Current Transducer LA 305-S

I_{PN} = 300 A

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

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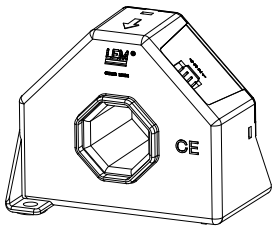

Electrical data

I_{PN}	Primary nominal current rms				300			A
I_{PM}	Primary current, measuring range				0 .. ± 500			A
					T_A = 70°C		T_A = 85°C	
R_M	Measuring resistance				$R_{M\,min}$	$R_{M\,max}$	$R_{M\,min}$	$R_{M\,max}$
	with ± 12 V	@ ± 300 A $_{max}$			0	52	0	50 Ω
		@ ± 500 A $_{max}$			0	17	0	15 Ω
	with ± 15 V	@ ± 300 A $_{max}$			0	75	5	73 Ω
		@ ± 500 A $_{max}$			0	31	5	29 Ω
I_{SN}	Secondary nominal current rms				120			mA
K_N	Conversion ratio				1 : 2500			
V_C	Supply voltage (± 5 %)				± 12 .. 15			V
I_C	Current consumption				20 (@ ± 15 V) + I_S			mA

Accuracy - Dynamic performance data

X_G	Overall accuracy @ I_{PN}, T_A = 25°C		± 0.8		%
ε_L	Linearity error		< 0.1		%
			Typ	Max	
I_O	Offset current @ I_P = 0, T_A = 25°C			± 0.20	mA
I_{OM}	Magnetic offset current [1] @ I_P = 0 and specified R_M,				mA
	after an overload of 3 x I_{PN}			± 0.40	mA
I_{OT}	Temperature variation of I_O	- 10°C .. + 85°C	± 0.12	± 0.30	mA
t_{ra}	Reaction time @ 10 % of I_{PN}		< 500		ns
t_r	Response time [2] @ 90 % of I_{PN} step		< 1		µs
di/dt	di/dt accurately followed		> 100		A/µs
BW	Frequency bandwidth (- 3 dB)		DC .. 100		kHz

General data

T_A	Ambient operating temperature		- 10 .. + 85	°C
T_S	Ambient storage temperature		- 40 .. + 90	°C
R_S	Secondary coil resistance	@ T_A = 70°C	35	Ω
		@ T_A = 85°C	37	Ω
m	Mass		200	g
	Standards		EN 50178: 1997	

Notes: [1] The result of the coercive force (Hc) of the magnetic circuit
[2] With a di/dt of 100 A/µs.

Features

- Closed loop (compensated) current transducer using the Hall effect
- Isolated 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.

LEM reserves the right to carry out modifications on its transducers, in order to improve them, without prior notice.

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Isolation characteristics

V_d	Rms voltage for AC isolation test, 50 Hz, 1 min	6	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 µs	20	kV
		Min	
dCp	Creepage distance	27	mm
dCl	Clearance distance	26.5	mm
CTI	Comparative Tracking Index (group IIIa)	225	

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
dCp, **dCl**, $\hat{V}_w$	Rated insulation voltage	Nominal voltage
Single insulation	2500 V	2500 V
Reinforced insulation	1250 V	1250 V

According VDE 0160 (1994): single insulation 3500 V
Reinforced insulation 1750 V

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 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.

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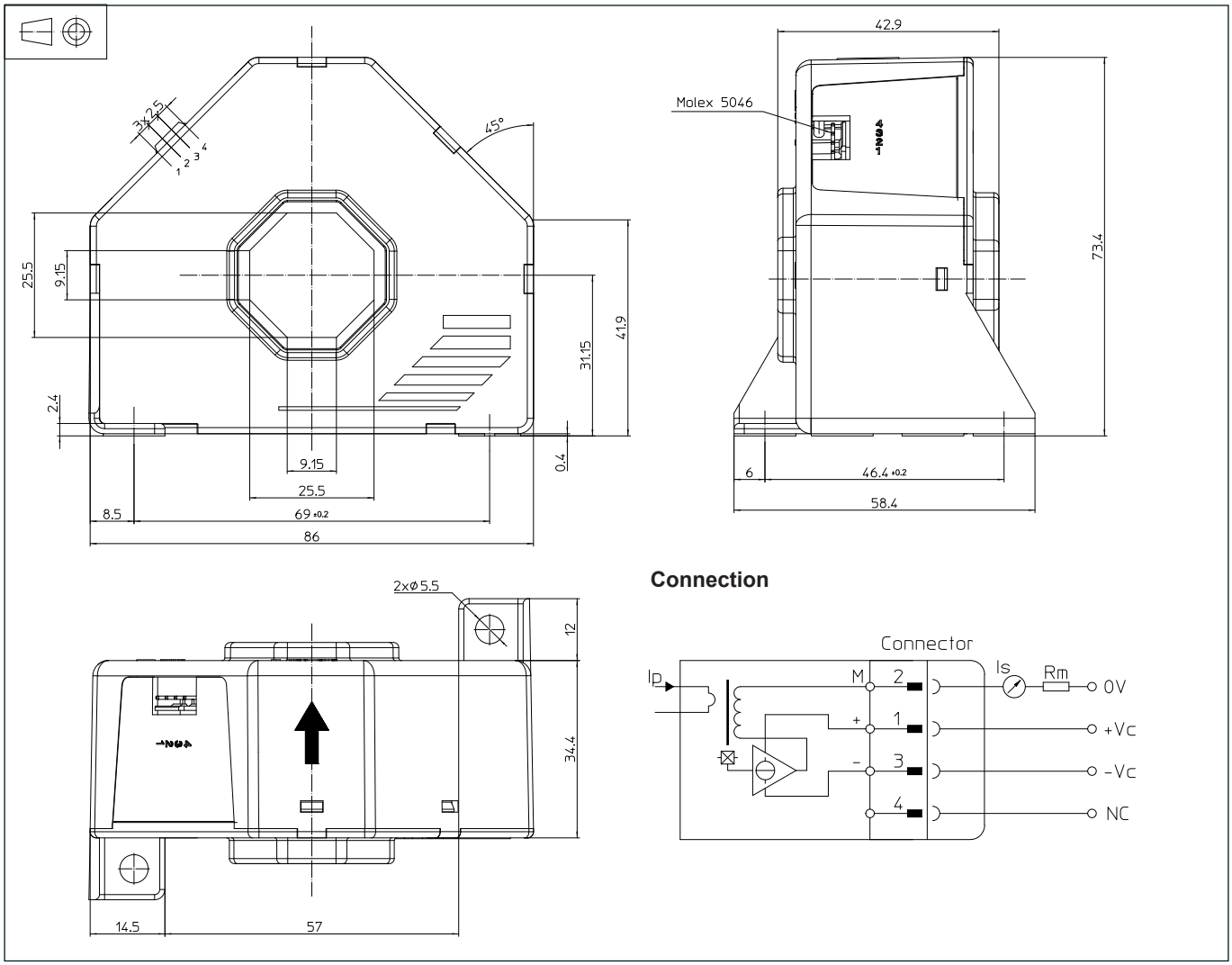
Dimensions LA 305-S (in mm)



Mechanical characteristics

• General tolerance	± 0.5 mm
• Transducer fastening	2 holes Ø 5.5 mm 2 M5 steel screws
Recommended fastening torque	4 Nm
• Primary through-hole	25.5 x 25.5 mm
• Connection of secondary	MOLEX 5046 4 pins tin plated

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.
- 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.

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