Current Transducer HAZ 4000 ... 20000-SB

I_{PN} = 4000 ... 20000 A

U_{out} = ±10 V

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



Electrical data

Primary nominal DC current or AC peak I_{PN} (A)	Primary current measuring range I_{PM} (A)	Type
4000	±4000	**HAZ 4000-SB**
6000	±6000	**HAZ 6000-SB**
10000	±10000	**HAZ 10000-SB**
12000	±12000	**HAZ 12000-SB**
14000	±14000	**HAZ 14000-SB**
20000	±20000	**HAZ 20000-SB**

U_C	Supply voltage (±5 %)		±15	V
I_C	Current consumption		±30	mA
$\hat{I}_{P\,max}$	Primary withstand peak current (maximum)		30,000	A
R_{INS}	Insulation resistance @ 500 V DC	> 1,000	MΩ	
U_{out}	Output voltage (Analog) @ $\pm I_{PN}$, R_L = 10 kΩ, T_A = 25 °C		±10	V
R_L	Load resistance		≥ 10	kΩ
R_{out}	Output internal resistance	approx.	100	Ω

Accuracy - Dynamic performance data

ε	Error @ I_{PN}, T_A = 25 °C (excluding offset)	≤ ±1	%
ε_L	Linearity error [1] 0 ... $\pm I_{PN}$	≤ ±0.5	% of I_{PN}
U_{OE}	Electrical offset voltage, T_A = 25 °C	< ±50	mV
U_{OM}	Magnetic offset voltage @ U_{PN} = 0 refered to primary after an excursion of 1 × U_{PN}	< ±12.5	mV
TCU_{OE}	Temperature of coefficient of U_{OE}	< ±1	mV/K
TCU_{out}	Temperature of coefficient of U_{out} (% of reading)	< ±0.05	%/K
$t_{D\,10}$	Delay time to 10 % of the final output value for I_{PNDC} step [2]	< 2	µs
$t_{D\,90}$	Delay time to 90 % of the final output value for I_{PNDC} step [2]	< 10	µs
BW	Frequency bandwidth (±3 dB), small signal [3]	DC ... 3	kHz

General data

T_A	Ambient operating temperature		−25 ... +85	°C
$T_{A\,st}$	Ambient storage temperature		−30 ... +90	°C
RH	Relative humidity (non-condensing) [4]		≤ 95	%
	Altitude above sea level		2000	m
			Indoor use only	
m	Mass	approx.	6	kg
	Standards [5] [6]		EN 50178: 1997, EN 50155: 2007, EN 50121-3-2: 2006	

Notes: [1] Linearity data exclude the electrical offset; [2] For a di/dt = 50 A/µs; [3] To avoid excessive core heating; [4] Long term exposure to high humidity environment may affect to product reliability;
[5] Please consult characterisation report for more technical details and application advice;
[6] Deviation of the offset during the test IEC 61000-4-3 @ 20 V/m between 100 and 220 MHz and between 450 and 550 MHz.

Features

- Hall effect measuring principle
- Galvanic separation between primary and secondary circuit
- Insulation voltage 17 kV RMS/50 Hz/1 min
- Low power consumption
- Package in PBT meeting UL 94-V0
- Instantaneous voltage output.

Advantages

- Easy installation
- Small size and space savings
- Only one design for wide current rating range
- High immunity to external interference.

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

Application domains

- Industrial
- Railway (fixed installations and onboard).

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LEM reserves the right to carry out modifications on its transducers, in order to improve them.

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Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	17	kV
U_t	Partial discharge extinction RMS voltage (q_m < 10 pC)	3.75	kV
U_{Ni}	Impulse withstand voltage 1.2/50 µs [1)]	32	kV
		Min	
d_{Cp}	Creepage distance	> 45	mm
d_{Cl}	Clearance	> 45	mm
CTI	Comparative Tracking Index (group I)	> 600	

Note: [1)] Impulse withstand voltage 1.2/50 µs passed without correction factors of 2000 m altitude.

Applications examples

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

	EN 50178	IEC 61010-1
d_{Cp}, d_{Cl}, U_{Ni}	Rated insulation voltage	Nominal voltage
Basic insulation	8000 V	9000 V
Reinforced insulation	3000 V	4000 V

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

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 (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.

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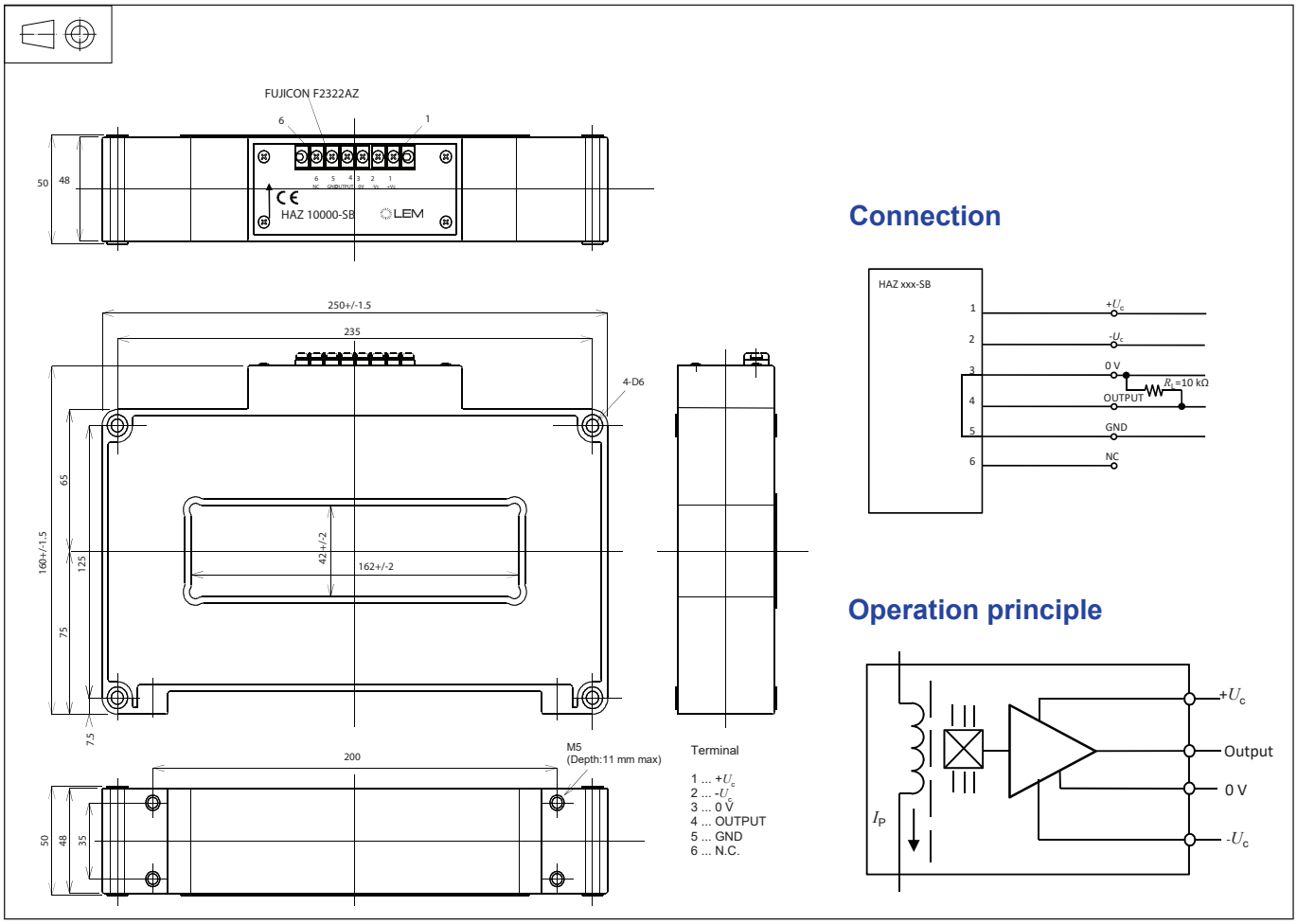
Dimensions HAZ 4000 ... 2000-SB (in mm)



Connection

Operation principle

Mechanical characteristics

• General tolerance	±0.5 mm
• Aperture for primary conductor	162 mm × 42 mm (±2 mm)
• Transducer fastening	4 × M5 (not supplied)
Recommended fastening torque	< 5 N·m
• Connection to secondary	FUJICON F2322AZ (6 terminals)

Remarks

- U_{out} is positive when I_P flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 120 °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
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.

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