

# Current Transducer LF 1005-S/SP22

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

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



Provisional



16277

## Electrical data

$I_{PN}$	Primary nominal current rms	1000	A					
$I_{PM}$	Primary current, measuring range @ $\pm 24 \text{ V}$	0 .. $\pm 1500$	A					
$R_M$	Measuring resistance @	$T_A = 70^\circ \text{C}$		$T_A = 85^\circ \text{C}$				
			$R_{M \text{ mini}}$	$R_{M \text{ maxi}}$	$R_{M \text{ mini}}$	$R_{M \text{ maxi}}$		
		with $\pm 15 \text{ V}$	@ $\pm 1000 \text{ A}_{\text{maxi}}$	0	23	0	20	$\Omega$
			@ $\pm 1200 \text{ A}_{\text{maxi}}$	0	12	0	9	$\Omega$
		with $\pm 24 \text{ V}$	@ $\pm 1000 \text{ A}_{\text{maxi}}$	10	65	15	62	$\Omega$
			@ $\pm 1500 \text{ A}_{\text{maxi}}$	10	29	15	26	$\Omega$
$I_{SN}$	Secondary nominal current rms	200	m A					
$K_N$	Conversion ratio	1 : 5000						
$V_C$	Supply voltage ( $\pm 5 \%$ )	$\pm 15 \dots 24$	V					
$I_C$	Current consumption	28 (@ $\pm 24 \text{ V}$ ) + $I_S$	m A					

## Features

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

## Special feature

- Secondary connection on Molex Mini-Fit Jr. 5566 - gold-plated pins.

## 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.

## Accuracy - Dynamic performance data

$X_G$	Overall accuracy @ $I_{PN}, T_A = 25^\circ \text{C}$	$\pm 0.4$	%	
$\mathcal{E}_L$	Linearity error	$< 0.1$	%	
$I_O$	Offset current @ $I_P = 0, T_A = 25^\circ \text{C}$	Typ	Maxi	
			$\pm 0.4$	m A
$I_{OT}$	Temperature variation of $I_O$ - $10^\circ \text{C} \dots + 85^\circ \text{C}$	$\pm 0.3$	$\pm 0.5$	m A
$t_r$	Response time <sup>1)</sup> to 90 % of $I_{PN}$ step	$< 1$	$\mu \text{s}$	
$di/dt$	di/dt accurately followed	$> 100$	A/ $\mu \text{s}$	
<b>BW</b>	Frequency bandwidth (-1 dB)	DC .. 150	kHz	

## Applications

- AC variable speed drives and servo motor drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications.

## General data

$T_A$	Ambient operating temperature	- 10 .. + 85	$^\circ \text{C}$	
$T_S$	Ambient storage temperature	- 25 .. + 100	$^\circ \text{C}$	
$R_S$	Secondary coil resistance @	$T_A = 70^\circ \text{C}$	43	$\Omega$
		$T_A = 85^\circ \text{C}$	46	$\Omega$
$m$	Mass Standards		550	g
			EN 50178: 1997	

## Applications domain

- Industrial.

Note: <sup>1)</sup> With a di/dt of 100 A/ $\mu \text{s}$ .

## Isolation characteristics

$V_d$	Rms voltage for AC isolation test, 50 Hz, 1 min	3	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 $\mu$ s	10.6	kV
		Mini	
dCp	Creepage distance	32.15	mm
dCl	Clearance distance	20.3	mm
CTI	Comparative Tracking Index (Group III a)	175	

## Application examples

According to EN 50178 and CEI 61010-1 standards and following conditions :

- Over voltage category OV 3
- Pollution degree PD2
- Non-uniform field

	EN 50178	CEI 61010-1
dCp, dCl, $\hat{V}_w$	Rated isolation voltage	Nominal voltage
Single isolation	2500 V	2500 V
Reinforced isolation	1250 V	1250 V

## 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

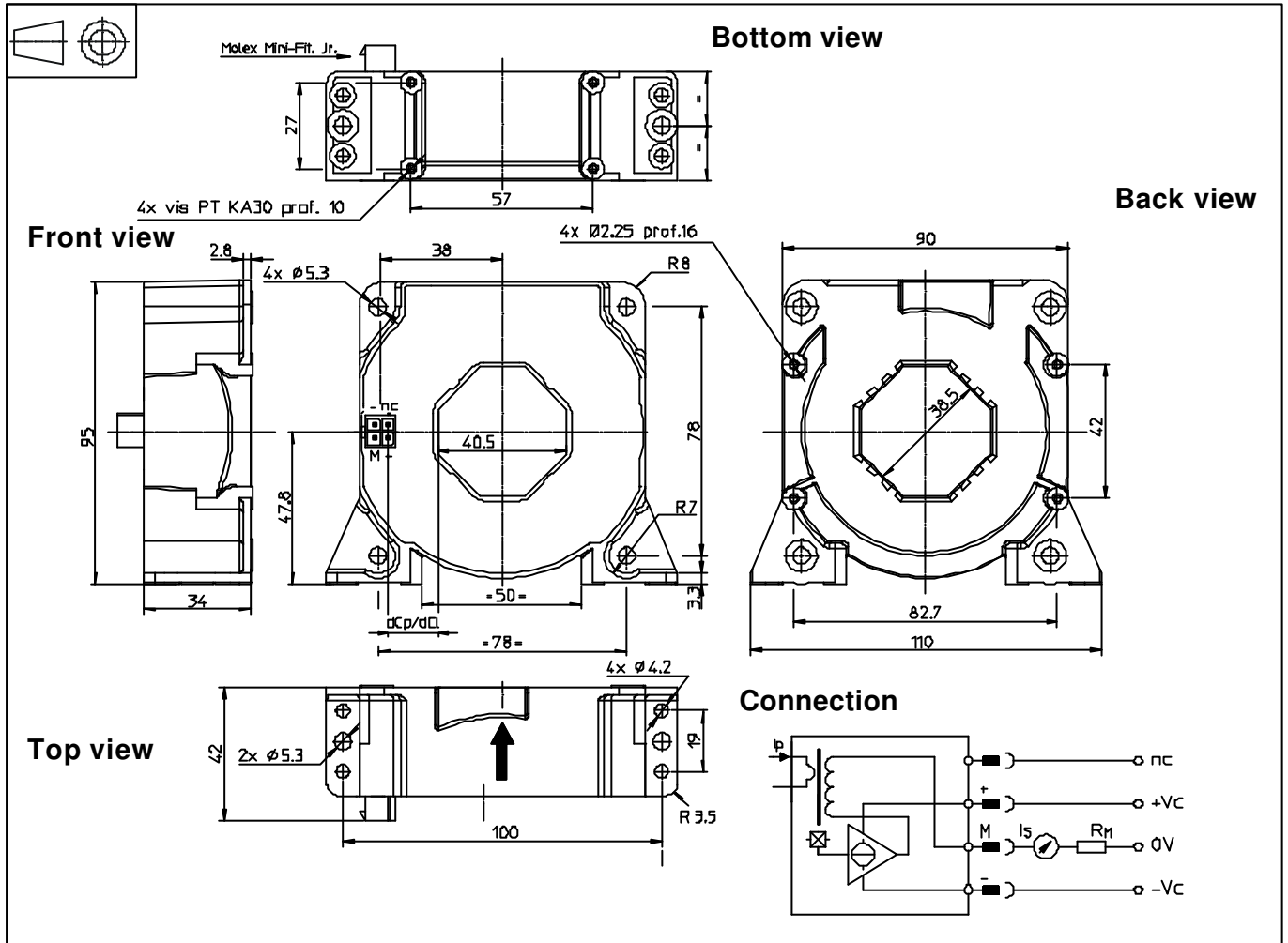
When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply).

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

This transducer is a built-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/SP22** (in mm. 1 mm = 0.0394 inch)

**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 Nm or 2.52 Lb.-Ft.
  - or
    - 4 holes  $\varnothing 4.2$  mm
    - 4 M4 steel screws
    - Recommended fastening torque 3.2 Nm or 2.02 Lb.-Ft.
- Horizontal position
  - 4 holes  $\varnothing 2.25$  mm depth 10mm
  - 4x PT KA30 screws long 10mm
  - Recommended fastening torque 0.9 Nm or 0.57 Lb.-Ft.
- Primary through-hole
  - 4 holes  $\varnothing 5.3$  mm
  - 4 M5 steel screws
  - Recommended fastening torque 4 Nm or 2.52 Lb.-Ft.
- Connection of secondary
  - 4 holes  $\varnothing 2.25$  mm depth 16mm
  - 4x PT KA30 screws long 16mm
  - Recommended fastening torque 1 Nm or 0.63 Lb.-Ft.
- Primary through-hole
  - 40.5 x 13 mm
  - or  $\varnothing 38$  mm
- Connection of secondary
  - Molex Mini-Fit Jr.
  - 5566 - gold-plated pins

**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.