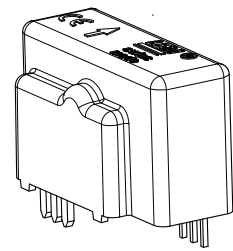


## Current Transducer LAS 50-TP/SP1

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

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



### Electrical data

$I_{PN}$	Primary nominal current rms	50	A
$I_{PM}$	Primary current, measuring range	0 .. $\pm 150$	A
$V_{OUT}$	Analogue output voltage	$V_C/2 \pm (0.625 \cdot I_P/I_{PN})V$ @ $I_P = 0$ $V_C/2 \pm 0.025$	V
$R_L$	Output load resistance	$\geq 2$	k $\Omega$
$R_{OUT}$	Output internal resistance	$< 20$	$\Omega$
$V_{REF}$	Internal reference voltage	$2.5 \pm 0.025$	V
	$V_{REF}$ load resistance	$\geq 1$	M $\Omega$
	$V_{REF}$ internal resistance	200	$\Omega$
	$V_{REF}$ external resistance	2.0 .. 2.8	V
$C_L$	Maximum output capacitive load	1	nF
$V_C$	Supply voltage ( $\pm 5\%$ )	5	V
$I_C$	Current consumption @ $V_C = 5 \text{ V}$	18	mA

### Accuracy - Dynamic performance data

$X$	Accuracy <sup>1)</sup> @ $I_{PN}$ , $T_A = 25^\circ\text{C}$	$< \pm 1$	%
$\epsilon_L$	Linearity error 0 .. $I_{PN}^{(2)}$	$< 0.7$	%
		Typ	Max
$TCV_{OUT}$	Thermal drift of $V_{OUT}$ @ $I_P = 0$	-40 $^\circ\text{C}$ .. +85 $^\circ\text{C}$	80 120 ppm/K
$TCV_{OUT}/V_{REF}$	Thermal drift of $V_{OUT}/V_{REF}$ @ $I_P = 0$	-40 $^\circ\text{C}$ .. +85 $^\circ\text{C}$	50 80 ppm/K
$TC\epsilon_G$	Thermal drift of the sensitivity	-10 $^\circ\text{C}$ .. +85 $^\circ\text{C}$	150 300 ppm/K
		-40 $^\circ\text{C}$ .. -10 $^\circ\text{C}$	400 700 ppm/K
$V_{OM}$	Residual voltage @ $I_P = 0$ after an overload of $2 \times I_{PNDC}$	$\pm 5$	mV
$t_{ra}$	Reaction time @ 10 % of $I_{PN}$	$< 200$	ns
$t_r$	Response time @ 90 % of $I_{PN}$	$< 500$	ns
$di/dt$	di/dt accurately followed	$> 100$	A/ $\mu\text{s}$
	Output noise without external filter	$< 10$	mVpp
<b>BW</b>	Frequency bandwidth (-1 dB)	DC .. 100	kHz

### General data

$T_A$	Ambient operating temperature	-40 .. +85	$^\circ\text{C}$
$T_S$	Ambient storage temperature	-40 .. +100	$^\circ\text{C}$
$m$	Mass	20	g
	Standards	EN 50178: 1997	

All data are given with a  $R_L = 10 \text{ k}\Omega$ .

Notes: <sup>1)</sup> Excluding electrical, magnetic offsets and linearity

<sup>2)</sup> Including magnetic offset.

### Features

- Current transducer using Eta-technology
- Unipolar voltage supply
- Isolated plastic case recognized according to UL 94-V0
- Compact design for PCB mounting
- Extended measuring range.

### Special feature

- $V_{OUT}$  @ 0 A is ratiometric and equal to  $V_C/2$ .

### 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 LAS 50-TP/SP1

### Isolation characteristics

$V_d$	Rms voltage for AC isolation test, 50 Hz, 1 min	5	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 $\mu$ s	> 8	kV
$V_e$	Rms voltage for partial discharge extinction @ 10 pC	> 2	kV
		Min	
<b>dCp</b>	Creepage distance <sup>1)</sup>	10.7	mm
<b>dCl</b>	Clearance distance <sup>1)</sup>	10.7	mm
<b>CTI</b>	Comparative Tracking Index (group IIIa)	175	

**Note:** <sup>1)</sup> 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
<b>dCp, dCl, <math>\hat{V}_w</math></b>	Rated isolation voltage	Nominal voltage
Single isolation	1000 V	1000 V
Reinforced isolation	500 V	500 V

### 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).

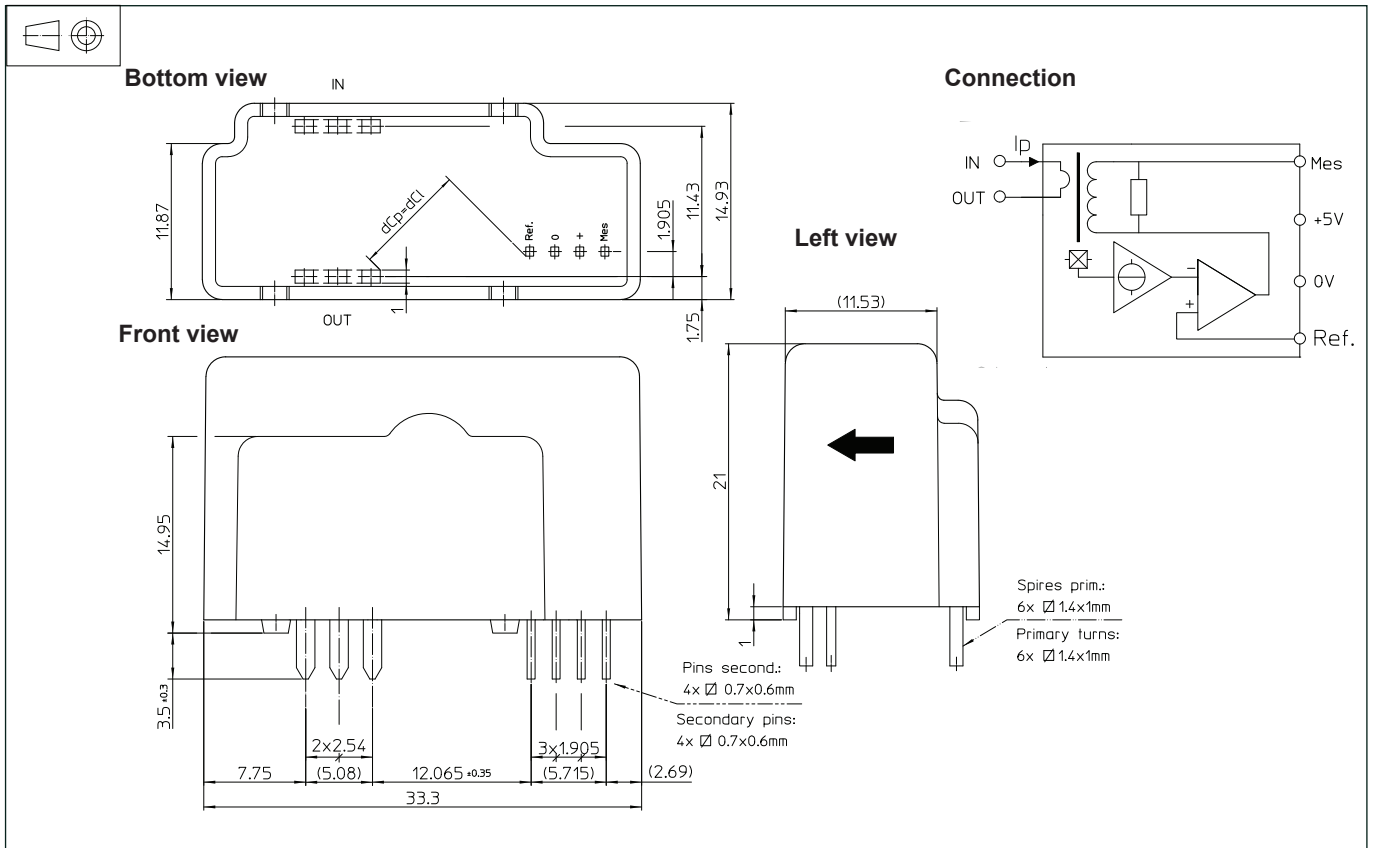
Ignoring this warning can lead to injury and/or cause serious damage.

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



Number of primary turns	Primary current		Nominal output voltage	Primary resistance	Primary insertion inductance
	Nominal	Maximal			
	$I_{PN}$ [A]	$I_P$ [A]	$V_{OUT}$ [V]	$R_p$ [m $\Omega$ ]	$L_p$ [ $\mu$ H]
1	50	150	$V_C/2 \pm 0.625$	0.12	0.008

### Mechanical characteristics

- General tolerance  $\pm 0.2$  mm
- Fastening & connection of primary 6 pins 1.4 x 1mm  
Recommended PCB hole 2 mm
- Fastening & connection of secondary 4 pins 0.7 x 0.6 mm  
Recommended PCB hole 1.2 Nm

### Remarks

- $V_{OUT}$  is positive when  $I_p$  flows from Terminals "IN" to terminal "OUT".
- Temperature of the primary conductor should not exceed 100°C.

### Output voltage - Primary current

( $V_C/2 = 2.5$  V in this example)

