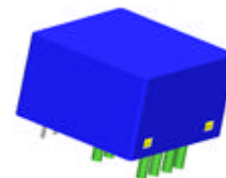


# Current Transducer HXS 20-NP/SP30

$I_{PN} = 5 - 10 - 20 \text{ A}$

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  $R_L = 10 \text{ k}\Omega$

## Electrical data

$I_{PN}$	Primary nominal r.m.s. current	$\pm 20$	A
$I_P$	Primary current measuring range	$\pm 60$	A
$V_{OUT}$	Analog output voltage @ $I_P$	$V_{REF} \pm (0.625 \cdot I_P / I_{PN})$	V
	$I_P = 0$	$V_{REF} \pm 0.0125$	V
$V_{REF}$	Internal Reference <sup>1)</sup> - Output voltage	$2.5 \pm 0.025$	V
	$V_{REF}$ Output impedance	typ. 200	$\Omega$
	$V_{REF}$ Load impedance	$\geq 200$	$\text{k}\Omega$
$R_L$	Output load resistance	$\geq 2$	$\text{k}\Omega$
$R_{OUT}$	Output impedance	$< 10$	$\Omega$
$C_L$	Max. output capacitive load	$< 1$	$\mu\text{F}$
$V_C$	Supply voltage ( $\pm 5 \%$ )	5	V
$I_C$	Current consumption @ $V_C = 5 \text{ V}$	22	mA

## Accuracy - Dynamic performance data

$X$	Accuracy <sup>2)</sup> @ $I_{PN}$ , $T_A = 25^\circ\text{C}$	$\leq \pm 1$	% of $I_{PN}$
$e_L$	Linearity $0 \dots I_{PN}$	$\leq \pm 0.5$	% of $I_{PN}$
	$\dots 3 \times I_{PN}$	$\leq \pm 1$	% of $I_{PN}$
$TCV_{OUT}$	Thermal drift of $V_{OUT}$ @ $I_P = 0$	$\leq \pm 0.4$	mV/K
$TCV_{REF}$	Thermal drift of $V_{REF}$	$\leq \pm 0.01$	%/K
$TCV_{OUT}/V_{REF}$	Thermal drift of $V_{OUT}/V_{REF}$ @ $I_P = 0$	$\leq \pm 0.2$	mV/K
$TCE_G$	Thermal drift of the gain	$\leq \pm 0.07\%$	of reading/K
$V_{OM}$	Residual voltage @ $I_P = 0$ , after an overload of $3 \times I_{PNDC}$	$\leq \pm 1.2$	% of $I_{PN}$
$t_{ra}$	Reaction time @ 10 % of $I_{PN}$	$< 3$	$\mu\text{s}$
$t_r$	Response time @ 90 % of $I_{PN}$	$< 5$	$\mu\text{s}$
$di/dt$	di/dt accurately followed	$> 50$	A/ $\mu\text{s}$
	Output noise (DC .. 10 kHz)	$< 15$	mVpp
	(DC .. 1 MHz)	$< 40$	mVpp
$f$	Frequency bandwidth (-3 dB) <sup>3)</sup>	DC .. 50	kHz

## General data

$T_A$	Ambient operating temperature	- 40 .. + 85	$^\circ\text{C}$
$T_S$	Ambient storage temperature	- 40 .. + 85	$^\circ\text{C}$
$dCp$	Creepage distance	$> 5.5$	mm
$dCI$	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

- 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.

# Current Transducer HXS 20-NP/SP30

## 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 1.2/50 $\mu$ s	6	kV

**Notes :** <sup>1)</sup> 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.

<sup>2)</sup> Excluding offset and hysteresis.

<sup>3)</sup> Small signal only to avoid excessive heatings of the magnetic core.

### Safety :



Caution, risk of danger

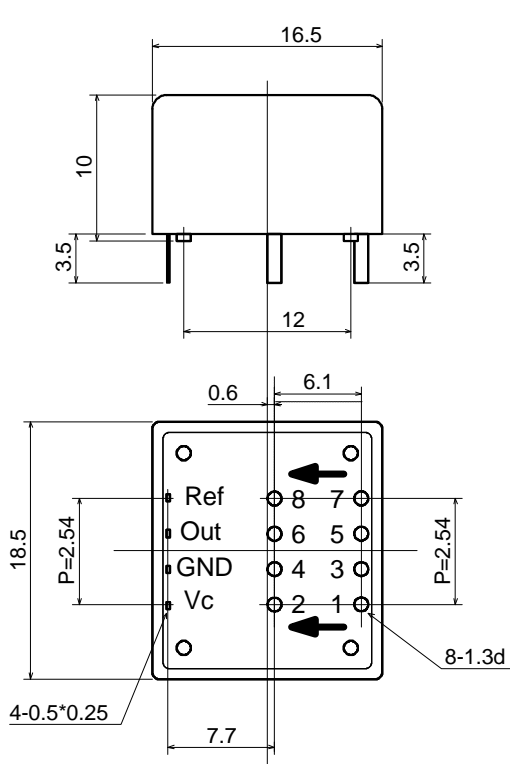


Caution, risk of electrical shock

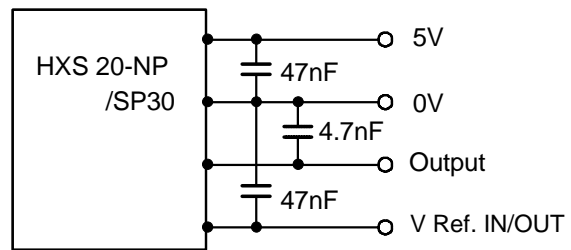
This transducer shall be used in accordance with manufacturer instruction. The temperature of the primary conductor shall not exceed 100°C. Power supply shall be a low voltage source and shall have an efficient protective system against over current. Power supply must incorporate a circuit breaker. This 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 20-NP/SP30

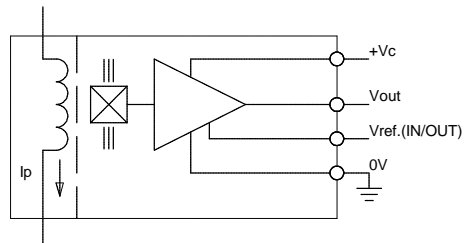
## Dimensions (in mm)



### Required Connection Circuit



### Operation Principle



Number of primary turns	Primary current		Primary resistance $R_p$ [m ohm]	Primary insertion inductance $L_p$ [ $\mu$ F]	Recommended PCB connections
	nominal $I_{PN}$ [A]	maximum $I_p$ [A]			
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

### Mechanical characteristics

- General tolerance  $\pm 0.2$  mm
- Fastening & connection of primary jumper 8 pins  $\varnothing 1.3$  mm  
Recommended PCB hole  $\varnothing 1.5$  mm
- Fastening & connection of secondary 4 pins  $0.5 \times 0.25$   
Recommended PCB hole  $\varnothing 0.7$  mm

### Remarks

- $V_{OUT}$  is positive when  $I_p$  flows from terminals 1, 3, 5, 7 (IN) to terminals 2, 4, 6, 8 (OUT).
- Temperature of the primary conductors should not exceed  $100^\circ\text{C}$ .