Current Transducer LT 4000-S/SP35

I_{PN} = 4000 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 r.m.s. current		4000		A
I_P	Primary current, measuring range		0 .. ± 6000		A
R_M	Measuring resistance		$R_{M\,min}$	$R_{M\,max}$	
	with ± 24 V	@ ± 2500 A_{max}	0	23	Ω
		@ ± 4000 A_{max}	0	9	Ω
		@ ± 6000 A_{max}	0	1	Ω
I_{SN}	Secondary nominal r.m.s. current		800		mA
K_N	Conversion ratio		1 : 5000		
V_C	Supply voltage [1]		± 24		V
I_C	Current consumption		41 + I_S		mA
V_d	R.m.s. voltage for AC isolation test, 50 Hz, 1 mn		12 [2]		kV
			1 [3]		
V_e	R.m.s. voltage for partial discharge extinction @ 10 pC		2.5		kV

Accuracy - Dynamic performance data

X_G	Overall accuracy @ I_{PN} , T_A = 25°C		± 0.5		%
ε_L	Linearity error		< 0.1		%
			Typ	Max	
I_O	Offset current @ I_P = 0, T_A = 25°C			± 0.8	mA
I_{OT}	Thermal drift of I_O	- 40°C .. + 70°C	± 0.4	± 0.8	mA
t_r	Response time [4] @ 90 % of I_{PN}		< 1		µs
di/dt	di/dt accurately followed		> 50		A/µs
f	Frequency bandwidth (- 1 dB)		DC .. 100		kHz

Test circuit

N_T	Number of turns		1000	
R_T	Resistance of test circuit @ T_A = 70°C		22	Ω
I_T	Test current @ 25 % de I_{PN}		1	A

General data

T_A	Ambient operating temperature		- 40 .. + 70	°C
T_S	Ambient storage temperature		- 50 .. + 85	°C
R_S	Secondary coil resistance @ T_A = 70°C		15	Ω
m	Mass		6.3	kg
	Standards		EN 50155 : 1995	

Notes :
[1] ± 24 V (- 12.5 %, + 10 %)
[2] Between primary and secondary + shield + test
[3] Between secondary and test and shield
[4] With a di/dt of 100 A/µs.

Features

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

Special features

- V_d = 12 kV [2]
- N_T = 1000 turns
- T_A = - 40°C .. + 70°C
- Internal shield connected to the external shield
- Connection to secondary circuit on LEMO EGJ. 1B. 305. CYC.

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

Application Domaine

- Traction

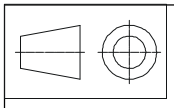
Frequency response of LT 4000-S/SP35 in the bandwidth 20 Hz < f < 200 Hz						
	Line current of 0 A		Line current of 20 A		Line current of 400 A	
AC current (20...200 Hz)	Amplitude error [%]	Phase error [°]	Amplitude error [%]	Phase error [°]	Amplitude error [%]	Phase error [°]
1 A (at 50 Hz)	± 20.6	-15	± 6.7	-3.6	± 6.7	-3.6
2 A (at 50 Hz)	± 11.9	-7	± 4.1	-3	± 4.1	-3

Amplitude error : in % of the measured signal

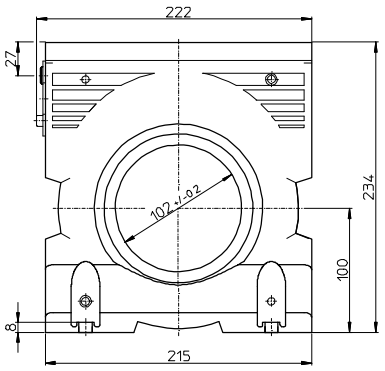
Phase error : in degrees with respect to the measured signal

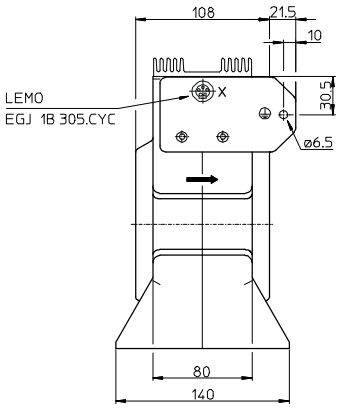
Maximum amplitude and phase errors for small AC currents added to different DC line currents.

Dimensions LT 4000-S/SP35 (in mm. 1mm = 0.0394 inch)

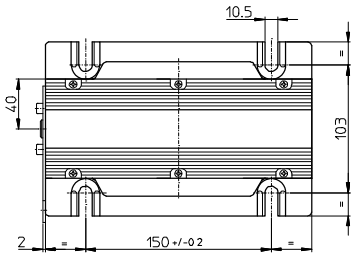


Front view

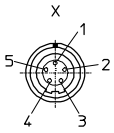




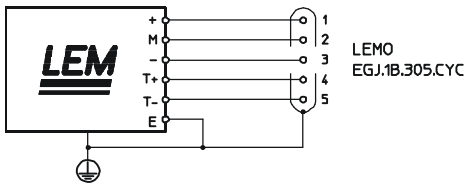
Left view



Top view



Connection



Secondary terminals

Pin	1	: supply voltage + 24 V
Pin	2	: measure
Pin	3	: supply voltage - 24 V
Pin	4	: test winding +
Pin	5	: test winding -
Terminal	⏚	: earth

Mechanical characteristics

- General tolerance ± 1mm
- Transducer fastening 4 slots ∅ 10.5 mm
  4 M10 steel screws
  Recommended fastening torque 11.5 Nm or 8.48 Lb. -Ft.
- Primary through-hole ∅ 102 mm
- Connection of secondary LEMO EGJ.1B.305.CYC

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.