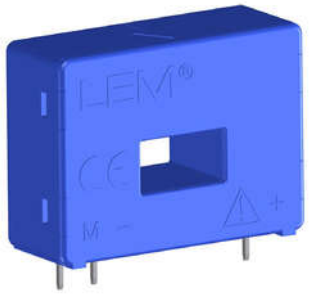
Current Transducer LA 55-P

I_{PN} = 50 A

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				50			A
I_{PM}	Primary current, measuring range				0 … ±70			A
R_M	Measuring resistance		@ T_A = 70 °C		T_A = 85 °C			
			$R_{M\,min}$	$R_{M\,max}$	$R_{M\,min}$	$R_{M\,max}$		
	with ±12 V	@ ±50 A_{max}	10	100	60	95		Ω
		@ ±70 A_{max}	10	50	60 [1]	60 [1]		Ω
	with ±15 V	@ ±50 A_{max}	50	160	135	155		Ω
		@ ±70 A_{max}	50	90	135 [2]	135 [2]		Ω
I_{SN}	Secondary nominal RMS current				50			mA
N_P/N_S	Turns ratio				1 : 1000			
U_C	Supply voltage (±5 %)				±12 ... 15			V
I_C	Current consumption (±2)				10 (@ ±15 V) + I_S			mA

Accuracy - Dynamic performance data

ε	Error @ I_{PN}, T_A = 25 °C	@ ±15 V (±5 %)	±0.65		%
		@ ±12 … 15 V (±5 %)	±0.90		%
ε_L	Linearity error		< 0.15		%
			Typ	Max	
I_O	Offset current @ I_P = 0, T_A = 25 °C			±0.2	mA
I_{OM}	Magnetic offset current [3] @ I_P = 0 and specified R_M, after an overload of 3 × I_{PN}			±0.3	mA
I_{OT}	Temperature variation of I_O	−25 °C … +85 °C	±0.1	±0.6	mA
		−40 °C … −25 °C	±0.2	±1.0	mA
$t_{D\,10}$	Delay time @ 10 % of I_{PN}		< 500		ns
$t_{D\,10}$	Delay time to 90 % of I_{PN} [4]		< 1		µs
BW	Frequency bandwidth (−1 dB)		DC … 200		kHz

General data

T_A	Ambient operating temperature		−40 … +85	°C
T_S	Ambient storage temperature		−40 … +90	°C
R_S	Resistance of secondary winding	@ T_A = 70 °C	80	Ω
		@ T_A = 85 °C	85	Ω
m	Mass		18	g
	Standards		EN 50178: 1997	
			UL 508: 2010	

Notes: [1] Measuring range limited to ±60 A_{max}
[2] Measuring range limited to ±55 A_{max}
[3] Result of the coercive field of the magnetic circuit
[4] For a di/dt = 200 A/µs.

Features

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

Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized response time
- Wide frequency bandwidth
- No insertion losses
- High immunity to external interference
- Current overload capability.

Applications

- AC variable speed drives and servo motor drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications.

Application domain

- Industrial.

LEM reserves the right to carry out modifications on its transducers, in order to improve them, without prior notice

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz/1 min	2.5	kV
U_{Ni}	Impulse withstand voltage 1.2/50 µs	5.7	kV
		Min	
d_{Cp}	Creepage distance	5	mm
d_{Cl}	Clearance	5	mm
CTI	Comparative tracking index (group I)	600	

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	300 V	300 V
Reinforced insulation	150 V	150 V

Safety

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

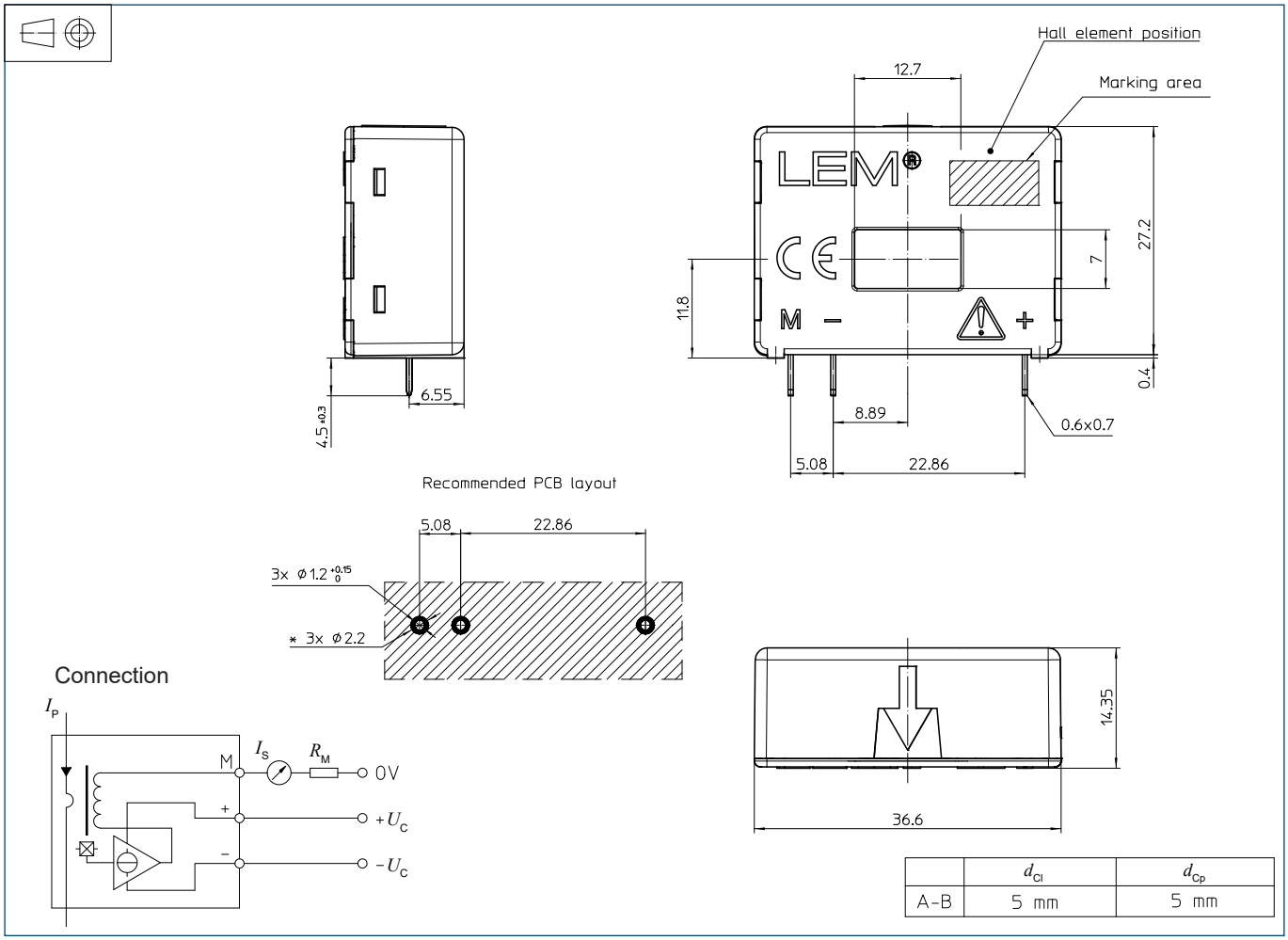


This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.



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 LA 55-P (in mm)



	d_{Cl}	d_{Cp}
A-B	5 mm	5 mm

Mechanical characteristics

- General tolerance ±0.2 mm
- Primary through-hole 12.7 × 7 mm
- Fastening & connection of secondary 3 pins
  0.6 × 0.7 mm
- Recommended PCB hole ø 1.2 mm

Remarks

- I_S is positive when I_P flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 90 °C.
- 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/.**
- Dynamic performances (di/dt and delay time) are best with a single bar completely filling the primary hole.
- In order to achieve the best magnetic coupling, the primary windings have to be wound over the top edge of the device.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.