High Performance Current Transducer ITN 12-P ULTRASTAB

I_{PM} = 0 ... 25 A

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

Electrical data

I_{PNDC}	Primary continuous direct current (nominal)	12.5	A
I_{PN}	Primary nominal RMS current	8.8	A
I_{PM}	Primary current, measuring range (peak limit)	0 … ±25	A
$\hat{I}_{P\,max}$	Maximum overload capability 100 ms [1]	±62.5	A
R_M	Measuring resistance	$R_{M\,min}$ $R_{M\,max}$	
	Over operating current, temperature and supply voltage range	0 [2]	Ω
I_{SNDC}	Secondary continuous direct current (nominal)	0 ... ±50	mA
I_{SN}	Secondary nominal RMS current	35	mA
K_N	Conversion ratio	1 : 250	
U_C	Supply voltage (±5 %)	±15	V
I_C	Current consumption ±15 V	≤ 60 + I_S	mA

Accuracy - Dynamic performance data

ε_L	Linearity error [3]	≤ 4	ppm
I_{OE}	Electrical offset current + self magnetization + effect of earth magnetic field @ T_A = 25 °C [3]	< 500	ppm
ΔI_{OE}	Offset stability (no load) [3]	< 5	ppm/month
TCI_{OE}	Temperature coefficient of I_{OE} (10 °C ... 45 °C) [3]	< 2	ppm/K
	Offset vs. power supply stability @ T_A = 25 °C [3] @ U_C = ±15 V ±5 %	< 1	ppm/% of U_C = ±15 V

General data

RH	Relative humidity (non condensing)	20 ... 80	%
T_A	Ambient operating temperature	+10 … +45	°C
T_S	Ambient storage temperature	−20 … +85	°C
R_S	Resistance of secondary winding @ T_A = 25 °C	90	Ω
m	Mass	0.35	kg

Notes: [1] Single pulse only, not AC.
Overload conditions of use as described on page 3.

[2] Max value of R_M is given in figures on page 4.

[3] All ppm figures refer to secondary measuring range 50 mA.

Features

- Closed loop (compensated) current transducer using an extremely accurate zero flux detector
- Mountable onto a PCB
- Metal housing for high immunity against external interference.

Advantages

- Excellent accuracy
- Very good linearity
- Low temperature drift
- Wide frequency bandwidth
- High immunity to external electrostatic and magnetic fields interference
- High resolution
- Low noise on output signal
- Low noise feedback to main conductor.

Applications

- Feed back element in precision current regulated devices (power supplies...)
- Calibration unit
- Precise and high-stability inverters
- Energy measurement
- Medical equipment.

Application domain

- Industrial and Medical.

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Insulation coordination

Between primary and secondary

U_b	Rated insulation RMS voltage, reinforced insulation	150	V
	Rated insulation RMS voltage, single insulation	300	V
	with IEC 61010-1 standards and following conditions		
	- Over voltage category III		
	- Pollution degree 2		
U_d	RMS voltage for AC insulation test, 50/60 Hz, 1 min	2.4 [1)]	kV
$\hat{U}_W$	Impulse withstand voltage 1.2/50 µs	4.3	kV
U_b	Rated insulation RMS voltage, reinforced insulation	150	V
	Rated insulation RMS voltage, single insulation	300	V
	with EN 50178 standards and following conditions		
	- Over voltage category III		
	- Pollution degree 2		
		Min	
d_{Cp}	Creepage distance	4.7	mm
d_{Cl}	Clearance	3.3	mm
CTI	Comparative tracking index (group IIIb)	175	

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

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 (e.g. 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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Output noise figures: @ 25 °C

Random RMS noise ppm:

0 – 10 Hz	0 – 100 Hz	0 – 1 kHz	0 – 10 kHz	0 – 100 kHz
< 0.4	< 0.5	< 0.7	< 5	< 10

Re-injected RMS noise measured on primary cable (DC − 50 kHz)		< 5	µV

Dynamic performance data

BW	Frequency bandwidth for small signal 0.5 %, of $I_{PN\ DC}$		
	(±1 dB)	DC ... 100	kHz
	(±3 dB)	DC ... > 500	kHz
t_r	Step response time [1] to 90 % of I_{PN}	< 1	µs

Note: [1] For a di/dt > 20 A/µs.

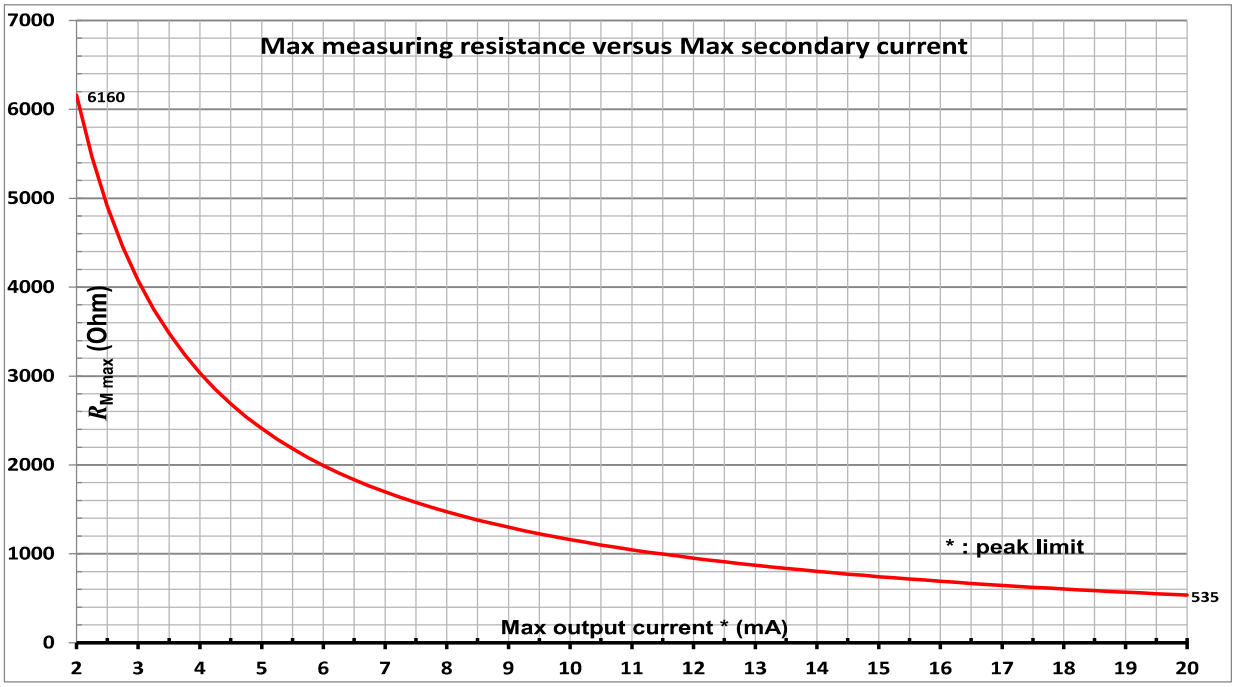
Over current protection - Electrical specification - Status

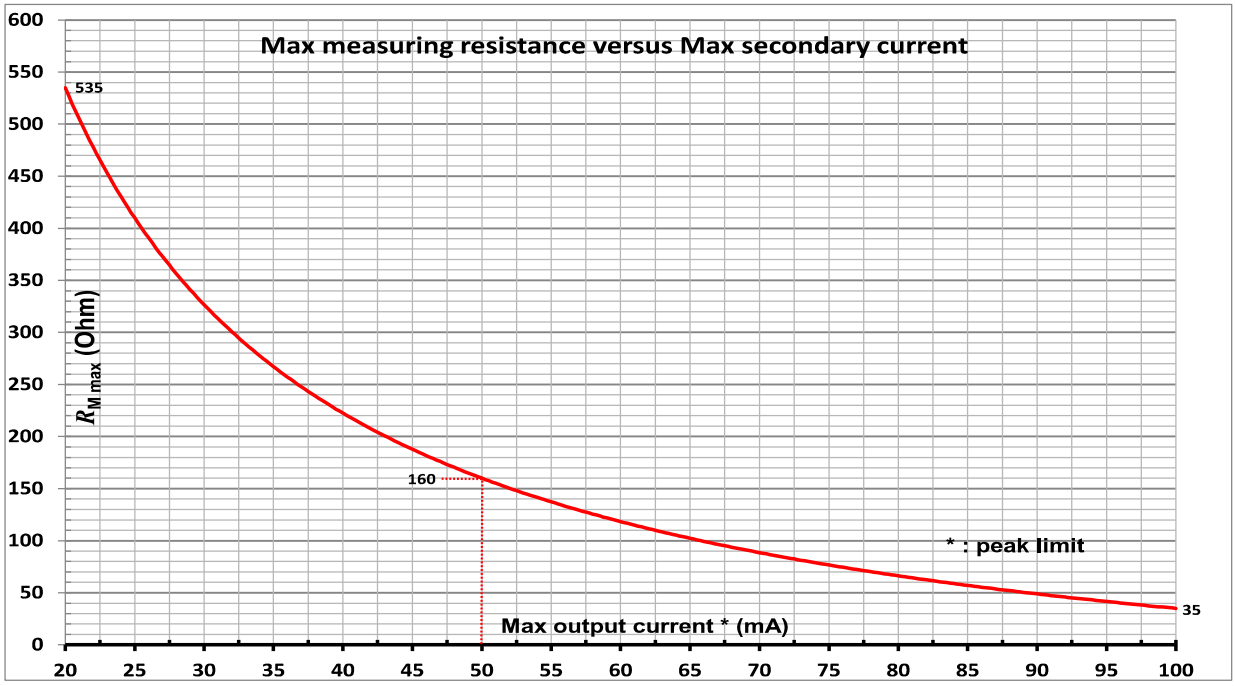
As soon as electrical saturation appears, the transducer switches from normal operation to over current mode.
This electrical saturation appears in any case beyond twice the measuring range.
The primary current corresponding to this trip level is related to the temperature inside the transducer.

Under these conditions:

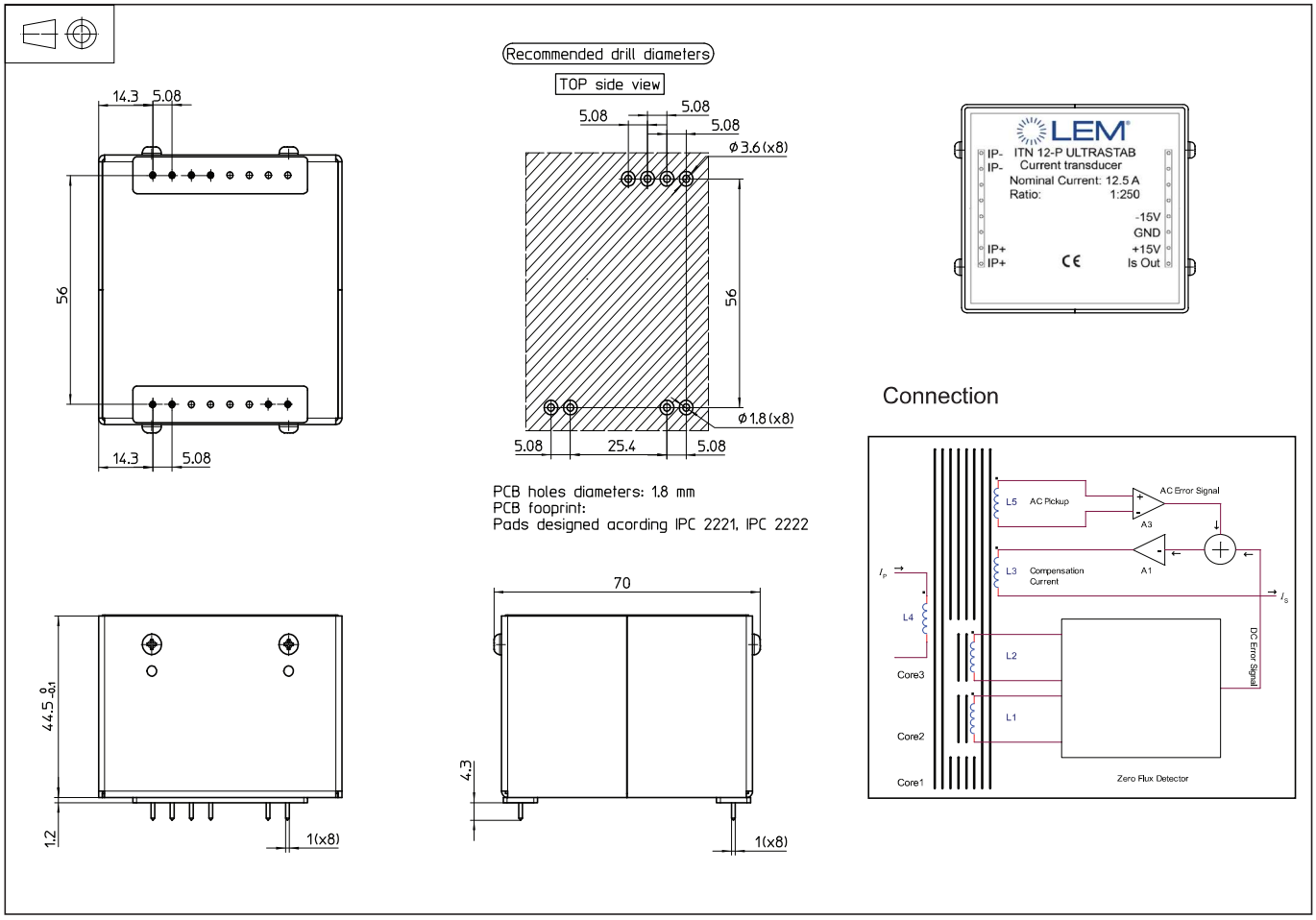
- Fault level I_P > 200 % of $I_{PN\ DC}$
- Primary current must not exceed 25 A
- If the primary current has exceeded the maximum I_P = 25 A or the device has been powered up with primary current flowing, it will enter the overload state. In this situation the output current will remain higher than ±100 mA (maximum ±120 mA with 20 ohm burden resistor), independent of the primary current.
- Action in case of overload:
  1. Make sure the primary current is switched off.
  2. Power down the device for one second.
  3. Power up the device.
  4. Reestablish the primary current.

Max measuring resistance versus Max secondary current





Dimensions ITN 12-P ULTRASTAB (in mm)



Mechanical characteristics

- General tolerance ±0.5 mm
- Fastening and connection of primary 4 pins 1 × 1 mm
- Fastening and connection of secondary 4 pins 1 × 1 mm
- Recommended PCB hole 1.8 mm

Remarks

- I_S is positive when I_P flows from terminals I_P+ to terminals I_P−.
- Temperature of the primary conductor should not exceed 65 °C.
- Do not apply primary current to unpowered device.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: **Products/Product Documentation.**
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.