

# Current Transducer LF 305-S/SP7

$I_{PN} = 250 \text{ A}$

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



## Electrical data

|          |   |                              |                |
|----------|---|------------------------------|----------------|
| $I_{PN}$ | Primary nominal current rms                     | 250                          | A              |
| $I_{PM}$ | Primary current, measuring range                | 0 .. $\pm 350$               | A              |
| $R_M$    | Measuring resistance<br>with $\pm 15 \text{ V}$ | $R_{M \min}$                 | $R_{M \max}$   |
|          |   | @ $\pm 250 \text{ A}_{\max}$ | 19 67 $\Omega$ |
|          |   | @ $\pm 350 \text{ A}_{\max}$ | 19 39 $\Omega$ |
| $I_{SN}$ | Secondary nominal current rms                   | 125                          | mA             |
| $K_N$    | Conversion ratio                                | 1 : 2000                     |                |
| $V_C$    | Supply voltage ( $\pm 5 \%$ )                   | $\pm 15$                     | V              |
| $I_C$    | Current consumption                             | $16 + I_S$                   | mA             |

## Accuracy - Dynamic performance data

|              |   |           |                  |
|--------------|---|-----------|------------------|
| $X_G$        | Overall accuracy @ $I_{PN}, T_A = 25^\circ\text{C}$   | $\pm 0.5$ | %                |
| $\epsilon_L$ | 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 $R_M$ ,<br>after an overload of $3 \times I_{PN}$ |           | $\pm 0.2$        |
|              |   |           | mA               |
| $I_{OT}$     | Temperature variation of $I_O$ - $40^\circ\text{C} \dots + 85^\circ\text{C}$                                      | $\pm 0.2$ | $\pm 0.5$        |
| $t_{ra}$     | Reaction time to 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/ $\mu\text{s}$ |
| BW           | Frequency bandwidth (-3 dB)   | DC .. 100 | kHz              |

## General data

|       |  |                              |                  |
|-------|--|------------------------------|------------------|
| $T_A$ | Ambient operating temperature                        | - 40 .. + 85                 | $^\circ\text{C}$ |
| $T_S$ | Ambient storage temperature                          | - 45 .. + 90                 | $^\circ\text{C}$ |
| $R_S$ | Secondary coil resistance @ $T_A = 85^\circ\text{C}$ | 32                           | $\Omega$         |
| $m$   | Mass   | 100                          | g                |
|       | Standards  | EN 50155: 1995 <sup>3)</sup> |                  |

**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/ $\mu\text{s}$   
<sup>3)</sup> Excepted testing according to IEC 61000-4-5.

## Features

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

## Special features

- $V_C = \pm 15 (\pm 5 \%) \text{ V}$
- $V_d = 3.6 \text{ kV}$
- Connection to secondary circuit via cable
- Not protected against an overload from the power supply.

## 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 inverters
- 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 Hz, 1 min | 3.6  | kV |
| $\hat{V}_w$ | Impulse withstand voltage 1.2/50 $\mu$ s        | 9    | kV |
|             |   | Min  |    |
| <b>dCp</b>  | Creepage distance                               | 10.1 | mm |
| <b>dCI</b>  | Clearance                                       | 10.1 | mm |
| <b>CTI</b>  | Comparative Tracking Index (group IIIa)         | 175  |    |

### 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).

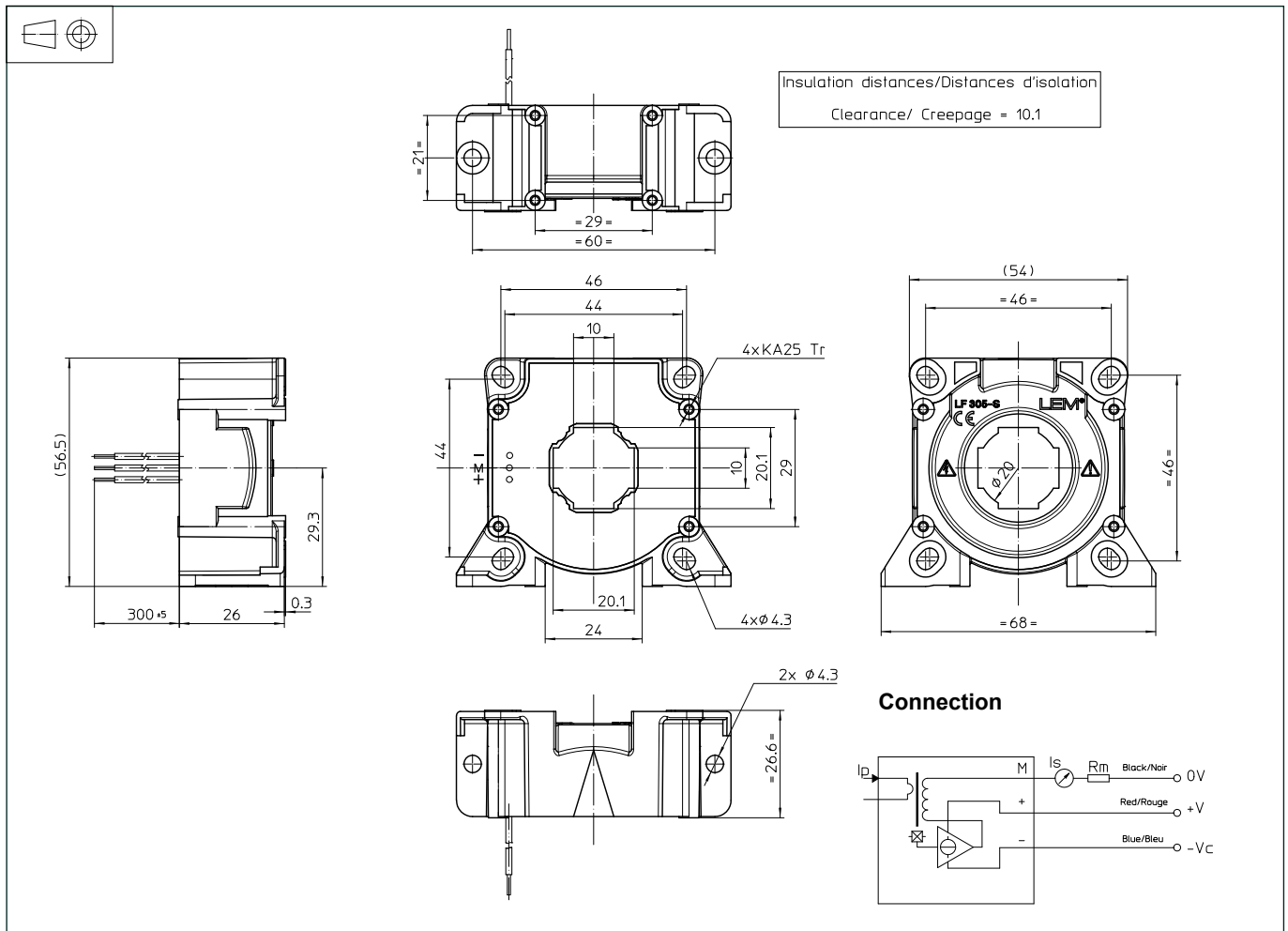
Ignoring this warning can lead to injury and/or cause serious damage.

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 305-S/SP7 (in mm)



### Mechanical characteristics

- General tolerance  $\pm 0.5$  mm
- Transducer fastening
  - Vertical position 2 holes  $\phi 4.3$  mm  
2 M4 steel screws
  - Recommended fastening torque 2.9 Nm
  - Horizontal position 4 holes  $\phi 4.3$  mm  
4 M4 steel screws
  - Recommended fastening torque 2.9 Nm
- Primary through-hole  $\phi 20$  mm
- Connection of secondary via cable with 5 mm stripped, tinned leads

### 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.