

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 (high power) and the secondary circuit (electronic circuit).



Electrical data

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

Accuracy - Dynamic performance data

X_G	Overall accuracy @ $I_{PN}, T_A = 25^\circ\text{C}$	± 0.5	%	
ϵ_L	Linearity error	< 0.1	%	
I_O	Offset current @ $I_p = 0, T_A = 25^\circ\text{C}$	Typ	Max	
			± 0.2	mA
I_{OM}	Magnetic offset current ¹⁾ @ $I_p = 0$ and specified R_M , after an overload of $3 \times I_{PN}$		± 0.2	mA
			± 0.5	mA
I_{OT}	Temperature variation of I_O - $40^\circ\text{C} \dots + 85^\circ\text{C}$	± 0.2	mA	
t_{ra}	Reaction time to 10 % of I_{PN}	< 500	ns	
t_r	Response time ²⁾ to 90 % of I_{PN} step	< 1	μs	
di/dt	di/dt accurately followed	> 100	A/ μs	
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	Ω
m	Mass	100	g
	Standards	EN 50155: 1995 ³⁾	

Notes: ¹⁾ The result of the coercive force (Hc) of the magnetic circuit
²⁾ With a di/dt of 100 A/ μs
³⁾ 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 μ s	9	kV
		Min	
dCp	Creepage distance	10.1	mm
dCI	Clearance distance	10.1	mm
CTI	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).

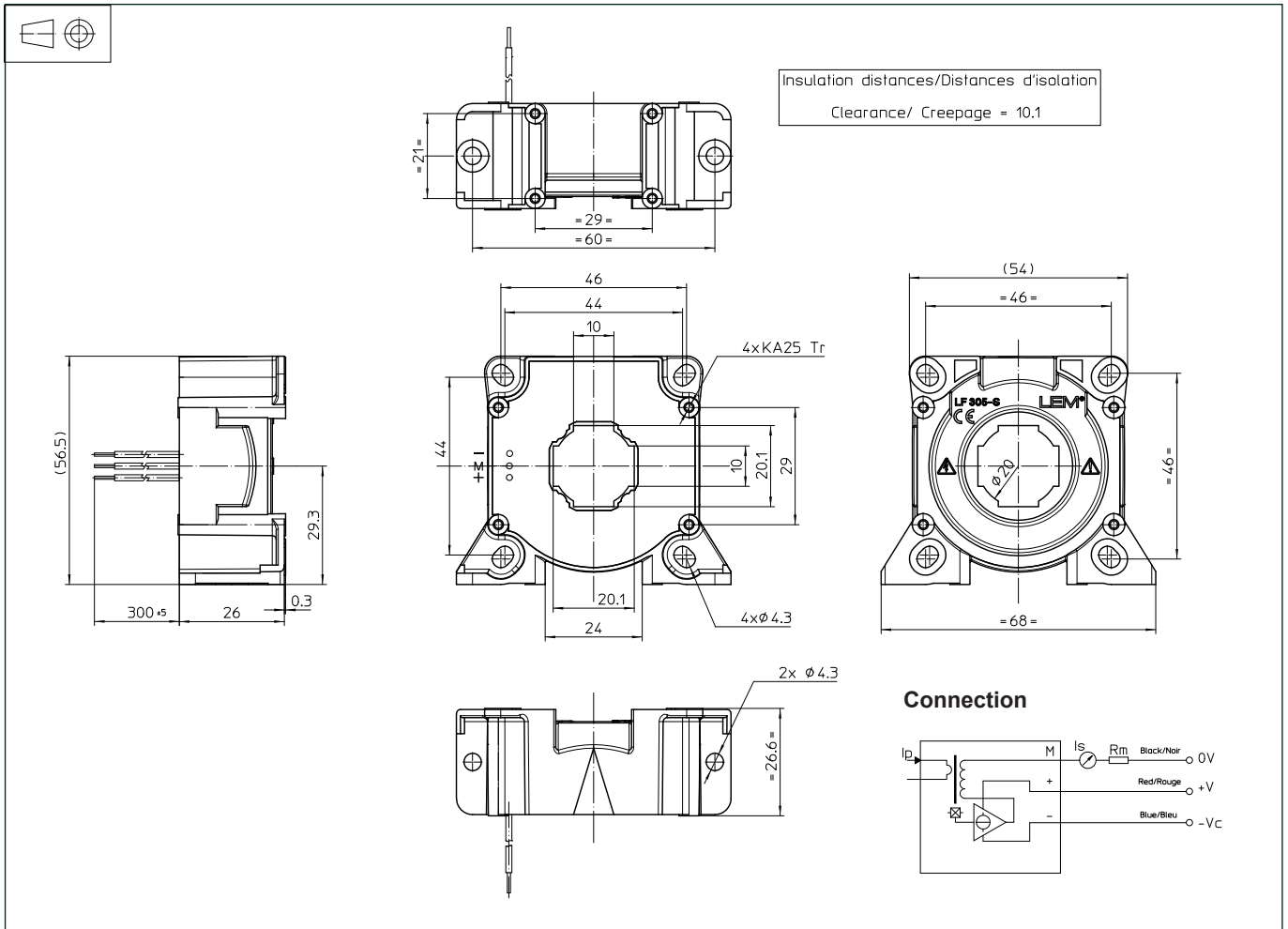
Ignoring this warning can lead to injury and/or cause serious damage.

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 ± 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.