

Current Transducer LF 306-S/SP7

$$I_{PN} = 300 \text{ A}$$

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).



0618

Electrical data

I_{PN}	Primary nominal current rms	300	A			
I_{PM}	Primary current, measuring range	0 .. ± 500	A			
R_M	Measuring resistance @ with $\pm 15 \text{ V}$	$T_A = 70^\circ\text{C}$				
		$T_A = 85^\circ\text{C}$				
		R_{Mmin}	R_{Mmax}			
		R_{Mmin}	R_{Mmax}			
	@ $\pm 300 \text{ A}_{max}$	15	56	22	54	Ω
	@ $\pm 500 \text{ A}_{max}$	15	20	22 ¹⁾	22 ¹⁾	Ω
I_{SN}	Secondary nominal current rms	150	mA			
K_N	Conversion ratio	1 : 2000				
V_C	Supply voltage ($\pm 5 \%$)	± 15	V			
I_C	Current consumption	$20 + I_s$	mA			

Features

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

Special features

- $T_A = -40^\circ\text{C} \dots +85^\circ\text{C}$
- Connection to secondary circuit on shielded cable GKW-LW/S 3 x 0.5 mm² (length 1m).

Accuracy - Dynamic performance data

X	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	Max
			± 0.20
I_{OM}	Residual current ²⁾ @ $I_p = 0$, after an overload of $3 \times I_{PN}$		± 0.08 mA
I_{OT}	Temperature variation of I_O - $40^\circ\text{C} \dots +85^\circ\text{C}$	± 0.35	± 0.80 mA
t_{ra}	Reaction time @ 10 % of I_{PN}	< 500	ns
t_r	Response time ³⁾ to 90 % of I_{PN} step	< 1	μs
di/dt	di/dt accurately followed	> 100	A/ μs
BW	Frequency bandwidth (- 1 dB)	DC .. 100	kHz

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.

General data

T_A	Ambient operating temperature	- 40 .. + 85	$^\circ\text{C}$
T_S	Ambient storage temperature	- 45 .. + 90	$^\circ\text{C}$
R_S	Secondary coil resistance @ $T_A = 85^\circ\text{C}$	34	Ω
m	Mass	100	g
	Standards	EN 50155: 1995	

Applications

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

Application Domain

- Traction.

Notes : ¹⁾ @ $\pm 470 \text{ A}_{max}$

²⁾ The result of the coercive field of the magnetic circuit

³⁾ With a di/dt of 100 A/ μs .

Current Transducer LF 306-S/SP7

Isolation characteristics

V_d	Rms voltage for AC isolation test, 50 Hz, 1 min	6	kV
		Min	
dCp	Creepage distance	6.9	mm
dCl	Clearance distance	6.3	mm
CTI	Comparative Tracking Index (Group III a)	175	

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

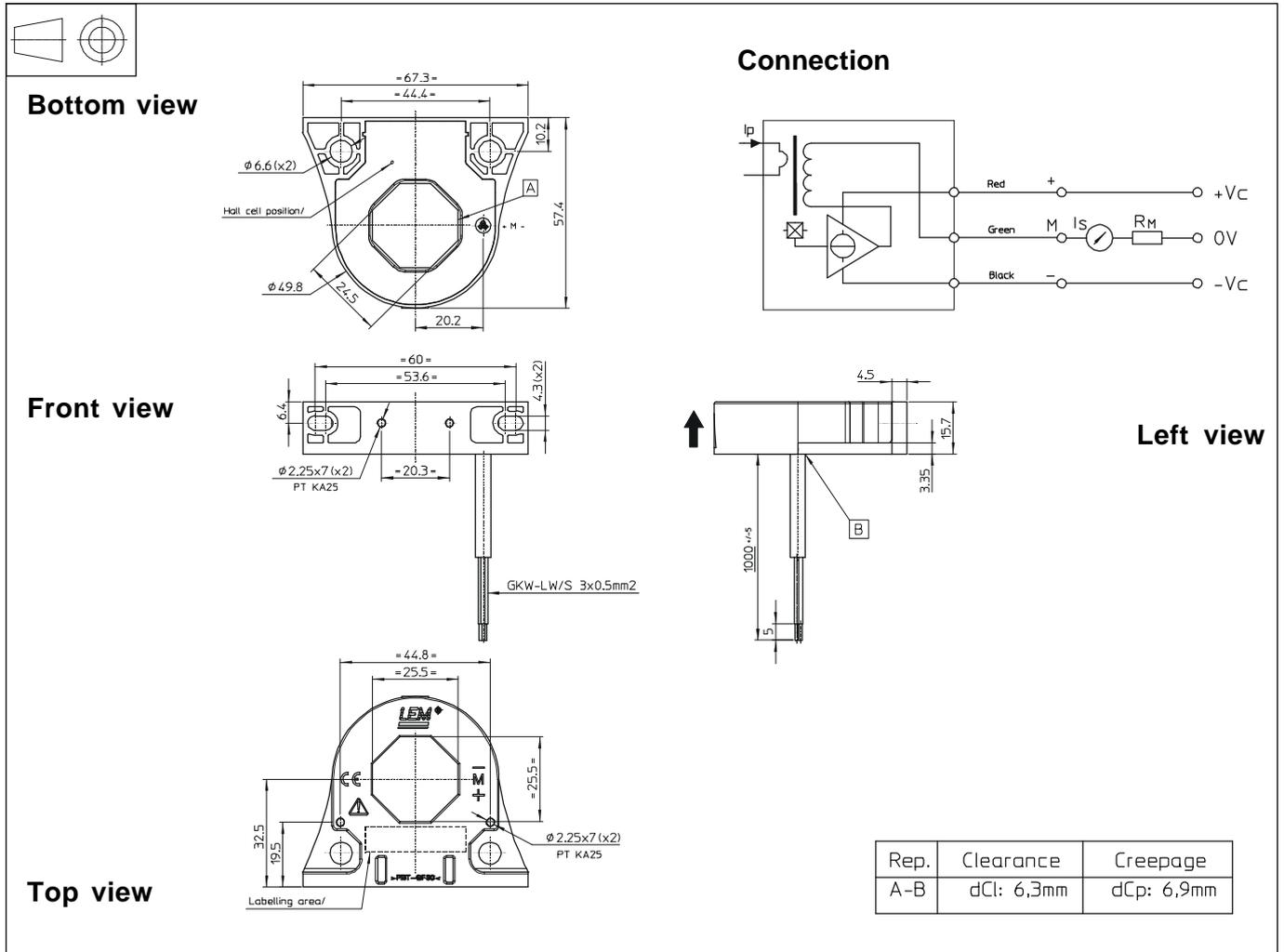
When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply).

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 306-S/SP7 (in mm. 1 mm = 0.0394 inch)

Mechanical characteristics

- General tolerance ± 0.5 mm
- Transducer fastening
 - Vertical position
 - 2 oblong holes $\varnothing 4.3$ mm
 - 2 M4 steel screws
 - Recommended fastening torque 3 Nm or 2.21 Lb.-Ft.
 - Or
 - 2 holes $\varnothing 2.25$ mm
 - 2 screws PTKA 25
- Recommended fastening torque 0.3 Nm or 0.22 Lb.-Ft.
- Or flat position
 - 2 holes $\varnothing 6.6$ mm
 - 2 M6 steel screws
- Recommended fastening torque 4.2 Nm or 3.1 Lb.-Ft.
- Or
 - 2 holes $\varnothing 2.25$ mm
 - 2 screws PTKA 25
- Recommended fastening torque 0.3 Nm or 0.22 Lb.-Ft.
- Primary through-hole 25.5 x 25.5 mm
- Connection of secondary Shielded cable
GKW-LW/S 3x0.5 mm²

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.

IMPORTANT NOTICE

The information in this document is considered accurate and reliable. However, LEM International SA and any company directly or indirectly controlled by LEM Holding SA ("LEM") do not provide any guarantee or warranty, expressed or implied, regarding the accuracy or completeness of this information and are not liable for any consequences resulting from its use. LEM shall not be responsible for any indirect, incidental, punitive, special, or consequential damages (including, but not limited to, lost profits, lost savings, business interruption, costs related to the removal or replacement of products, or rework charges) regardless of whether such damages arise from tort (including negligence), warranty, breach of contract, or any other legal theory.

LEM reserves the right to update the information in this document, including specifications and product descriptions, at any time without prior notice. Information in this document replaces any previous versions of this document. No license to any intellectual property is granted by LEM through this document, either explicitly or implicitly. Any Information and product described herein is subject to export control regulations.

LEM products may possess either unidentified or documented vulnerabilities. It is the sole responsibility of the purchaser to design and operate their applications and products in a manner that mitigates the impact of these vulnerabilities. LEM disclaims any liability for such vulnerabilities. Customers must select products with security features that best comply with applicable rules, regulations, and standards for their intended use. The purchaser is responsible for making final design decisions regarding its products and for ensuring compliance with all legal, regulatory, and security-related requirements, irrespective of any information or support provided by LEM.

LEM products are not intended, authorized, or warranted for use in life support, life-critical, or safety-critical systems or equipment, nor in applications where failure or malfunction of an LEM product could result in personal injury, death, or significant property or environmental damage. LEM and its suppliers do not assume liability for the inclusion and/or use of LEM products in such equipment or applications; thus, this inclusion and/or use is at the purchaser's own and sole risk. Unless explicitly stated that a specific LEM product is automotive qualified, it should not be used in automotive applications. LEM does not accept liability for the inclusion and/or use of non-automotive qualified products in automotive equipment or applications.

Applications that are described herein are for illustrative purposes only. LEM makes no representation or warranty that LEM products will be suitable for a particular purpose, a specified use or application. The purchaser is solely responsible for the design and operation of its applications and devices using LEM products, and LEM accepts no liability for any assistance with any application or purchaser product design. It is purchaser's sole responsibility to determine whether the LEM product is suitable and fit for the purchaser's applications and products planned, as well as for the planned application and use of purchaser's third-party customer(s).

Stressing and using LEM products at or above limiting values will cause permanent damage to the LEM product and potentially to any device embedding or operating with LEM product. Limiting values are stress ratings only and operation of the LEM product at or above conditions and limits given in this document is not warranted. Continuous or repeated exposure to limiting values will permanently and irreversibly affect the quality and reliability of the LEM product.

LEM products are sold subject to the general terms and conditions of commercial sale, as published at www.lem.com unless otherwise agreed in a specific written agreement. LEM hereby expressly rejects the purchaser's general terms and conditions for purchasing LEM products by purchaser. Any terms and conditions contained in any document issued by the purchaser either before or after issuance of any document by LEM containing or referring to the general terms and conditions of sale are explicitly rejected and disregarded by LEM, and the document issued by the purchaser is wholly inapplicable to any sale or licensing made by LEM and is not binding in any way on LEM.