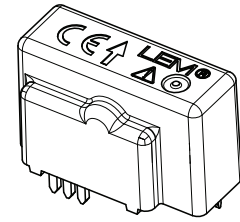


Current Transducer LAS 100-TP/SP1

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

$$I_{PN} = 100 \text{ A}$$



Electrical data

I_{PN}	Primary nominal RMS current	100	A
I_{PM}	Primary current, measuring range	0 ... ±200	A
	At frequency > 1 kHz	0 ... ±300	A
V_{out}	Output voltage (Analog) @	I_P	$U_C/2 \pm (0.625 \times I_P/I_{PN}) \text{ V}$
		$I_P = 0$	$U_C/2 \pm 0.025 \text{ V}$
R_L	Load resistance	≥ 2	kΩ
R_{out}	Output internal resistance	< 20	Ω
V_{ref}	Reference voltage	2.5 ± 0.025	V
	V_{ref} load resistance	≥ 1	MΩ
	V_{ref} internal resistance	200	Ω
	V_{ref} external voltage	2.0 ... 2.8	V
C_L	Capacitive loading	≤ 1	nF
U_C	Supply voltage (±5 %)	5	V
I_C	Current consumption @ $U_C = 5 \text{ V}$	18	mA
	typ		

Accuracy - Dynamic performance data

X	Accuracy ¹⁾ @ I_{PN} , $T_A = 25 \text{ °C}$	±1	%
ϵ_L	Linearity error 0 ... I_{PN} ²⁾	< 0.7	%
		Typ	Max
TCV_{out}	Temperature coefficient of V_{out} @ $I_P = 0$		
	-40 ... +85 °C	80	120 ppm/K
TCV_{out}/V_{ref}	Temperature coefficient of V_{out}/V_{ref} @ $I_P = 0$		
	-40 ... +85 °C	50	80 ppm/K
TCG	Temperature coefficient of G	300	500 ppm/K
V_{OM}	Magnetic offset voltage @ $I_P = 0$		
	after an overload of $2 \times I_{PNDC}$	±5	mV
t_{ra}	Reaction time @ 10 % of I_{PN}	< 200	ns
t_r	Step response time to 90 % of I_{PN} ³⁾	< 500	ns
	Output noise without external filter	< 10	mVpp
BW	Frequency bandwidth (-1 dB)	DC ... 100	kHz

General data

T_A	Ambient operating temperature	-40 ... +85	°C
T_S	Ambient storage temperature	-40 ... +100	°C
m	Mass	20	g
	Standard	EN 50178: 1997	

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

Notes: ¹⁾ Excluding electrical, magnetic offsets and linearity

²⁾ Including magnetic offset

³⁾ For a $di/dt = 100 \text{ A}/\mu\text{s}$.

Features

- Current transducer using Eta-technology
- Unipolar voltage supply
- Insulating 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 $U_C/2$

Advantages

- Excellent accuracy
- Very good linearity
- Very 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 100-TP/SP1

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	> 8	kV
U_e	Partial discharge extinction RMS voltage @ 10 pC	> 2	kV
		Min	
d_{cp}	Creepage distance ¹⁾	10.70	mm
d_{cl}	Clearance ¹⁾	10.70	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.



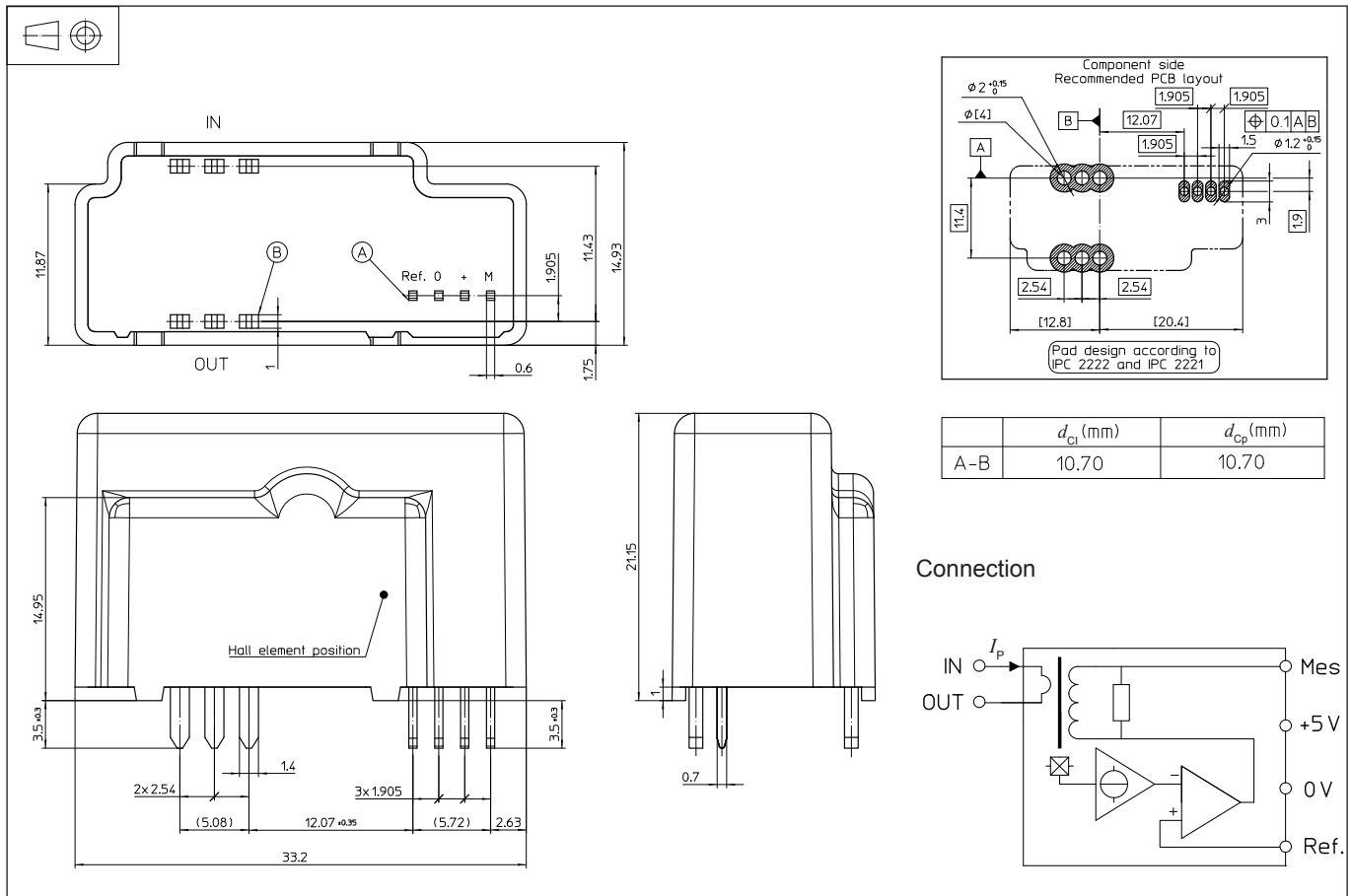
Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (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.

Dimensions LAS 100-TP/SP1 (in mm)



Number of primary turns	Primary current		Nominal output voltage V_{out} [V]	Primary resistance R_P [m Ω]	Primary insertion inductance L_P [μ H]
	Nominal I_{PN} [A]	Maximum I_P [A]			
1	50	300	$U_C/2 \pm 0.625$	0.12	0.008

Mechanical characteristics

- General tolerance ± 0.2 mm
- Fastening & connection of primary 6 pins 1.4×1 mm
Recommended PCB hole 2 mm
- Fastening & connection of secondary 4 pins 0.7×0.6 mm
- Recommended PCB hole 1.2 mm

Remarks

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

Output Voltage - Primary Current

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

