

Current Transducer LF 1005-S/SP28

$I_{PN} = 941 \text{ A}$

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).



Electrical data

I_{PN}	Primary nominal current rms	941	A	
I_{PM}	Primary current, measuring range	0 .. ± 2400	A	
R_M	Measuring resistance with $\pm 24 \text{ V}$	$R_{M \min}$ $R_{M \max}$		
			@ $\pm 941 \text{ A}_{\max}$	0 53 Ω
			@ $\pm 1412 \text{ A}_{\max}$	7 30 Ω
			@ $\pm 2280 \text{ A}_{\max}$	7 11 Ω
			@ $\pm 2400 \text{ A}_{\max}$	7 9 Ω
I_{SN}	Secondary nominal rms current	314	mA	
K_N	Conversion ratio	1 : 3000		
V_C	Supply voltage (+25 %/-5%) ¹⁾	± 24 ¹⁾	V	
I_C	Current consumption	$28 + I_S$	mA	

Features

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

Special features

- $I_{PM} = 0 .. \pm 2400 \text{ A}$
- $V_C = \pm 24 (+25 \%/ -5\%) \text{ V}^{1)}$
- $T_A = -10^\circ\text{C} .. +70^\circ\text{C}$.

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 @ $I_{PN}, T_A = 25^\circ\text{C}$	± 0.4	%
e_L	Linearity error	< 0.1	%
I_O	Offset current @ $I_p = 0, T_A = 25^\circ\text{C}$	Typ	± 0.4 mA
		Max	± 0.4 mA
I_{OT}	Temperature variation of I_O -10°C .. +70°C	± 0.4	mA
t_r	Response time ²⁾ 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

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 .. +70	$^\circ\text{C}$
T_S	Ambient storage temperature	-25 .. +85	$^\circ\text{C}$
R_S	Secondary coil resistance @ $T_A = 70^\circ\text{C}$	17	Ω
m	Mass	555	g
	Standards	EN 50178: 1997	

Application Domain

- Industrial.

Notes: ¹⁾ $V_C = \pm 24 \text{ V} (+25\%)$ only with ambient operating temperature max @ $+50^\circ\text{C}$. If $T_A = +70^\circ\text{C}$, $V_C = \pm 24 \text{ V} (\pm 5\%)$

²⁾ With a di/dt of 100 A/ μs .

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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 μ s	16	kV
		Min	
dCp	Creepage distance	20.6	mm
dCl	Clearance distance	19.6	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	IEC 61010-1
dCp, dCl, \hat{V}_w	Rated isolation voltage	Nominal voltage
Single isolation	1500 V	2000 V
Reinforced isolation	1000 V	1000 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).

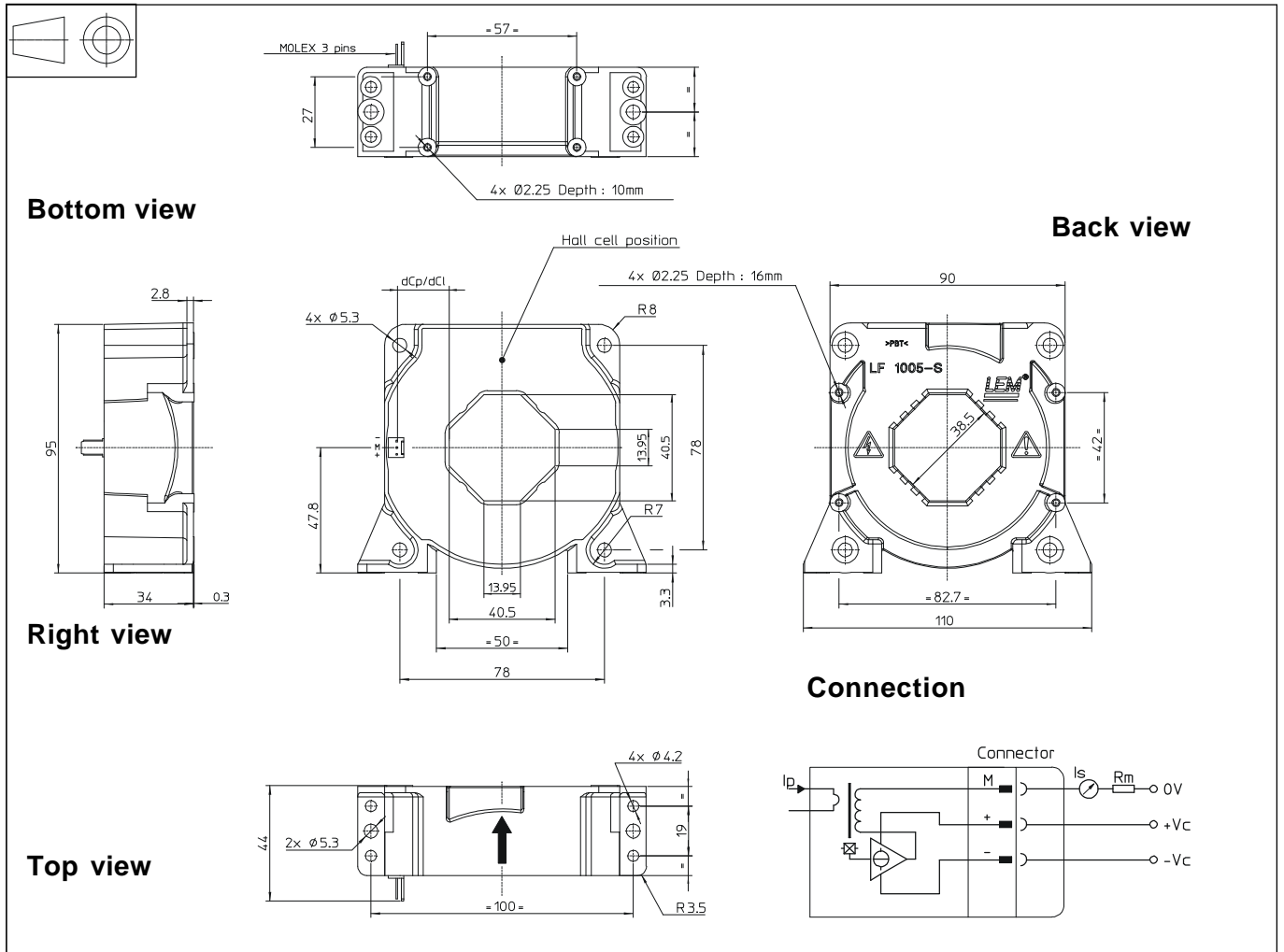
Ignoring this warning can lead to injury and/or cause serious damage.

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/SP28 (in mm. 1 mm = 0.0394 inch)



Mechanical characteristics

- General tolerance ± 0.5 mm
- Transducer fastening
 - Vertical position
 - 2 holes $\varnothing 5.3$ mm
 - 2 M5 steel screws
 - Recommended fastening torque 4 Nm or 2.96 Lb. - Ft.
 - or
 - 4 holes $\varnothing 4.2$ mm
 - 4 M4 steel screws
 - Recommended fastening torque 3.2 Nm or 2.37 Lb. - Ft.
 - or
 - 4 holes $\varnothing 2.25$ mm depth 10 mm
 - 4 x PT KA30 screws long 10 mm
 - Recommended fastening torque 0.9 Nm or 0.66 Lb. - Ft.
- Transducer fastening
 - Horizontal position
 - 4 holes $\varnothing 5.3$ mm
 - 4 M5 steel screws
 - Recommended fastening torque 4 Nm or 2.96 Lb. - Ft.
 - or
 - 4 holes $\varnothing 2.25$ mm depth 16 mm
 - 4 x PT KA30 screws long 16 mm
 - Recommended fastening torque 1 Nm or 0.74 Lb. - Ft.
- Primary through-hole
 - 40.5 x 13 mm
 - or
 - $\varnothing 38$ mm
- Connection of secondary
 - Molex 6410
 - 3 Tin 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.