Current Transducer LAH 100-P
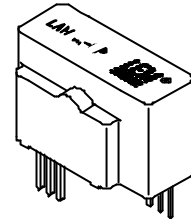
For the electronic measurement of currents : DC, AC, pulsed ...,
with a galvanic isolation between the primary circuit
(high power) and the secondary circuit (electronic circuit).

I_{PN} = 100 A

C E

Features

- Closed loop (compensated) current transducer using the Hall effect
- Printed circuit board mounting
- Insulated plastic case recognized according to UL 94-V0.
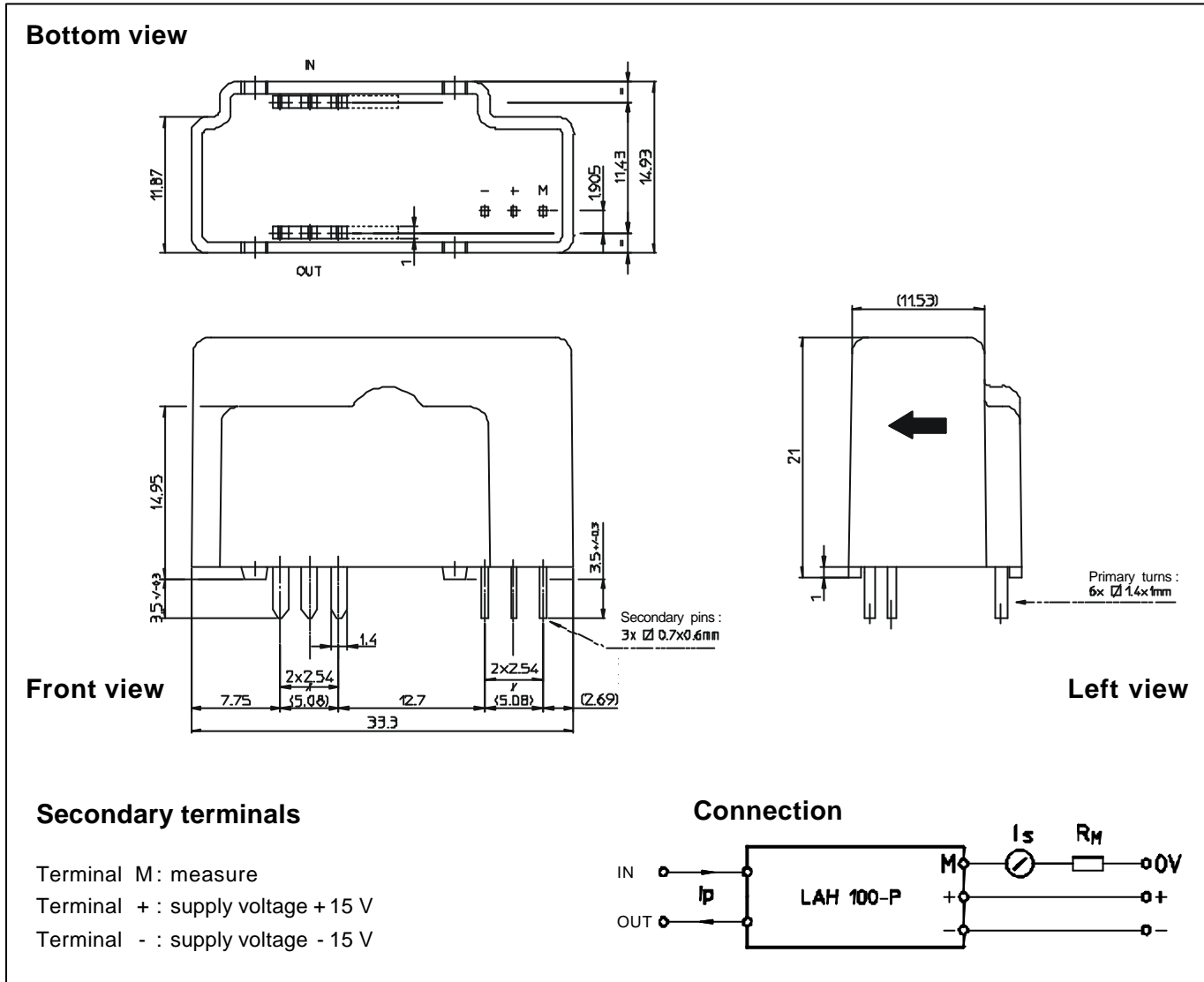
Advantages

- 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

- 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.

Electrical data

			$T_A = 70°C$		$T_A = 85°C$		
			$R_{M min}$	$R_{M max}$	$R_{M min}$	$R_{M max}$	
I_{PN}	Primary nominal r.m.s. current		100				A
I_P	Primary current, measuring range [1]		0 .. 160				A
R_M	Measuring resistance @						
	with ± 12 V	@ I_{PN} [± A$_{DC}$]	0	63	0	57	Ω
		@ I_{PN} [A$_{RMS}$] [2]	0	11	0	5	Ω
	with ± 15 V	@ I_{PN} [± A$_{DC}$]	20	120	45	114	Ω
		@ I_{PN} [A$_{RMS}$] [2]	20	51	45	45	Ω
		@ $I_P < I_{PN}$ [3]					
I_{SN}	Secondary nominal r.m.s. current		50				m A
K_N	Conversion ratio		1 : 2000				
V_C	Supply voltage (± 5 %)		± 12 .. 15				V
I_C	Current consumption		10 (@ ± 15 V)+I$_S$				m A
V_d	R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn		5				k V
$\hat{V}_e$	R.m.s. voltage for partial discharge extinction @ 10 pC		> 2				k V
$\hat{V}_w$	Impulse withstand voltage 1.2/50 μs		> 12				k V

Accuracy - Dynamic performance data

				Typ	Max	
X	Accuracy[4] @ I_{PN}, $T_A = 25°C$			± 0.25		%
e_L	Linearity			< 0.15		%
I_O	Offset current @ $T_A = 25°C$				± 0.15	m A
I_{OM}	Residual current @ $I_P = 0$, after an overload of 5 x I_{PN}			± 0.10	± 0.15	m A
I_{OT}	Thermal drift of I_O	0°C .. + 70°C		± 0.10	± 0.40	m A
		- 25°C .. + 85°C		± 0.10	± 0.50	m A
t_{ra}	Reaction time @ 10 % of I_{PN}			< 200		ns
t_r	Response time [5] @ 90 % of I_{PN}			< 500		ns
di/dt	di/dt accurately followed			> 200		A/μs
f	Frequency bandwidth (- 1 dB)			DC .. 200		kHz

General data

T_A	Ambient operating temperature		- 25 .. + 85	°C
T_S	Ambient storage temperature		- 40 .. + 90	°C
R_S	Secondary coil resistance	@ $T_A = 70°C$	115	Ω
		@ $T_A = 85°C$	121	Ω
	Insulating material group		I	
m	Mass		24	g
	Standards [6]		EN 50178	

Notes : [1] For 10 s, with $R_M \leq 25 Ω$ ($V_C = ± 15$ V) - [2] 50 Hz Sinusoidal -
[3] The measuring resistance $R_{M min}$ may be lower (see "LAH Technical Information" leaflet) - [4] Without I_O & I_{OM} - [5] With a di/dt of 100 A/μs
[6] A list of corresponding tests is available.

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Dimensions LAH 100-P (in mm. 1 mm = 0.0394 inch)

Bottom view

IN

11.87

OUT

11.43

14.93

1.905

1

− + M

Front view

14.95

3.5 +/−0.3

2×2.54

(5.08)

1.4

7.75

2×2.54

(5.08)

12.7

(2.69)

33.3

3.5 +/−0.3

Secondary pins :
3x ☐ 0.7x0.6mm

Left view

(11.53)

21

1

Primary turns :
6x ☐ 1.4x1mm

Secondary terminals

Terminal M : measure

Terminal + : supply voltage + 15 V

Terminal - : supply voltage - 15 V

Connection

IN

Ip

OUT

LAH 100-P

M

+

−

Is RM

0V

+

−

Number of primary turns	Primary current		Nominal output current	Turns ratio	Primary resistance	Primary insertion inductance
	nominal	maximum				
	I_{PN} [A]	I_P [A]	I_{SN} [mA]	K_N	R_P [mΩ]	L_P [µH]
1	100	160	50	1 : 2000	0.08	0.007

Mechanical characteristics

- General tolerance   ± 0.2 mm
- Fastening & connection of primary   6 pins 1.4 x 1 mm
  Recommended PCB hole   2 mm
- Fastening & connection of secondary 3 pins 0.7 x 0.6 mm
  Recommended PCB hole   1.2 mm

Remarks

- I_S is positive when I_P flows from terminals "IN" to terminals "OUT".
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.

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