

Current Transducer HXS 10-NP/SP3

$I_{PN} = 10 \text{ A}$

DUAL PHASE

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

Primary nominal r.m.s. current I_{PN} (A)		Primary current measuring range I_p (A)		Type
Serial	Parallel	Serial	Parallel	
± 10	± 20	± 30	± 60	HXS 10-NP/SP3
V_{OUT}	Analog output voltage @ I_p $I_p = 0$			$V_{REF} \pm (0.625 \cdot I_p / I_{PN}) \text{ V}$ $V_{REF} \pm 0.0125 \text{ V}$
V_{REF}	Internal Reference ¹⁾ - Output voltage			$2.5 \pm 0.025 \text{ V}$
		V_{REF}	Output impedance	typ. 200 Ω
		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

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

- Two separate primary windings for dual phase measurement

Accuracy - Dynamic performance data

X	Accuracy ²⁾ @ I_{PN} , $T_A = 25^\circ\text{C}$	$\leq \pm 1$	% of I_{PN}
e_L	Linearity 0.. I_{PN} .. $3 \times I_{PN}$	$\leq \pm 0.5$ $\leq \pm 1$	% of I_{PN} % 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	$\leq \pm 0.05\%$	of reading/K
V_{OM}	Residual voltage @ $I_p = 0$, after an overload of $3 \times I_{PNDC}$	$< \pm 0.7$	% 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

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.

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) UL94 classification	> 600 V0	V
m	Mass Standards	10 EN 50178 (97-10-01)	g

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Insulation category

V_b	Nominal Voltage with IEC 61010-1 standards and following conditions	150	V r.m.s.
	- Single insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field		
V_b	Nominal Voltage with EN 50178 standards and following conditions	300	V r.m.s.
	- Reinforced insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field		
V_d	R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn		
	Primary to secondary	2.5	kV
	Primary 1 to Primary 2	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

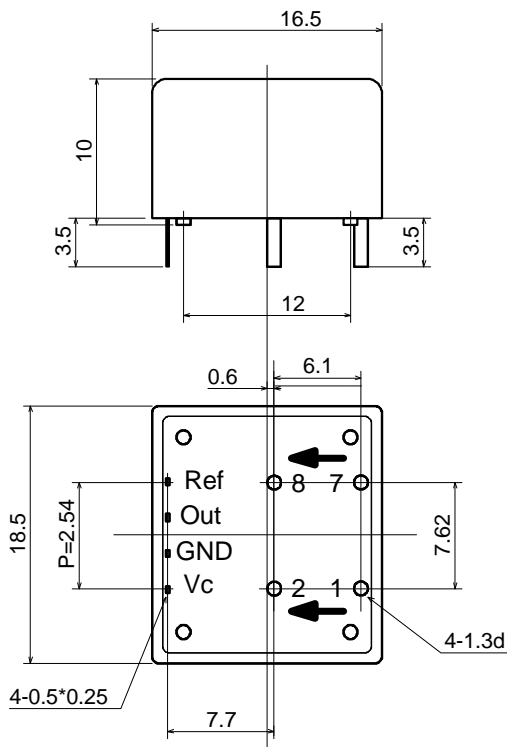


Caution, risk of electrical shock

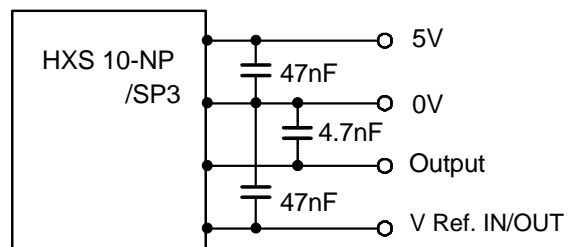
This transducer shall be used in accordance with manufacturer instruction. The temperature of the primary conductor shall not exceed 100°C. Power supply shall be a low voltage source and shall have an efficient protective system against over current. Power supply must incorporate a circuit breaker. This 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 10-NP/SP3

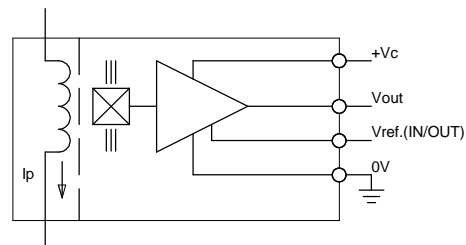
Dimensions (in mm)



Required Connection Circuit



Operation Principle



Primary connections	Primary current		Primary resistance R_p [m ohm]	Primary insertion inductance L_p [uF]	Recommended PCB connections
	nominal I_{PN} [A]	maximum I_p [A]			
Serial	10	30	0.5	0.025	IN 1 — 7 2 — 8 OUT
Parallel	20	60	0.15	0.01	IN 1 — 7 2 — 8 OUT

Mechanical characteristics

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

Remarks

- V_{OUT} is positive when I_p flows from terminals 1, 7 (IN) to terminals 2, 8 (OUT)
- Temperature of the primary conductors should not exceed 100°C .