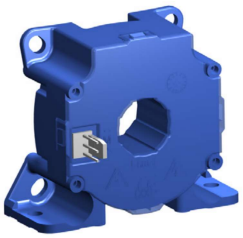
Current Transducer LF 205-S

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

I_{PN} = 200 A



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 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.

Electrical data

I_{PN}	Primary nominal RMS current			200			A
I_{PM}	Primary current, measuring range			0 ... ±420			A
R_M	Measuring resistance @		T_A = 70 °C		T_A = 85 °C		
			$R_{M\,min}$	$R_{M\,max}$	$R_{M\,min}$	$R_{M\,max}$	
	with ±12 V	@ ±200 A $_{max}$	0	71	0	69	Ω
		@ ±420 A $_{max}$	0	14	0	12	Ω
	with ±15 V	@ ±200 A $_{max}$	0	100	23	98	Ω
		@ ±420 A $_{max}$	0	28	23	26	Ω
I_{SN}	Secondary nominal RMS current			100			mA
N_P/N_S	Turns ratio			1 : 2000			
U_C	Supply voltage (+5 %)			±12 ... 15			V
I_C	Current consumption @ ±15 V			17 + I_S			mA

Accuracy - Dynamic performance data

ε_{tot}	Total error @ I_{PN}, T_A = 25 °C		±0.5		%
ε_L	Linearity error		< 0.1		%
			Typ	Max	
I_{OE}	Electrical offset current @ I_P = 0, T_A = 25 °C			±0.2	mA
I_{OM}	Magnetic offset current [1] @ I_P = 0 and specified R_M, after an overload of 3 × I_{PN}			±0.1	mA
I_{OT}	Temperature variation of I_O	−40 °C ... +85 °C	±0.12	±0.4	mA
$t_{D\,10}$	Delay time to 10 % of the final output value for I_{PN} step			< 500	ns
$t_{D\,90}$	Delay time to 90 % of the final output value for I_{PN} step [1]			< 1	µs
BW	Frequency bandwidth (−3 dB)		DC ... 100		kHz

General data

T_A	Ambient operating temperature		−40 ... +85	°C
$T_{A\,st}$	Ambient storage temperature		−40 ... +90	°C
R_S	Resistance of secondary winding	@ T_A = 70 °C	33	Ω
		@ T_A = 85 °C	35	Ω
m	Mass		78	g
	Standards		EN 50178: 1997	

Notes: [1] The result of the coercive force of the magnetic circuit
[2] For a di/dt = 100 A/µs.

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LEM reserves the right to carry out modifications on its transducers, in order to improve them.

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50/60 Hz, 1 min	3.5	kV
U_{Ni}	Impulse withstand voltage 1.2/50 µs	8.8	kV
U_t	Partial discharge RMS test voltage (q_m< 10 pC)	> 2	kV
		Min	
d_{Cp}	Creepage distance	11	mm
d_{Cl}	Clearance	10.2	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}, U_{Ni}	Rated insulation voltage	Nominal voltage
Basic insulation	500 V	500 V
Reinforced insulation	250 V	250 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.

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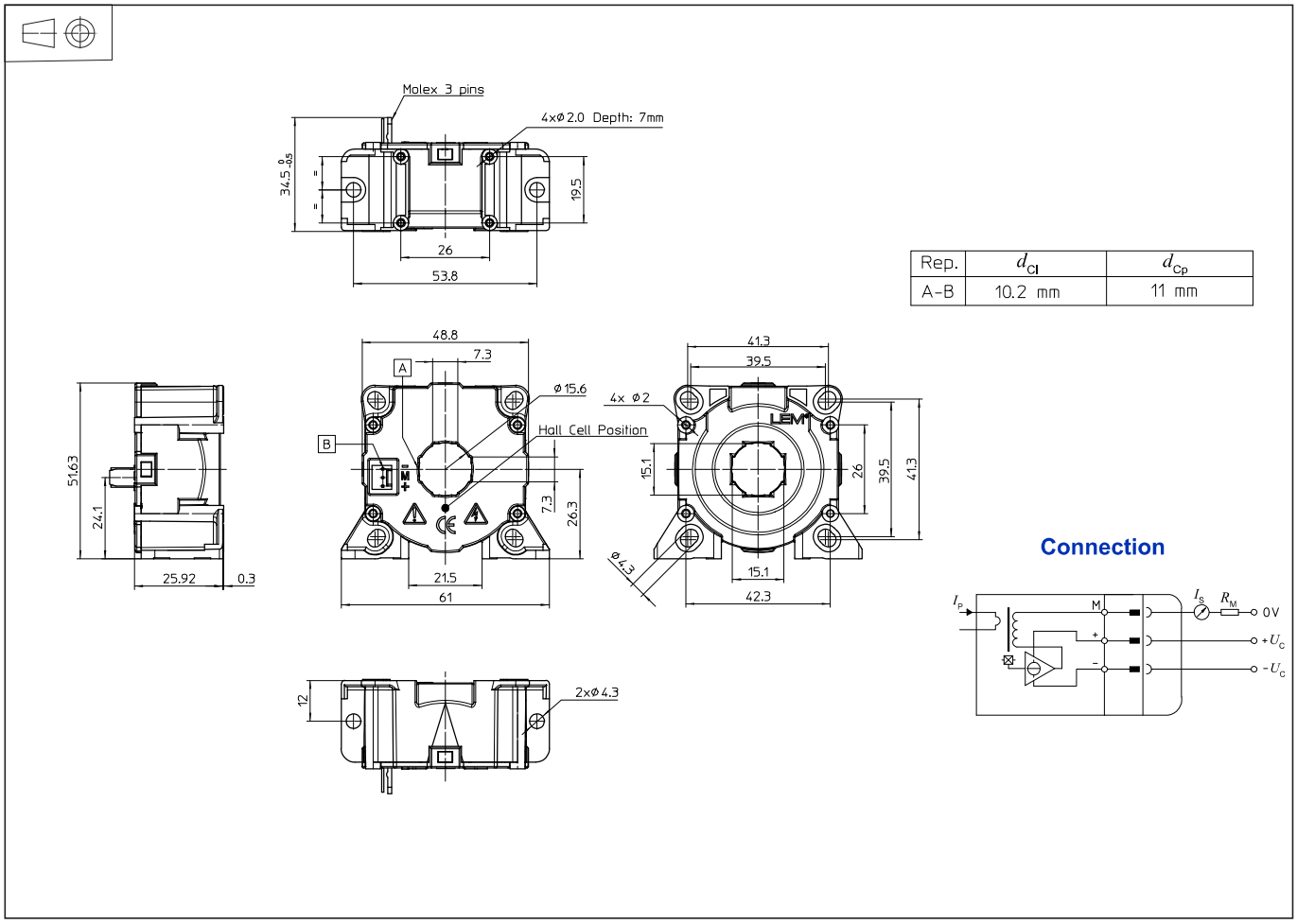
Dimensions LF 205-S (in mm)



Rep.	d_{Cl}	d_{Cp}
A-B	10.2 mm	11 mm

Connection

Mechanical characteristics

- General tolerance ±0.2 mm
- Transducer fastening
  Vertical position 2 holes Ø 4.3 mm
  2 steel screws M4
  Recommended fastening torque 1.5 N·m
  Or 4 holes Ø 2.0 mm
  depth: 7 mm
  4 screws PTKA 25
  length: 6 mm
- Transducer fastening
  Horizontal position 4 holes Ø 4.3 mm
  4 steel screws M4
  Recommended fastening torque 1.5 N·m
  Or 4 holes Ø 2.0 mm
  4 screws PTKA 25
  min length: 11.5 mm with thickness of fixed plate
  Recommended fastening torque 0.7 N·m
- Primary through-hole Ø 15.5 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.

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