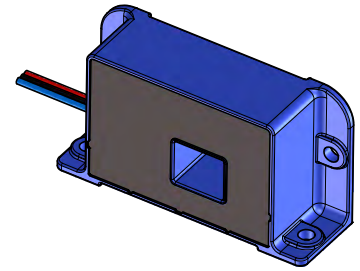


# Current Transducer LAF 50-S

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

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



## Electrical data

$I_{PN}$	Primary nominal rms current	50	A
$I_{PM}$	Primary current, measuring range	0 .. $\pm 70$	A
$R_M$	Measuring resistance with $\pm 15 \text{ V}$	$R_{M \min}$	$R_{M \max}$
		@ $\pm 50 \text{ A}_{\max}$	0 230 $\Omega$
		@ $\pm 70 \text{ A}_{\max}$	0 155 $\Omega$
$I_{SN}$	Secondary nominal rms current	50	mA
$K_N$	Conversion ratio	1 : 1000	
$U_C$	Supply voltage ( $\pm 5 \%$ )	$\pm 15$	V
$I_C$	Current consumption	$16 + I_S$	mA

## Accuracy - Dynamic performance data

$X_G$	Overall accuracy @ $I_{PN}$ , $T_A = 25 \text{ }^\circ\text{C}$ , $\pm 15 \text{ V}$ ( $\pm 5 \%$ )	$\pm 1$	%
$\epsilon_L$	Linearity error	$< 0.20$	%
$I_O$	Offset current @ $I_P = 0$ , $T_A = 25 \text{ }^\circ\text{C}$	$< \pm 0.40$	mA
$I_{OM}$	Magnetic offset current @ $I_P = 0$ , and specified $R_M$ , after an overload of $3 \times I_{PN}$	Typ	Max
		$\pm 0.3$	$\pm 0.8$
$I_{OT}$	Temperature variation of $I_O$ - $40 \text{ }^\circ\text{C}$ .. $+ 85 \text{ }^\circ\text{C}$		mA
$t_{ra}$	Reaction time <sup>1)</sup>	$< 500$	ns
$t_r$	Step response time to 90 % of $I_{PN}$ <sup>1)2)</sup>	$< 1$	$\mu\text{s}$
$di/dt$	$di/dt$ accurately followed <sup>2)</sup>	$> 100$	A/ $\mu\text{s}$
$BW$	Frequency bandwidth (- 1 dB) <sup>2)</sup>	DC .. 100	kHz

## General data

$T_A$	Ambient operating temperature	- 40 .. + 85	$^\circ\text{C}$
$T_S$	Ambient storage temperature	- 40 .. + 90	$^\circ\text{C}$
$R_S$	Resistance of secondary winding @ $T_A = 85 \text{ }^\circ\text{C}$	33.5	$\Omega$
$m$	Mass	$< 70$	g
	Standard	EN 50178: 1997	

Notes: <sup>1)</sup> With a  $di/dt$  of 100 A/ $\mu\text{s}$

<sup>2)</sup> Best result with primary conductor completely filling the aperture and/or the return conductor wrapped over the top of the transducer.

## Features

- Closed loop (compensated) current transducer using the Hall effect
- Insulating plastic case recognized according to UL 94 V-0.

## Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized response time
- Wide frequency bandwidth
- No insertion losses
- High immunity to 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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### Insulation coordination

$U_d$	Rms voltage for AC insulation test, 50 Hz, 1 min	3	kV
$\hat{U}_w$	Impulse withstand voltage 1.2/50 $\mu$ s	8	kV
		Min	
$d_{Cp}$	Creepage distance	33.25	mm
$d_{Cl}$	Clearance	33.05	mm
$CTI$	Comparative tracking index (group IIIa)	175	

### 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	2500 V	2500 V
Reinforced insulation	1250 V	1250 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 (eg. primary busbar, power supply).

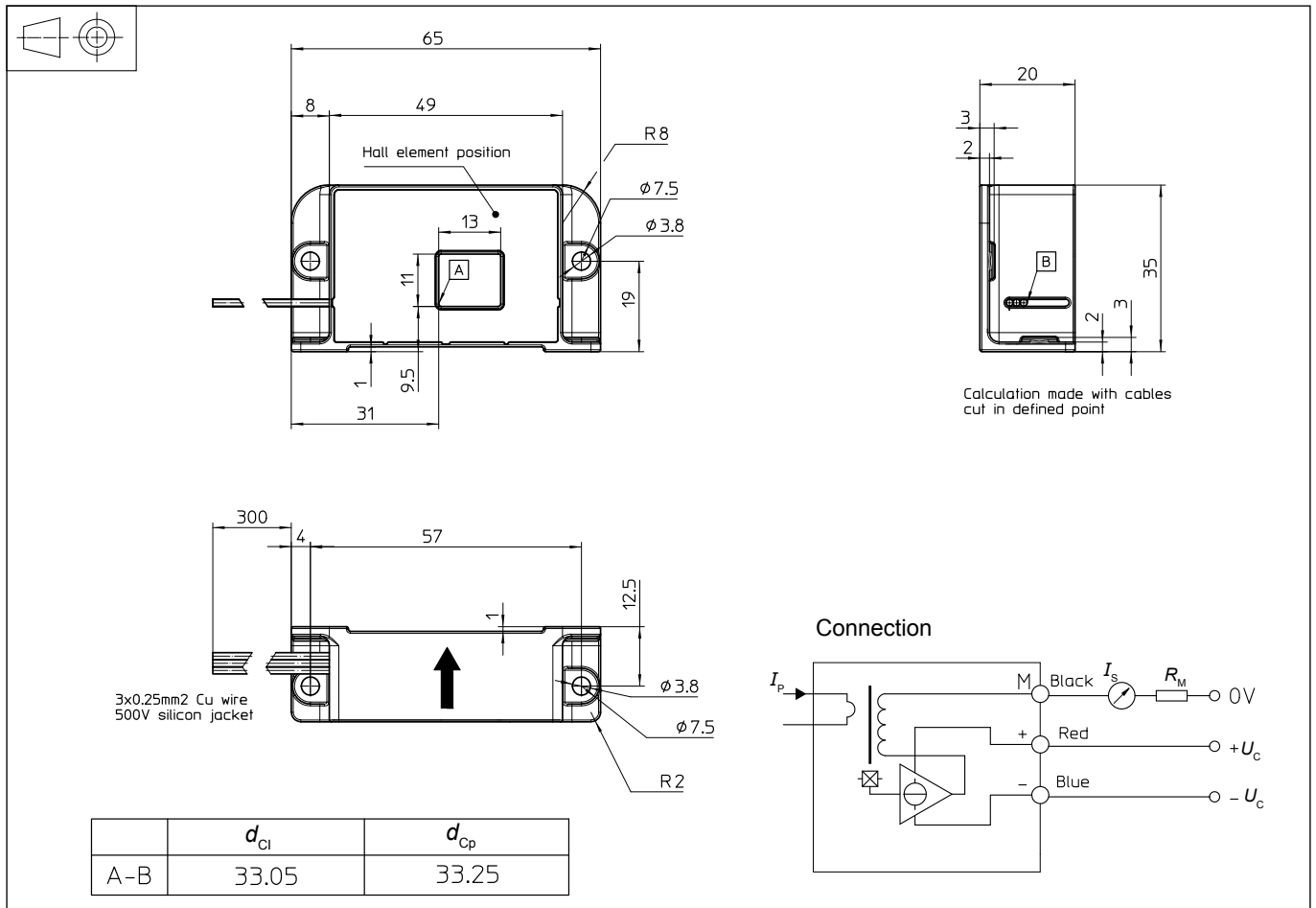
Ignoring this warning can lead to injury and/or cause serious damage.

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 LAF 50-S (in mm)



## Mechanical characteristics

- General tolerance  $\pm 0.5$  mm
- Transducer fastening vertical and horizontal 2 holes  $\phi 3.8$  mm  
2 M4 steel screws  
Recommended fastening torque 1.2 N·m ( $\pm 10\%$ )
- Primary through-hole 11 x 13 mm
- Connection of secondary wires, in red (+), blue (-) and black (M)
- Mounting hardware M4 or 6-32 pan head screws

## Remarks

- $I_S$  is positive when  $I_P$  flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 100 °C.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: [Products/Product Documentation](#).
- Dynamic performances ( $di/dt$  and response time) are best with a single bar completely filling the primary hole.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.