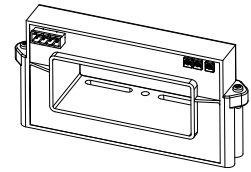


# Current Transducer AHR B420

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

$I_{PN} = 500 \dots 2000 \text{ A}$



## Electrical data

Primary nominal DC & AC current	Primary AC current, max. peak value <sup>1)</sup>	Output voltage	Type
$I_{PN}$ (A)	$I_{PM}$ (A)	$I_{out}$ (mA DC)	
500	2000	4-20	AHR 500 B420
800	2500	4-20	AHR 800 B420
1000	2000	4-20	AHR 1000 B420
1500	2500	4-20	AHR 1500 B420
2000	3000	4-20	AHR 2000 B420
$R_L$	Load resistance	< 300	$\Omega$
$U_C$	Supply voltage ( $\pm 5\%$ ) <sup>1)</sup>	+20 ... 50	V DC
$I_C$	Current consumption	30 mA + $I_{out}$	
$I_{SL}$	Output current limitation	< 25	mA
$I_P$	Overload capability	30000	At

## Accuracy - Dynamic performance data <sup>2)</sup>

$X$	Accuracy @ $I_{PN}$ , $T_A = 25^\circ\text{C}$ (excluding offset)	< $\pm 1$	% of $I_{PN}$
$\epsilon_L$	Linearity error (1 % of $I_{PN} \dots \pm I_{PN}$ )	< $\pm 1.0$	% of $I_{PN}$
$I_{OE}$	Electrical offset current @ $T_A = 25^\circ\text{C}$	4 $\pm$ 0.2	mA
$TCI_{OE}$	Temperature coefficient of $I_{OE}$ 0 $^\circ\text{C}$ ... +60 $^\circ\text{C}$	$\pm 3.2$	$\mu\text{A/K}$
	-40 $^\circ\text{C}$ ... +70 $^\circ\text{C}$	$\pm 6.4$	$\mu\text{A/K}$
$TCI_{out}$	Temperature coefficient of $I_{out}$ (% of reading)	$\pm 0.15$	%/K
$t_r$	Step response time to 90 % of $I_{PN}$	< 150	ms
$BW$	Frequency bandwidth ( $\pm 1$ dB)	DC 20 ... 6000	Hz

## General data

$T_A$	Ambient operating temperature	-40 ... +70	$^\circ\text{C}$
$T_S$	Ambient storage temperature	-40 ... +85	$^\circ\text{C}$
$m$	Mass	650	g
IPxx	Protection degree Standard	IP20	EN 50178: 1997 <sup>3)</sup>

**Notes:** <sup>1)</sup> The max peak AC current is the highest peak level of primary signal that is taken into account for accurate true RMS calculation. Yet the device is designed for maximum continuous true RMS value equal to  $I_{PN}$ , whereas the output is limited by the above specified output limitation.

<sup>2)</sup> WARNING: The specified characteristics of the transducer are only guaranteed if the paired top and bottom parts are mounted together and not mixed with similar parts of other transducers.

<sup>3)</sup> Regarding compliance towards IEC 61000-4-6 (EN 61000-6-2 (2005)): Variation of the offset between 150 kHz and 80 kHz with 10 V AM 80% @ 1 kHz.

## Features

- DC + distorted AC waveform currents measurement
- True RMS output
- Busbar or panel mounting
- Split core type
- Insulating plastic case recognized according to UL 94-V0.

## Advantages

- High insulation between primary and secondary circuits
- Eliminates insertion loss
- Easy installation.

## Applications

- AC power supplies or Motors: True RMS current sensing - the most accurate way to monitor power supply or motor input power
- VFD Controlled Loads: VFD output current monitoring to indicate how the motor and attached load are operating.
- SCRs or Switch-mode Rectifiers: Accurate measurement of output current
- Renewable Energy Installations or Backup Batteries: Continuous condition monitoring allowing automatic failure detection/ anticipation.

## Application domain

- Energy solutions.

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### Insulation coordination

$U_d$	RMS voltage for AC insulation test <sup>1)</sup> , 50 Hz, 1min	5.8	kV
$d_{cp}$	Creepage distance	11.9	mm
$d_{cl}$	Clearance	11.9	mm
$CTI$	Comparative tracking index (group IIIa)	225	

Note: <sup>1)</sup> Between primary (completely filling the aperture) and secondary.

### Applications examples

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

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

	EN 50178	IEC 61010-1
$d_{cp}, d_{cl}, \hat{U}_w$	Rated insulation voltage	Nominal voltage
Basic insulation	1000 V	1000 V
Reinforced insulation	500 V	500 V

### 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).

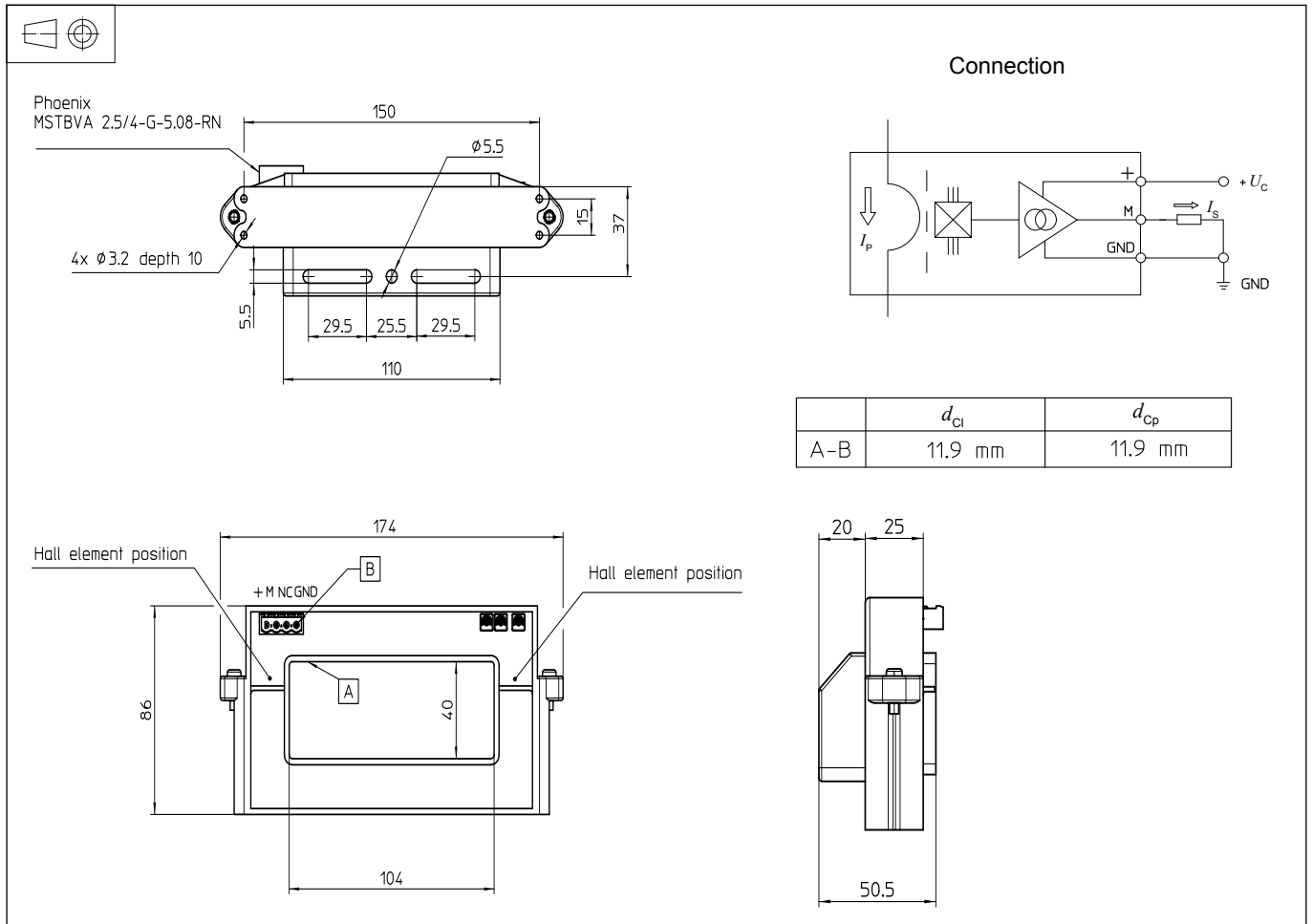
Ignoring this warning can lead to injury and/or cause serious damage.

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 (in mm)



## Mechanical characteristics

- General tolerance  $\pm 1.0$  mm
  - Primary aperture  $104 \times 40$  mm
  - Mounting
    - Busbar fastening  $1 \text{ hole } \phi 5.5 \text{ mm \& } 2 \text{ slots } 5.5 \times 30 \text{ mm}$
    - Panel mounting  $4 \text{ holes } \phi 3.2 \text{ mm}$
    - Distance between hole axes  $15 \times 150$  mm
- For panel mounting, use M4 screws (not supplied) with appropriate length to panel's thickness, and tighten to  $0.8 \text{ N}\cdot\text{m} \pm 20\%$  torque.

## Remarks

- The return busbar and primary conductor elbow must be located at a minimum distance of  $2.5 \times$  the window length away from the transducer case.
- Temperature of the primary conductor can not exceed  $90^\circ\text{C}$ .
- 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:

[Products/Product Documentation.](#)

- Dynamic performances ( $di/dt$  and response time) are best with a single bar completely filling the primary hole.
- This is a standard model. For different versions (supply voltages, turns ratios, unidirectional measurements...), please contact us.

## Transfer characteristics

