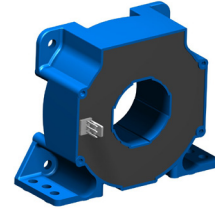


# Current Transducer LF 505-S

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



$I_{PN} = 500 \text{ A}$



## Electrical data

$I_{PN}$	Primary nominal RMS current	500	A			
$I_{PM}$	Primary current, measuring range	0 ... $\pm 800$	A			
$R_M$	Measuring resistance	with $\pm 15 \text{ V}$	@ $\pm 500 \text{ A}_{max}$	$R_{Mmin}$ 0	$R_{Mmax}$ 60	$\Omega$
			@ $\pm 800 \text{ A}_{max}$	0	11	$\Omega$
		with $\pm 18 \text{ V}$	@ $\pm 500 \text{ A}_{max}$	0	92	$\Omega$
			@ $\pm 800 \text{ A}_{max}$	0	30	$\Omega$
			@ $\pm 500 \text{ A}_{max}$	5	149	$\Omega$
with $\pm 24 \text{ V}$	@ $\pm 800 \text{ A}_{max}$	5	65	$\Omega$		
$I_{SN}$	Secondary nominal RMS current	100	mA			
$N_P/N_S$	Turns ratio	1 : 5000				
$U_C$	Supply voltage ( $\pm 5 \%$ )	$\pm 15 \dots 24$	V			
$I_C$	Current consumption ( $\pm 1 \text{ mA}$ )	$34 (@ \pm 24) + I_S$	mA			

## Accuracy - Dynamic performance data

$\epsilon_{tot}$	Total error @ $I_{PN}, T_A = 25 \text{ }^\circ\text{C}$	$\pm 0.6$	%
$\epsilon_L$	Linearity error	$< 0.1$	%
$I_O$	Offset current @ $I_p = 0, T_A = 25 \text{ }^\circ\text{C}$	Typ	$\pm 0.4$ mA
		Max	$\pm 0.4$ mA
$I_{OT}$	Temperature variation of $I_O$ $-40 \text{ }^\circ\text{C} \dots +70 \text{ }^\circ\text{C}$	$\pm 0.1$	mA
$I_{OM}$	Magnetic offset current @ $I_p = 0$ and specified $R_M$ , after an overload of $3 \times I_{PN}$	Typ	$\pm 0.2$ mA
		Max	$\pm 0.2$ mA
$t_{D90}$	Delay time to 90 % of the final output value for $I_{PN}$ step <sup>1)</sup> $< 1$		$\mu\text{s}$
$BW$	Frequency bandwidth ( $-1 \text{ dB}$ )	DC ... 100	kHz

## General data

$T_A$	Ambient operating temperature	$-40 \dots +70$	$^\circ\text{C}$
$T_{Ast}$	Ambient storage temperature	$-40 \dots +85$	$^\circ\text{C}$
$R_S$	Resistance of secondary winding @ $T_A = 70 \text{ }^\circ\text{C}$	70	$\Omega$
$m$	Mass	230	g
	Standards	EN 50155: 2021 EN 50121-3-2: 2016	

Note: <sup>1)</sup> For a  $di/dt = 100 \text{ A}/\mu\text{s}$ .

## Features

- Closed loop (compensated) current transducer using the Hall effect
- Insulating plastic case recognized according to UL 94-V0.

## Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized delay time
- Wide frequency bandwidth
- No insertion losses
- High immunity to external interference
- Current overload capability.

## Applications

- Single or three phase inverters
- Propulsion and braking choppers
- Propulsion converters
- Auxiliary converters

- Battery chargers.

## Application domains

- Railway (fixed installations and onboard).

**Current Transducer LF 505-S**

**Insulation coordination**

$U_d$	RMS voltage for AC insulation test, 50 Hz, 1 min	3.8	kV
$U_{Ni}$	Impulse withstand voltage 1.2/50 $\mu$ s	12.5	kV
		Min	
$d_{cp}$	Creepage distance	15.2	mm
$d_{ci}$	Clearance	14.5	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
$d_{cp}, d_{ci}, U_{Ni}$	Rated insulation voltage	Nominal voltage
Basic insulation	1250 V	1250 V
Reinforced insulation	690 V	690 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).

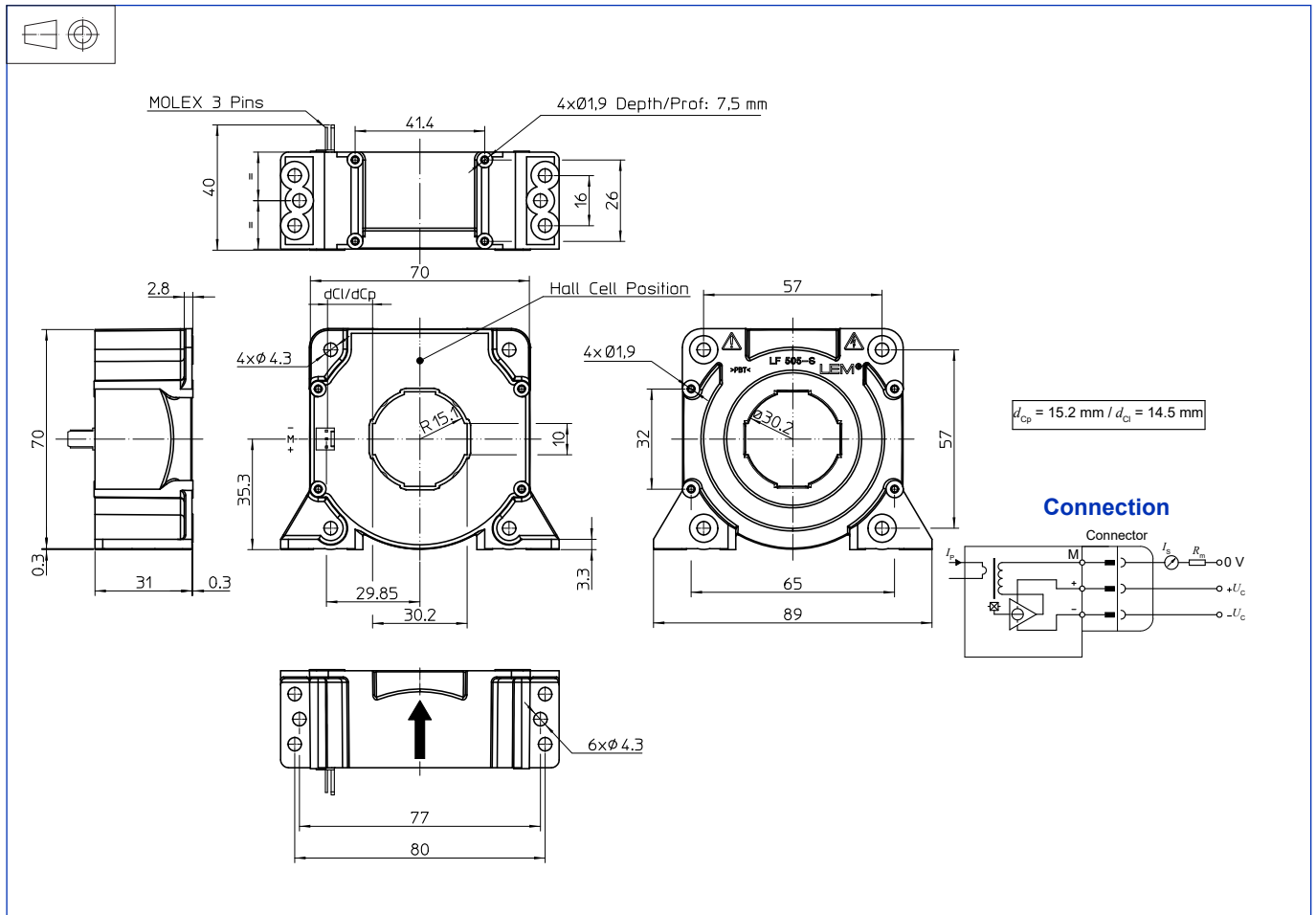
Ignoring this warning can lead to injury and/or cause serious damage.

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 LF 505-S (in mm)



### Mechanical characteristics

- General tolerance  $\pm 0.5$  mm
- Transducer fastening
  - Vertical or flat lying position 4 or 6 holes  $\varnothing 4.3$  mm
  - 4 or 6 steel screws M4
  - Recommended fastening torque 3.2 N·m or 2.37 Lb.-Ft
  - or vertical position 4 holes  $\varnothing 1.9$  mm, depth: 7.5 mm
  - 4 screws PTKA 25, length: 6 mm
  - Recommended fastening torque 0.7 N·m or 0.52 Lb.-Ft
  - or flat lying position 4 holes  $\varnothing 1.9$  mm, crossing
  - 4 screws PTKA 25, length: 10 mm
  - Recommended fastening torque 0.75 N·m or 0.55 Lb.-Ft
- Primary through-hole  $\varnothing 30.2$  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.
- 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: <https://www.lem.com/en/file/3137/download/>.
- Dynamic performances ( $di/dt$  and delay 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.