

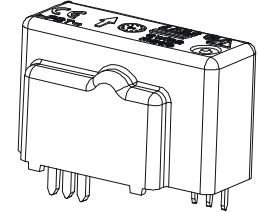
Current Transducer LAH 50-P/SP1

$I_{PN} = 50\text{ A}$

For the electronic measurement of currents: DC, AC, pulsed ..., with a galvanic isolation between the primary circuit (high power) and the secondary circuit (electronic circuit).



16004



Electrical data

I_{PN}	Primary nominal current rms	50	A				
I_{PM}	Primary current, measuring range ¹⁾	0 .. ± 90	A				
R_M	Measuring resistance @	$T_A = 70\text{ °C}$		$T_A = 85\text{ °C}$			
		R_{Mmin}	R_{Mmax}	R_{Mmin}	R_{Mmax}		
		with ± 15 V @ $I_{PN} [\pm A_{DC}]$		22	163	58	159
		@ $I_{PN} [A_{RMS}]^{2)}$		22	93	58	89
@ $I_P I_{PN}^{2)}$							
I_{SN}	Secondary nominal current rms	50	mA				
K_N	Conversion ratio	1 : 1000					
V_C	Supply voltage (± 5 %)	± 15	V				
I_C	Current consumption	10 + I_s	mA				

Features

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

Special features

- $I_{PM} = 0 \dots \pm 90\text{ A}$
- $K_N = 1 : 1000$.

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.

Accuracy - Dynamic performance data

X	Accuracy ³⁾ @ I_{PN} , $T_A = 25\text{ °C}$	± 0.25	%	
\mathcal{E}_L	Linearity error	< 0.15	%	
I_O	Offset current @ $T_A = 25\text{ °C}$	Typ	Max	
			± 0.3	
I_{OM}	Magnetic offset current @ $I_P = 0$ and specified R_M , after an overload of $5 \times I_{PN}$	± 0.2	± 0.3	
I_{OT}	Temperature variation of I_O	0 °C .. + 70 °C	± 0.2	± 0.6
		- 25 °C .. + 85 °C	± 0.2	± 0.8
t_{ra}	Reaction time @ 10 % of I_{PN}	< 200	ns	
t_r	Response time ⁴⁾ to 90 % of I_{PN} step	< 500	ns	
di/dt	di/dt accurately followed	> 200	A/μs	
BW	Frequency bandwidth (- 1 dB)	DC .. 200	kHz	

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.

General data

T_A	Ambient operating temperature	- 25 .. + 85	°C
T_S	Ambient storage temperature	- 40 .. + 90	°C
R_S	Secondary coil resistance	@ $T_A = 70\text{ °C}$	72
		@ $T_A = 85\text{ °C}$	76
m	Mass		22
		Standards	EN 50178: 1997

Application domain

- Industrial.

Notes: ¹⁾ During 10 s, with $R_M \leq 53\ \Omega$
²⁾ The measuring resistance R_{Mmin} may be lower (see "LAH Technical Information" leaflet or the "LAH Application Note")
³⁾ Without I_O & I_{OM}
⁴⁾ With a di/dt of 100 A/μs.

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Isolation characteristics

V_d	Rms voltage for AC isolation test, 50/60 Hz, 1 mn	5	kV
\hat{V}_w	Impulse withstand voltage 1.2/50 μ s	12	kV
V_e	Partial discharge extinction voltage rms @ 10pC	>2	kV
		Min	
dCp	Creepage distance ⁵⁾	11.75	mm
dCl	Clearance distance ⁵⁾	11.75	mm
CTI	Comparative Tracking Index (Group III a)	175	

Application 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
dCp, dCl	Rated isolation voltage	Nominal voltage
Single isolation	1000 V	1000 V
Reinforced isolation	500 V	500 V

Note: ⁵⁾ On PCB with soldering pattern UTEC93-703.

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 (eg. primary busbar, power supply).

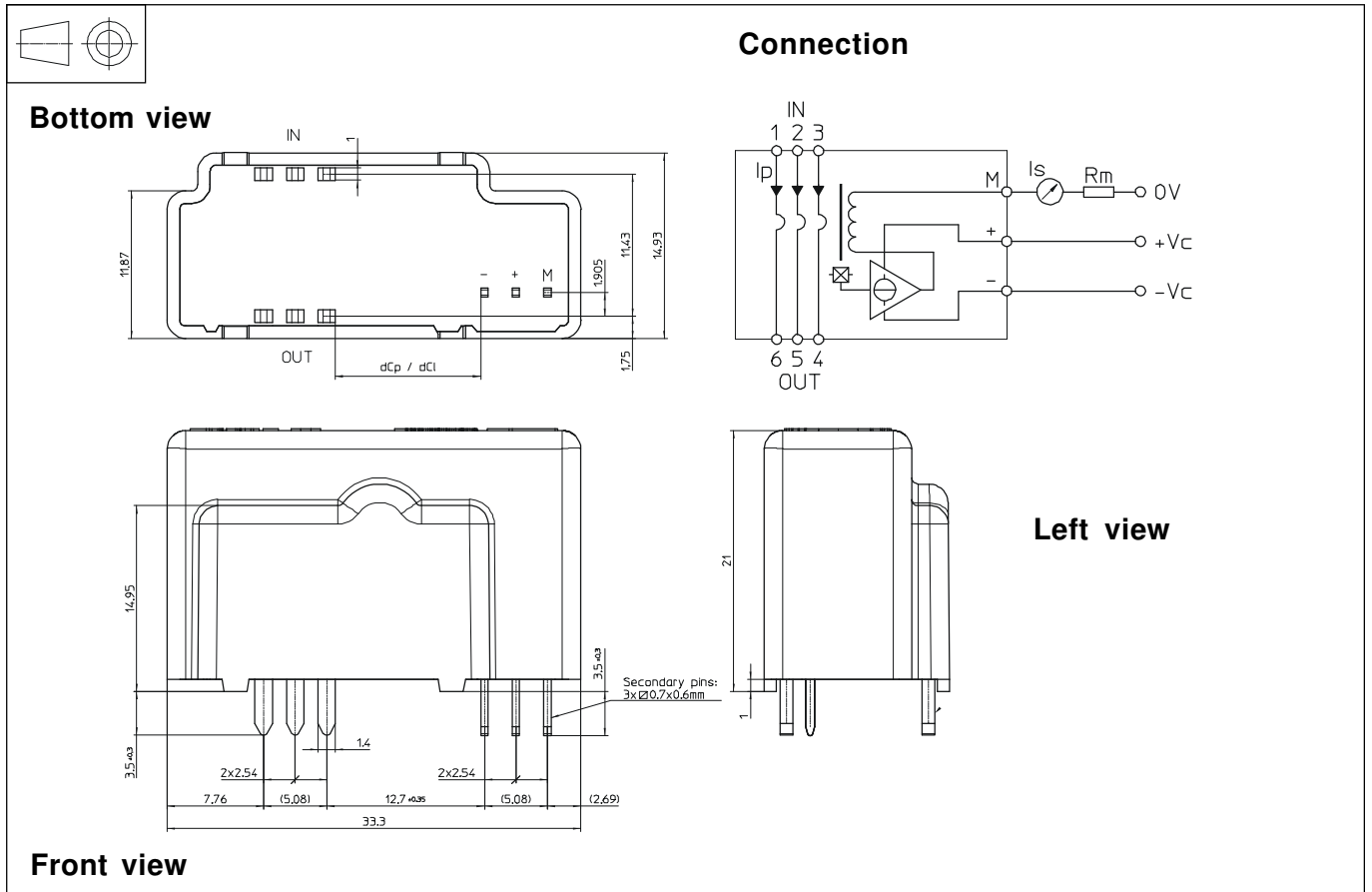
Ignoring this warning can lead to injury and/or cause serious damage.

This transducer is a built-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 50-P/SP1 (in mm. 1 mm = 0.0394 inch)



Number of primary turns	Primary current		Nominal output current I_{SN} [mA]	Turns ratio K_N	Primary resistance R_P [mΩ]	Primary insertion inductance L_P [μH]
	nominal I_{PN} [A]	maximum I_P [A]				
1	50	90	50	1 : 1000	0.12	0.008

Mechanical characteristics

- General tolerance ± 0.2 mm
- Fastening & connection of primary
Recommended PCB hole 2 mm
- Fastening & connection of secondary
Recommended PCB hole 1.2 mm

Remarks

- I_S is positive when I_P flows from IN to OUT.
- The jumper temperature and PCB should not exceed 100 °C.