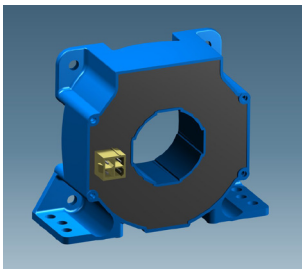
Current Transducer LF 505-S/SP40

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

I_{PN} = 500 A



Electrical data

I_{PN}	Primary nominal RMS current		500 (630/10 sec.)		A
I_{PM}	Primary current, measuring range @ ±24 V		0 ... ±1200		A
R_M	Measuring resistance		$R_{M\,min}$	$R_{M\,max}$	
	with ±15 V	@ ±500 A $_{max}$	0	31	Ω
		@ ±740 A $_{max}$	0	3	Ω
	with ±24 V	@ ±500 A $_{max}$	3	90	Ω
		@ ±1000 A $_{max}$	3	17	Ω
		@ ±1200 A $_{max}$	3	5	Ω
I_{SN}	Secondary nominal RMS current		143		mA
N_P/N_S	Turns ratio		1 : 3500		
U_C	Supply voltage (±5 %) [1]		±15 ... 24		V
I_C	Current consumption		30 (@ ±24 V) + I_S		mA

Accuracy - Dynamic performance data

ε_{tot}	Total error @ I_{PN}, T_A = 25 °C		±0.6		%
ε_L	Linearity error		< 0.1		%
			Typ	Max	
I_O	Offset current @ I_P = 0, T_A = 25 °C			±0.45	mA
I_{OT}	Temperature variation of I_O	−25 °C ... +70 °C	±0.3	±0.50	mA
		−40 °C ... +70 °C	±0.5	±0.80	mA
$t_{D\,90}$	Delay time [2] to 90 % of I_{PN}		< 1		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	Resistance of secondary winding @ T_A = 70 °C		56	Ω
m	Mass		230	g
	Standard		EN 50155: 1995	

Notes: [1] For U_C = ±24 V (±3 %) $R_{M\,min}$ = 1.6 Ω
[2] For a di/dt = 100 A/µs.

Features

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

Special features

- I_{PM} = 0 ... ±1200 A
- N_P/N_S = 1 : 3500
- U_C = ±15 ... 24 V
- T_A = −40 ... +70 °C
- Connection to secondary circuit on Molex Mini Fit Jr. 5566.

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

- Single or three phases inverter
- Propulsion and braking chopper
- Propulsion converter
- Auxiliary converter
- Battery charger.

Application domain

- Traction.

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Current Transducer LF 505-S/SP40

Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	4.4 Min	kV
d_{Cp}	Creepage distance [3)]	22.2	mm
d_{Cl}	Clearance [3)]	8.5	mm
CTI	Comparative tracking index (group IIIa)	175	

Note: [3)] Distance between “A” and “B” see outline drawing.

Safety

This transducer must be used in limited-energy secondary circuits according to EN50155.

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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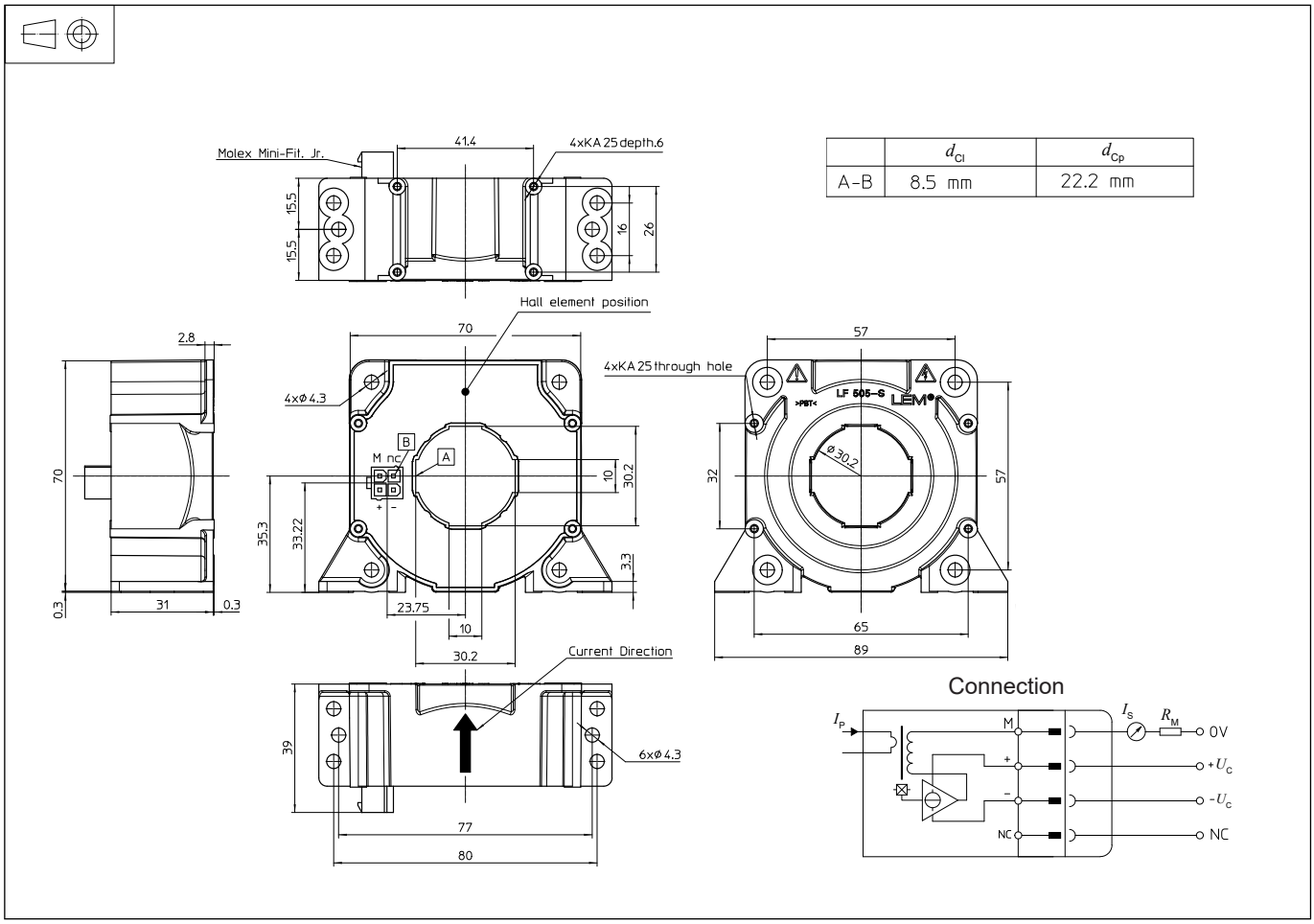
Dimensions LF 505-S/SP40 (in mm)



	d_{Cl}	d_{Cp}
A-B	8.5 mm	22.2 mm

Mechanical characteristics

- General tolerance ±0.5 mm
- Transducer fastening
  - Vertical position
    - 6 holes Ø 4.3 mm
    - 6 steel screws M4
  - Recommended fastening torque 3.2 N·m
  - or
    - 4 holes Ø 1.9 mm, depth: 7.5 mm
    - 4 screws PTKA 25, length: 6 mm
  - Recommended fastening torque 0.7 N·m
  - Horizontal position
    - 4 holes Ø 4.3 mm,
    - 4 steel screws M4
  - Recommended fastening torque 0.75 N·m
  - or
    - 4 holes Ø 1.9 mm,
    - 4 screws PTKA 25,
    - length: 10 mm
  - Recommended fastening torque 0.75 N·m
- Primary through-hole Ø 30.2 mm max
- Connection of secondary Molex Mini-Fit Jr. 5566 gold-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.

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