

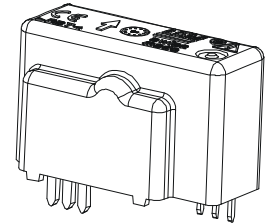
## Current Transducer LAH 100-P

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



16052

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



### Electrical data

|          |                                                |                                                                                                  |                              |
|----------|------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------|
| $I_{PN}$ | Primary nominal current rms                    | 100                                                                                              | A                            |
| $I_{PM}$ | Primary current, measuring range <sup>1)</sup> | 0 .. 160                                                                                         | A                            |
| $R_M$    | Measuring resistance @                         | $T_A = 70^\circ\text{C}$ $T_A = 85^\circ\text{C}$<br>$R_{Mmin}$ $R_{Mmax}$ $R_{Mmin}$ $R_{Mmax}$ |                              |
|          | with $\pm 12 \text{ V}$                        | @ $I_{PN} [\pm A_{DC}]$                                                                          | 0   63   0   57 $\Omega$     |
|          |                                                | @ $I_{PN} [A_{RMS}]$ <sup>2)</sup>                                                               | 0   11   0   5 $\Omega$      |
|          | with $\pm 15 \text{ V}$                        | @ $I_{PN} [\pm A_{DC}]$                                                                          | 20   120   45   114 $\Omega$ |
|          |                                                | @ $I_{PN} [A_{RMS}]$ <sup>2)</sup>                                                               | 20   51   45   45 $\Omega$   |
|          |                                                | @ $I_P < I_{PN}$ <sup>3)</sup>                                                                   |                              |
| $I_{SN}$ | Secondary nominal current rms                  | 50                                                                                               | mA                           |
| $K_N$    | Conversion ratio                               | 1 : 2000                                                                                         |                              |
| $V_C$    | Supply voltage ( $\pm 5 \%$ )                  | $\pm 12 \dots 15$                                                                                | V                            |
| $I_C$    | Current consumption                            | 10 (@ $\pm 15 \text{ V}$ ) + $I_S$                                                               | mA                           |

### Accuracy - Dynamic performance data

|          |                                                                                                     |                                     |                  |
|----------|-----------------------------------------------------------------------------------------------------|-------------------------------------|------------------|
| $X$      | Accuracy <sup>4)</sup> @ $I_{PN}$ , $T_A = 25^\circ\text{C}$                                        | $\pm 0.25$                          | %                |
| $e_L$    | Linearity error                                                                                     | $< 0.15$                            | %                |
| $I_O$    | Offset current @ $T_A = 25^\circ\text{C}$                                                           | Typ    Max                          |                  |
| $I_{OM}$ | Magnetic offset current @ $I_P = 0$ and specified $R_M$ ,<br>after an overload of $5 \times I_{PN}$ | $\pm 0.10$ $\pm 0.15$               | mA               |
| $I_{OT}$ | Temperature variation of $I_O$                                                                      | 0°C .. + 70°C $\pm 0.10$ $\pm 0.40$ | mA               |
|          | - 25°C .. + 85°C                                                                                    | $\pm 0.10$ $\pm 0.50$               | mA               |
| $t_{ra}$ | Reaction time @ 10 % of $I_{PN}$                                                                    | $< 200$                             | ns               |
| $t_r$    | Response time <sup>5)</sup> to 90 % of $I_{PN}$ step                                                | $< 500$                             | ns               |
| $di/dt$  | di/dt accurately followed                                                                           | $> 200$                             | A/ $\mu\text{s}$ |
| $BW$     | Frequency bandwidth (- 1 dB)                                                                        | DC .. 200                           | kHz              |

### General data

|       |                               |                                |          |
|-------|-------------------------------|--------------------------------|----------|
| $T_A$ | Ambient operating temperature | - 25 .. + 85                   | °C       |
| $T_S$ | Ambient storage temperature   | - 40 .. + 90                   | °C       |
| $R_S$ | Secondary coil resistance     | @ $T_A = 70^\circ\text{C}$ 115 | $\Omega$ |
|       |                               | @ $T_A = 85^\circ\text{C}$ 121 | $\Omega$ |
| $m$   | Mass                          | 24                             | g        |
|       | Standards                     | EN 50178: 1997                 |          |

Notes: <sup>1)</sup> For 10 s, with  $R_M \leq 25 \Omega$  ( $V_C = \pm 15 \text{ V}$ )

<sup>2)</sup> 50 Hz Sinusoidal

<sup>3)</sup> The measuring resistance  $R_{Mmin}$  may be lower (see "LAH Technical Information" leaflet)

<sup>4)</sup> Without  $I_O$  &  $I_{OM}$

<sup>5)</sup> With a di/dt of 100 A/ $\mu\text{s}$ .

### Features

- Closed loop (compensated) current transducer using the Hall effect
- Printed circuit board mounting
- Insulated plastic case recognized according to UL 94-V0.

### 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 LAH 100-P

### Isolation characteristics

|             |                                                    |       |    |
|-------------|----------------------------------------------------|-------|----|
| $V_d$       | Rms voltage for AC isolation test, 50/60 Hz, 1 min | 5     | kV |
| $\hat{V}_w$ | Impulse withstand voltage 1.2/50 $\mu$ s           | 12    | kV |
| $V_e$       | Partial discharge extinction voltage rms @ 10pC    | >2    | kV |
|             |                                                    | Min   |    |
| dCp         | Creepage distance <sup>6)</sup>                    | 11.75 | mm |
| dCl         | Clearance distance <sup>6)</sup>                   | 11.75 | 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 : <sup>6)</sup> 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).

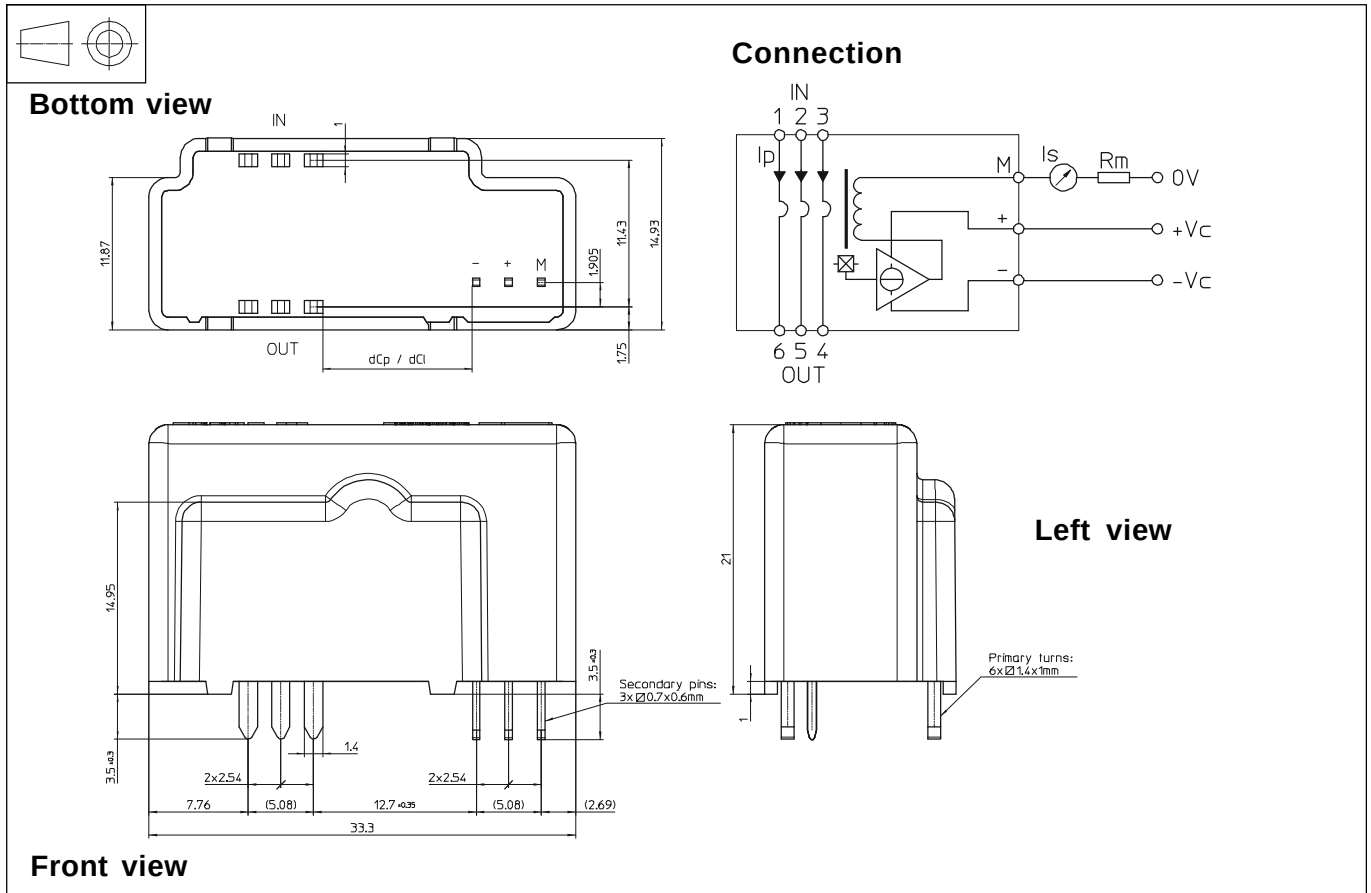
Ignoring this warning can lead to injury and/or cause serious damage.

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 LAH 100-P (in mm. 1 mm = 0.0394 inch)



| Number of primary turns | Primary current      |                   | Nominal output current | Turns ratio | Primary resistance | Primary insertion inductance |
|-------------------------|----------------------|-------------------|------------------------|-------------|--------------------|------------------------------|
|                         | nominal $I_{PN}$ [A] | maximum $I_P$ [A] |                        |             |                    |                              |
| 1                       | 100                  | 160               | 50                     | 1 : 2000    | 0.08               | 0.007                        |

### Mechanical characteristics

- General tolerance  $\pm 0.2$  mm
- Fastening & connection of primary  
Recommended PCB hole 2 mm
- Fastening & connection of secondary  
Recommended PCB hole 1.2 mm

### Remarks

- $I_s$  is positive when  $I_p$  flows from terminals "IN" to terminals "OUT".
- The jumper temperature and PCB should not exceed 100°C.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.