

Current Transducer HTC 50 ... 500-S/SP2

For the electronic measurement of currents: DC, AC, pulsed..., with galvanic separation between the primary circuit and the secondary circuit.



$$I_{PN} = \pm 50 \dots 500 \text{ A}$$



Electrical data

Primary nominal DC current (continuous) I_{PNDC} (A)	Primary current measuring range I_{PM} (A)	Type
50	±55	HTC 50-S/SP2
90	±99	HTC 90-S/SP2
250	±275	HTC 250-S/SP2
500	±550	HTC 500-S/SP2
U_C	Supply voltage (±3 %)	±15 V
I_C	Current consumption @ $U_C = \pm 15 \text{ V}$	< ±20 mA
R_{INS}	Insulation resistance @ 500 V DC	> 500 MΩ
U_{out}	Output voltage (analog) @ $\pm I_{PNDC}$; $R_L = 2 \text{ k}\Omega$; $T_A = 25^\circ\text{C} \pm 10$	V
R_{out}	Output internal resistance	< 100 Ω
R_L	Load resistance	≥ 2 kΩ

Accuracy - Dynamic performance data

ϵ	Error @ I_{PNDC} , $T_A = 25^\circ\text{C}$	< ±1	% of I_{PNDC}
ϵ_L	Linearity error (0 ... $\pm I_{PNDC}$)	< ±1	% of I_{PNDC}
U_{OE}	Electrical offset voltage @ $T_A = 25^\circ\text{C}$	HTC 50 ... 90-S/SP2	< ±100 mV
		HTC 250 ... 500-S/SP2	< ±30 mV
U_{OM}	Magnetic offset voltage @ $U_{PN} = 0$ referred to primary after an excursion of $1 \times U_{PNDC}$	HTC 50 ... 90-S/SP2	< ±70 mV
		HTC 250 ... 500-S/SP2	< ±50 mV
TCU_{OE}	Temperature coefficient of U_{OE}	HTC 50 ... 90-S/SP2	
		(-40 ... -20 °C)	< ±6 mV/K
		(-20 ... +85 °C)	< ±4 mV/K
		HTC 250 ... 500-S/SP2	< ±1 mV/K
TCU_{out}	Temperature coefficient of U_{out}	HTC 50 ... 90-S/SP2	< ±0.5 %/K
		HTC 250 ... 500-S/SP2	< ±0.1 %/K
t_{D90}	Delay time @ 90 % of the final output value I_{PNDC} step ¹⁾	≤ 10	µs
BW	Frequency bandwidth (-3 dB)	DC ... 10	kHz

General data

T_A	Ambient operating temperature	-40 ... +85	°C
T_{Ast}	Ambient storage temperature	-40 ... +85	°C
RH	Relative humidity (non-condensing) ²⁾ Altitude above sea level	≤ 95	%
		2000	m
		Indoor use only	
m	Mass Standard ³⁾	450	g
		EN 50155: 2007.	

Features

- Open loop current transducer using the Hall effect
- Insulating plastic case recognized according to UL 94-V0.

Special feature

- Connector TE34-4-16P (JAE).

Advantages

- Easy installation
- Compact
- High immunity to external interference
- Low power consumption.

Applications

- Single or three phase inverters
- Propulsion and braking choppers
- Propulsion converters
- Auxiliary converters
- Battery chargers.

Application Domain

- Railway (fixed installations and onboard).

Notes: ¹⁾ For a $di/dt = 100 \text{ A}/\mu\text{s}$

²⁾ Long term exposure to high humidity environment may affect to product reliability.

³⁾ Deviation of the offset during the test IEC 61000-4-3 @ 20 V/m in the ranges (80-250) MHz and (500-1000) MHz.

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	2.5 Min	kV
d_{Cp}	Creepage distance	> 15.1	mm
d_{Cl}	Clearance	> 15.1	mm
CTI	Comparative tracking index (group IIIa)	275	

Safety

This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.



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.



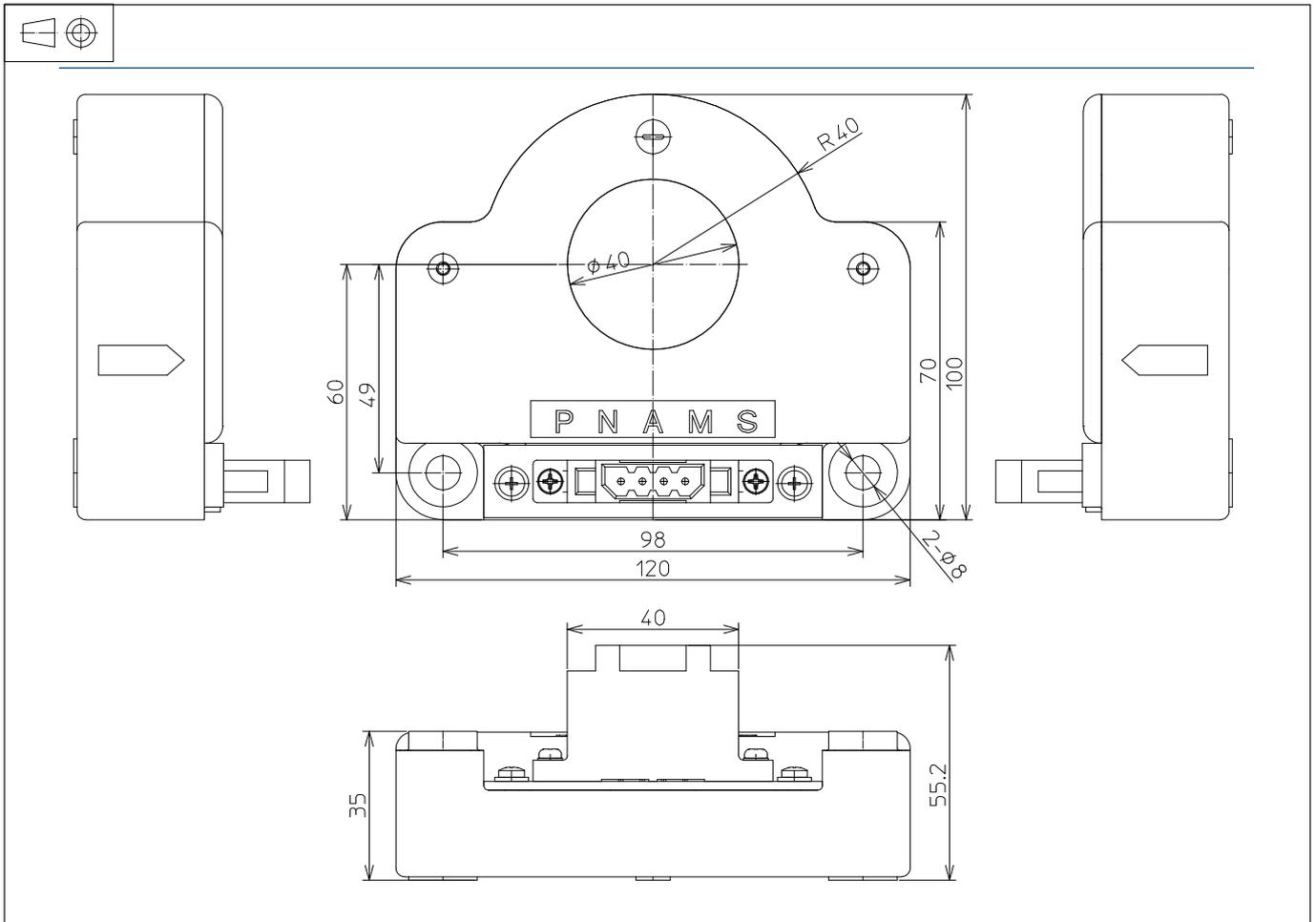
Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (e.g. primary busbar, power supply). Ignoring this warning can lead to injury and/or cause serious damage.

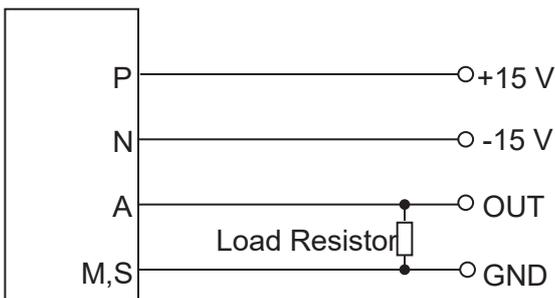
This transducer is a build-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used.

Main supply must be able to be disconnected.

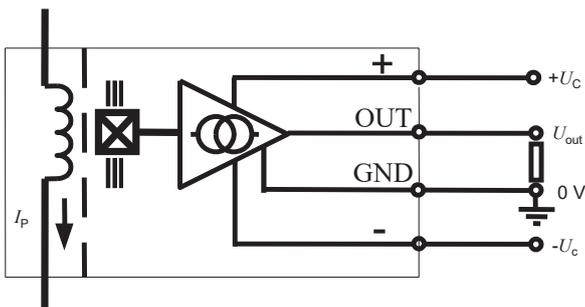
Dimensions HTC 50 ... 500-S/SP2 (in mm)



Connection circuit



Operation principle



Mechanical characteristics

- General tolerance ± 1 mm
- Transducer fastening
Recommended fastening torque 2.6 ± 0.52 N·m

Remarks

- I_s is positive when I_p flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 100 °C.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: <https://www.lem.com/en/file/3137/download/>.