Current Transducer LTS 15-NP

For the electronic measurement of currents : DC, AC, pulsed, mixed, with a galvanic isolation between the primary circuit (high power) and the secondary circuit (electronic circuit).

I_{PN} = 5 - 7.5 - 15 A

Electrical data

I_{PN}	Primary nominal r.m.s. current	15	At
I_P	Primary current, measuring range	0 .. ± 45	At
V_{OUT}	Analog output voltage @ I_P	$2.5 \pm (0.625 \cdot I_P/I_{PN})$	V
	$I_P = 0$	2.5 [1]	V
N_S	Number of secondary turns (± 0.1 %)	2000	
R_L	Load resistance	≥ 2	kΩ
R_{IM}	Internal measuring resistance (± 0.5 %)	83.33	Ω
TCR_{IM}	Thermal drift of R_{IM}	< 50	ppm/K
V_C	Supply voltage (± 5 %)	5	V
I_C	Current consumption @ V_C = 5 V Typ	$23 + I_S^{2)} + (V_{OUT}/R_L)$	mA
V_d	R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn	3	kV
V_e	R.m.s. voltage for partial discharge extinction @ 10 pC	> 1.5	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 µs	> 8	kV

Accuracy - Dynamic performance data

		Typ	Max	
X	Accuracy @ I_{PN} , T_A = 25°C		± 0.2	%
	Accuracy with R_{IM} @ I_{PN} , T_A = 25°C		± 0.7	%
ε_L	Linearity		< 0.1	%
TCV_{OUT}	Thermal drift of V_{OUT} @ I_P = 0 - 10°C .. + 85°C	100	150	ppm/K
$TC\varepsilon_G$	Thermal drift of the gain - 10°C .. + 85°C		50 [3]	ppm/K
V_{OM}	Residual voltage @ I_P = 0, after an overload of 3 x I_{PN}		± 0.5	mV
	5 x I_{PN}		± 2.0	mV
	10 x I_{PN}		± 2.0	mV
t_{ra}	Reaction time @ 10 % of I_{PN}	< 50		ns
t_r	Response time @ 90 % of I_{PN}	< 400		ns
di/dt	di/dt accurately followed	> 35		A/µs
f	Frequency bandwidth (0 .. - 0.5 dB)	DC .. 100		kHz
	(- 0.5 .. 1 dB)	DC .. 200		kHz

General data

T_A	Ambient operating temperature	- 10 .. + 85	°C
T_S	Ambient storage temperature	- 25 .. + 100	°C
	Insulating material group	III a	
m	Mass	10	g
	Standards	EN 50178	
		EN 60950	

Notes : [1] Absolute value @ T_A = 25°C, 2.475 < V_{OUT} < 2.525
[2] Please see the operation principle on the other side
[3] Only due to TCR_{IM}.

Features

- Closed loop (compensated) multi-range current transducer using the Hall effect
- Unipolar voltage supply
- Compact design for PCB mounting
- Insulated plastic case recognized according to UL 94-V0
- Incorporated measuring resistance
- Extended measuring range.

Advantages

- Excellent accuracy
- Very good linearity
- Very low temperature drift
- Optimized response time
- Wide frequency bandwidth
- No insertion losses
- High immunity to external interference
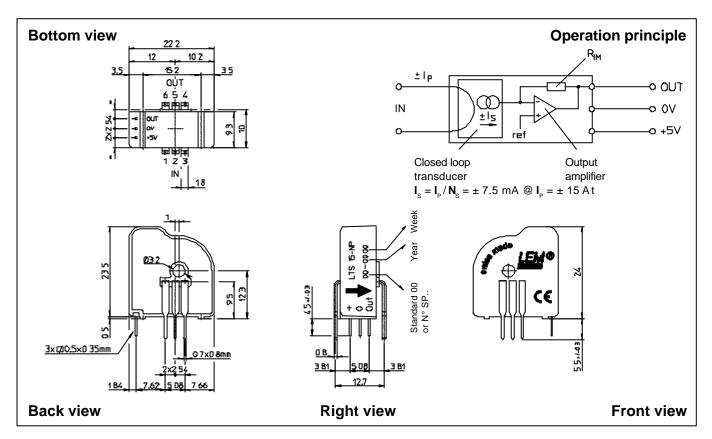- Current overload capability.

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.

001208/4

Dimensions LTS 15-NP (in mm. 1 mm = 0.0394 inch)

Bottom view

Operation principle

$$I_S = I_P / N_S = \pm 7.5 \text{ mA @ } I_P = \pm 15 \text{ A t}$$

Closed loop transducer

Output amplifier

Back view

Right view

Front view

Number of primary turns	Primary nominal r.m.s. current I_{PN} [A]	Nominal output voltage V_{OUT} [V]	Primary resistance R_P [mΩ]	Primary insertion inductance L_P [µH]	Recommended connections
1	± 15	2.5 ± 0.625	0.18	0.013	6 5 4 OUT / IN 1 2 3
2	± 7.5	2.5 ± 0.625	0.81	0.05	6 5 4 OUT / IN 1 2 3
3	± 5	2.5 ± 0.625	1.62	0.12	6 5 4 OUT / IN 1 2 3

Mechanical characteristics

- General tolerance   ± 0.2 mm
- Fastening & connection of primary   6 pins 0.7 x 0.8 mm
  Recommended PCB hole   1.3 mm
- Fastening & connection of secondary   3 pins 0.5 x 0.35 mm
  Recommended PCB hole   0.8 mm
- Additional primary through-hole   ⌀ 3.2 mm

Remark

- V_{OUT} is positive when I_P flows from terminals 1, 2, 3 to terminals 6, 5, 4.

Output Voltage - Primary Current

V_{OUT} [V]

5
4.5
3.125
2.5
1.875
0.5

I_P [At]

- I_{Pmax} - I_{PN} 0 I_{PN} I_{Pmax}

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