

Current Transducer LF 2005-S/SP10

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

$$I_{PN} = 2000 \text{ A}$$



Electrical data

I_{PN}	Primary nominal current rms	2000	A	
I_{PM}	Primary current, measuring range (@ $\pm 24 \text{ V}$)	0 .. ± 3750	A	
R_M	Measuring resistance	$R_{M \min}$ $R_{M \max}$		
				with $\pm 15 \text{ V}$
		@ $\pm 2500 \text{ A}_{\max}$	0 1	Ω
	with $\pm 24 \text{ V}$	@ $\pm 2000 \text{ A}_{\max}$	3.33 29	Ω
	@ $\pm 3750 \text{ A}_{\max}$	3.33 3.33	Ω	
I_{SN}	Secondary nominal current rms	400	mA	
K_N	Conversion ratio	1 : 5000		
V_C	Supply voltage ($\pm 3 \%$)	$\pm 15 \dots 24$	V	
I_C	Current consumption	33 (@ $\pm 24 \text{ V}$) + I_S	mA	

Accuracy - Dynamic performance data

X_G	Overall accuracy @ I_{PN} , $T_A = 25^\circ\text{C}$	± 0.3	%	
ε_L	Linearity error	< 0.1	%	
I_O	Offset current @ $I_P = 0$, $T_A = 25^\circ\text{C}$	Typ	Max	
I_{OT}	Temperature variation of I_O	- $25^\circ\text{C} \dots + 70^\circ\text{C}$	± 0.2	mA
		- $40^\circ\text{C} \dots - 25^\circ\text{C}$	± 1.5	mA
t_r	Response time ¹⁾ to 90 % of I_{PN} step	< 1	μs	
di/dt	di/dt accurately followed	> 100	A/ μs	
BW	Frequency bandwidth (- 1 dB)	DC .. 150	kHz	

General data

T_A	Ambient operating temperature	- 40 .. + 70	$^\circ\text{C}$
T_S	Ambient storage temperature	- 50 .. + 85	$^\circ\text{C}$
R_S	Secondary coil resistance @ $T_A = 70^\circ\text{C}$	25	Ω
m	Mass	1.5	kg
	Standard	EN 50155: 2001	

Note: ¹⁾ With a di/dt of 100 A/ μs .

Features

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

Special features

- $V_C = \pm 15 \dots 24 (\pm 3 \%) \text{ V}$
- $T_A = - 40^\circ\text{C} \dots + 70^\circ\text{C}$
- Internal shield connected to “- V_C ”
- Connection to secondary circuit on 2 SUB-D 15 poles connectors
- Hall cell at bottom
- External shield around secondary connections
- Current direction.

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 phase 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 insulation test, 50 Hz, 1 min	6 ¹⁾	kV
		0.5 ²⁾	kV
		Min	
dCp	Creepage distance	46.3	mm
dCI	Clearance	46.3	mm
CTI	Comparative Tracking Index (group I)	600	

Notes: ¹⁾ Between primary and secondary + external shield

²⁾ Between external shield + secondary.

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).

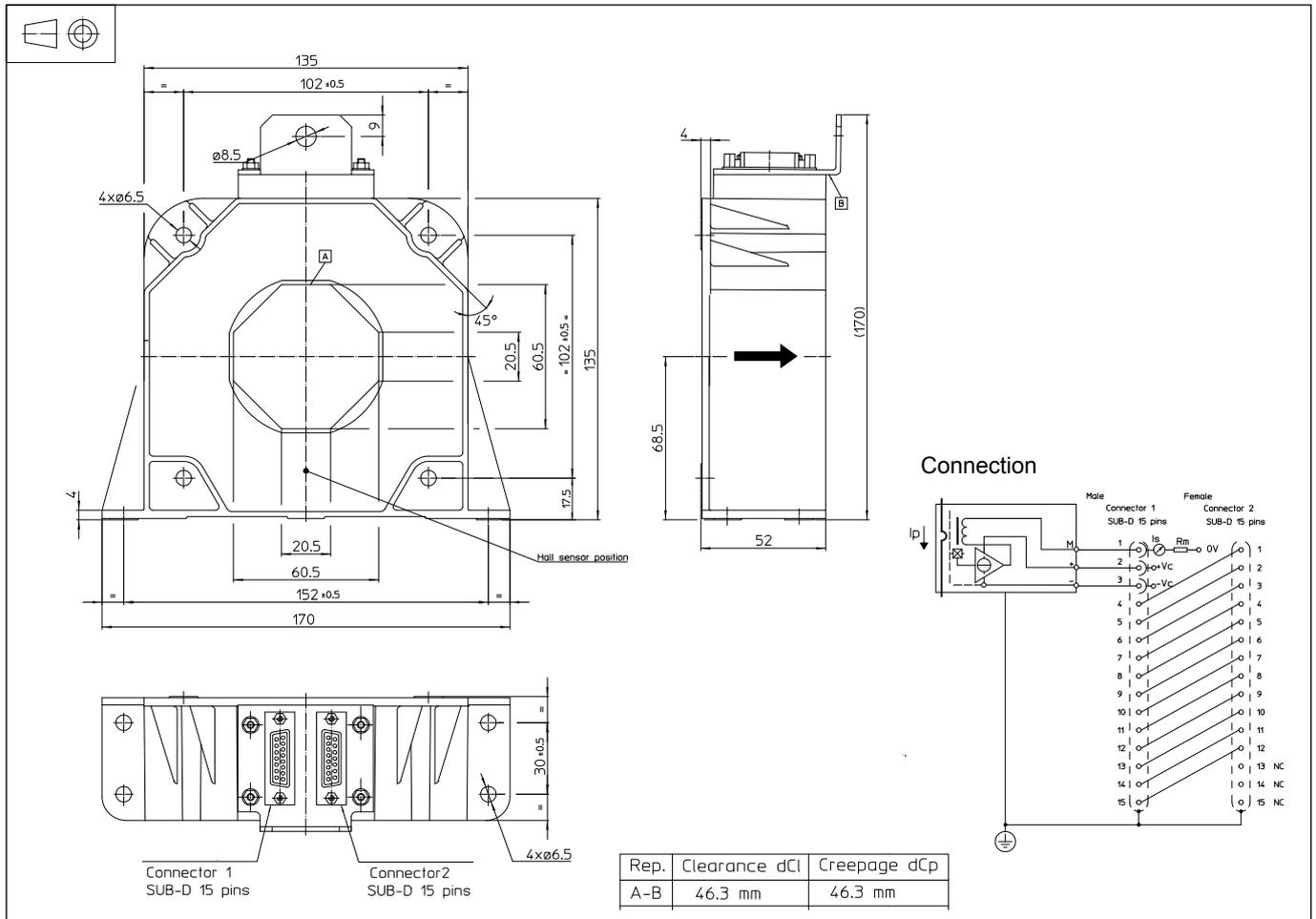
Ignoring this warning can lead to injury and/or cause serious damage.

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 2005-S/SP10 (in mm)



Mechanical characteristics

- General tolerance ± 1 mm
- Transducer fastening
Vertical or flat position 4 holes Ø 6.5 mm
4 M6 steel screws
Recommended fastening torque 4.2 Nm
- Primary through-hole 60.5 x 20.5 mm
Or Ø max 56 mm
- Connection of secondary 2 SUB-D 15 poles:
male connector 1,
female connector 2
- Connection external shield 1 hole Ø 8.5 mm
1 M8 steel screw
Recommended fastening torque 9 Nm

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.