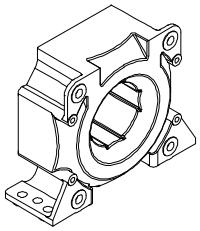
Current Transducer LF 505-S

I_{PN} = 500 A

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).

16137



Electrical data

I_{PN}	Primary nominal current rms		500		A
I_{PM}	Primary current, measuring range		0 .. ± 800		A
R_M	Measuring resistance		$R_{M\ mini}$	$R_{M\ maxi}$	
	with ± 15 V	@ ± 500 A_{maxi}	0	60	Ω
		@ ± 800 A_{maxi}	0	11	Ω
	with ± 18 V	@ ± 500 A_{maxi}	0	92	Ω
		@ ± 800 A_{maxi}	0	30	Ω
	with ± 24 V	@ ± 500 A_{maxi}	5	149	Ω
		@ ± 800 A_{maxi}	5	65	Ω
I_{SN}	Secondary nominal current rms		100		mA
K_N	Conversion ratio		1 : 5000		
V_C	Supply voltage (± 5 %)		± 15 .. 24		V
I_C	Current consumption (± 1 mA)		24 (@ ± 18 V) + I_S		mA

Accuracy - Dynamic performance data

X	Accuracy @ I_{PN}, T_A = 25°C		± 0.6		%
ε_L	Linearity error		< 0.1		%
			Typ	Maxi	
I_O	Offset current @ I_P = 0, T_A = 25°C			± 0.4	mA
I_{OM}	Magnetic offset current @ I_P = 0 and specified R_M, after an overload of 3 x I_{PN}			± 0.2	mA
I_{OT}	Temperature variation of I_O	- 40°C .. + 70°C	± 0.1	± 0.4	mA
t_r	Response time [1] to 90 % of I_{PN} step		< 1		µs
di/dt	di/dt accurately followed		> 100		A/µs
BW	Frequency bandwidth (- 1 dB)		DC .. 100		kHz

General data

T_A	Ambient operating temperature		- 40 .. + 70	°C
T_S	Ambient storage temperature		- 40 .. + 85	°C
R_S	Secondary coil resistance	@ T_A = 70°C	70	Ω
m	Mass		230	g
	Standards		EN 50155: 1995	
			EN 50178: 1997	

Note: [1] 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.

Applications domain

- Traction
- Industrial.

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

Current Transducer LF 505-S

Isolation characteristics

V_d	Rms voltage for AC isolation test, 50 Hz, 1 min	3.8	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 µs	12.5	kV
		Mini	
dCp	Creepage distance	15.2	mm
dCl	Clearance distance	14.5	mm
CTI	Comparative Tracking Index (Group IIIa)	175	

Application examples

According to EN 50178 and CEI 61010-1 standards and following conditions:

- Over voltage category OV 3
- Pollution degree PD2
- Non-uniform field

	EN 50178	CEI 61010-1
dCp, dCl, $\hat{V}_w$	Rated isolation voltage	Nominal voltage
Single isolation	1250 V	1250 V rms
Reinforced isolation	690 V	690 V rms

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.

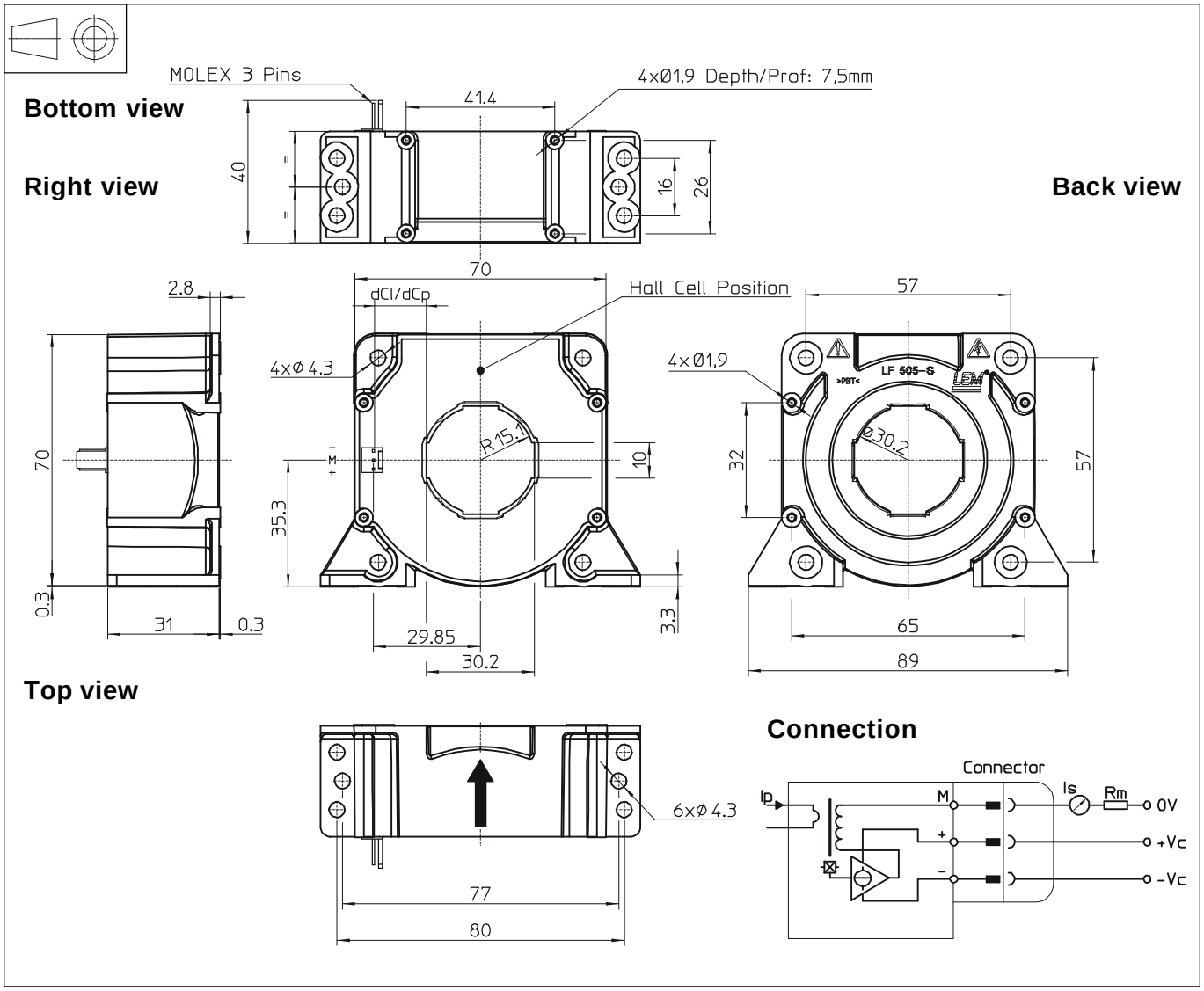


Caution, risk of electrical shock

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.

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Dimensions LF 505-S (in mm. 1 mm = 0.0394 inch)



Mechanical characteristics

• General tolerance	± 0.5 mm
• Transducer fastening	
Vertical or flat lying position	4 or 6 holes ∅ 4.3 mm
	4 or 6 steel screws M4
Recommended fastening torque	3.2 Nm or 2.37 Lb.-Ft.
or vertical position	4 holes ∅ 1.9 mm, depth : 7.5 mm
	4 screws PTKA 25, length: 6 mm
Recommended fastening torque	0.7 Nm or 0.52 Lb.-Ft.
or flat lying position	4 holes ∅ 1.9 mm, crossing
	4 screws PTKA 25, length:10 mm
Recommended fastening torque	0.75 Nm or 0.55 Lb.-Ft.
• Primary through-hole	∅ 30.2 mm
• Connection of secondary	MOLEX 6410
	3 Tin plated pins

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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