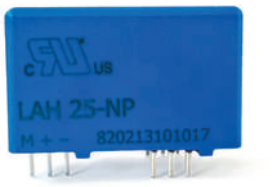
Current Transducer LAH 25-NP

I_{PN} = 8-12-25 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			25			A
I_{PM}	Primary current, measuring range [1]			0 … ±55			A
R_M	Measuring resistance @ [2]			T_A = 70 °C		T_A = 85 °C	
				$R_{M\,min}$	$R_{M\,max}$	$R_{M\,min}$	$R_{M\,max}$
	with ±12 V	@ I_{PN} [±At DC]		0	284	0	280 Ω
		@ I_{PN} [At RMS] [3]		0	182	0	178 Ω
	with ±15 V	@ I_{PN} [±At DC]		67	398	70	394 Ω
		@ I_{PN} [At RMS] [3]		67	263	70	259 Ω
		@ $I_P < I_{PN}$ [4]					
I_{SN}	Secondary nominal RMS current			25			mA
N_P/N_S	Turns ratio			1-2-3 : 1000			
U_C	Supply voltage (±5 %)			±12 … 15			V
I_C	Current consumption			10 (@ ±15 V) + I_S			mA

Accuracy - Dynamic performance data

ε_{tot}	Total error [5] @ I_{PN}, T_A = 25 °C	±0.3		%
ε_L	Linearity error	< 0.2		%
		Typ	Max	
I_O	Offset current referred to primary @ I_P = 0, T_A = 25 °C		±150	mA
I_O	Offset current referred to secondary @ I_P = 0, T_A = 25 °C		±0.15	mA
I_{OM}	Magnetic offset current @ I_P = 0, referred to secondary and specified R_M, after an overload of 5 × I_{PN}	±0.20	±0.25	mA
I_{OT}	Temperature variation of I_O, referred to secondary			
	0 °C … +70 °C	±0.10	±0.60	mA
	–25 °C … +85 °C	±0.10	±0.70	mA
$t_{D\,10}$	Delay time to 10 % of the final output value for I_{PN} step [6]	< 200		ns
$t_{D\,90}$	Delay time to 90 % of the final output value for I_{PN} step [6]	< 500		ns
BW	Frequency bandwidth (−1 dB)	DC … 200		kHz

General data

T_A	Ambient operating temperature		–25 … +85	°C
$T_{A\,st}$	Ambient storage temperature		–40 … +90	°C
R_S	Resistance of secondary winding	@ T_A = 70 °C	72	Ω
		@ T_A = 85 °C	76	Ω
m	Mass		20	g
	Standards		EN 50178: 1997	

Notes: [1] During 10 s, with R_M ≤ 109 Ω (U_C = ±15 V)

[2] Calculation of $R_{M\,min}$ with the maximum power of the transistors = 0.307 W @ 70 °C and the maximum power of the transistors = 0.302 W @ 85 °C

[3] Sinusoidal wave 50 Hz

[4] The minimum measuring resistance R_M may be lower (see “LAH technical information” leaflet)

[5] Without I_O & I_{OM}

[6] For a di/dt = 100 A/µs.

Features

- Closed loop (compensated) multi-range current transducer using the Hall effect
- Printed circuit board mounting
- Insulating plastic case recognized according to UL 94-V0.

Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized delay time
- 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.

23March2023/Version 12

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 LAH 25-NP

Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	5	kV
U_{Ni}	Impulse withstand voltage 1.2/50 µs	12	kV
U_t	Partial discharge RMS test voltage (q_m < 10 pC)	> 2	kV
		Min	
d_{Cp}	Creepage distance [1)]	12	mm
d_{Cl}	Clearance [1)]	12	mm
CTI	Comparative tracking index (group IIIa)	175	

Note: [1)] On PCB with soldering pattern UTEC93-703.

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	1000 V	1000 V
Reinforced insulation	500 V	500 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.

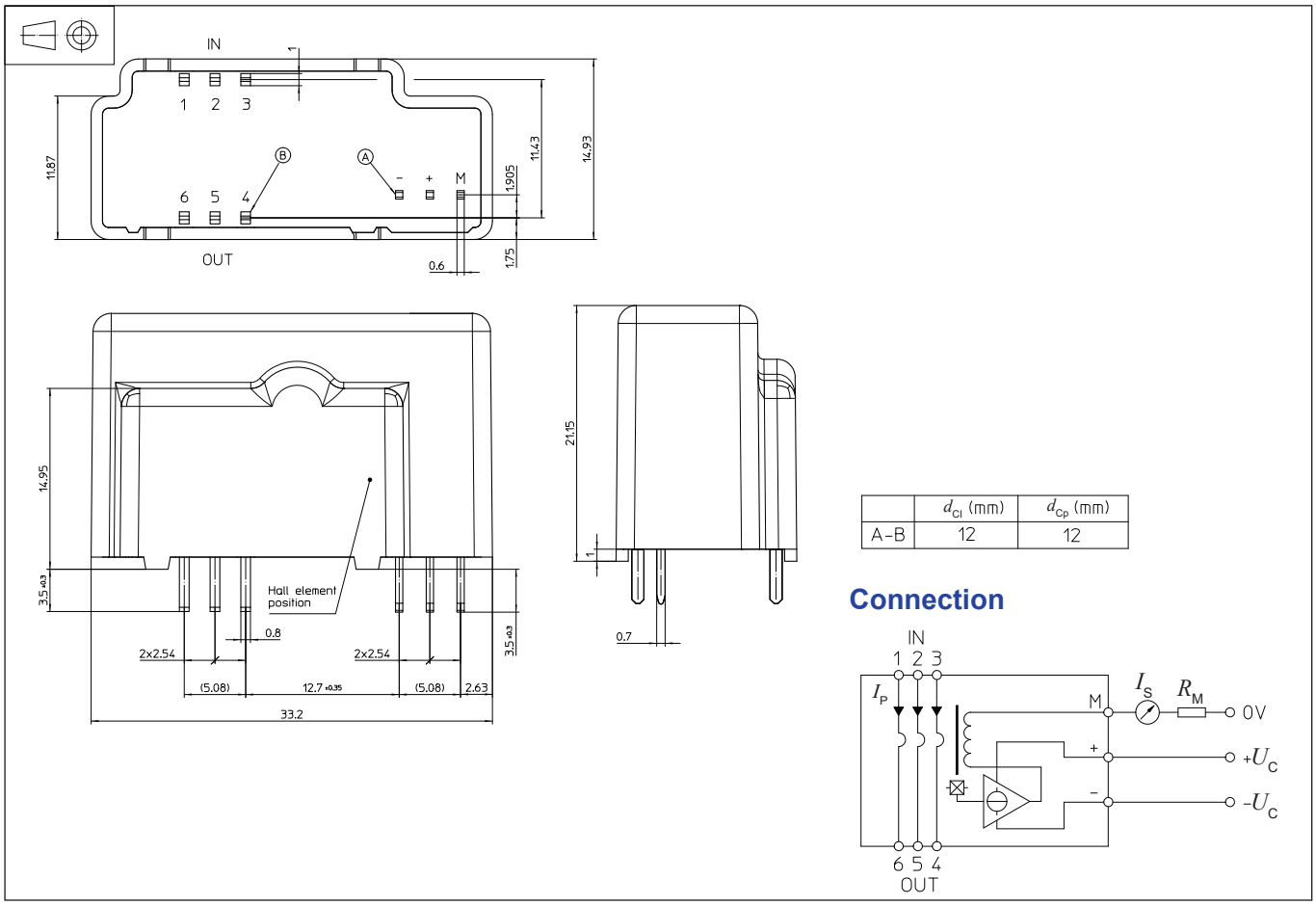


Caution, risk of electrical shock
When operating the transducer, certain parts of the module can carry hazardous voltage (e.g. primary busbar, power supply). Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a build-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used.
Main supply must be able to be disconnected.

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

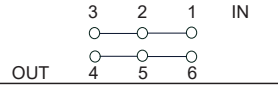
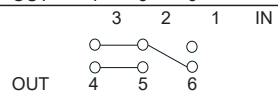
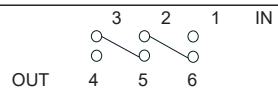
LEM International SA
Route du Nant-d'Avril, 152
1217 Meyrin
www.lem.com

Dimensions LAH 25-NP (in mm)



	d_{Cl} (mm)	d_{Cp} (mm)
A-B	12	12

Connection

Number of primary turns	Primary current nominal I_{PN} [A]	Primary current maximum I_P [A]	Nominal output current I_{SN} [mA]	Turns ratio N_P/N_S	Primary resistance R_P [mΩ]	Primary insertion inductance L_P [µH]	Recommended PCB connections
1	25	55	25	1 : 1000	0.18	0.012	
2	12	27	24	2 : 1000	0.81	0.054	
3	8	18	24	3 : 1000	1.62	0.110	

Mechanical characteristics

- General tolerance ±0.2 mm
- Fastening & connection of primary 6 pins 1 mm × 0.8 mm
  Recommended PCB hole 1.5 mm
- Fastening & connection of secondary 3 pins 0.7 mm × 0.6 mm
  Recommended PCB hole 1.2 mm

Remarks

- I_S is positive when I_P flows from terminals 1, 2, 3 (IN) to terminals 6, 5, 4 (OUT).
- The jumper temperature and PCB should not exceed 100 °C.
- This is a standard model. For different versions (supply voltages, turns ratio, unidirectional measurements...), please contact us.

23March2023/Version 12

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