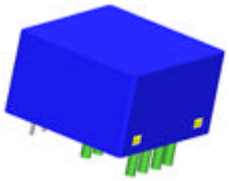
Current Transducer HXS 50-NP/SP2

I_{PN} = 12.5 - 25 - 50 A

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).



All Data are given with a R_L = 10 kΩ

Electrical data

I_{PN}	Primary nominal r.m.s. current	±50	A
I_P	Primary current measuring range	±150	A
V_{OUT}	Analog output voltage @ I_P	V_{REF} ±(0.625·I_P/I_{PN})	V
	I_P = 0	V_{REF} ± 0.0125	V
V_{REF}	Internal Reference [1] - Output voltage	2.5 ± 0.025	V
	V_{REF} Output impedance	typ. 200	Ω
	V_{REF} Load impedance	≥ 200	kΩ
R_L	Output load resistance	≥ 2	kΩ
R_{OUT}	Output impedance	< 10	Ω
C_L	Max. output capacitive load	< 1	µF
V_C	Supply voltage (± 5 %)	5	V
I_C	Current consumption @ V_C = 5 V	22	mA

Accuracy - Dynamic performance data

X	Accuracy [2] @ I_{PN} , T_A = 25°C	≤±1	% of I_{PN}
e_L	Linearity 0.. I_{PN}	≤±0.5	% of I_{PN}
	.. 3 x I_{PN}	≤±1	% of I_{PN}
TCV_{OUT}	Thermal drift of V_{OUT} @ I_P = 0	≤±0.4	mV/K
TCV_{REF}	Thermal drift of V_{REF}	≤±0.01	%/K
TCV_{OUT} / V_{REF}	Thermal drift of V_{OUT} / V_{REF} @ I_P = 0	≤±0.2	mV/K
TCe_G	Thermal drift of the gain	≤±0.05% of reading/K	
V_{OM}	Residual voltage @ I_P = 0, after an overload of 3 x $I_{PN\,DC}$	<±1	% of I_{PN}
t_{ra}	Reaction time @ 10 % of I_{PN}	< 3	µs
t_r	Response time @ 90 % of I_{PN}	< 5	µs
di/dt	di/dt accurately followed	> 50	A/µs
	Output noise (DC ..10 kHz)	< 15	mVpp
	(DC .. 1 MHz)	< 40	mVpp
f	Frequency bandwidth (-3 dB) [3]	DC .. 50	kHz

General data

T_A	Ambient operating temperature	- 40 .. + 105	°C
T_S	Ambient storage temperature	- 40 .. + 105	°C
dCp	Creepage distance	> 5.5	mm
dCl	Clearance distance	> 5.5	mm
CTI	Comparative tracking index (Group I)	> 600	V
	UL94 classification	V0	
m	Mass	10	g
	Standards	EN 50178 (97-10-01)	

Features

- Hall effect measuring principle
- Multirange current transducer through PCB pattern lay-out
- Galvanic isolation between primary and secondary circuit
- Isolation test voltage 2500V
- Low power consumption
- Extremely low profile, 10mm
- Single power supply +5V
- Fixed offset & gain

Special Feature

- T_A = -40 .. +105 °C

Advantages

- Small size and space saving
- Only one design for wide current ratings range
- High immunity to external interference.
- Internal & external reference

Applications

- AC variable speed drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications.

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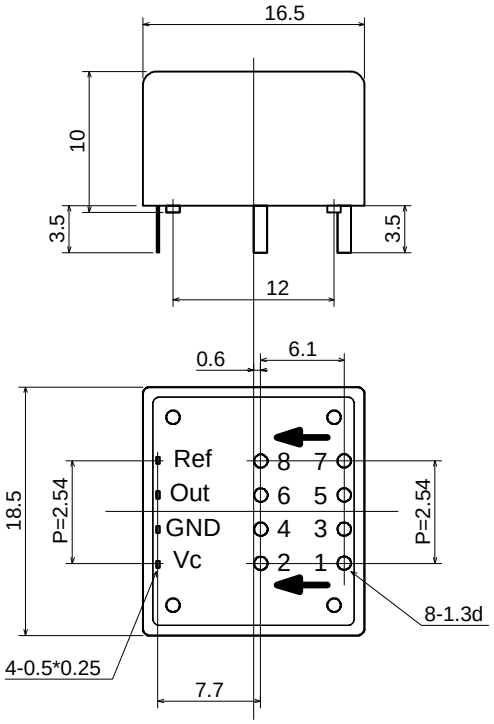
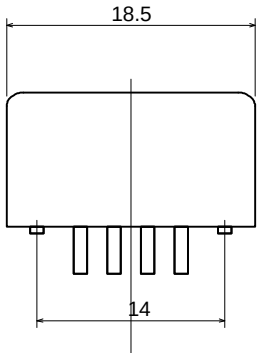
Insulation category			
V_b	Nominal Voltage with IEC 61010-1 standards and following conditions - Single insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field	150	V r.m.s.
V_b	Nominal Voltage with EN 50178 standards and following conditions - Reinforced insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field	300	V r.m.s.
V_d	R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn	2.5	kV
V_e	R.m.s. voltage for partial discharge extinction @ 10pC	> 1	kV
V_w	Impulse withstand voltage 1.2/50µs	6	kV

Notes : [1] It is possible to overdrive V_{REF} with an external reference voltage between 2 - 2.8 V providing its ability to sink or source approximately 2.5 mA.
[2] Excluding offset and hysteresis.
[3] Small signal only to avoid excessive heatings of the magnetic core.

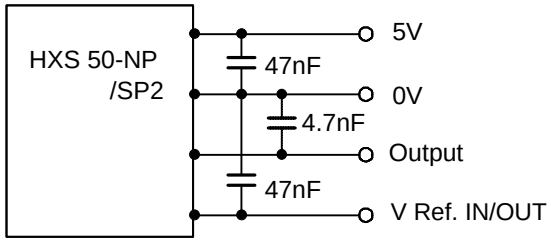
Safety :  Caution, risk of danger  Caution, risk of electrical shock	This transducer shall be used in accordance with manufacturer instruction. Power supply shall be a low voltage source and shall have an efficient protective system against over current. Power supply must incorporate a circuit breaker. This transducer shall be used in an electric/electronic equipment in respect of standards rules and applicable safety requirements. Primary bar and output terminals can provide hazardous voltage. This transducer is a built in device, of which conducting parts must be inaccessible by installation. Protective envelope or additional shield must be used.

HXS 50-NP/SP2
Dimensions (in mm)

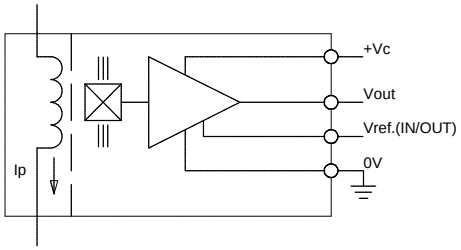




Required Connection Circuit



Operation Principle



Number of primary turns	Primary current nominal I_{PN} [A]	Primary current maximum I_P [A]	Primary resistance R_P [m ohm]	Primary insertion inductance L_P [uF]	Recommended PCB connections
1	50	150	0.05	0.025	IN 1 3 5 7 / 2 4 6 8 OUT
2	25	75	0.2	0.1	IN 1 3 5 7 / 2 4 6 8 OUT
4	12.5	37.5	1	0.4	IN 1 3 5 7 / 2 4 6 8 OUT

Mechanical characteristics

- General tolerance ± 0.2 mm
- Fastening & connection of primary jumper 8 pins Ø 1.3 mm
  Recommended PCB hole Ø 1.5 mm
- Fastening & connection of secondary 4 pins 0.5 x 0.25
  Recommended PCB hole Ø 0.7 mm

Remarks

- $\mathbf{V}_{OUT}$ is positive when $\mathbf{I}_p$ flows from terminals 1, 3, 5, 7 (IN) to terminals 2, 4, 6, 8 (OUT).
- Temperature of the primary conductors should not exceed 120°C.