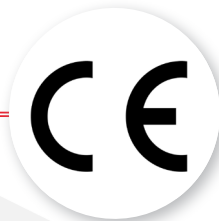
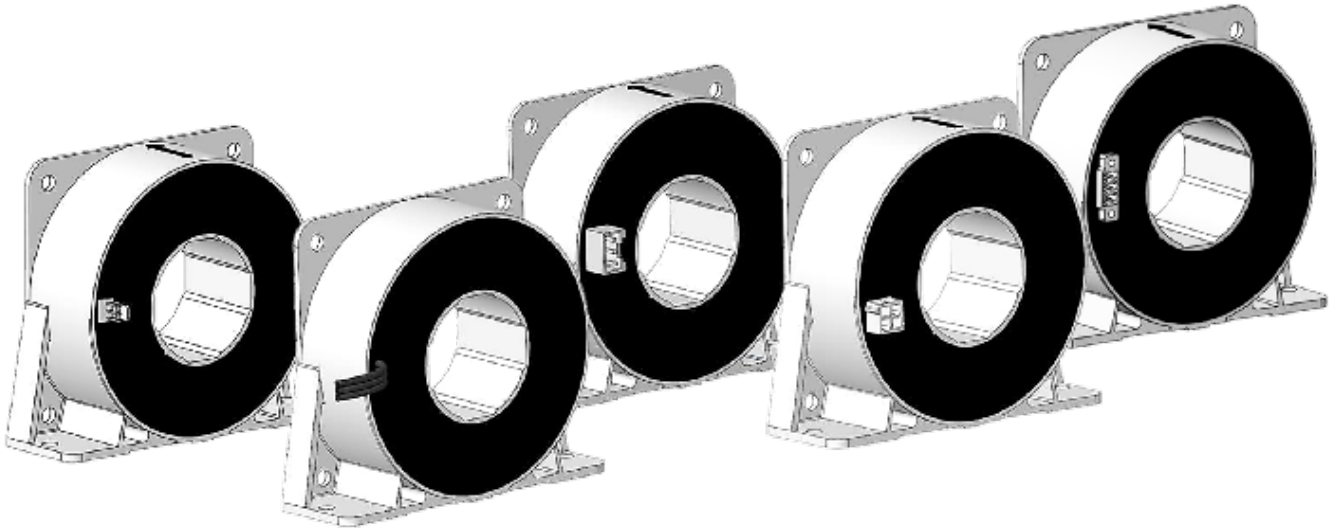


# TECHNICAL SPECIFICATIONS

## HRS1000-I-XXXXX

A powerful, compact and robust current sensor to measure AC, DC and pulsating currents with a galvanic insulation between primary and secondary circuits, able to measure accurately currents from 20A to 2700A.



### KEY FEATURES

- Current sensor dedicated to high power applications
- Up to 2700A in a 1000A casing to maintain compactness
- High robustness to electromagnetic disturbed environments
- Very accurate measurements (< 0.25%)

### APPLICATIONS



#### INDUSTRIAL

- Uninterruptible Power Supplies (UPS)
- Power supplies for welding applications
- Converter for DC drives and servomotors
- AC variable speed drives
- Wind turbines inverters
- Solar farm inverters



## Electrical details

Parameter	Unit	Value
Primary nominal current – AC (rms)	A	1000
Measuring range – AC (1min/15min)	A	2700
Measuring range – DC (1min/15min)	A	1900
Not measurable overload (10ms/h)	A	10 000
Secondary current (@nominal current)	mA	200
Turn ratio (Np/Ns)		1/5000
Measuring resistance (cf graph 1)	$\Omega$	See graph 1 underneath
Secondary resistance (@ 85°C)	$\Omega$	$\leq 46$
Voltage drop	V	$\leq 1.6$
No load consumption current	mA	$\leq 25$
Max current consumption (@ 2700A)	mA	545
Supply voltage (+/- 5%)	V DC	+/- 24*
Frequency bandwidth	kHz	0-100

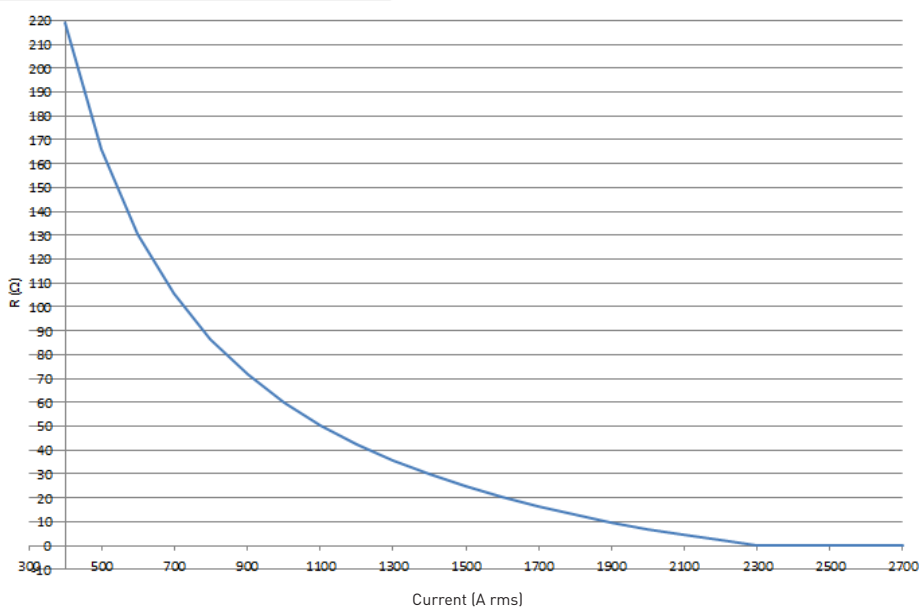
\*Please consult us for any other supply voltage configuration

## Performances

Parameter	Unit	Value
Overall accuracy @ nominal current (cf graph 3)	%	0.25
Linearity	%	$\leq 0.1$
Offset value	mA	$\leq 0.25$
Temperature drift coefficient on offset	mA/K	$\leq 0.025$
Response time	$\mu\text{s}$	$\leq 1$
di/dt correctly followed	A/ $\mu\text{s}$	100
Error generated by magnetic disturbances (cf graph 4)	%	$< 0.1$

### Graph 1 : Measuring resistance vs rms current

Maximum measurement resistance for a maximum current to be measured at 85°C (with a supply voltage of 22.8V (24V -5%)).



## Standards

Standard category		Reference
UL	✓	UL508 (pending)
CE Low voltage directive EMC directive Product standard (industrial)	✓	2014/30/UE 2014/35/UE EN 61010-1
RoHS	✓	Directive 2011/65UE
REACH	✓	Reglement 1907/2006
Conflict mineral	✓	Dodd Franck Act 1502

## General specs

Parameter	Unit	Value
Storage temperature	°C	-50/+90
Operating temperature	°C	-40/+85
Pollution degree		2
Overvoltage category		3
Mass	g	<600

## Insulation

Parameter	Unit	Value
Dielectric test	kV	7.4 50Hz, 1min
Impulse test	kV	20 1.2/50µs x n pulses
Comparative Tracking Index (CTI)		400 ≤ CTI ≤ 600
Insulation voltage, basic insulation	V	1 000
Insulation voltage, reinforced insulation	V	1 000



## Warnings/Safety

This sensor must be used in electrical circuits according to EN61010-1.



This sensor must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the system instructions and internal customer rules.



Caution: risk of electrical shock. When operating the sensor, certain parts can carry hazardous voltages (primary bar, power supply...). Ignoring this warning can lead to injury and/or cause serious damage.



Caution: hot surface: the temperature on the sensor and on the busbar can reach very high temperatures.

*For a use in specific environment or conditions, please contact us.*

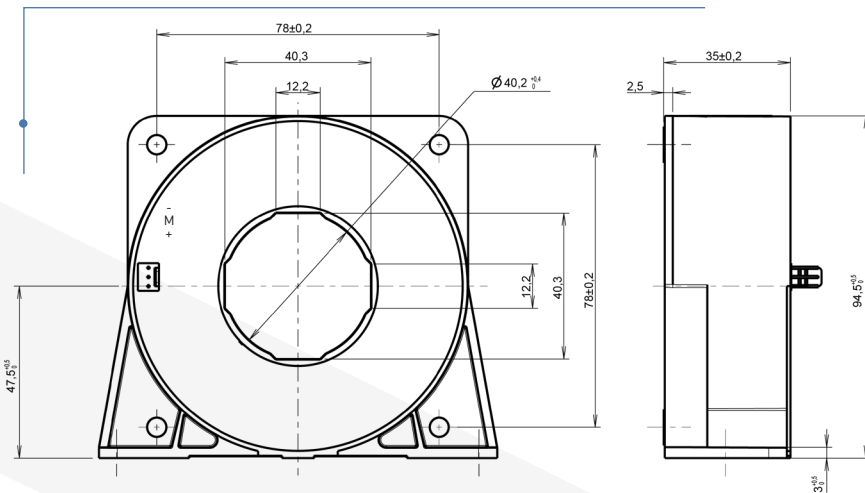
## Mounting instructions

- Installation and cabling of the sensor must be done according to applicable standards and safety requirements
- The power supply cable must be less than 30m long
- Bus bar must not touch the product. The temperature of the primary conductor must not exceed 100°C.
- Except for the mounting surface, a clearance distance of 1cm minimum must be respected all around the product.
- The reliability of the product is defined around nominal values. The use of the product outside of them will affect the reliability of the product and will reduce its lifetime.

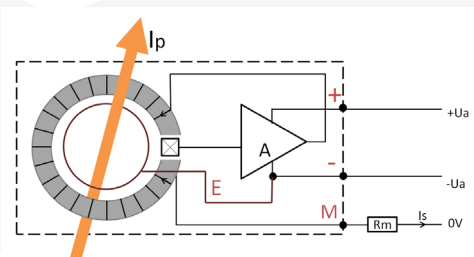
Operation : It is necessary to power on the sensor before having a primary current signal

*If a special arrangement of busbars does not allow to respect the recommendation, or if you require information on reliability on special conditions, please contact us to assess the feasibility of the solution.*

## Mechanical details - HRS1000-I-000XX



### CONNECTION DIAGRAM



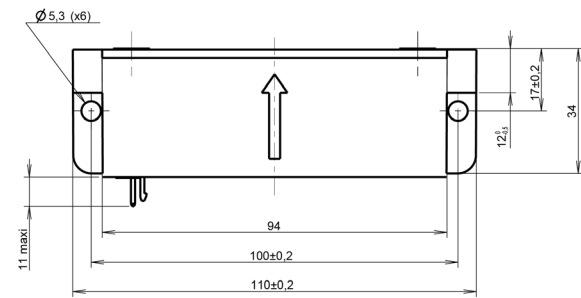
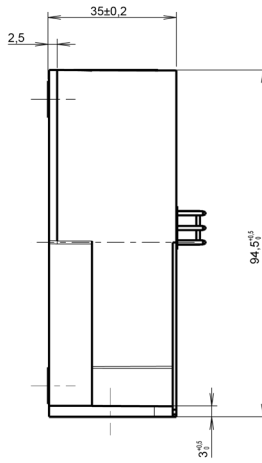
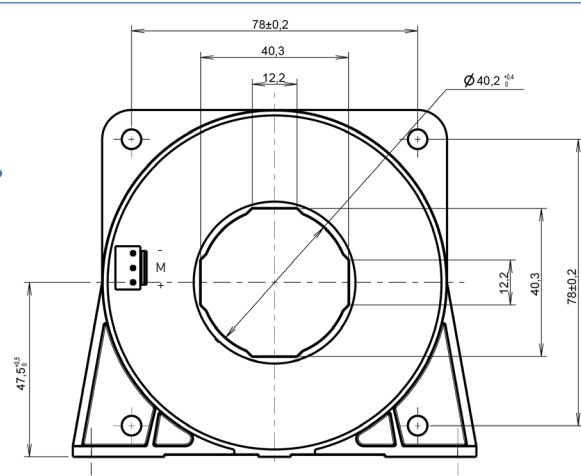
Molex type ref. 6410-03

- General tolerance = +/- 1mm

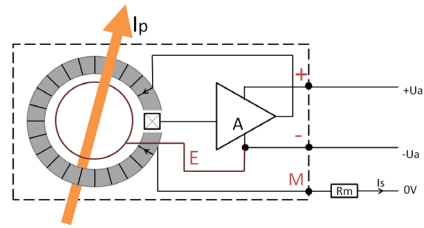
- Clearance distance (connector to through opening) = 20.6mm
- Creepage distance (connector to through opening) = 20.6mm



## Mechanical details - HRS1000-I-001XX



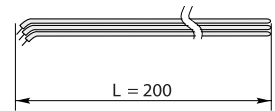
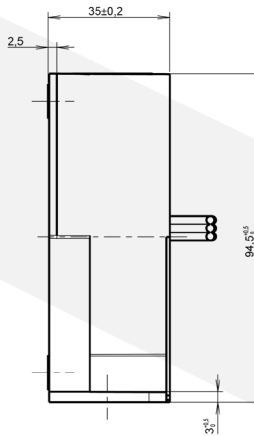
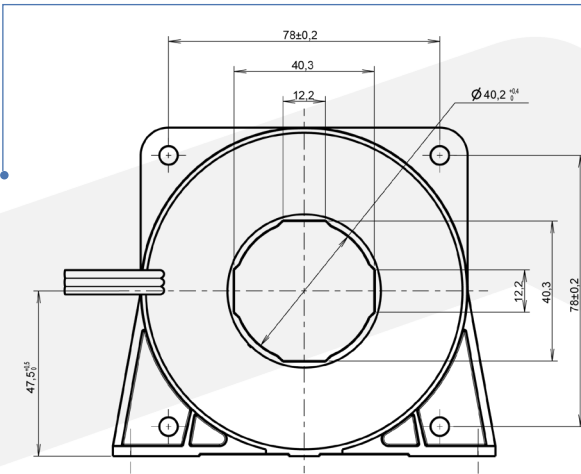
### CONNECTION DIAGRAM



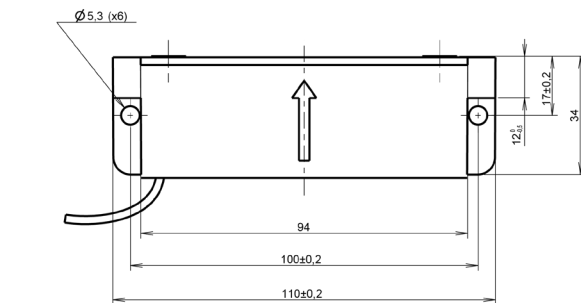
Connector  
JST ref. BH3P-VH-1

- General tolerance = +/- 1mm
- Clearance distance (connector to through opening) = 16.9mm
- Creepage distance (connector to through opening) = 31.7mm

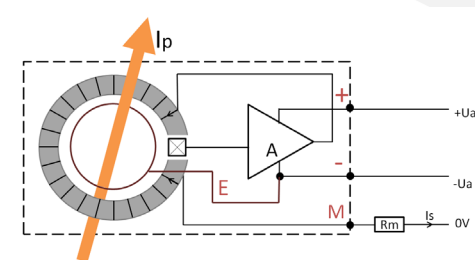
## Mechanical details - HRS1000-I-002XX



Cable: - Red +V<sub>A</sub>  
- Green M  
- Black -V<sub>A</sub>



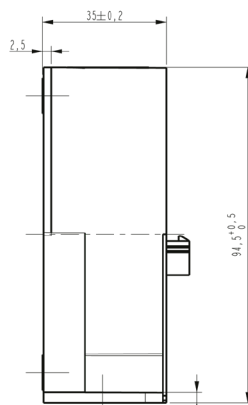
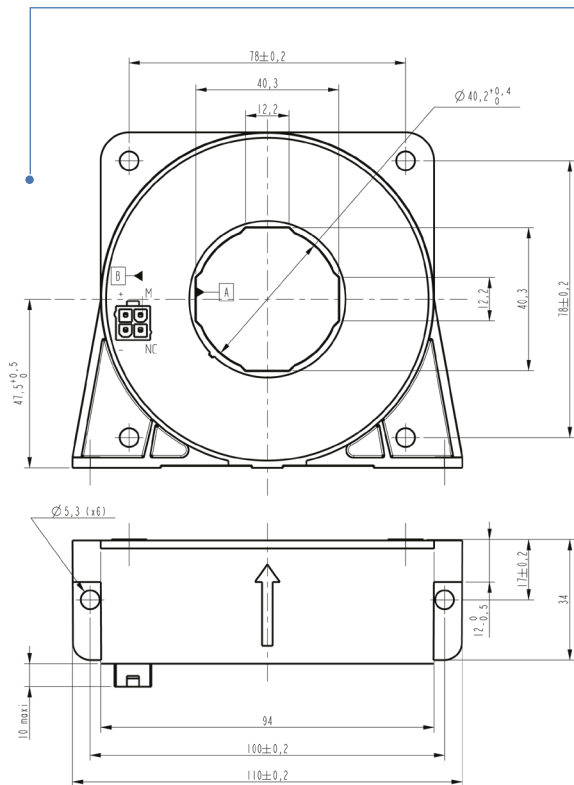
### CONNECTION DIAGRAM



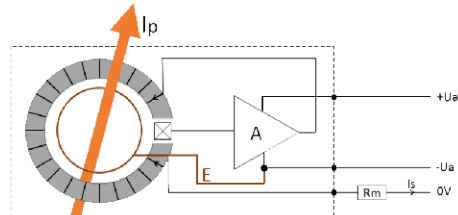
- General tolerance = +/- 1mm
- Clearance distance (connector to through opening) = 20.6mm
- Creepage distance (connector to through opening) = 20.6mm



## Mechanical details - HRS1000-I-005XX



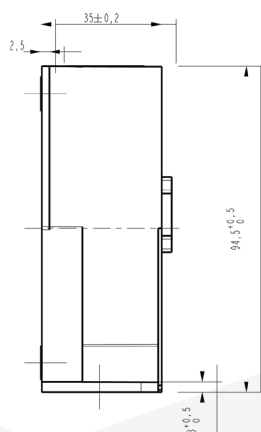
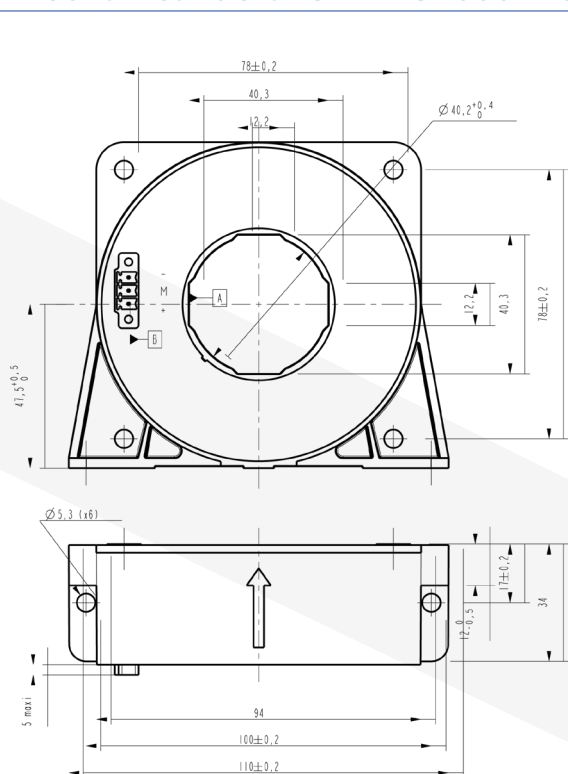
CONNECTION DIAGRAM



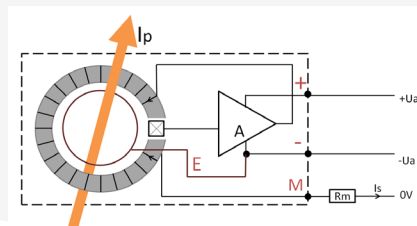
Connector  
Molex ref. Minifit Jr 5566

- General tolerance = +/- 1mm
- Clearance distance (connector to through opening) = 17.4mm
- Creepage distance (connector to through opening) = 30.6mm

## Mechanical details - HRS1000-I-006XX

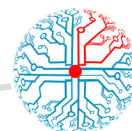


CONNECTION DIAGRAM



Connector  
Phoenix type contact 3pts

- General tolerance = +/- 1mm
- Clearance distance (connector to through opening) = 17.3mm
- Creepage distance (connector to through opening) = 24.9mm



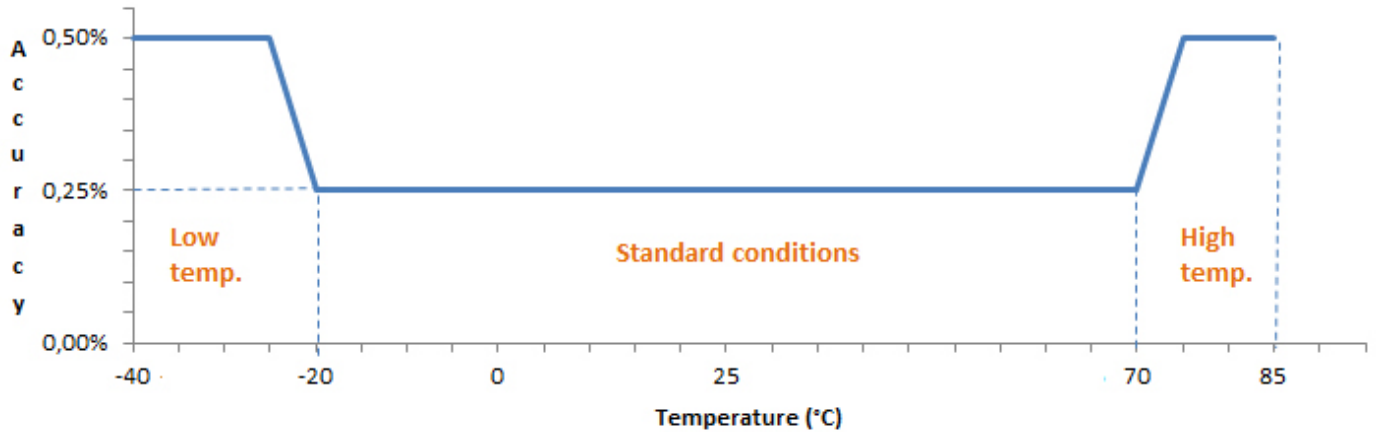
## Accuracy

### Definition

The term accuracy corresponds to the error  $\frac{(\text{current measured} - \text{real current})}{\text{real current}}$ .  
It takes into account the residual current, linearity and thermal drift.

### Graph 2 : Accuracy vs temperature

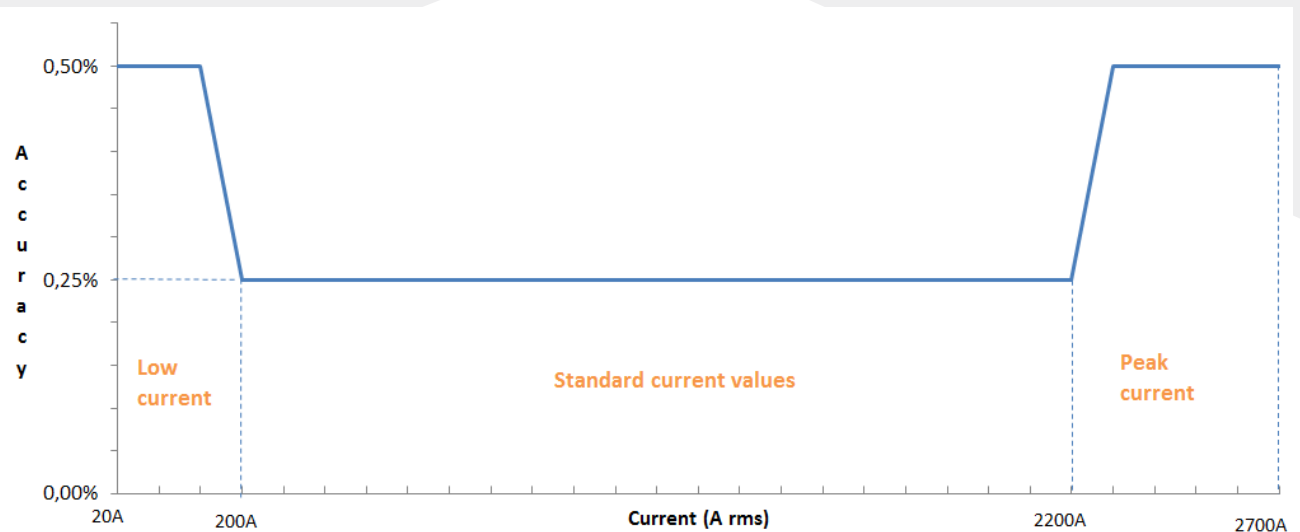
The accuracy is +/- 0.25 % within an interval of between -40°C and +85°C.  
For higher and lower temperatures (< -20°C and > 70°C), it is guaranteed within an interval of +/- 0.5 %.



*Note:* These values are given for a nominal current = 1000A rms.

### Graph 3 : Accuracy vs current

The wide measurement range allows to measure currents from 20A up to 2700A. From 200A rms to 2200A rms, accuracy is better than 0,25% and for higher and lower values, it is guaranteed within an interval of +/-0.5%.

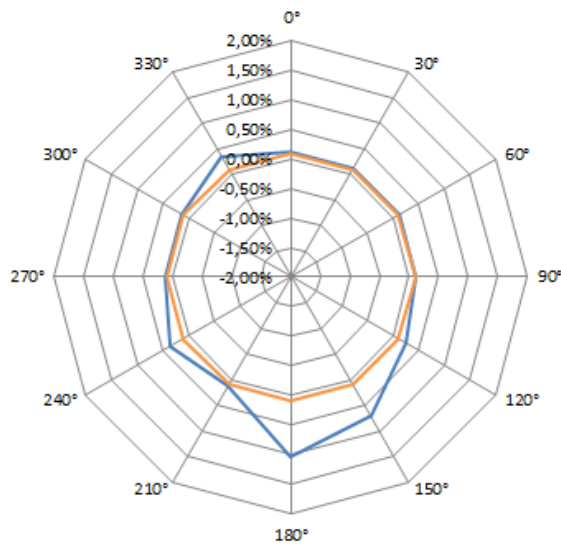


*Note:* These values are given for an ambient temperature = 25°C.



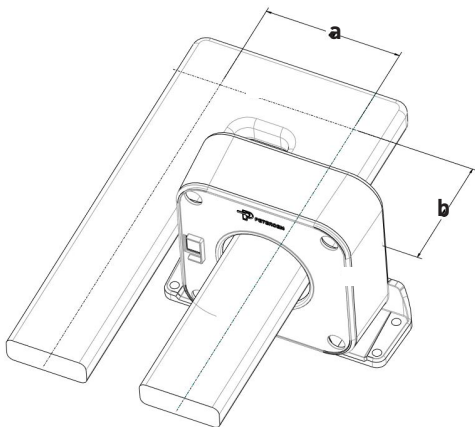
#### Graph 4 : Electro-magnetic robustness

In order to be able to install the current sensor in any position without affecting the quality of measures, the product has been qualified with an external busbar installed 1cm away from the casing. Whereas standard sensors from the market are sensible to the position of the external bar, HRS guarantees the accuracy of measurements in all positions, even in presence of high level of magnetic disturbances.

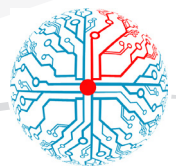


#### Accuracy vs mounting angle @ 1000A rms

— typical sensor  
— HRS1000



The qualification of the magnetic disturbances on the sensor is done using a U shape busbar. Tests are performed with a 10 minimum distance from the back section (a) et return section (b), which is the most disturbing case.



PETERCEM Sensors



@MAFELECTEAM

[www.petercem/sensors.com](http://www.petercem/sensors.com)  
[sales-sensors@petercem.fr](mailto:sales-sensors@petercem.fr)