Current Transducer HXS 20-NP/SP30

I_{PN} = 5 - 10 - 20 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	± 20	A
I_P	Primary current measuring range	± 60	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 error 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	≤ ± 0.07% of reading/K	
V_{OM}	Residual voltage @ I_P = 0, after an overload of 3 x $I_{PN\ DC}$	< ± 1.2	% 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
V_{no}	Output noise (DC ..10 kHz)	< 20	mVpp
	(DC .. 1 MHz)	< 40	mVpp
f	Frequency bandwidth (-3 dB)	DC .. 50	kHz

General data

T_A	Ambient operating temperature	- 40 .. + 85	°C
T_S	Ambient storage temperature	- 40 .. + 85	°C
m	Mass	10	g
	Standards	EN 50178 (97-10-01)	

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.

Features

- Hall effect measuring principle
- Multirange current transducer through PCB pattern lay-out
- Galvanic isolation between primary and secondary circuit
- Isolation test voltage 3500V
- Low power consumption
- Extremely low profile, < 11mm
- Single power supply +5V
- Fixed offset & gain
- Insulated plastic case recognized according to UL 94-V0.

Special Feature

- Designed to avoid heating

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.

Application Domain

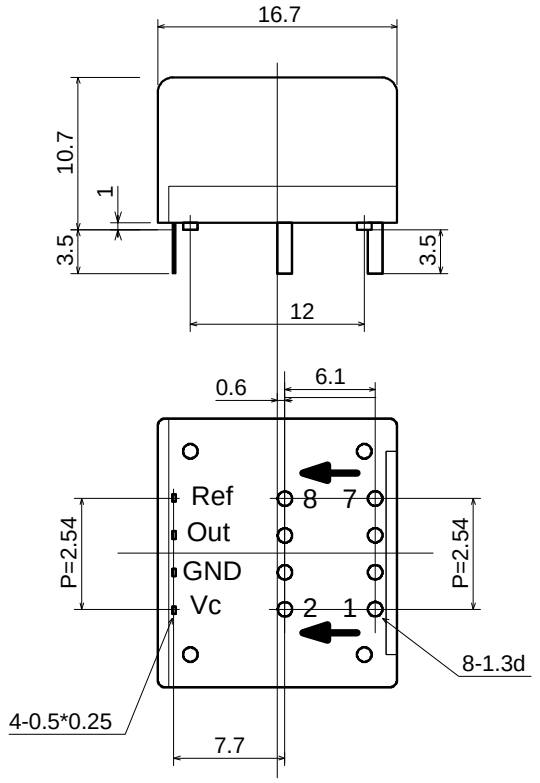
- Industrial

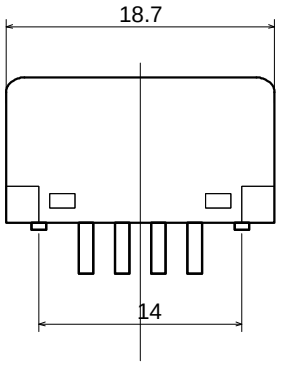
Current Transducer HXS 20-NP/SP30

Isolation characteristics

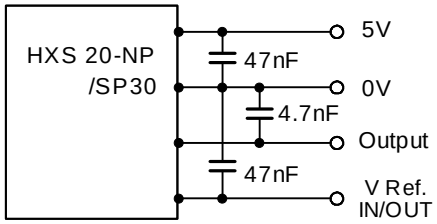
V_b	Nominal Voltage with IEC 61010-1 standards and following conditions - Single insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field	150	V r.m.s.
V_b	Nominal Voltage with EN 50178 standards and following conditions - Reinforced insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field	300	V r.m.s.
V_d	R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn	3.5	kV
dCp	Creepage distance	> 5.5	mm
dCl	Clearance distance	> 5.5	mm
CTI	Comparative tracking index (Group I)	> 600	V

Dimensions HXS 20-NP/SP30 (in mm. 1 mm = 0.0394 inch)



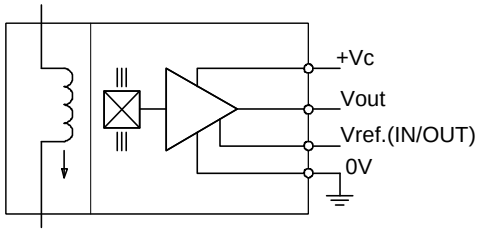


Required connection circuit



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 [µH]	Recommended PCB connections
1	20	60	0.05	0.029	IN 1 3 5 7 / 2 4 6 8 OUT
2	10	30	0.2	0.12	IN 1 3 5 7 / 2 4 6 8 OUT
4	5	15	1	0.46	IN 1 3 5 7 / 2 4 6 8 OUT

Operation Principle



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 100°C.

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.