# Current Transducer LF 306-S/SP7

# $I_{PN}$ = 300 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 @ | | $T_A$ = 70°C | | $T_A$ = 85°C | | |
| | | | $R_{M\,min}$ | $R_{M\,max}$ | $R_{M\,min}$ | $R_{M\,max}$ | |
| | with ± 15 V | @ ± 300 $A_{max}$ | 15 | 56 | 22 | 54 | Ω |
| | | @ ± 500 $A_{max}$ | 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 (± 5 %) | | ± 15 | | | | V |
| $I_C$ | Current consumption | | 20 + $I_S$ | | | | mA |

## Accuracy - Dynamic performance data

| | | | | | |
|---|---|---|---|---|---|
| **X** | Accuracy @ $I_{PN}$ , $T_A$ = 25°C | | ± 0.4 | | % |
| $\varepsilon_L$ | Linearity error | | < 0.1 | | % |
| | | | Typ | Max | |
| $I_O$ | Offset current @ $I_P$ = 0, $T_A$ = 25°C | | | ± 0.20 | mA |
| $I_{OM}$ | Residual current [2] @ $I_P$ = 0, after an overload of 3 x $I_{PN}$ | | | ± 0.08 | mA |
| $I_{OT}$ | Temperature variation of $I_O$ | - 40°C .. + 85°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 |

## General data

| | | | |
|---|---|---|---|
| $T_A$ | Ambient operating temperature | - 40 .. + 85 | °C |
| $T_S$ | Ambient storage temperature | - 45 .. + 90 | °C |
| $R_S$ | Secondary coil resistance @$T_A$ = 85°C | 34 | Ω |
| ***m*** | Mass | 100 | g |
| | Standards | EN 50155: 1995 | |

## Features

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

## Special features

- $T_A$ = - 40°C .. + 85°C
- Connection to secondary circuit on shielded cable GKW-LW/S 3 x 0.5 $mm^2$ (length 1m).

## 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 Domain

- Traction.

Notes : [1] @ ± 470 $A_{max}$

[2] The result of the coercive field of the magnetic circuit

[3] 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 | 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.




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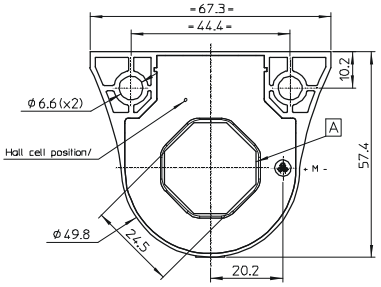
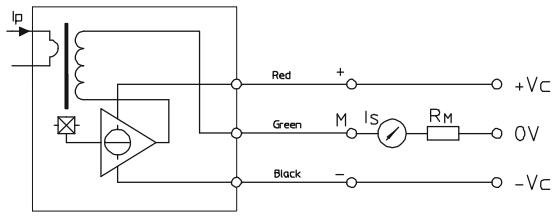
## Dimensions LF 306-S/SP7 (in mm. 1 mm = 0.0394 inch)

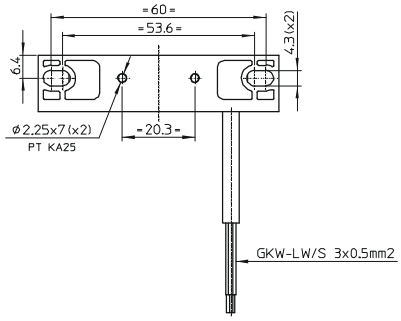
**Bottom view**

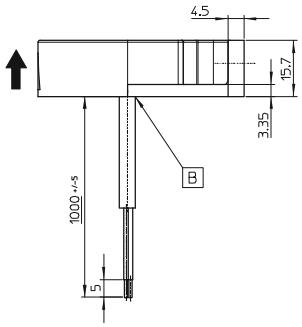



**Connection**



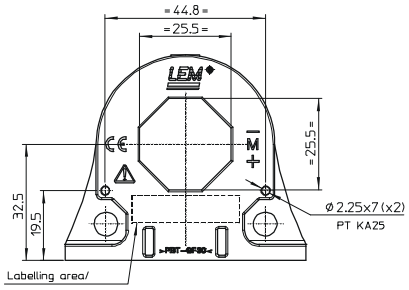

**Front view**




**Left view**

**Top view**




| Rep. | Clearance | Creepage |
|---|---|---|
| A-B | dCl: 6,3mm | dCp: 6,9mm |

## Mechanical characteristics

| | |
|---|---|
| • General tolerance | ± 0.5 mm |
| • Transducer fastening | |
| Vertical position | 2 oblong holes ∅ 4.3 mm |
| | 2 M4 steel screws |
| Recommended fastening torque | 3 Nm or 2.21 Lb.-Ft. |
| Or | 2 holes ∅ 2.25 mm |
| | 2 screws PTKA 25 |
| Recommended fastening torque | 0.3 Nm or 0.22 Lb.-Ft. |
| Or flat position | 2 holes ∅ 6.6 mm |
| | 2 M6 steel screws |
| Recommended fastening torque | 4.2 Nm or 3.1 Lb.-Ft |
| Or | 2 holes ∅ 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 3 x0.5 $mm^2$ |

## 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.





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