Current Transducer LT 1005-S/SP4

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

I_{PN} = 1000 A

Electrical data

		$T_A = 70°C$		$T_A = 85°C$		
I_{PN}	Primary nominal current rms		1000			A
I_{PM}	Primary current, measuring range @ ± 24 V		0 .. ± 2000			A
R_M	Measuring resistance	$R_{M\,min}$	$R_{M\,max}$	$R_{M\,min}$	$R_{M\,max}$	
	with ± 15 V @ ± 1000 A $_{max}$	0	24	0	21	Ω
	@ ± 1500 A $_{max}$	0	7	0	4	Ω
	with ± 24 V @ ± 1000 A $_{max}$	5	58	10	55	Ω
	@ ± 2000 A $_{max}$	5	16	10	13	Ω
I_{SN}	Secondary nominal current rms		250			mA
K_N	Conversion ratio		1 : 4000			
V_C	Supply voltage (± 5 %)		± 15 .. 24			V
I_C	Current consumption		30 (@ ± 24 V) + I_S			mA

Accuracy - Dynamic performance data

		Typ	Max	
X_G	Overall accuracy [1] @ I_{PN}, $T_A = 25°C$		± 0.4	%
ε_L	Linearity error		< 0.1	%
I_O	Offset current @ $I_P = 0$, $T_A = 25°C$		± 0.50	mA
I_{OT}	Temperature variation of I_O - 40°C .. - 25°C		± 0.80	mA
	- 25°C .. + 85°C	± 0.25	± 0.70	mA
t_r	Response time [2] to 90 % of I_{PN} step		< 1	µs
di/dt	di/dt accurately followed		> 50	A/µs
BW	Frequency bandwidth (- 1 dB)		DC .. 150	kHz

General data

T_A	Ambient operating temperature		- 40 .. + 85	°C
T_S	Ambient storage temperature		- 50 .. + 95	°C
R_S	Secondary coil resistance	@ $T_A = 70°C$	26	Ω
		@ $T_A = 85°C$	29	Ω
m	Mass		850	g
	Standards		EN 50155: 2001	

Notes: [1] The overall accuracy is ± 1.5 % at ambient temperature -50°C, including a maximum offset drift 2.2 mA

[2] With a di/dt of 100 A/µs.
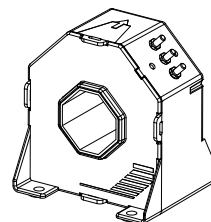
Features

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

Special features

- K_N = 1 : 4000
- V_d = 12 kV
- T_A = - 40°C .. + 85°C
- Potted
- Connection to secondary circuit on M4 threaded studs
- Personalized label.

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	12	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 µs	38	kV
		Min	
dCp	Creepage distance	61.9	mm
dCl	Clearance	53.1	mm
CTI	Comparative Tracking Index (group IIIa)	225	

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 LT 1005-S/SP4 (in mm)

Rep.	Clearance dCl	Creepage dCp
A–B	53,1 mm	61,9 mm
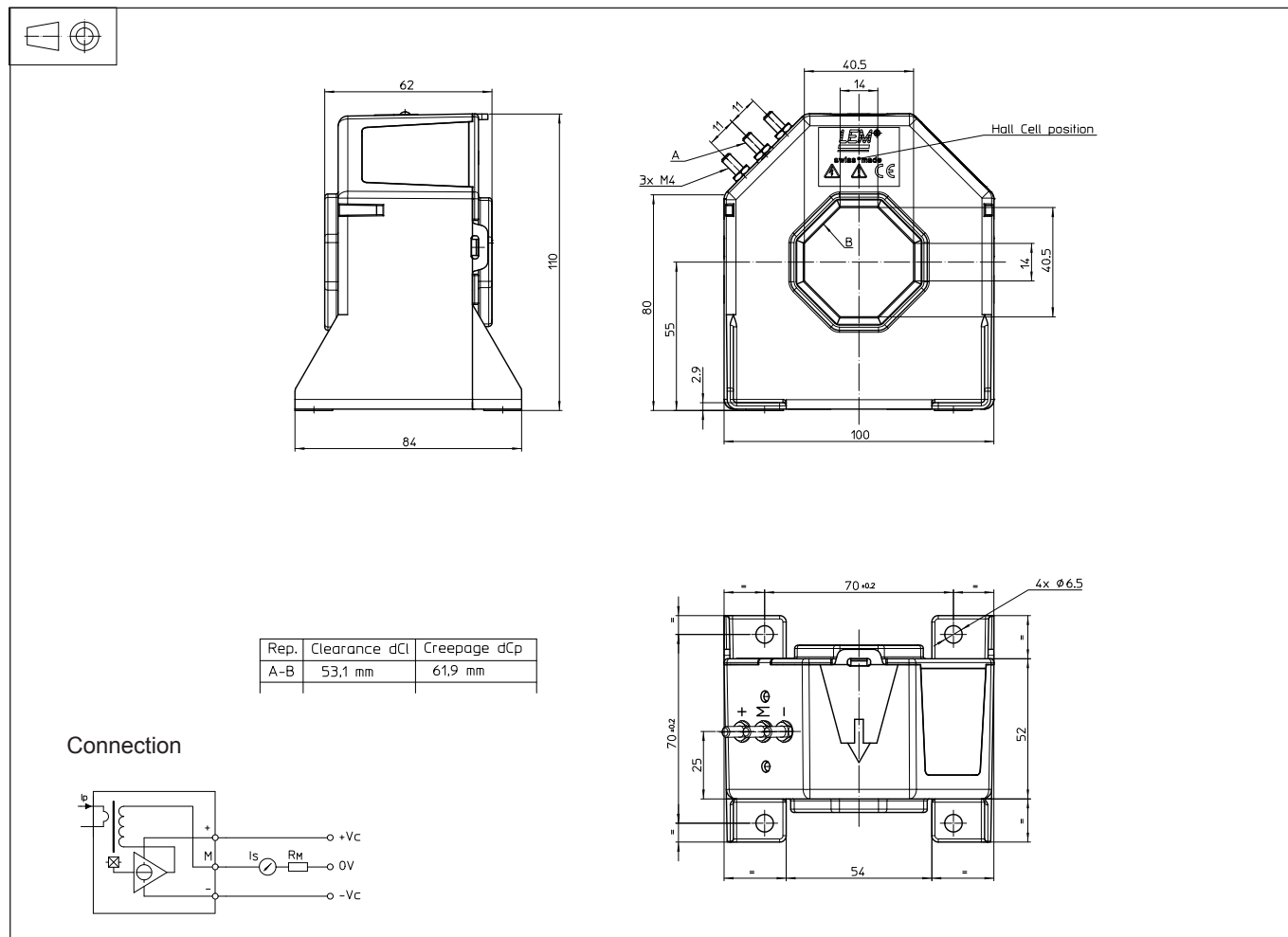
Connection

Mechanical characteristics

- General tolerance   ± 1 mm
- Transducer fastening   4 holes Ø 6.5 mm
  4 M6 steel screws
  Recommended fastening torque   4.20 Nm
- Primary through-hole   40.5 x 14 mm
  or Ø 36 mm max
- Connection of secondary   M4 threaded studs
  Recommended fastening torque   1.2 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.