

Current Transducer LAH 25-NP

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



$$I_{PN} = 8-12-25 \text{ A}$$



Electrical data

I_{PN}	Primary nominal rms current	25	At				
I_{PM}	Primary current, measuring range ¹⁾	0 ... 55	At				
R_M	Measuring resistance @ ²⁾	$T_A = 70 \text{ }^\circ\text{C}$		$T_A = 85 \text{ }^\circ\text{C}$			
			$R_{M \min}$	$R_{M \max}$	$R_{M \min}$	$R_{M \max}$	
		with $\pm 12 \text{ V}$	@ I_{PN} [\pm At DC]	0	284	0	280 Ω
			@ I_{PN} [At rms] ³⁾	0	182	0	178 Ω
		with $\pm 15 \text{ V}$	@ I_{PN} [\pm 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				
K_N	Conversion ratio	1-2-3 : 1000					
U_C	Supply voltage ($\pm 5 \%$)	$\pm 12 \dots 15$	V				
I_C	Current consumption	10 (@ $\pm 15 \text{ V}$) + I_S	mA				

Accuracy - Dynamic performance data

X	Accuracy ⁵⁾ @ I_{PN} , $T_A = 25 \text{ }^\circ\text{C}$	± 0.3	%
ϵ_L	Linearity error	< 0.2	%
I_O	Offset current @ $I_p = 0$, $T_A = 25 \text{ }^\circ\text{C}$	Typ	Max
			± 0.15
I_{OM}	Magnetic offset current @ $I_p = 0$, and specified R_M , after an overload of $5 \times I_{PN}$	± 0.20	± 0.25 mA
I_{OT}	Temperature variation of I_O $0 \text{ }^\circ\text{C} \dots +70 \text{ }^\circ\text{C}$ $-25 \text{ }^\circ\text{C} \dots +85 \text{ }^\circ\text{C}$	± 0.10	± 0.60 mA
		± 0.10	± 0.70 mA
t_{ra}	Reaction time to 10 % of I_{PN}	< 200	ns
t_r	Step response time ⁶⁾ to 90 % of I_{PN}	< 500	ns
di/dt	di/dt accurately followed	> 200	A/ μ s
BW	Frequency bandwidth (-1 dB)	DC ... 200	kHz

General data

T_A	Ambient operating temperature	$-25 \dots +85$	$^\circ\text{C}$
T_S	Ambient storage temperature	$-40 \dots +90$	$^\circ\text{C}$
R_S	Resistance of secondary winding @ $T_A = 70 \text{ }^\circ\text{C}$	72	Ω
		@ $T_A = 85 \text{ }^\circ\text{C}$	76 Ω
m	Mass	20	g
	Standards	EN 50178: 1997	

Notes: ¹⁾ During 10 s, with $R_M \leq 109 \text{ } \Omega$ ($U_C = \pm 15 \text{ V}$)

²⁾ Calculation of $R_{M \min}$ with the maximum power of the transistors = 0.307 W @ $70 \text{ }^\circ\text{C}$ and the maximum power of the transistors = 0.302 W @ $85 \text{ }^\circ\text{C}$

³⁾ Sinusoidal wave 50 Hz

⁴⁾ The minimum measuring resistance R_M may be lower (see "LAH technical information" leaflet)

⁵⁾ Whithout I_O & I_{OM}

⁶⁾ With a di/dt of 100 A/ μ s.

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 response 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.

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Insulation coordination

U_d	Rms voltage for AC insulation test, 50 Hz, 1 min	5	kV
\hat{U}_w	Impulse withstand voltage 1.2/50 μ s	12	kV
U_e	Partial discharge extinction rms voltage @ 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
$d_{cp}, d_{cl}, \hat{U}_w$	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.



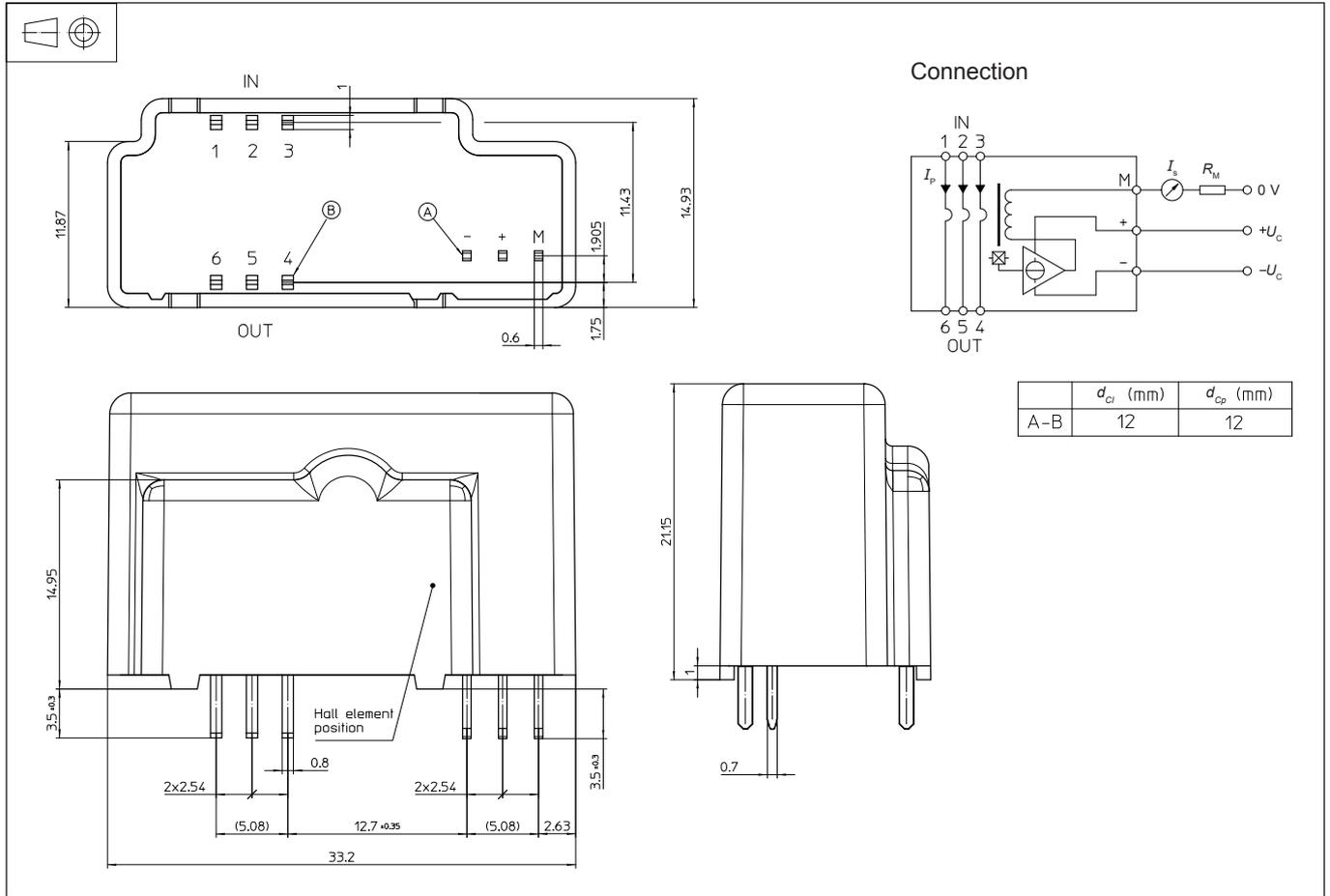
Caution, risk of electrical shock

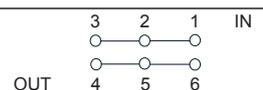
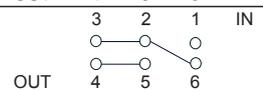
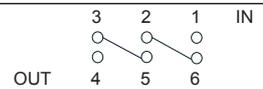
When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply). Ignoring this warning can lead to injury and/or cause serious damage.

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 LAH 25-NP (in mm)



Number of primary turns	Primary current nominal I _{PN} [A]	Primary current maximum I _P [A]	Nominal output current I _{SN} [mA]	Turns ratio K _N	Primary resistance R _p [mW]	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.