

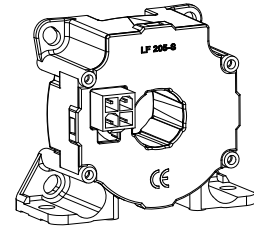
# Current Transducer LF 205-S/SP5

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



16164

**$I_{PN} = 100 \text{ A}$**



## Electrical data

$I_{PN}$	Primary nominal current rms	100	A					
$I_{PM}$	Primary current, measuring range	0 .. $\pm 200$	A					
$R_M$	Measuring resistance @	$T_A = 70^\circ\text{C}$		$T_A = 85^\circ\text{C}$				
			$R_{M \text{ min}}$	$R_{M \text{ max}}$	$R_{M \text{ min}}$	$R_{M \text{ max}}$		
		with $\pm 12 \text{ V}$	@ $\pm 100 \text{ A}_{\text{max}}$	0	95	15	94	$\Omega$
			@ $\pm 150 \text{ A}_{\text{max}}$	0	59	15	58	$\Omega$
			@ $\pm 200 \text{ A}_{\text{max}}$	0	40	15	39	$\Omega$
		with $\pm 15 \text{ V}$	@ $\pm 100 \text{ A}_{\text{max}}$	16	123	47	122	$\Omega$
			@ $\pm 150 \text{ A}_{\text{max}}$	16	78	47	77	$\Omega$
	@ $\pm 200 \text{ A}_{\text{max}}$	16	55	47	54	$\Omega$		
$I_{SN}$	Secondary nominal current rms	100	mA					
$K_N$	Conversion ratio	1 : 1000						
$V_C$	Supply voltage (+ 5 %)	$\pm 12 \dots 15$	V					
$I_C$	Current consumption @ $\pm 15 \text{ V}$	$17 + I_S$	mA					

## Accuracy - Dynamic performance data

$X_G$	Overall accuracy @ $I_{PN}$ , $T_A = 25^\circ\text{C}$	$\pm 0.6$	%
$\epsilon_L$	Linearity error	$< 0.1$	%
$I_O$	Offset current @ $I_p = 0$ , $T_A = 25^\circ\text{C}$	Typ	Max
			$\pm 0.2$
$I_{OM}$	Magnetic offset current <sup>1)</sup> @ $I_p = 0$ and specified $R_M$ , after an overload of $3 \times I_{PN}$	$\pm 0.2$	mA
$I_{OT}$	Temperature variation of $I_O$ - $40^\circ\text{C} \dots + 85^\circ\text{C}$	$\pm 0.25$   $\pm 0.65$	mA
$t_{Ta}$	Reaction time @ 10 % of $I_{PN}$	$< 500$	ns
$t_r$	Response time <sup>2)</sup> to 90 % of $I_{PN}$ step	$< 1$	$\mu\text{s}$
$di/dt$	$di/dt$ accurately followed	$> 100$	A/ $\mu\text{s}$
<b>BW</b>	Frequency bandwidth (- 3 dB)	DC .. 100	kHz

## General data

$T_A$	Ambient operating temperature	- 40 .. + 85	$^\circ\text{C}$
$T_S$	Ambient storage temperature	- 40 .. + 90	$^\circ\text{C}$
$R_S$	Secondary coil resistance @ $T_A = 70^\circ\text{C}$	10	$\Omega$
		@ $T_A = 85^\circ\text{C}$	11
$m$	Mass	78	g
	Standards	EN 50155: 2001	

Notes: <sup>1)</sup> The result of the coercive force (Hc) of the magnetic circuit  
<sup>2)</sup> With a  $di/dt$  of 100 A/ $\mu\text{s}$ .

## Features

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

## Special features

- $I_{PN} = 100 \text{ A}$
- $I_{PM} = 0 \dots \pm 200 \text{ A}$
- $K_N = 1 : 1000$
- Connection to secondary circuit on Molex Minifit Jr 5566 with gold-plated pins.

## 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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### Isolation characteristics

$V_d$	Rms voltage for AC isolation test, 50/60 Hz, 1 min	3.5	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 $\mu$ s	8.8	kV
$V_e$	Partial discharge extinction voltage rms @10 pC	> 2	kV
		Min	
<b>dCp</b>	Creepage distance	9.5	mm
<b>dCl</b>	Clearance distance	9.5	mm
<b>CTI</b>	Comparative Tracking Index (group III a)	175	

### Applications examples

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

- Over voltage category OV 2
- Pollution degree PD3
- Non-uniform field

	EN 50178	IEC 61010-1
dCp, dCl, $\hat{V}_w$	Rated isolation voltage	Nominal voltage
Single isolation	500 V	500 V
Reinforced isolation	250 V	250 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).

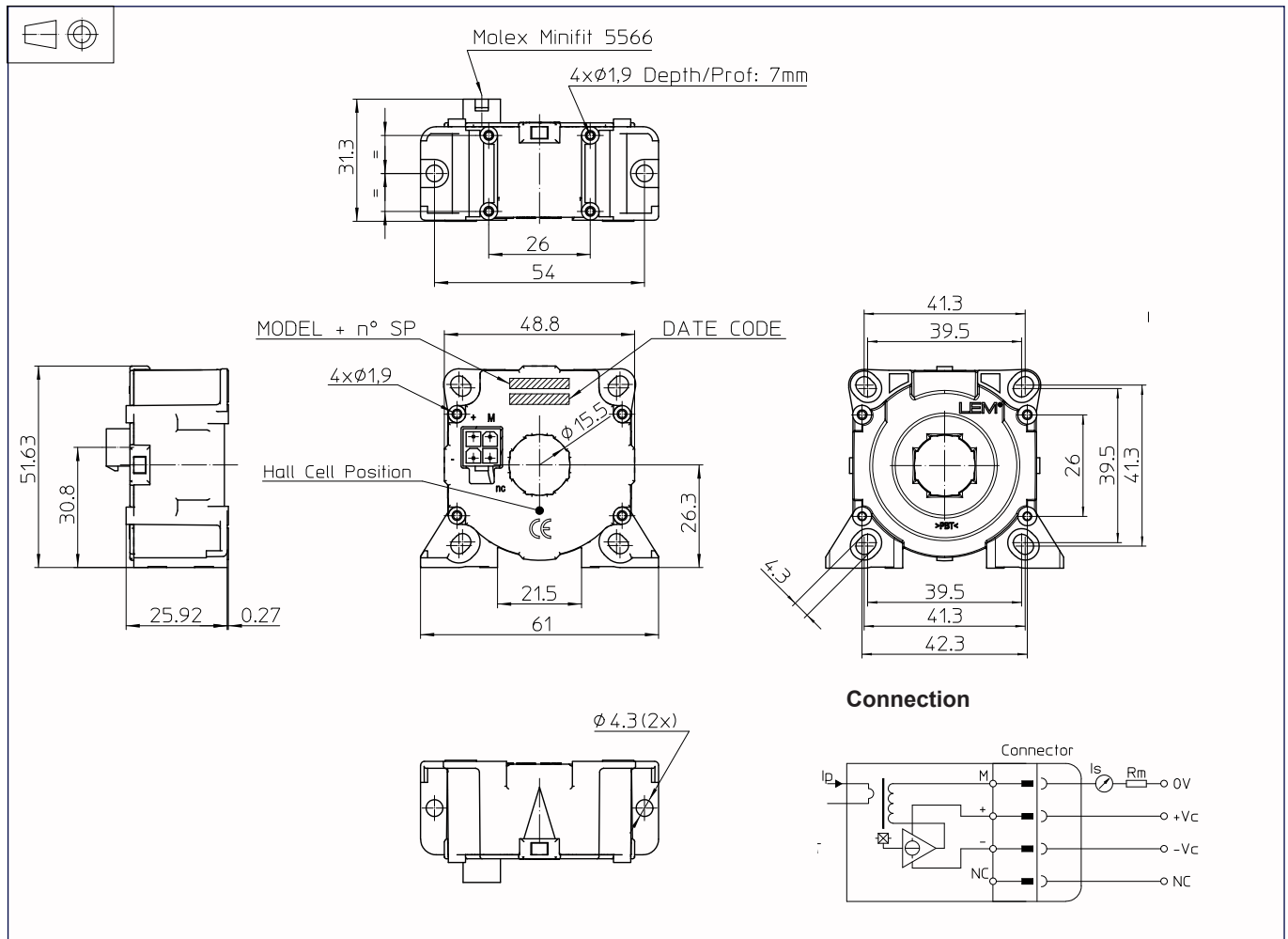
Ignoring this warning can lead to injury and/or cause serious damage.

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.

## Dimensions LF 205-S/SP5 (in mm)



### Mechanical characteristics

- General tolerance  $\pm 0.5$  mm
- Transducer fastening
  - Vertical position
    - 2 holes Ø 4.3 mm
    - 2 steel screws M4
    - Recommended fastening torque 3.2 Nm
    - or
    - 4 holes Ø 1.9 mm, depth: 7 mm
    - 4 screws PTKA 25, length: 6 mm
  - Horizontal position
    - 4 holes Ø 4.3 mm
    - 4 steel screws M4
    - Recommended fastening torque 3.2 Nm
    - or
    - 4 holes Ø 1.9 mm, 4 screws PTKA 25,
    - Recommended fastening torque 0.7 Nm
- Primary through-hole Ø 15.5 mm
- Connection of secondary Molex Minifit jr. 5566 with 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.
- Dynamic performances (di/dt and response time) are best with a single bar completely filling the primary hole.