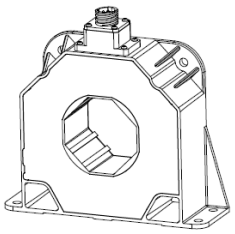
# Current Transducer LF 2005-S/SP3

$I_{PN}$ = 2000 A

For the electronic measurement of currents: DC, AC, pulsed..., with galvanic separation between the primary circuit and the secondary circuit.



## Electrical data

| | | | | | |
|---|---|---|---|---|---|
| $I_{PN}$ | Primary nominal RMS current | | 2000 | | A |
| $I_{PM}$ | Primary current, measuring range | | 0 ... ±3500 | | A |
| $\hat{I}_{P\,max}$ | Primary withstand peak current (maximum) | | 20 | | kA |
| $R_M$ | Measuring resistance | | $R_{M\,min}$ | $R_{M\,max}$ | |
| | with ±15 V | @ ±2000 A $_{max}$ | 0 | 7 | Ω |
| | | @ ±2200 A $_{max}$ | 0 | 4 | Ω |
| | with ±24 V | @ ±2000 A $_{max}$ | 0 | 27.5 | Ω |
| | | @ ±3000 A $_{max}$ | 0 | 10 | Ω |
| $I_{SN}$ | Secondary nominal RMS current | | 400 | | mA |
| $N_P/N_S$ | Turns ratio | | 1 : 5000 | | |
| $U_C$ | Supply voltage | | ±15 ... 24 | | V |
| $I_C$ | Current consumption | | 33 (@ ±24 V) + $I_S$ | | mA |

## Accuracy - Dynamic performance data

| | | | | | |
|---|---|---|---|---|---|
| $\varepsilon_{tot}$ | Total error @ $I_{PN}$, $T_A$ = 25 °C | | ±0.3 | | % |
| $\varepsilon_L$ | Linearity error | | < 0.1 | | % |
| | | | Typ | Max | |
| $I_O$ | Offset current @ $I_P$ = 0, $T_A$ = 25 °C | | | ±0.5 | mA |
| $I_{OM}$ | Magnetic offset current @ $I_P$ = 0 and specified $R_M$, after an overload of 3 × $I_{PN}$ | | | ±0.2 | mA |
| $I_{OT}$ | Temperature variation of $I_O$ | −40 °C ... +70 °C | ±0.2 | ±0.3 | mA |
| $t_{D\,90}$ | Delay time to 90 % of the final output value for $I_{PN}$ step [1] | | < 1 | | µs |
| $BW$ | Frequency bandwidth (−1 dB) | | DC ... 150 | | kHz |

## General data

| | | | |
|---|---|---|---|
| $T_A$ | Ambient operating temperature | −40 ... +70 | °C |
| $T_{A\,st}$ | Ambient storage temperature | −50 ... +85 | °C |
| $R_S$ | Resistance of secondary winding @ $T_A$ = 70 °C | 24 | Ω |
| $m$ | Mass | 1.5 | kg |
| | Standards | EN 50155: 2017 [2]<br>EN 50121-3-2: 2016 | |

Notes: [1] For a $di/dt$ = 100 A/µs
[2] Additional information available on request.

## Features

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

## Special features

- $U_d$ = 10 kV
  Test with piece ABB GVT 7 209 019
- $T_A$ = −40 °C ... +70 °C
- Connection to secondary circuit on AMP CPC 11/4.

## 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 phase inverter
- Propulsion and braking chopper
- Propulsion converter
- Auxiliary converter
- Battery charger.

## Application Domain

- Railway (fixed installations and onboard).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### Insulation coordination

| | | | |
|---|---|---|---|
| $U_d$ | RMS voltage for AC insulation test, 50 Hz, 1 min | 10 [1)] | kV |
| | | 0.5 [2)] | kV |
| $U_t$ | Partial discharge RMS test voltage ($q_m$ < 10 pC) | ≥ 4.8 | kV |
| | | Min | |
| $d_{Cp}$ | Creepage distance | 81.7 | mm |
| $d_{Cl}$ | Clearance | 59.8 | mm |
| $CTI$ | Comparative tracking index (group I) | 600 | |

Notes: [1)] Between primary and secondary + shield
[2)] Between shield and secondary.

## Safety

This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.

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 build-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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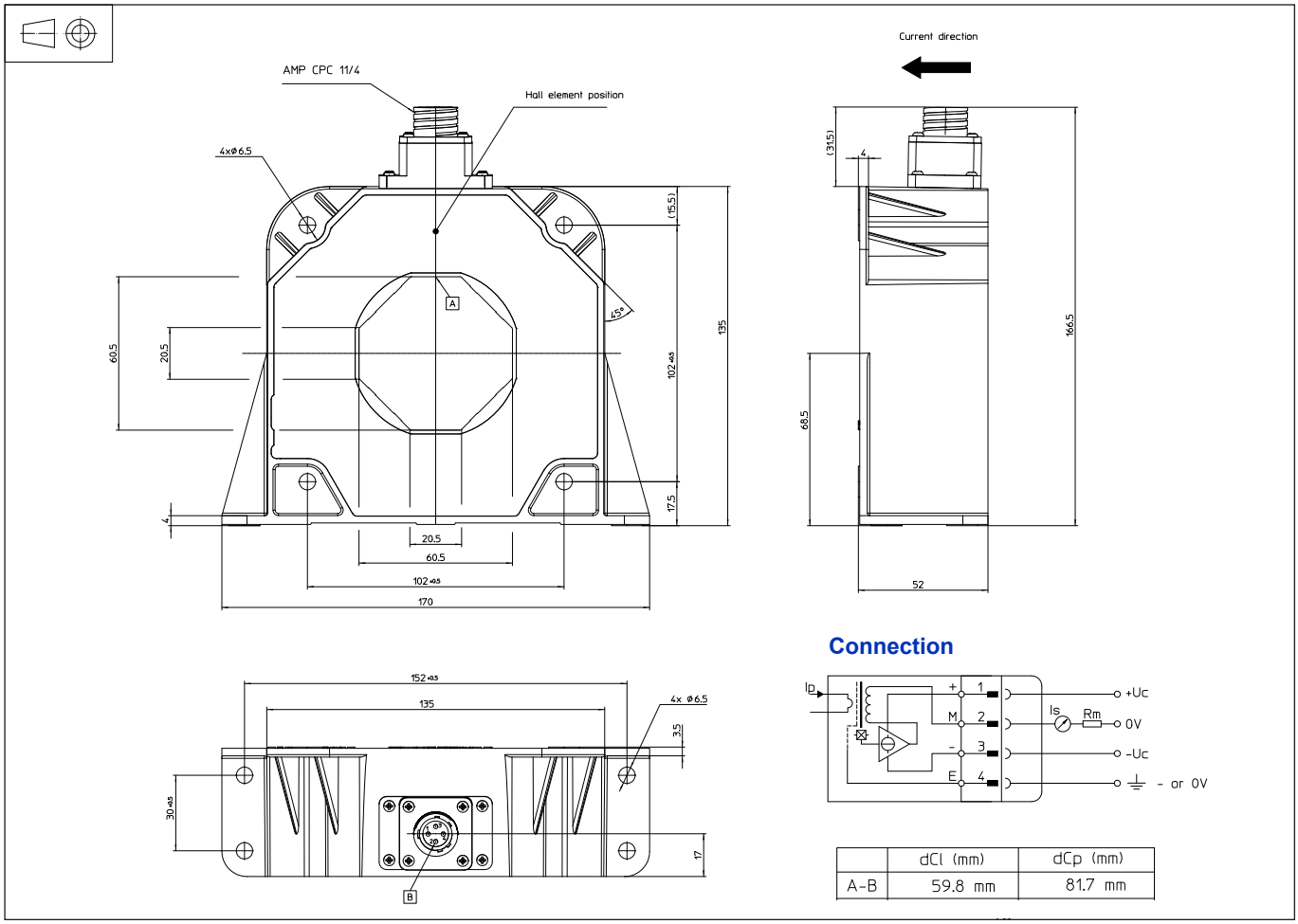
## Dimensions LF 2005-S/SP3 (in mm)




| | dCl (mm) | dCp (mm) |
|---|---|---|
| A-B | 59.8 mm | 81.7 mm |

## Mechanical characteristics

- General tolerance ±1 mm
- Transducer fastening
  Flat or vertical position 4 holes Ø 6.5 mm
  4 M6 steel screws
  Recommended fastening torque 5.5 N.m
- Primary through-hole 60.5 × 20.5 mm
  Or Ø 56 mm
- Connection of secondary AMP CPC 11/4

## 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 delay time) are best with a single bar completely filling the primary hole.



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