

High Accuracy and Stability Current Transducer ITB 300-S

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

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).



Electrical data

I_{PN}	Primary nominal r.m.s. current	300	A
I_P	Primary current, measuring range @ $\pm 15 \text{ V}$	$0.. \pm 450$	A
\hat{I}_P	Max overload capability 10 ms ¹⁾	± 3000	A
R_M	Measuring resistance @ $T_A = 85^\circ\text{C}$ @ $V_C = \pm 15 \text{ V}$, $I_P = \pm 450 \text{ A}$	$R_{M \min}$ 0 $R_{M \max}$ 5	Ω
I_{SN}	Secondary nominal r.m.s. current	150	mA
K_N	Conversion ratio	1 : 2000	
V_C	Supply voltage ($\pm 5 \%$)	± 15	V
I_C	Current consumption @ $\pm 15 \text{ V}$	$< \pm 90 + I_s$	mA

Accuracy - Dynamic performance data

X_G	Overall accuracy @ I_{PN} , $T_A = 25^\circ\text{C}$	$< \pm 0.05$	%
ϵ_L	Linearity error	< 0.001	%
I_O	Offset current @ $I_P = 0$, $T_A = 25^\circ\text{C}$	Max ± 0.1	mA
TCI_O	Offset current drift temperature coefficient	< 1	$\mu\text{A}/^\circ\text{C}$
t_r	Response time @ 90 % of I_{PN} ²⁾	< 1	μs
di/dt	di/dt accurately followed	> 100	A/ μs
f	Frequency bandwidth (- 3 dB) (with limited amplitude)	DC .. 100	kHz

Status output

Normal operation indicator : Open collector, active low (normal operation)		
Max. input Collector current	40	mA
Max. Collector - Emitter voltage	50	V

General data

T_A	Ambient operating temperature	- 40 .. + 85	$^\circ\text{C}$
T_S	Ambient storage temperature	- 45 .. + 85	$^\circ\text{C}$
R_S	Secondary coil resistance @ $T_A = 85^\circ\text{C}$	31	Ω
m	Mass	0.49	kg
	Standards	EN 50178 : 1997 EN 50155 : 2001	

Notes : ¹⁾ Transducer may need a few seconds to comeback to "Normal operation" state when autoreset system is running

²⁾ With a $di/dt \geq 100 \text{ A}/\mu\text{s}$.

Features

- Closed loop (compensated) current transducer using fluxgate technology
- Insulated plastic case recognized according to UL 94-V0
- D-Sub 9 male interface output.

Advantages

- Excellent linearity
- High accuracy over high bandwidth
- Very low output noise
- Very low offset drift
- Optimized response time
- No insertion losses
- High immunity to external interference
- Current overload capability
- Autoreset after overload.¹⁾

Applications

- High precision power supplies
- Calibration unit
- Precise and high stability inverters
- Energy measurement
- Medical equipment.

Application domain

- Traction and industrial.

Current transducer ITB 300-S

Isolation characteristics

V_d	R.m.s. voltage for AC isolation test, 50 Hz, 1 mn	5.3 ³⁾	kV
		1 ⁴⁾	kV
\hat{V}_w	Impulse withstand voltage 1.2/50 μ s	10.8	kV
		Min	
V_e	R.m.s. voltage for partial discharge extinction @ 10 pC ⁵⁾	2.2	kV
		Min	
dCp	Creepage distance ⁶⁾	12.2	mm
dCI	Clearance distance ⁶⁾	12.2	mm
CTI	Comparative Tracking Index (Group I)	600	V

Application examples

According to EN 50178 and CEI 61010-1 standards and following conditions :

- Overvoltage category OV2
- Pollution degree PD2
- Heterogeneous field.

	EN 50178	CEI 61010-1
dCp, dCI, \hat{V}_w	Rated isolation voltage	Nominal voltage
Single isolation	2.2 kVac	Cat II 1000 V rms
Reinforced isolation	1.2 kVac	Cat II 600 V rms

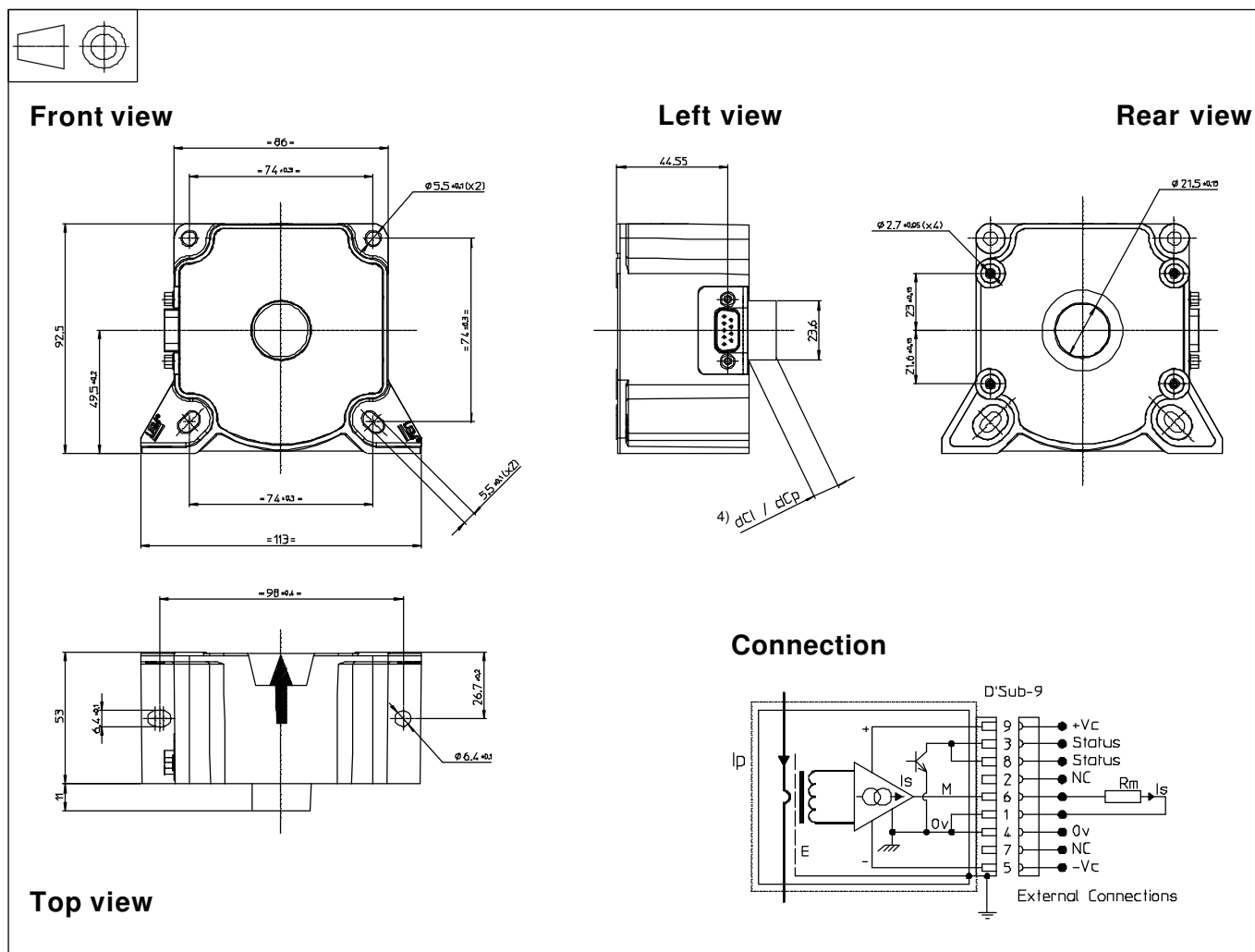
Notes : ³⁾ Between primary and secondary + shield

⁴⁾ Between secondary and shield

⁵⁾ Test carried out with a busbar \varnothing 19 mm centered in the through-hole
With a busbar \varnothing 21.5 mm (contact between busbar and housing) the min value is reduced to 1 kV

⁶⁾ See outline drawing.

Dimensions ITB 300-S (in mm. 1 mm = 0.0394 inch)



Mechanical characteristics

- General tolerance ± 1 mm
- Transducer fastening
 - Flat 1 4 x M5 steel screws
Recommended fastening torque 3.4 Nm or 2.5 Lb.-Ft.
 - Flat 2 4 x PTKA30 steel screws
Recommended fastening torque 1 Nm or 0.74 Lb.-Ft.
@ 10 mm penetration
 - Upright 2 x M6 steel screws
Recommended fastening torque 4.5 Nm or 3.3 Lb.-Ft.
- Primary through hole $\varnothing \leq 21.5$ 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.**
- Transducer needs to be connected with a shielded secondary cable to comply with EN 50155 standard.

Safety



This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following 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.

050627/0

LEM reserves the right to carry out modifications on its transducers, in order to improve them, without previous notice.

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