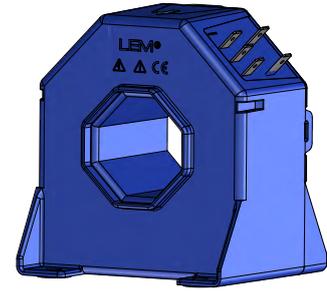


# Current Transducer LT 1005-S/SP41

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

$I_{PN} = 1000 \text{ A}$



## Electrical data

$I_{PN}$	Primary nominal rms current	1000	A				
$I_{PM}$	Primary current, measuring range @ $\pm 24 \text{ V}$	0 .. $\pm 2000$	A				
$R_M$	Measuring resistance	$T_A = 70 \text{ }^\circ\text{C}$		$T_A = 85 \text{ }^\circ\text{C}$			
		$R_{M \min}$	$R_{M \max}$	$R_{M \min}$	$R_{M \max}$		
		with $\pm 15 \text{ V}$	@ $\pm 1000 \text{ A}_{\max}$	0	18	0	16
			@ $\pm 1500 \text{ A}_{\max}$	0	2	0	1
	with $\pm 24 \text{ V}$	@ $\pm 1000 \text{ A}_{\max}$	5	52	10	51	
		@ $\pm 2000 \text{ A}_{\max}$	5	11	10	10	
$I_{SN}$	Secondary nominal rms current	250	mA				
$K_N$	Conversion ratio	1 : 4000					
$U_C$	Supply voltage ( $\pm 5 \%$ )	$\pm 15 \dots 24$	V				
$I_C$	Current consumption	$30 (@ \pm 24 \text{ V}) + I_S$	mA				

## Accuracy - Dynamic performance data

$X_G$	Overall accuracy <sup>1)</sup> @ $I_{PN}$ , $T_A = 25 \text{ }^\circ\text{C}$	$\pm 0.4$	%
$\epsilon_L$	Linearity error	$< 0.1$	%
$I_O$	Offset current @ $I_P = 0$ , $T_A = 25 \text{ }^\circ\text{C}$	Typ	$\pm 0.5$
		Max	$\pm 0.8$
$I_{OT}$	Temperature variation of $I_O$ - $40 \text{ }^\circ\text{C} \dots + 85 \text{ }^\circ\text{C}$	$\pm 0.25$	mA
$t_r$	Step response time <sup>2)</sup> to 90 % of $I_{PN}$	$< 1$	$\mu\text{s}$
$di/dt$	$di/dt$ accurately followed	$> 50$	A/ $\mu\text{s}$
$BW$	Frequency bandwidth (- 1 dB)	DC .. 150	kHz

## Test Circuit

$N_T$	Number of turns	1000	-
$R_T$	Resistance of secondary winding @ $T_A = 70 \text{ }^\circ\text{C}$	52	$\Omega$
		@ $T_A = 85 \text{ }^\circ\text{C}$	54
$I_T$	Test current @ 10 % of $I_{PN}$	0.1	A

## General data

$T_A$	Ambient operating temperature	- 40 .. + 85	$^\circ\text{C}$
$T_S$	Ambient storage temperature	- 50 .. + 95	$^\circ\text{C}$
$R_S$	Resistance of secondary winding @ $T_A = 70 \text{ }^\circ\text{C}$	26	$\Omega$
		@ $T_A = 85 \text{ }^\circ\text{C}$	27
$m$	Mass	860	g
	Standards	EN 50155: 2001 UL 508: 2010	

Notes: <sup>1)</sup> The overall accuracy is  $\pm 1.5 \%$  at ambient temperature @  $- 40 \text{ }^\circ\text{C}$ , including a maximum offset drift 2.2 mA

<sup>2)</sup> With a  $di/dt$  of 100 A/ $\mu\text{s}$ .

## Features

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

## Special features

- $N_T = 1000$  turns
- $K_N = 1 : 4000$
- $U_d = 12 \text{ kV}$
- $T_A = - 40 \text{ }^\circ\text{C} \dots + 85 \text{ }^\circ\text{C}$
- Potted.

## 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 inverter
- Propulsion and braking chopper
- Propulsion converter
- Auxiliary converter
- Battery charger.

## Application domain

- Traction.

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### Insulation coordination

$U_d$	Rms voltage for AC insulation test, 50 Hz, 1 min	12 <sup>1)</sup>	kV
$\hat{U}_w$	Impulse withstand voltage 1.2/50 $\mu$ s	30	kV
		Min	
$d_{Cp}$	Creepage distance	52.2	mm
$d_{Cl}$	Clearance	42.5	mm
<i>CTI</i>	Comparative Tracking Index (group IIIa)	225	

**Note:** <sup>1)</sup> Between primary and secondary + test winding.

### Safety

This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.



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).

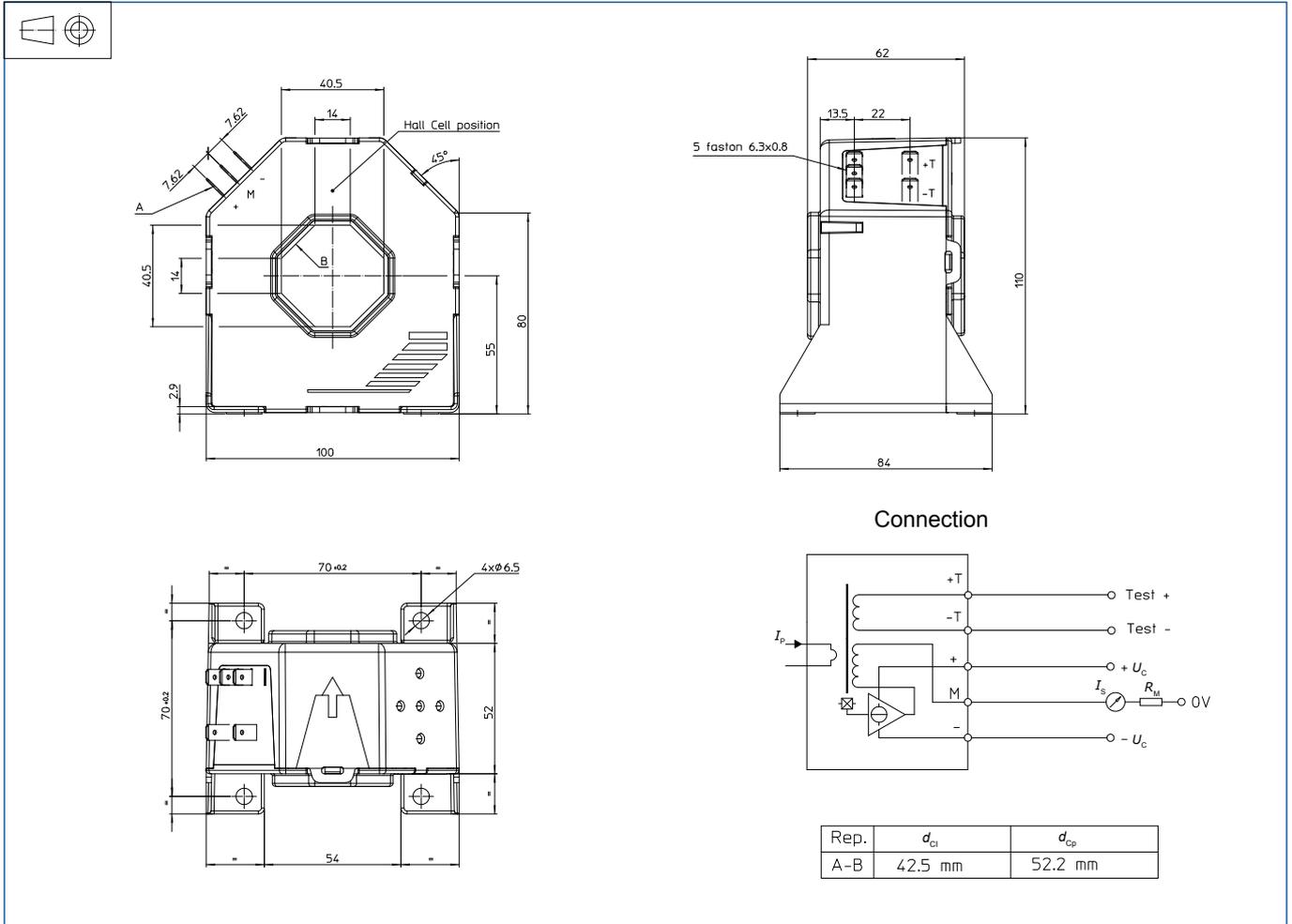
Ignoring this warning can lead to injury and/or cause serious damage.

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/SP41 (in mm)



### Mechanical characteristics

- General tolerance  $\pm 1$  mm
- Transducer fastening 4 holes  $\varnothing 6.5$  mm  
4 M6 steal screws
- Recommended fastening torque 4.2 N·m
- Primary through-hole 40.5 × 14 mm  
or  $\varnothing 36$  mm max
- Connection of secondary Faston  
6.3 × 0.8 mm

### 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.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: [Products/Product Documentation](#).
- Dynamic performances ( $di/dt$  and response time) are best with a single bar completely filling the primary hole.