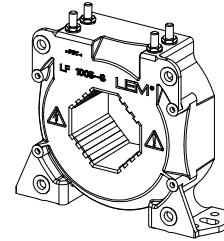


# Current Transducer LF 1005-S/SP33

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	0 ... $\pm 2000$	A
$R_M$	Measuring resistance with $\pm 24 \text{ V}$	$R_{M \min}$	$R_{M \max}$
		@ $\pm 1000 \text{ A}_{\max}$	8.5 60 $\Omega$
		@ $\pm 1500 \text{ A}_{\max}$	8.5 25 $\Omega$
	@ $\pm 2000 \text{ A}_{\max}$	8.5 8.5 $\Omega$	
$I_{SN}$	Secondary nominal RMS current	200	mA
$N_P/N_S$	Turns ratio	1 : 5000	
$U_C$	Supply voltage ( $\pm 7 \%$ )	$\pm 24$	V
$I_C$	Current consumption	$28 + I_S$	mA

## Accuracy - Dynamic performance data

$\epsilon_{\text{tot}}$	Total error @ $I_{PN}, T_A = 25 \text{ }^\circ\text{C}$	$\pm 0.5$	%
$\epsilon_L$	Linearity error	$< 0.1$	%
$I_O$	Offset current @ $I_P = 0, T_A = 25 \text{ }^\circ\text{C}$	Typ	Max
			$\pm 0.4$ mA
$I_{OT}$	Temperature variation of $I_O$ $-40 \text{ }^\circ\text{C} \dots +85 \text{ }^\circ\text{C}$	$\pm 0.3$	$\pm 0.8$ mA
$t_{D90}$	Delay time to 90 % of the final output value for $I_{PN}$ step <sup>1)</sup> $< 1$		$\mu\text{s}$
$BW$	Frequency bandwidth ( $-1 \text{ dB}$ )	DC ... 150	kHz

## General data

$T_A$	Ambient operating temperature	$-40 \dots +85$	$^\circ\text{C}$
$T_{A \text{st}}$	Ambient storage temperature	$-45 \dots +90$	$^\circ\text{C}$
$R_S$	Resistance of secondary winding @ $T_A = 85 \text{ }^\circ\text{C}$	45	$\Omega$
$m$	Mass	500	g
	Standards	EN 50155: 2017 <sup>2)</sup> UL 508: 2010 EN 50121-3-2: 2016	

**Notes:** <sup>1)</sup> For a  $di/dt = 100 \text{ A}/\mu\text{s}$   
<sup>2)</sup> Additional information available on request.

## Features

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

## Special features

- $U_C = \pm 24 (\pm 7 \%) \text{ V}$
- $U_d = 6 \text{ kV}$
- $T_A = -40 \text{ }^\circ\text{C} \dots +85 \text{ }^\circ\text{C}$
- Shield between primary and secondary
- Connection to secondary circuit on M4 threaded studs.

## 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

- Railway (fixed installations and onboard).

## Current Transducer LF 1005-S/SP33

### Insulation coordination

$U_d$	RMS voltage for AC insulation test, 50 Hz, 1 min	6 <sup>1)2)</sup>	kV
		1 <sup>3)</sup>	kV
		Min	
$d_{cp}$	Creepage distance	33.6	mm
$d_{cl}$	Clearance	33.6	mm
$CTI$	Comparative tracking index (group IIIa)	175	

**Notes:** 1) With a primary bar which fills the through-hole  
 2) Between primary and secondary + shield  
 3) Between shield and secondary.

## 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).

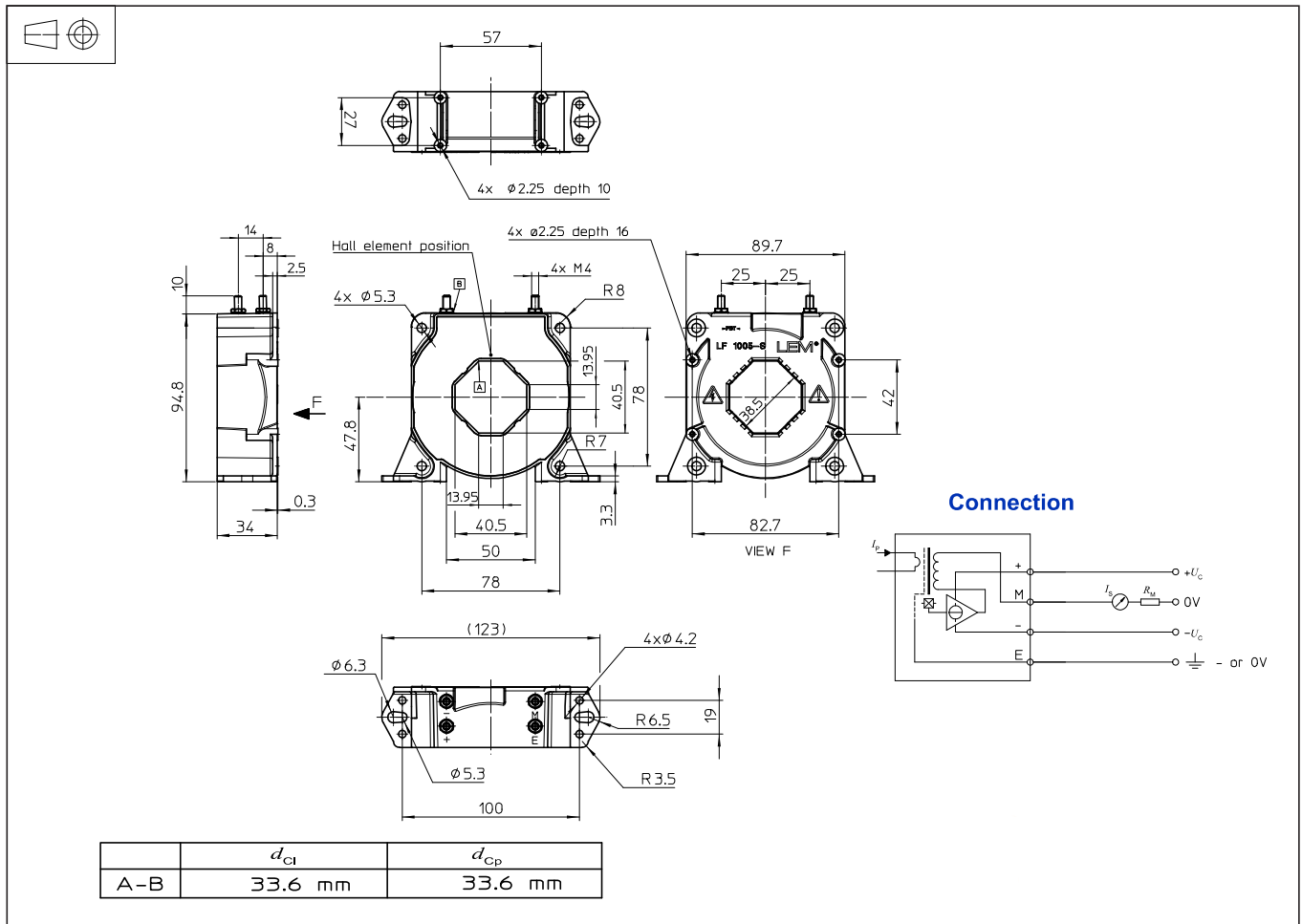
Ignoring this warning can lead to injury and/or cause serious damage.

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 LF 1005-S/SP33 (in mm)



### Mechanical characteristics

- General tolerance  $\pm 0.5$  mm
- Transducer fastening
  - Vertical position
    - 2 holes  $\varnothing 5.3$  mm
    - 2 M5 steel screws
    - Recommended fastening torque 4 N·m
    - or
    - 2 holes  $\varnothing 6.3$  mm
    - 2 M6 steel screws
    - Recommended fastening torque 5 N·m
    - or
    - 4 holes  $\varnothing 4.2$  mm
    - 4 M4 steel screws
    - Recommended fastening torque 3.2 N·m
    - or
    - 4 holes  $\varnothing 2.25$  mm depth 10 mm
    - 4 × PT KA30 screws length 10 mm
    - Recommended fastening torque 0.9 N·m
  - Horizontal position:
    - 4 holes  $\varnothing 5.3$  mm
    - Recommended fastening torque 4 N·m
    - or
    - 4 holes  $\varnothing 2.25$  mm depth 16 mm

- Recommended fastening torque 1 N·m
- Primary through-hole
  - 40.5 × 13.5 mm
  - or
  - $\varnothing 38$  mm
- Connection of secondary
  - M4 threaded studs
  - Recommended fastening torque 1.2 N·m

### 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: <https://www.lem.com/en/file/3137/download/>.
- Dynamic performances ( $di/dt$  and delay time) are best with a single bar completely filling the primary hole.