# Current Transducer LTS 6-NP

# $I_{PN}$ = 6 At

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).

## Electrical data

| | | | | |
|---|---|---|---|---|
| $I_{PN}$ | Primary nominal r.m.s. current | | 6 | At |
| $I_P$ | Primary current, measuring range | | 0 .. ± 19.2 | At |
| $\hat{I}_{PDC}$ | Overload capability | | 250 | At |
| $V_{OUT}$ | Analog output voltage @ $I_P$ | | 2.5 ± (0.625·$I_P$/$I_{PN}$) | V |
| | $I_P$ = 0 | | 2.5 [1] | V |
| $N_S$ | Number of secondary turns (± 0.1 %) | | 2000 | |
| $R_L$ | Load resistance | | ≥ 2 | kΩ |
| $R_{IM}$ | Internal measuring resistance (± 0.5 %) | | 208.33 | Ω |
| $TCR_{IM}$ | Thermal drift of $R_{IM}$ | | < 50 | ppm/K |
| $V_C$ | Supply voltage (± 5 %) | | 5 | V |
| $I_C$ | Current consumption @ $V_C$ = 5 V | Typ | 28+$I_S$ [2] +($V_{OUT}$/$R_L$) | mA |

## Accuracy - Dynamic performance data

| | | | | | |
|---|---|---|---|---|---|
| X | Accuracy @ $I_{PN}$, $T_A$ = 25°C | | ± 0.2 | | % |
| | Accuracy with $R_{IM}$ @ $I_{PN}$, $T_A$ = 25°C | | ± 0.7 | | % |
| $\varepsilon_L$ | Linearity error | | < 0.1 | | % |
| | | | Typ | Max | |
| $TCV_{OUT}$ | Thermal drift of $V_{OUT}$ @ $I_P$ = 0 | - 10°C .. + 85°C | 80 | 200 | ppm/K |
| | | - 40°C .. - 10°C | | 250 | ppm/K |
| $TC\varepsilon_G$ | Thermal drift of the gain | - 40°C .. + 85°C | | 50 [3] | ppm/K |
| $V_{OM}$ | Residual voltage @ $I_P$ = 0, after an overload of 3 x $I_{PN}$ | | | ± 0.5 | mV |
| | 5 x $I_{PN}$ | | | ± 2.0 | mV |
| | 10 x $I_{PN}$ | | | ± 2.0 | mV |
| $t_{ra}$ | Reaction time @ 10 % of $I_{PN}$ | | < 100 | | ns |
| $t_r$ | Response time @ 90 % of $I_{PN}$ | | < 400 | | ns |
| di/dt | di/dt accurately followed | | > 15 | | A/µs |
| f | Frequency bandwidth (0 .. - 0.5 dB) | | DC .. 100 | | kHz |
| | (- 0.5 .. 1 dB) | | DC .. 200 | | kHz |

## General data

| | | | |
|---|---|---|---|
| $T_A$ | Ambient operating temperature | - 40 .. + 85 | °C |
| $T_S$ | Ambient storage temperature | - 40 .. + 100 | °C |
| | Insulating material group | IIIa | |
| m | Mass | 10 | g |
| | Standards [4] | EN 50178 : 1997 | |
| | | IEC 60950-1 : 2001 | |

Notes : [1] Absolute value @ $T_A$ = 25°C, 2.475 < $V_{OUT}$ < 2.525

[2] Please see the operation principle on the other side

[3] Only due to $TCR_{IM}$

[4] Specification according to IEC 61000-4-3 are not guaranteed between 95 and 110 MHz (value higher by 5% than the specification).

## Features

- Closed loop (compensated) multi-range current transducer using the Hall effect
- Unipolar voltage supply
- Compact design for PCB mounting
- Insulated plastic case recognized according to UL 94-V0
- Incorporated measuring resistance
- Extended measuring range.

## 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.









Tope Co., Ltd. Tel: (02) 8228-0658 Fax: (02) 8228-0659 http://www.sensor.com.tw e-mail: tope@ms1.hinet.net

## Isolation characteristics

| | | | |
|---|---|---|---|
| $V_d$ | R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn | 3 | kV |
| $\hat{V}_w$ | Impulse withstand voltage 1.2/50 µs | > 8 | kV |
| $V_e$ | R.m.s. voltage for partial discharge extinction @ 10pC | Min > 1.5 | kV |
| **dCp** | Creepage distance [5] | Min 15.5 | mm |
| **dCl** | Clearance distance [6] | 6.35 | 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, $\hat{V}_w$ | Rated isolation voltage | Nominal voltage |
| Single isolation | 600 V | 600 V |
| Reinforced isolation | 300 V | 300 V |

Notes : [5] On housing
[6] On PCB with soldering pattern UTEC93-703.

## Safety

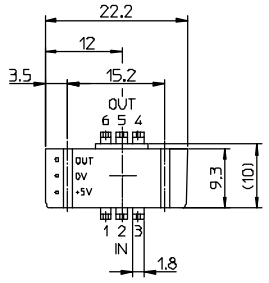
This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacturer's operating instructions.

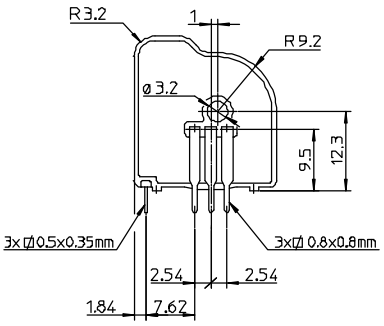
Caution, risk of electrical shock

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.

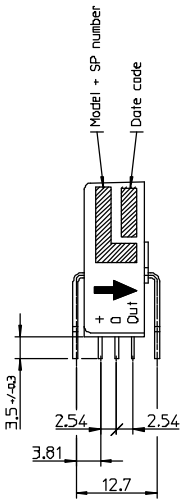
## Dimensions LTS 6-NP (in mm. 1 mm = 0.0394 inch)

### Bottom view



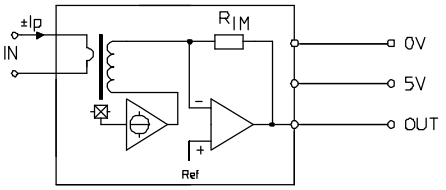




Back view

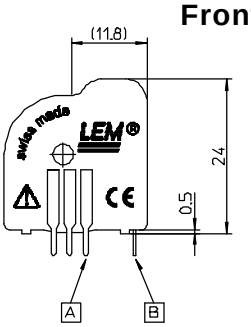



Right view

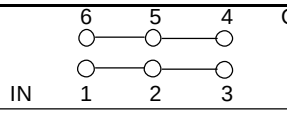
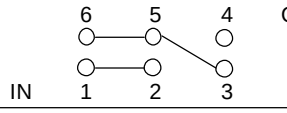
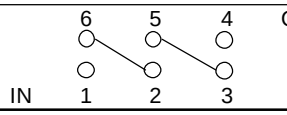
### Operation principle




### Front view




| Rep. | Clearance | Creepage |
|---|---|---|
| A-B | 6.35mm | 15,5mm |

| Number of primary turns | Primary nominal r.m.s. current $I_{PN}$ [A] | Nominal output voltage $V_{OUT}$ [V] | Primary resistance $R_P$ [mΩ] | Primary insertion inductance $L_P$ [µH] | Recommended connections |
|---|---|---|---|---|---|
| 1 | ± 6 | 2.5 ± 0.625 | 0.18 | 0.013 |   |
| 2 | ± 3 | 2.5 ± 0.625 | 0.81 | 0.05 |   |
| 3 | ± 2 | 2.5 ± 0.625 | 1.62 | 0.12 |   |

### Mechanical characteristics

- General tolerance ± 0.2 mm
- Fastening & connection of primary 6 pins 0.8 x 0.8 mm
  Recommended PCB hole 1.3 mm
- Fastening & connection of secondary 3 pins 0.5 x 0.35 mm
  Recommended PCB hole 0.8 mm
- Additional primary through-hole ∅ 3.2 mm

### Remarks

- $V_{OUT}$ is positive when $I_P$ flows from terminals 1, 2, 3 to terminals 6, 5, 4.
- Temperature of the primary jumper should not exceed 100°C.

### Output Voltage - Primary Current