

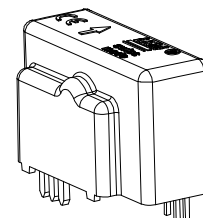
Current Transducer LAS 50-TP/SP1

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

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



16067



Electrical data

| | | | |
|-----------|---|--|------------|
| I_{PN} | Primary nominal r.m.s. current | 50 | A |
| I_P | Primary current, measuring range | 0 .. ± 150 | A |
| V_{OUT} | Analog output voltage @ | I_P $V_{REF} \pm (0.625 \cdot I_P / I_{PN})$ | V |
| | | $I_P = 0$ $V_{REF} \pm 0.025$ | V |
| R_L | Output load resistance | ≥ 2 | k Ω |
| R_{OUT} | Output internal resistance | < 20 | Ω |
| V_{REF} | Internal reference voltage | 2.5 ± 0.025 | V |
| | V_{REF} load resistance | ≥ 1 | M Ω |
| | V_{REF} internal resistance | 200 | Ω |
| | V_{REF} external voltage range | 2.0 .. 2.8 | V |
| C_L | Max. output capacitive load | 1 | nF |
| V_C | Supply voltage ($\pm 5\%$) | 5 | V |
| I_C | Current consumption @ $V_C = 5 \text{ V}$ | typ 18 | mA |

Accuracy - Dynamic performance data

| | | | |
|---------------------|---|--|-------------------------|
| X | Accuracy ¹⁾ @ I_{PN} , $T_A = 25^\circ\text{C}$ | $< \pm 1$ | % |
| e_L | Linearity error 0 .. I_{PN} ²⁾ | < 0.7 | % |
| TCV_{OUT} | Thermal drift of V_{OUT} @ $I_P = 0$ | -40 $^\circ\text{C}$.. +85 $^\circ\text{C}$ | Typ 80 Max 120 ppm/K |
| TCV_{OUT}/V_{REF} | Thermal drift of V_{OUT}/V_{REF} @ $I_P = 0$ | -40 $^\circ\text{C}$.. +85 $^\circ\text{C}$ | Typ 50 Max 80 ppm/K |
| TCE_G | Thermal drift of the gain | -10 $^\circ\text{C}$.. +85 $^\circ\text{C}$ | Typ 150 Max 300 ppm/K |
| | | -40 $^\circ\text{C}$.. -10 $^\circ\text{C}$ | Typ 400 Max 700 ppm/K |
| V_{OM} | Residual 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 | Response time @ 90 % of I_{PN} | < 500 | ns |
| di/dt | di/dt accurately followed | > 100 | A/ μs |
| | Output noise without external filter | < 10 | mVpp |
| f | 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 : ¹⁾ Excluding electrical, magnetic offsets and linearity

²⁾ Including magnetic offset.

Features

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

Special feature

- The internal reference is ratiometric.

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.

Copyright protected.

Current Transducer LAS 50-TP/SP1

Isolation characteristics

| | | | |
|-------------|--|-------|----|
| V_d | R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn | 5 | kV |
| \hat{V}_w | Impulse withstand voltage 1.2/50 μ s | >8 | kV |
| V_e | R.m.s. voltage for partial discharge extinction @ 10pC | >2 | kV |
| | | Min | |
| dCp | Creepage distance ³⁾ | 10.70 | mm |
| dCl | Clearance distance ³⁾ | 10.70 | 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: ³⁾ 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).

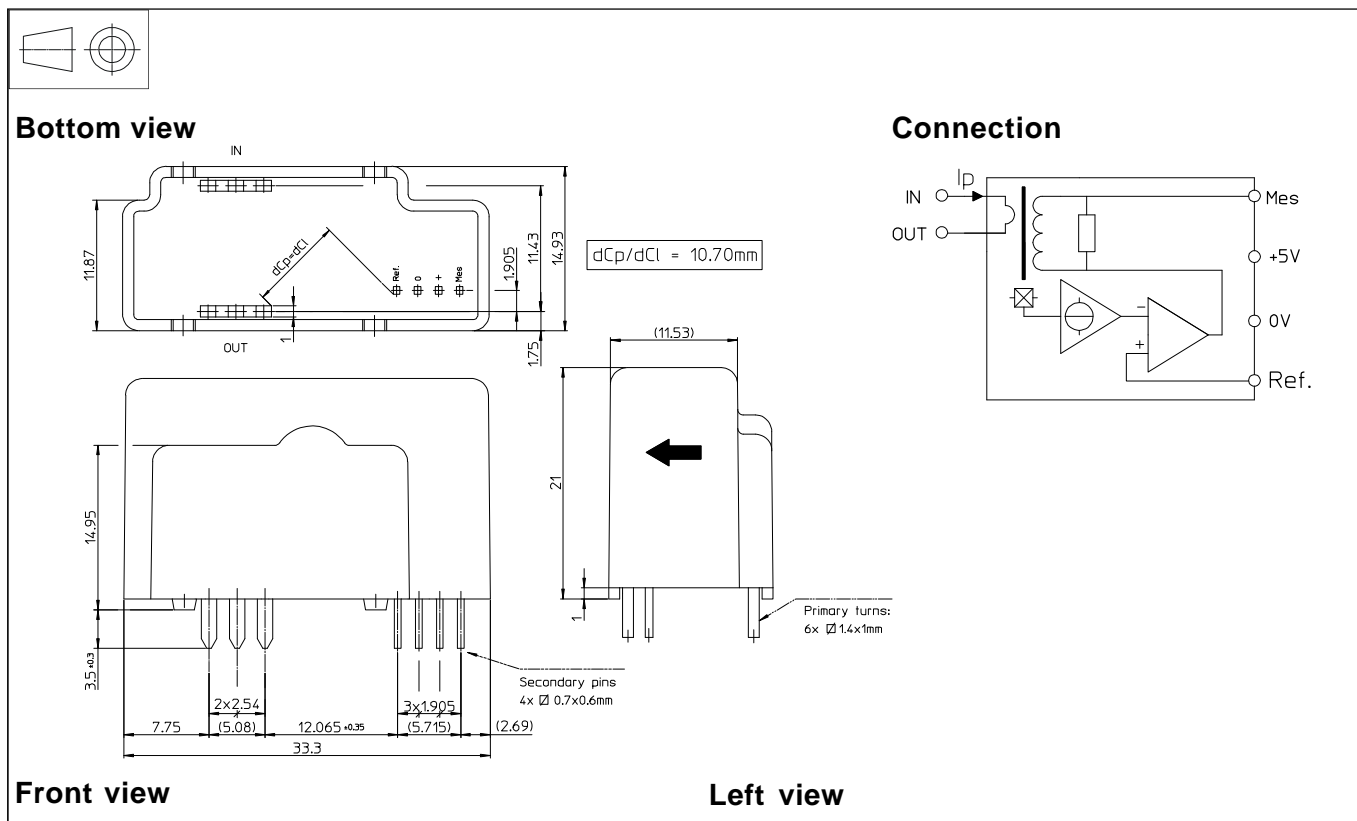
Ignoring this warning can lead to injury and/or cause serious damage.

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 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] | | | |
| 1 | 50 | 150 | $V_{REF} \pm 0.625$ | 0.12 | 0.008 |

Mechanical characteristics

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

Remarks

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

Output Voltage - Primary Current

($V_{REF} = 2.5$ V in this example)

