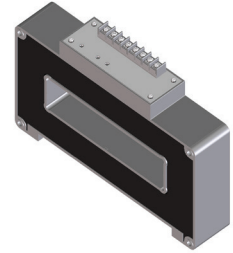


## Current Transducer HAZ 4000 ... 20000-SBI/SP1

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

$$I_{PN} = 4000 \dots 20000 \text{ A}$$

$$I_{out} = 4 \dots 20 \text{ mA}$$



### Electrical data

Primary nominal DC current or AC peak	Primary current measuring range	Type	
$I_{PN}$ (A)	$I_{PM}$ (A)		
4000	±4000	<b>HAZ 4000-SBI/SP1</b>	
10000	±10000	<b>HAZ 10000-SBI/SP1</b>	
20000	±20000	<b>HAZ 20000-SBI/SP1</b>	
$U_C$	Supply voltage (±5 %)	±15	V
$I_C$	Current consumption	±50	mA
$\hat{I}_{Pmax}$	Primary withstand peak current (maximum)	30,000	A
$R_{INS}$	Insulation resistance @ 500 V DC	> 1,000	MΩ
$I_{out}$	Output current (Analog) @ ± $I_{PN}$ , $T_A = 25^\circ\text{C}$	4 ... 20	mA
$R_L$	Load resistance	< 300	Ω
$R_{out}$	Output internal resistance	approx. 20	Ω

### Accuracy - Dynamic performance data

$\epsilon$	Error @ $I_{PN}$ , $T_A = 25^\circ\text{C}$ (excluding offset)	≤ ±1	%
$\epsilon_L$	Linearity error <sup>1)</sup> 0 ... ± $I_{PN}$	≤ ±0.5	% of $I_{PN}$
$I_{OE}$	Electrical offset current, $T_A = 25^\circ\text{C}$	12 ± 0.08	mA
$I_{OM}$	Magnetic offset current @ $I_P = 0$ after an excursion of $1 \times I_{PN}$	< ±0.025	mA
$TCI_{OE}$	Temperature of coefficient of $I_{OE}$	< ±0.05	% of $I_{PN}/K$
$TCI_{out}$	Temperature of coefficient of $I_{out}$ (% of reading)	< ±0.05	%/K
$t_{D10}$	Delay time to 10 % of the final output value for $I_{PNDC}$ <sup>2)</sup>	< 2	µs
$t_{D90}$	Delay time to 90 % of the final output value for $I_{PNDC}$ <sup>2)</sup>	< 10	µs
$BW$	Frequency bandwidth (±3 dB), small signal <sup>3)</sup>	DC ... 3	kHz

### General data

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

- Notes:**
- <sup>1)</sup> Linearity data exclude the electrical offset;
  - <sup>2)</sup> For a  $di/dt = 50 \text{ A}/\mu\text{s}$ ;
  - <sup>3)</sup> To avoid heating;
  - <sup>4)</sup> Long term exposure to high humidity environment may affect to product reliability;
  - <sup>5)</sup> Please consult characterisation report for more technical details and application advice;
  - <sup>6)</sup> 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 current output.

### Special feature

- $I_{out} = 4 \dots 20 \text{ mA}$ .

### 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).

## Current Transducer HAZ 4000 ... 20000-SBI/SP1

### 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 $\mu$ s <sup>1)</sup>	32	kV
		Min	
$d_{Cp}$	Creepage distance	> 45	mm
$d_{Ci}$	Clearance	> 45	mm
$CTI$	Comparative Tracking Index (group I)	> 600	

**Note:** <sup>1)</sup> Impulse withstand voltage 1.2/50  $\mu$ s 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
$d_{Cp}, d_{Ci}, U_{Ni}$	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.



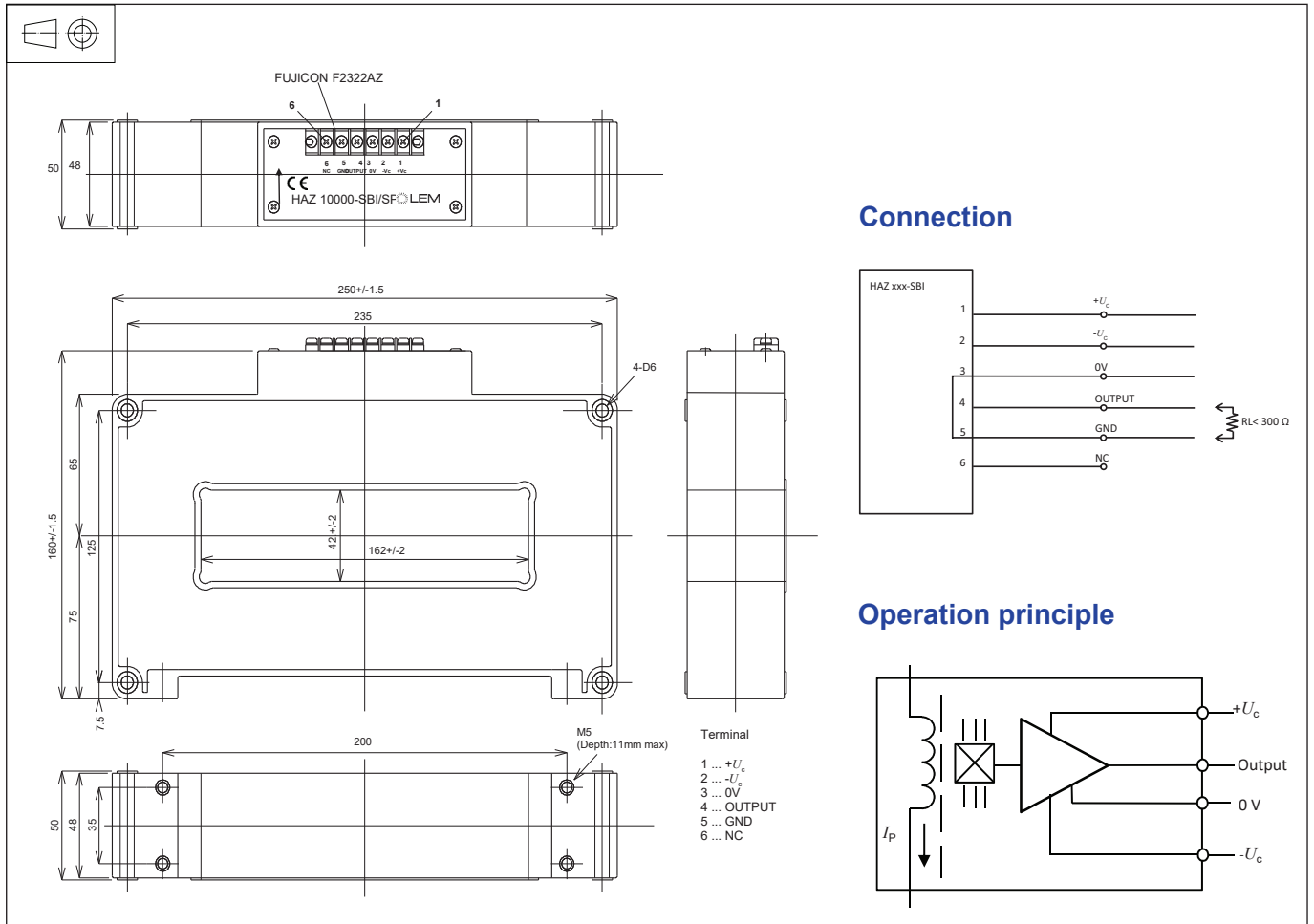
Caution, risk of electrical shock

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.

## Dimensions HAZ 4000 ... 20000-SBI/SP1 (in mm)



### Mechanical characteristics

- General tolerance  $\pm 0.5$  mm
- Aperture for primary conductor  $162 \text{ mm} \times 42 \text{ mm}$  ( $\pm 2$  mm)
- Transducer fastening  $4 \times \text{M5}$  (not supplied)
- Recommended fastening torque  $< 5 \text{ N}\cdot\text{m}$
- Connection to secondary FUJICON F2322AZ (6 terminals)

### Remarks

- $I_{\text{out}}$  is positive when  $I_p$  flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed  $120^\circ\text{C}$ .
- 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>