

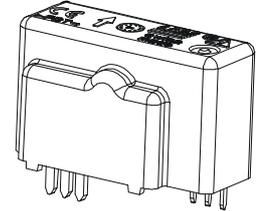
# Current Transducer LAH 50-P/SP1

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

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 <sup>1)</sup>	0 .. ± 90	A		
$R_M$	Measuring resistance @ with ± 15 V	$T_A = 70^\circ\text{C}$	$T_A = 85^\circ\text{C}$		
				$R_{Mmin}$ $R_{Mmax}$	$R_{Mmin}$ $R_{Mmax}$
		@ $I_{PN} [\pm A_{DC}]$	22 163	58 159	Ω
		@ $I_{PN} [A_{RMS}]^2$	22 93	58 89	Ω
@ $I_P I_{PN}^2$					
$I_{SN}$	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		

## Accuracy - Dynamic performance data

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

## General data

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

- 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.

## 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

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

## 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.

## 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.

## Current Transducer LAH 50-P/SP1

### 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 $\mu$ s	12	kV
$V_e$	Partial discharge extinction voltage rms @ 10pC	>2	kV
		Min	
dCp	Creepage distance <sup>5)</sup>	11.75	mm
dCl	Clearance distance <sup>5)</sup>	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: <sup>5)</sup> 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).

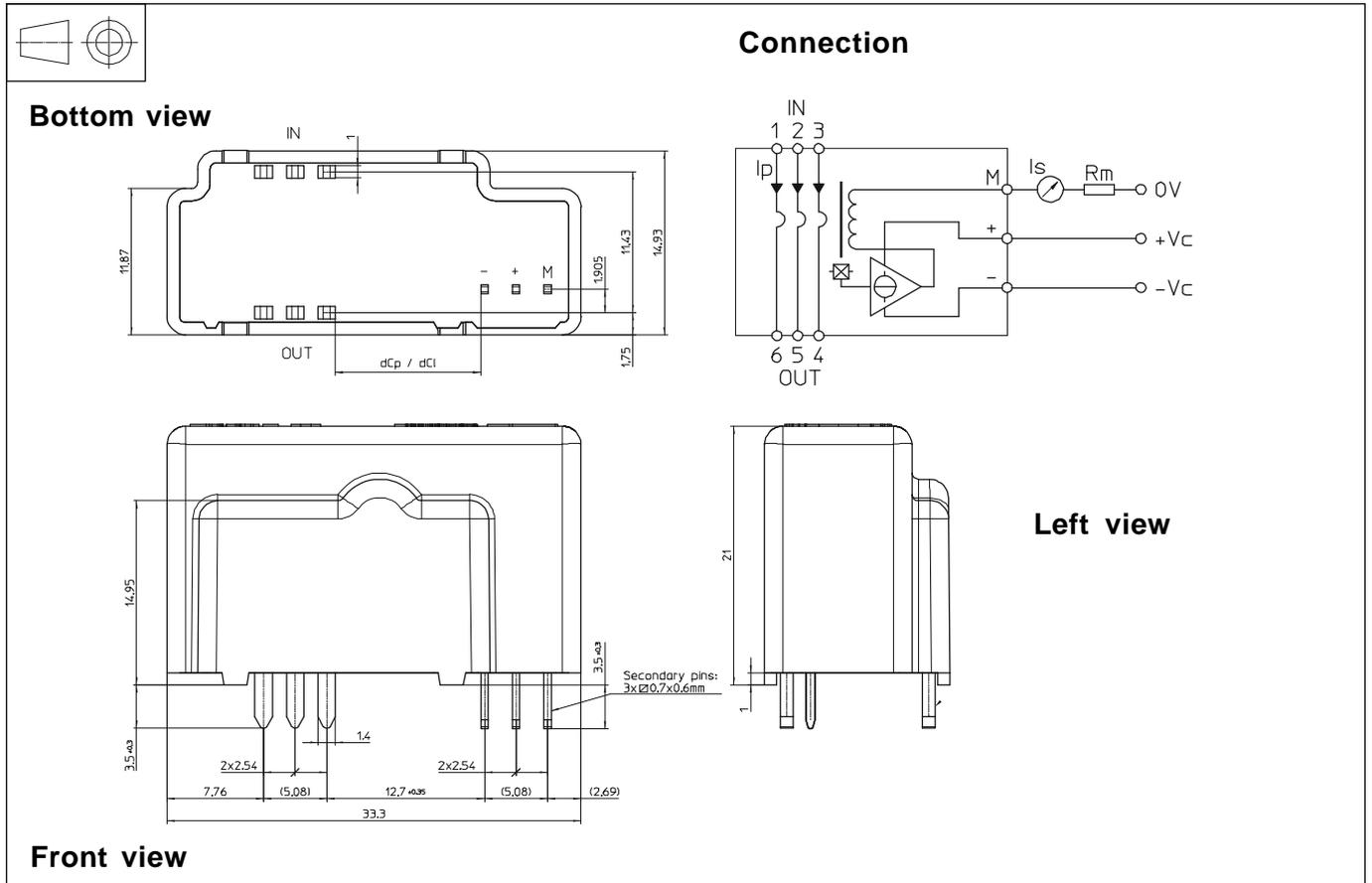
Ignoring this warning can lead to injury and/or cause serious damage.

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  $\pm 0.2$  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.