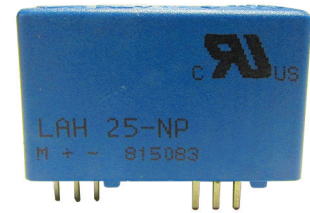


# Current Transducer LAH 25-NP

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



$$I_{PN} = 8-12-25 A$$



## Electrical data

|          |  |                      |                                   |                      |              |              |       |
|----------|--|----------------------|-----------------------------------|----------------------|--------------|--------------|-------|
| $I_{PN}$ | Primary nominal RMS current                    | 25                   | At                                |                      |              |              |       |
| $I_{PM}$ | Primary current, measuring range <sup>1)</sup> | 0 ... ±55            | At                                |                      |              |              |       |
| $R_M$    | Measuring resistance @ <sup>2)</sup>           | $T_A = 70\text{ °C}$ |                                   | $T_A = 85\text{ °C}$ |              |              |       |
|          |  |                      | $R_{M\ min}$                      | $R_{M\ max}$         | $R_{M\ min}$ | $R_{M\ max}$ |       |
|          |  | with ±12 V           | @ $I_{PN}$ [±At DC]               | 0                    | 284          | 0            | 280 Ω |
|          |  |                      | @ $I_{PN}$ [At RMS] <sup>3)</sup> | 0                    | 182          | 0            | 178 Ω |
|          |  | with ±15 V           | @ $I_{PN}$ [±At DC]               | 67                   | 398          | 70           | 394 Ω |
|          | @ $I_{PN}$ [At RMS] <sup>3)</sup>              | 67                   | 263                               | 70                   | 259 Ω        |              |       |
|          | @ $I_P < I_{PN}$ <sup>4)</sup>                 |                      |                                   |                      |              |              |       |
| $I_{SN}$ | Secondary nominal RMS current                  | 25                   | mA                                |                      |              |              |       |
| $K_N$    | Conversion ratio                               | 1-2-3 : 1000         |                                   |                      |              |              |       |
| $U_C$    | Supply voltage (±5 %)                          | ±12 ... 15           | V                                 |                      |              |              |       |
| $I_C$    | Current consumption                            | 10 (@ ±15 V) + $I_S$ | mA                                |                      |              |              |       |

## Accuracy - Dynamic performance data

|              |  |            |       |    |
|--------------|--|------------|-------|----|
| $X$          | Accuracy <sup>5)</sup> @ $I_{PN}$ , $T_A = 25\text{ °C}$   | ±0.3       | %     |    |
| $\epsilon_L$ | Linearity error  | < 0.2      | %     |    |
| $I_O$        | Offset current @ $I_P = 0$ , $T_A = 25\text{ °C}$  | Typ        | ±0.15 | mA |
|              |  | Max        |       |    |
| $I_{OM}$     | Magnetic offset current @ $I_P = 0$ , and specified $R_M$ , after an overload of $5 \times I_{PN}$ | ±0.20      | ±0.25 | mA |
| $I_{OT}$     | Temperature variation of $I_O$ 0 °C ... +70 °C   | ±0.10      | ±0.60 | mA |
|              |  | ±0.10      | ±0.70 | mA |
| $t_{ra}$     | Reaction time to 10 % of $I_{PN}$  | < 200      | ns    |    |
| $t_r$        | Step response time <sup>6)</sup> to 90 % of $I_{PN}$   | < 500      | ns    |    |
| $BW$         | 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 |
| $R_S$ | Resistance of secondary winding @ $T_A = 70\text{ °C}$ | 72                     | Ω  |
|       |  | @ $T_A = 85\text{ °C}$ | 76 |
| $m$   | Mass   | 20                     | g  |
|       | Standards  | EN 50178: 1997         |    |

- Notes:**
- <sup>1)</sup> During 10 s, with  $R_M \leq 109\ \Omega$  ( $U_C = \pm 15\text{ V}$ )
  - <sup>2)</sup> Calculation of  $R_{M\ min}$  with the maximum power of the transistors = 0.307 W @ 70 °C and the maximum power of the transistors = 0.302 W @ 85 °C
  - <sup>3)</sup> Sinusoidal wave 50 Hz
  - <sup>4)</sup> The minimum measuring resistance  $R_M$  may be lower (see "LAH technical information" leaflet)
  - <sup>5)</sup> Without  $I_O$  &  $I_{OM}$
  - <sup>6)</sup> With a  $di/dt$  of 100 A/μs.

## Features

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

## Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized response time
- 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 25-NP

### 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 $\mu$ s         | 12         | kV |
| $U_e$       | Partial discharge extinction RMS voltage @10 pC  | > 2<br>Min | kV |
| $d_{cp}$    | Creepage distance <sup>1)</sup>                  | 12         | mm |
| $d_{cl}$    | Clearance <sup>1)</sup>                          | 12         | mm |
| CTI         | Comparative tracking index (group IIIa)          | 175        |    |

Note: <sup>1)</sup> 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.

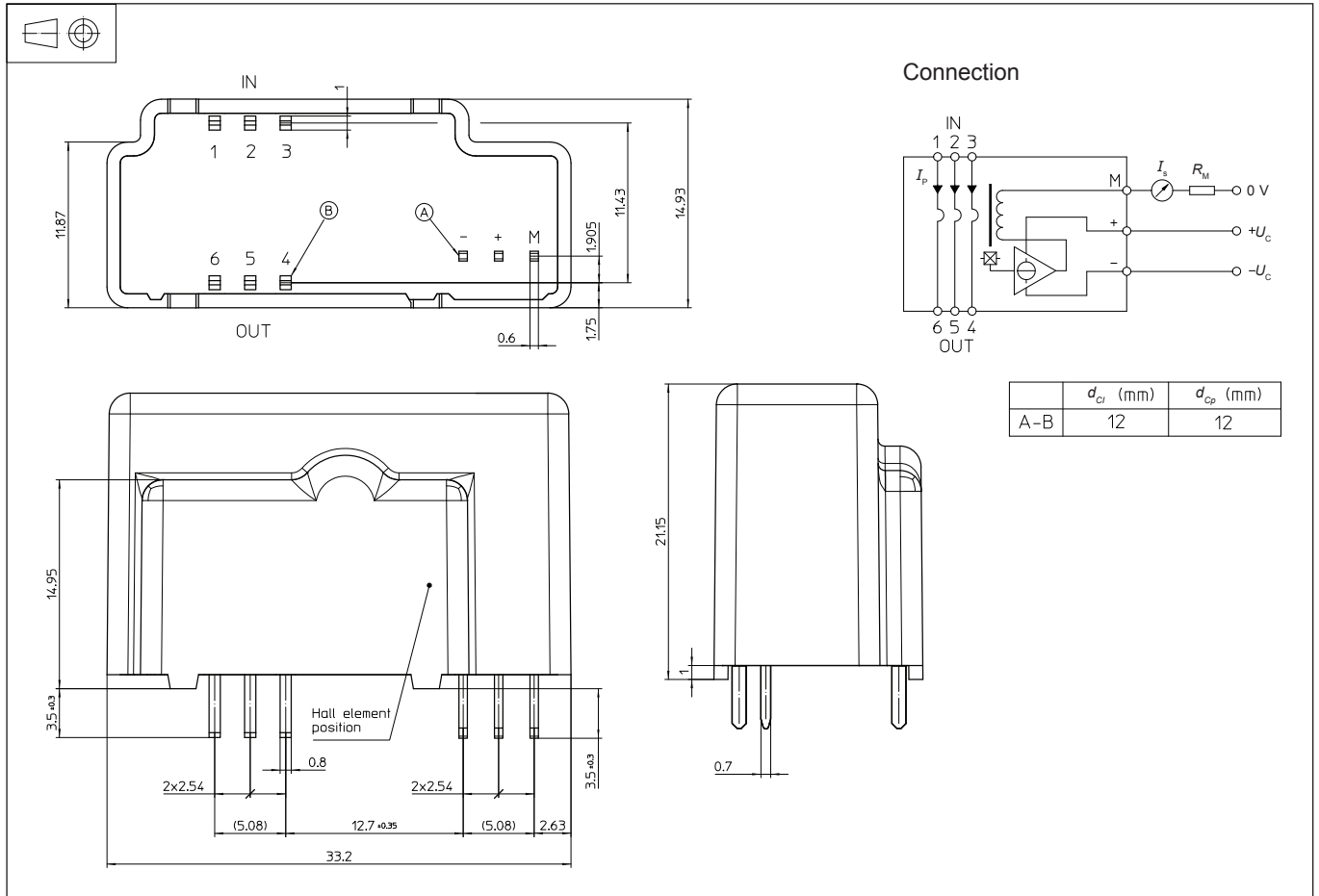


Caution, risk of electrical shock

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 LAH 25-NP (in mm)



| Number of primary turns | Primary current nominal $I_{pN}$ [A] | Primary current maximum $I_p$ [A] | Nominal output current $I_{sN}$ [mA] | Turns ratio $K_N$ | Primary resistance $R_p$ [mΩ] | Primary insertion inductance $L_p$ [μH] | Recommended PCB connections |
|-------------------------|--------------------------------------|-----------------------------------|--------------------------------------|-------------------|-------------------------------|---|-----------------------------|
| 1                       | 25                                   | 55                                | 25                                   | 1 : 1000          | 0.18                          | 0.012                                   |                             |
| 2                       | 12                                   | 27                                | 24                                   | 2 : 1000          | 0.81                          | 0.054                                   |                             |
| 3                       | 8                                    | 18                                | 24                                   | 3 : 1000          | 1.62                          | 0.110                                   |                             |

### Mechanical characteristics

- General tolerance  $\pm 0.2$  mm
- Fastening & connection of primary  
Recommended PCB hole 1.5 mm
- Fastening & connection of secondary  
Recommended PCB hole 1.2 mm

### Remarks

- $I_s$  is positive when  $I_p$  flows from terminals 1, 2, 3 (IN) to terminals 6, 5, 4 (OUT).
- The jumper temperature and PCB should not exceed 100 °C.
- This is a standard model. For different versions (supply voltages, turns ratio, unidirectional measurements...), please contact us.