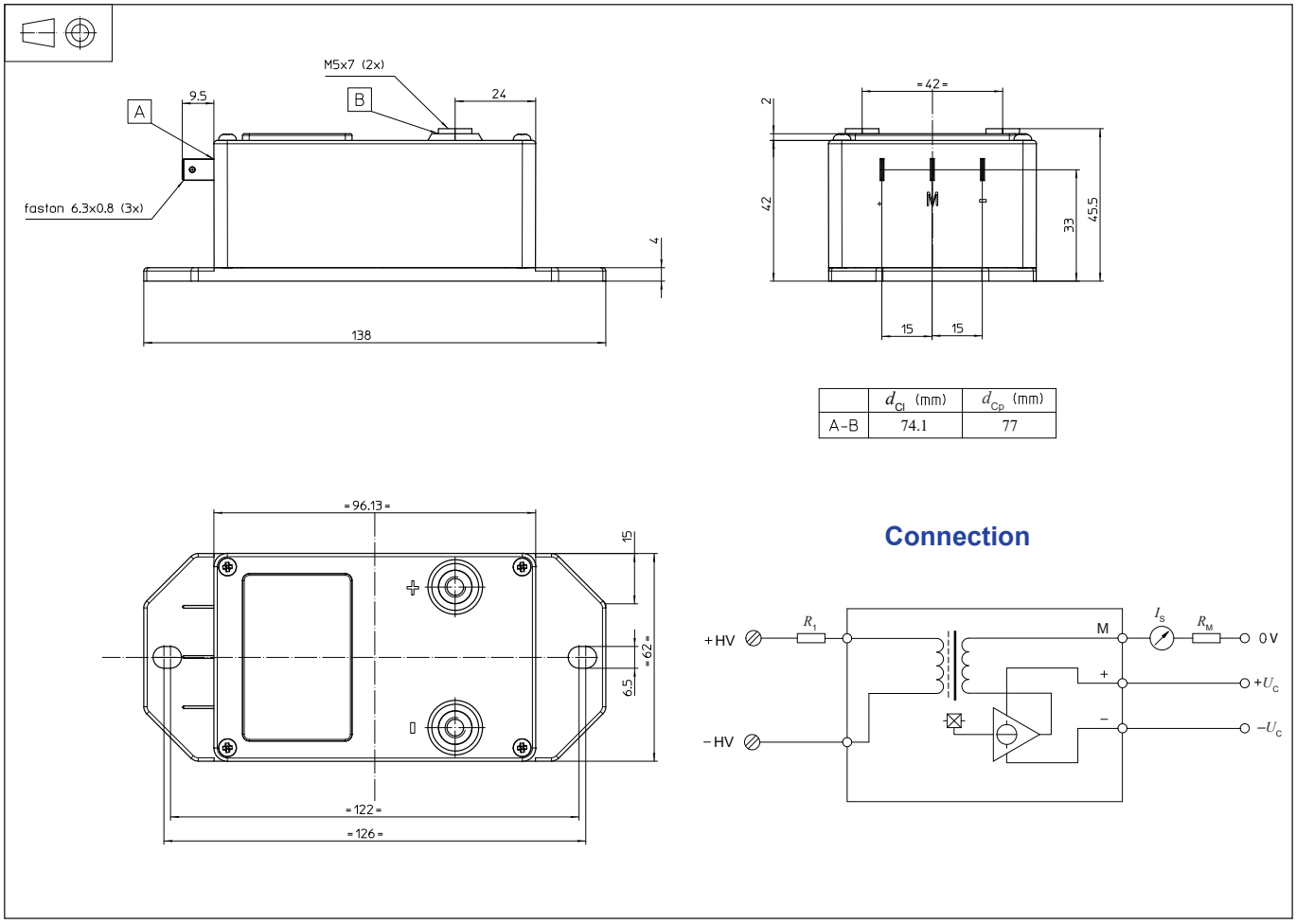
Caution, risk of electrical shock

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.
Mains supply must be able to be disconnected.

LEM reserves the right to carry out modifications on its transducers, in order to improve them.

LEM International SA
Route du Nant-d'Avril, 152
1217 Meyrin
www.lem.com

Dimensions LV 100 (in mm)



	d_{Cl} (mm)	d_{Cp} (mm)
A-B	74.1	77

Connection

Mechanical characteristics

• General tolerance	±0.3 mm
• Transducer fastening	2 holes ⌀ 6.5 mm
	M6 steel screws
Recommended fastening torque	5 N·m
• Connection of primary	M5 steel screws
Recommended fastening torque	2.2 N × m
• Connection of secondary	Faston 6.3 × 0.8 mm

Remarks

- I_S is positive when U_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.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.

Instructions for use of the current transducer model LV 100

Primary resistor R_1: the transducer's optimum total error 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} = 1000 V a) R_1 = 100 kΩ/40 W, I_P = 10 mA Total error = ±0.7 % of U_{PN} (@ T_A = +25 °C)
b) R_1 = 400 kΩ/5 W, I_P = 2.5 mA Total error = ±2.5 % 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 insulation, this transducer is suitable for measuring nominal voltages from 100 to 2500 V.

27January2023/Version 10

LEM reserves the right to carry out modifications on its transducers, in order to improve them.

LEM International SA
Route du Nant-d'Avril, 152
1217 Meyrin
www.lem.com