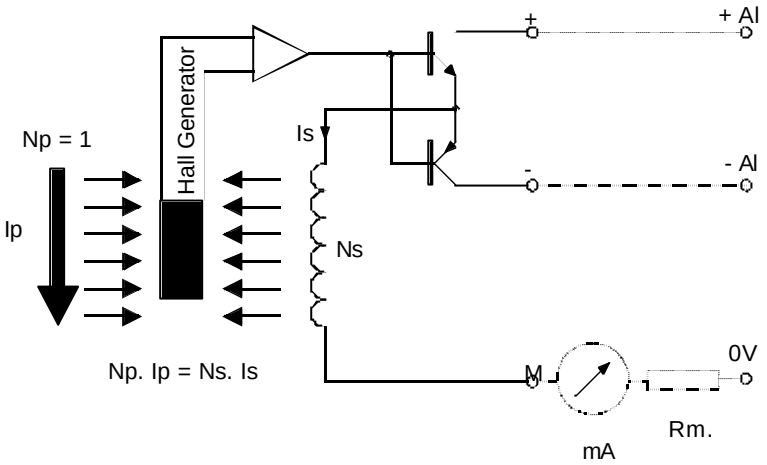
Document Title	Document Number	Revision Index	For-mat	No. of Pages	Lan-guage	File name	File Type
User Guide LF 2005-S/SP13	1	0	A4	5	EN	User Guide LF 2005-S/SP13_en	Word 2000
Datasheet	2	1	A4	2	EN	97.14.69.013.0.pdf	PDF (Adobe Acrobat 5.0)
Drawing	3	3	A2	1	FR	92.23.01.902.0	DXF
Material list	4	1	A4	2	EN	LF 2005-S SP13 materials.pdf	PDF (Adobe Acrobat 5.0)

SOMMAIRE

1 DESCRIPTION

The LF 2005-S/SP13 current transducer is mounted in a thermoplastic self-extinguishing housing.
The housing includes the magnetic and electronic circuits. It supports the connections of the measuring circuit.
It is wholly molded in order to ensure the rigidity within the housing and the insulation between the primary and secondary circuits.

2 OPERATING PRINCIPLE



3 TECHNICAL CHARACTERISTIC

The datasheet on the following page includes all the necessary data :

- electrical characteristics
- accuracy
- general characteristics
- specificities
- dimensions
- connections

Complementary information :

- Protection degree : IP54
- Reliability of the current transducer LF2005-S/SP6:

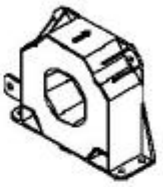
Environment / Temperature	**GM/30°C**	**GM/40°C**	**GM/50°C**
Total Failure Rate (FIT)	$2.883 * 10^{-6}$	$3.434 * 10^{-6}$	$4.085 * 10^{-6}$
MTBF (Hours)	346'906	291'209	244'791

4 DATA SHEET

Current Transducer LF 2005-S/SP13

I_{PN} = 2000 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		2000		A
I_P	Primary current, measuring range		0 .. ± 3500		A
I_P	Overload capability @ 10 ms		20		kA
R_M	Measuring resistance		$R_{M\,min}$	$R_{M\,max}$	
	with ± 15 V	@ ± 2000 A_{max}	0	4	Ω
	with ± 24 V	@ ± 2000 A_{max}	0	23	Ω
		@ ± 3100 A_{max}	0	6	Ω
		@ ± 3500 A_{max}	0	2	Ω
I_{SN}	Secondary nominal r.m.s. current		400		mA
K_N	Conversion ratio		1 : 5000		
V_C	Supply voltage [1]		± 15 .. 24		V
I_C	Current consumption		33 (@ ± 24 V) + I_S		mA
V_d	R.m.s. voltage for AC isolation test, 50 Hz, 1 mn		10 [2]		kV
			100 [3]		V
V_e	R.m.s. voltage for partial discharges extinction @ 10 pC		> 4.8		kV

Accuracy - Dynamic performance data

X_G	Overall accuracy @ I_{PN}, T_A = 25°C		± 0.3		%
ε_L	Linearity		< 0.1		%
			Typ	Max	
I_O	Offset current @ I_P = 0, T_A = 25°C			± 0.5	mA
I_{OT}	Thermal drift of I_O	- 25°C .. + 80°C	± 0.2	± 0.4	mA
		- 40°C .. - 25°C		± 1.5	mA
t_r	Response time [4] @ 90 % of I_{PN}		< 1		µs
di/dt	di/dt accurately followed		> 100		A/µs
f	Frequency bandwidth (- 1 dB)		DC .. 150		kHz

General data

T_A	Ambient operating temperature		- 40 .. + 80		°C
T_S	Ambient storage temperature		- 50 .. + 85		°C
R_S	Secondary coil resistance @	T_A = 70°C	24.8		Ω
		T_A = 85°C	25.6		Ω
m	Mass		1.5		kg
	Standards [5]		EN 50155		

Notes : [1] ± 15 V (- 5 %) .. ± 24 V (+ 20 %)
[2] Between primary and secondary + shield
[3] Between secondary and shield
[4] With a di/dt of 100 A/µs
[5] A list of corresponding tests is available.

Features

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

Special features

- V_C = ± 15 .. 24 V [1]
- V_d = 10 kV [2]
- T_A = - 40°C .. + 80°C
- Internal shield connected to V_C -
- Connection to secondary circuit on LEMO EEJ.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

- 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.

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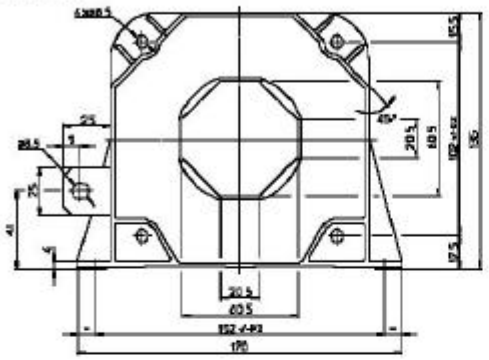
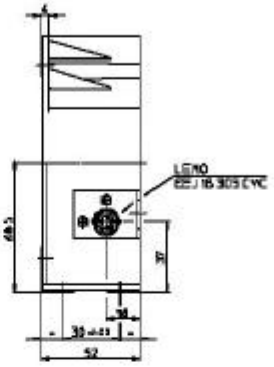
LEM Components www.lem.com

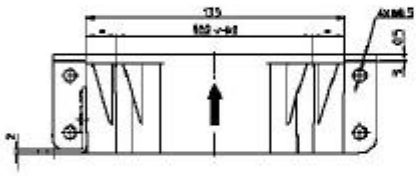
Dimensions LF 2005-S/SP13 (in mm. 1 mm = 0.0394 inch)

Front view



Left view



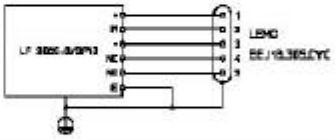


Top view

Secondary terminals

Pin	1	: supply voltage + 15 .. 24 V
Pin	2	: measure
Pin	3	: supply voltage - 15 .. 24 V
Pin	4	: NC
Pin	5	: NC
Terminal	⏚	: earth

Connection



Mechanical characteristics

• General tolerance	± 0.5 mm
• Fastening	4 holes ∅ 6.5 mm
• Primary through-hole	60.5 x 60.5 mm
• Connection of secondary	LEMO EEJ.1B.305.CYC
• Connection to the ground	hole ∅ 8.5 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.
- Dynamic performances (di/dt and response time) are best with a single bar completely filling the primary hole.

5 SECURITY ADVICES

5.1 Installation

The LEM current transducers are designed for measurement high electrical currents, with a high galvanic isolation level. They are installed in equipment designed in the same way to make usage of high current and voltages. When mounting a transducer, the operator will follow the mounting instruction and security rules indicated for the profession. The secondary cables will be installed and maintained at the right distance, corresponding to the isolation level indicated for the installation.

Mechanical fastening of the transducer will be done with the appropriate means (see indication on the datasheet, page 4). Fastening torque will be followed.

5.2 Function

During function, the transducer is not dangerous as such, but the primary conductor installed into the primary hole. Safety for person is not different as the one given for the installation. The electrical isolation level is indicated in the datasheet (page 3).

6 ELIMINATION

The transducer is completely moulded. Therefore a separation of the various parts is possible only with difficulties. The elimination would so follow the way and mean dedicated to electronic devices.

6.1 Materials used in the transducer

UCLEM

Number: 90.14.69.013.0
Description: LF 2005-S/SP13

Elements	Weight (gr)	Materials Name	Type	Composition	Manufacturer	Class UL	Standard	Density
Housing	212.3	TECHNYL A20 V25	Plastic	PA 6.6+25% Glass Fiber	RHONE POULENC	V-0	I47 / F3	1.38
Moulding Product 1	60.0	RTV627 Basis,Hardener	Plastic	Elastomer silicon Bi-compound 1/1		V-0	I1 F0	1.39
Moulding Product 2	480.0	TEDISTAC/ISOSTAC D4150/3	Plastic	Polyurethan resin bi-compound (Polyether 100 / Diisocyanat 16)	STAC	V-0	I3 F1	1.45
Magnetical Circuit	110.0	Iron-Silicon	Metal	Iron-Silicon (25% Si)	Permag Ltd			
Magnetical Core Protection	1.0	PP NAT.	Plastic	PP NAT.(HB)				
Printed Circuit Board A	19.4	FR4	Plastic	Epoxy resin + 40%GF	Isola, and others	V-0	I1 F3	1.85
Secondary Winding Wire	670.0	Copper wire - LOTAN C13P	Metal	Copper wire Enamelled with Polyurethan varnish	HUBER+SUHNER	V-0	no class	
Total	1452.7							

UCLEM

Number:
Description:

Elements	% of recyclable materials	End of life indicator: % of re use	% of recyclable	% of waste	Waste management	Waste in production	Material warning	Temp. 0.45 Mpa	Temp. 1.8 Mpa	Calorific Value	Mechanical Charpy [KJ/m2]	Mechanical Izod [KJ/m2]	CTI	Dielectric strenght	Magnetic coercitivity	Magnetic induction
Housing	0	0	0	0		Cremation	0	None	250	250		9	73 [J/m]	375	16	
Moulding Product 1																
Moulding Product 2	0	0	0	0		Cremation		Diisocyanat						600	22	
Magnetical Circuit	100	0	100	100		Dump	0	None								
Magnetical Core Protection																
Printed Circuit Board A	0	0	0	0		Cremation	0						0.45 [Kj/m2]	min. 175		
Secondary Winding Wire	100	100	100	100			1									
Total																