Current Transducer LAS 100-TP/SP1

I_{PN} = 100 A

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

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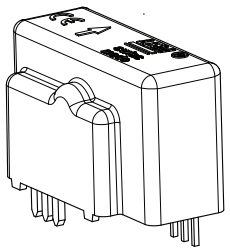

Electrical data

I_{PN}	Primary nominal current rms		100	A
I_{PM}	Primary current, measuring range		0 .. ± 200	A
	At frequency > 1 kHz		0 .. ± 300	A
V_{OUT}	Analog output voltage	@ I_P	$V_C/2$ ± (0.625.I_P/I_{PN})V	
		@ I_P = 0	$V_C/2$ ± 0.025	V
R_L	Output load resistance		≥ 2	kΩ
R_{OUT}	Output internal resistance		< 20	Ω
V_{REF}	Internal reference voltage		2.5 ± 0.025	V
	V_{REF} load resistance		≥ 1	MΩ
	V_{REF} internal resistance		200	Ω
	V_{REF} external resistance		2.0 .. 2.8	V
C_L	Maximum output capacitive load		1	nF
V_C	Supply voltage (± 5 %)		5	V
I_C	Current consumption @ V_C = 5 V	typical	18	mA

Accuracy - Dynamic performance data

X	Accuracy [1] @ I_{PN} , T_A = 25°C		± 1		%
ε_L	Linearity error 0 .. I_{PN} [2]		< 0.7		%
			Typ	Max	
TCV_{OUT}	Thermal drift of V_{OUT} @ I_P = 0	-40°C .. +85°C	80	120	ppm/K
TCV_{OUT}/V_{REF}	Thermal drift of V_{OUT}/V_{REF} @ I_P = 0	-40°C .. +85°C	50	80	ppm/K
$TC\varepsilon_G$	Thermal drift of the sensitivity	-40°C .. +85°C	300	500	ppm/K
V_{OM}	Residual voltage @ I_P = 0 after an overload of 2 x $I_{PN\ DC}$		± 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/µs
	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
	Standards	EN 50178: 1997	

All data are given with a R_L = 10 kΩ.

Notes: [1] Excluding electrical, magnetic offsets and linearity
[2] 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.

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Isolation characteristics

$\mathbf{V}_d$	Rms voltage for AC isolation test, 50 Hz, 1 min	5	kV
$\hat{\mathbf{V}}_w$	Impulse withstand voltage 1.2/50 µs	> 8	kV
$\mathbf{V}_e$	Rms voltage for partial discharge extinction @ 10 pC	> 2	kV
		Min	
dCp	Creepage distance [1)]	10.7	mm
dCl	Clearance distance [1)]	10.7	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
dCp, **dCl**, $\hat{\mathbf{V}}_w$	Rated isolation voltage	Nominal voltage
Single isolation	1000 V	1000 V
Reinforced isolation	500 V	500 V

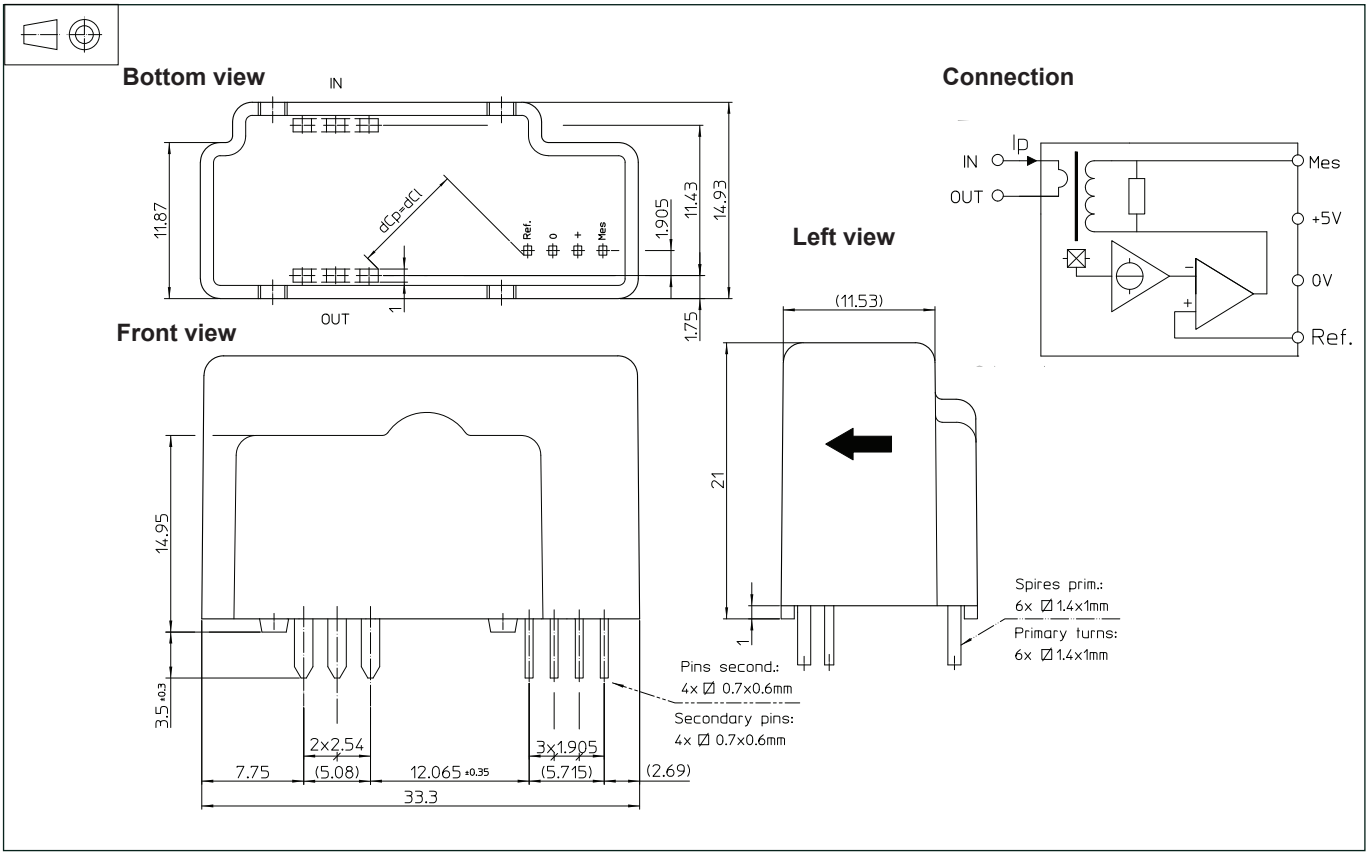
Safety

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 100-TP/SP1 (in mm. 1 mm = 0.0394 inch)



Number of primary turns	Primary current		Nominal output voltage	Primary resistance	Primary insertion inductance
	Nominal I_{PN} [A]	Maximal I_P [A]	V_{OUT} [V]	R_P [mΩ]	L_P [µH]
1	50	150	$V_C/2 \pm 0.625$	0.12	0.008

Mechanical characteristics

- General tolerance ± 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)