

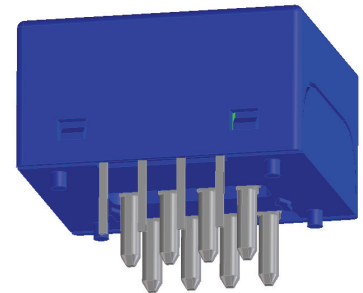
# Current Transducer HXS 20-NP/SP30

For the electronic measurement of currents: DC, AC, pulsed..., with galvanic isolation between the primary circuit (high power) and the secondary circuit (electronic circuit).



All Data are given with a  $R_L = 10\text{ k}\Omega$

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



## Electrical data

$I_{PN}$	Primary nominal current rms	$\pm 20$	A
$I_{PM}$	Primary current, measuring range	$\pm 60$	A
$V_{OUT}$	Analog Output voltage @ $I_P$	$V_{OE} \pm (0.625 \cdot I_P / I_{PN})$	V
$G_{TH}$	Theoretical sensitivity	0.625	V / $I_{PN}$
$V_{REF}$	Reference voltage <sup>1)</sup>	2.5 $\pm$ 0.025	V
	Output voltage	typ. 200	$\Omega$
	Output impedance	$\geq 200$	k $\Omega$
	Load impedance	$\geq 2$	k $\Omega$
$R_L$	Load resistance	< 5	$\Omega$
$R_{OUT}$	Output internal resistance	= 4.7	nF
$C_L$	Capacitive loading ( $\pm 20\%$ )	5	V
$V_C$	Supply voltage ( $\pm 5\%$ ) <sup>2)</sup>	19	mA
$I_C$	Current consumption @ $V_C = 5\text{V}$		

## Accuracy - Dynamic performance data

$X$	Accuracy <sup>3)</sup> @ $I_{PN}$ , $T_A = 25^\circ\text{C}$	$\leq \pm 1$	%
$\epsilon_L$	Linearity error	$0 \dots I_{PN}$	$\leq \pm 0.5$
		$0 \dots 3 \times I_{PN}$	$\leq \pm 1$
$TCV_{OE}$	Temperature coefficient of $V_{OE}$	(+25.. 85°C)	$\leq \pm 0.4$ mV/K
		(-40.. +25°C)	$\leq \pm 0.525$ mV/K
$TCV_{REF}$	Temperature coefficient of $V_{REF}$	(+25.. 85°C)	$\leq \pm 0.01$ %/K
		(-40.. +25°C)	$\leq \pm 0.015$ %/K
$TCV_{OE/V_{REF}}$	Temperature coefficient of $V_{OE}/V_{REF}$		$\leq \pm 0.15$ mV/K
$TCG$	Temperature coefficient of $G$		$\leq \pm 0.07\%$ of reading/K
$V_{OE}$	Electrical offset voltage @ $I_P = 0$ , $T_A = 25^\circ\text{C}$		$V_{REF} \pm 0.0125$ V
$V_{OM}$	Magnetic offset voltage @ $I_P = 0$		
	after an overload of $3 \times I_{PN}$	$< \pm 1.2$	%
$t_{ra}$	Reaction time to 10 % of $I_{PN}$ step	< 3	$\mu\text{s}$
$t_r$	Response time to 90 % of $I_{PN}$ step	< 5	$\mu\text{s}$
$di/dt$	di/dt accurately followed	> 50	A/ $\mu\text{s}$
$V_{no}$	Output voltage noise (DC .. 10 kHz)	< 20	mVpp
	(DC .. 1 MHz)	< 40	mVpp
$BW$	Frequency bandwidth (-3 dB) <sup>4)</sup>	DC .. 50	kHz

## General data

$T_A$	Ambient operating temperature	- 40 .. + 85	$^\circ\text{C}$
$T_S$	Ambient storage temperature	- 40 .. + 85	$^\circ\text{C}$
$m$	Mass	10	g
	Standards	EN 50178: 1997	

**Notes** : <sup>1)</sup> It is possible to overdrive  $V_{REF}$  with an external reference voltage between 1.5V - 2.8V providing its ability to sink or source approximately 5 mA.

<sup>2)</sup> Maximum supply voltage (not operating) < 6.5 V

<sup>3)</sup> Excluding offset and Magnetic offset voltage.

<sup>4)</sup> Small signal only to avoid excessive heatings of the magnetic core.

## Features

- Hall effect measuring principle
- Multirange current transducer through PCB pattern lay-out
- Galvanic isolation between primary and secondary circuit
- Isolation test voltage 3500 V
- Low power consumption
- Extremely low profile < 11 mm
- Single power supply + 5 V
- Fixed offset & sensitivity
- Isolated 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 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.

## Application domain

- Industrial.

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### Isolation characteristics

<b>V<sub>d</sub></b>	Rms voltage for AC isolation test, 50 Hz, 1 min	3.5	kV
<b>dCp</b>	Creepage distance	> 5.5	mm
<b>dCl</b>	Clearance distance	> 5.5	mm
<b>CTI</b>	Comparative Tracking Index (group I)	> 600	V

### Applications examples

According to **EN 50178, IEC 61010-1 standards** and following conditions:

- Over voltage category OV 3
- Pollution degree PD2
- Non-uniform field

	EN 50178	IEC 61010-1
Single isolation	600 V	600 V
Reinforced isolation	300 V	150 V

According to **UL508 standard** and following conditions: Max.Voltage 600V

- Over voltage category OV 3
- Pollution degree PD2

### 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 (eg. primary busbar, power supply).

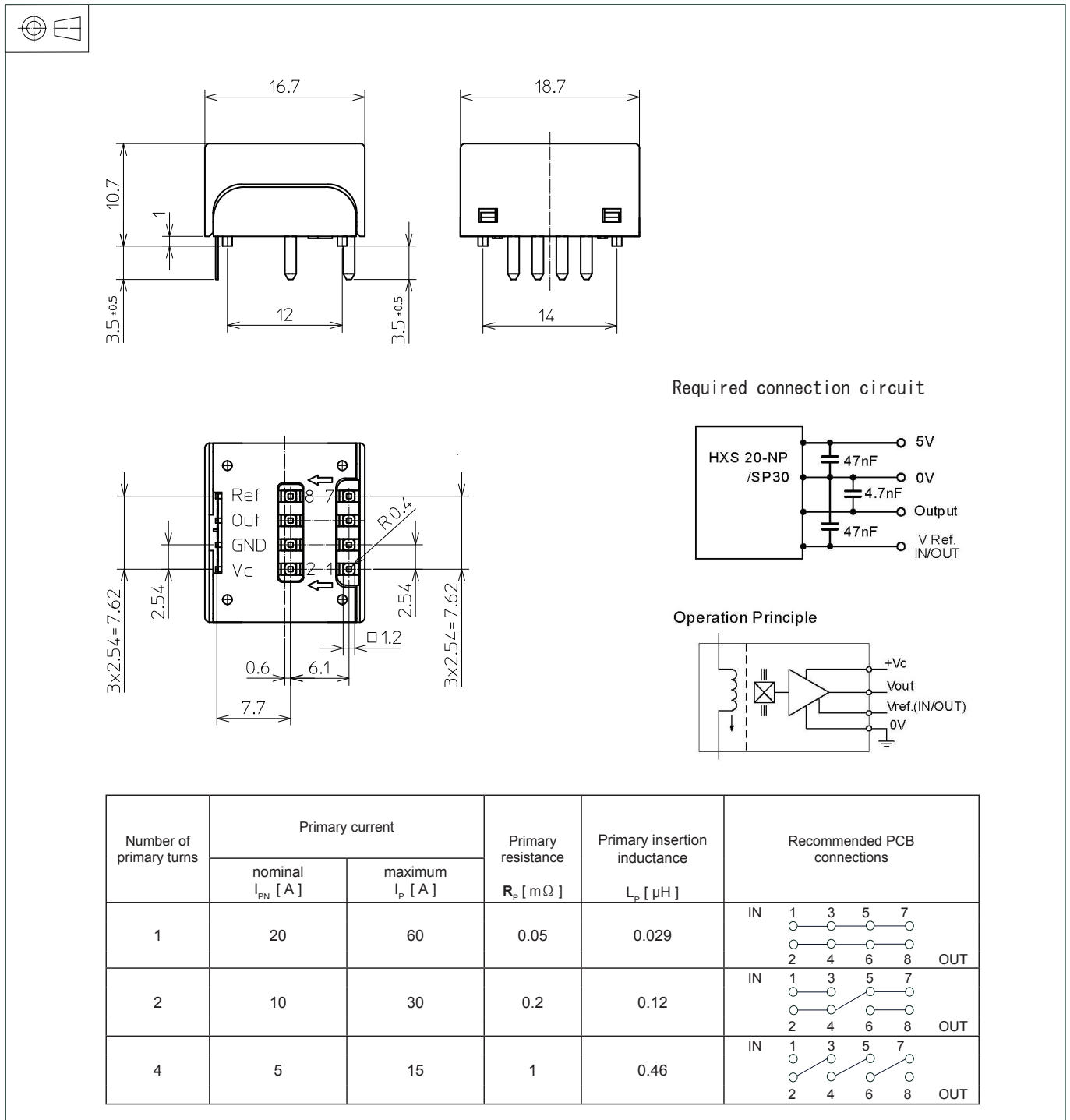
Ignoring this warning can lead to injury and/or cause serious damage.

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.

## Dimensions HXS 20-NP/SP30 (in mm)



### Mechanical characteristics

- General tolerance  $\pm 0.2$  mm
- Transducer fastening & connection of primary jumper 8 pins  $\square 1.2$  mm (corner R 0.4mm)
- Transducer fastening & connection of secondary 4 pins  $0.5 \times 0.25$  mm

### Recommended PCB hole

- Primary PCB hole  $\varnothing 1.5$  mm
- Secondary 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 conductor should not exceed 100°C.