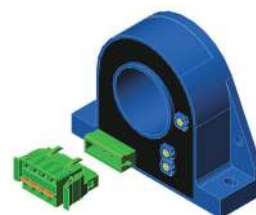


## Current Transducer DHR-C5

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



$$I_{PN} = 100 \dots 400 \text{ A}$$



### Electrical data

| Type       | Primary current, measuring range <sup>1)</sup> | Primary nominal RMS current |      |
|------------|------------------------------------------------|-----------------------------|------|
|            | $I_{PM}$ (A)                                   | $I_{PN}$ (A)                |      |
| DHR 100 C5 | ±600                                           | 100                         |      |
| DHR 200 C5 | ±600                                           | 200                         |      |
| DHR 300 C5 | ±1000                                          | 300                         |      |
| DHR 400 C5 | ±1000                                          | 400                         |      |
| $U_{out}$  | Output voltage                                 | 0 ... 5                     | V DC |
| $R_L$      | Load resistance                                | ≥ 10                        | kΩ   |
| $U_C$      | Supply voltage <sup>2)</sup>                   | +20 ... 50                  | V DC |
| $I_C$      | Current consumption                            | 30                          | mA   |
| $U_{SL}$   | Output voltage limitation                      | < 14                        | V    |
| $I_{Pmax}$ | Maximum withstand primary peak current         | 30000                       | At   |

### Accuracy - Dynamic performance data

|                  |                                                                      |                |      |
|------------------|----------------------------------------------------------------------|----------------|------|
| $\epsilon_{tot}$ | Total error @ $I_{PN}$ , $T_A = 25^\circ\text{C}$ (excluding offset) | < ±1           | %    |
| $\epsilon_L$     | Linearity error (1 % of $I_{PN} \dots I_{PN}$ )                      | < ±1.0         | %    |
| $U_{OE}$         | Electrical offset voltage @ $T_A = 25^\circ\text{C}$                 | < ±100         | mV   |
| $TCU_{OE}$       | Temperature coefficient of $U_{OE}$ (0 ... +60 °C)                   | ±2.0           | mV/K |
|                  | (-40 ... +70 °C)                                                     | ±4.0           | mV/K |
| $TCU_{out}$      | Temperature coefficient of $U_{out}$ (% of reading)                  | ±0.1           | %/K  |
| $t_{D90}$        | Delay time to 90 % of the final output value for $I_{PN}$ step < 150 |                | ms   |
| $BW$             | Frequency bandwidth (±1 dB)                                          | DC 20 ... 6000 | Hz   |

### General data

|           |                               |             |    |
|-----------|-------------------------------|-------------|----|
| $T_A$     | Ambient operating temperature | -40 ... +70 | °C |
| $T_{Ast}$ | Ambient storage temperature   | -40 ... +85 | °C |
| $m$       | Mass                          | 260         | g  |
| IPxx      | Protection degree             | IP20        |    |

**Notes:** <sup>1)</sup>  $I_{PM}$  is the highest peak level of the 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> According to the UL 508 Standard for Safety for Industrial Control Equipment, the supply voltage must not exceed 42 V DC

<sup>3)</sup> Deviation of the offset during the test IEC 61000-4-3 between 100 MHz and 1000 MHz

<sup>4)</sup> Deviation of the offset during the test IEC 61000-4-6 between 150 kHz and 80 MHz.

### Features

- VFD and SCR waveforms current measurement
- True RMS output
- Panel mounting
- Eliminates insertion loss
- Insulating plastic case recognized according to UL 94-V0.

### Advantages

- Large aperture for cable up to Ø 32 mm
- High insulation between primary and secondary circuits
- Easy installation.

### Applications

- **VFD Controlled Loads**  
VFD output indicates how the motor and attached load are operating
- **SCR Controlled Loads**  
Accurate measurement of phase angle fired or burst fired (time proportioned) SCRs. Current measurement gives faster response than temperature measurement
- **Switching Power Supplies and Electronic Ballasts**  
True RMS sensing is the most accurate way to measure power supply or ballast input power.

### Application Domain

- Energy and Automation.

## Current Transducer DHR-C5

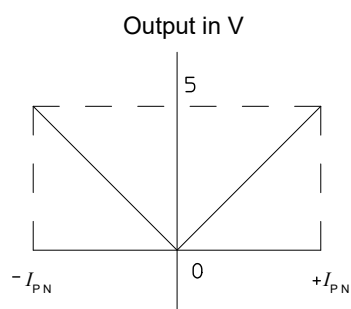
### Insulation coordination

|          |                                                                                                                                                                                                                                         |       |    |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----|
| $U_{Nm}$ | Rated insulation RMS voltage <sup>1)</sup><br>according to the standard IEC 61010-1 and with the following conditions:<br>- Reinforced insulation<br>- Over voltage category CAT III<br>- Pollution degree PD2<br>- Heterogeneous field | 300   | V  |
| $U_d$    | RMS voltage for AC insulation test <sup>2)</sup> , 50 Hz, 1 min                                                                                                                                                                         | 4.0   | kV |
| $U_{Ni}$ | Impulse withstand voltage 1.2/50 $\mu$ s                                                                                                                                                                                                | 7.3   | kV |
|          |                                                                                                                                                                                                                                         | Min   |    |
| $d_{Cp}$ | Creepage distance                                                                                                                                                                                                                       | 7.2   | mm |
| $d_{Cl}$ | Clearance                                                                                                                                                                                                                               | 7.2   | mm |
| $CTI$    | Comparative tracking index (group I)                                                                                                                                                                                                    | > 600 |    |

**Notes:** <sup>1)</sup> Between primary conductor voltage and ground. The voltage category could be improved according to the insulation characteristic given by the cable manufacturer. The UL 508 Standard for Safety for Industrial Control Equipment requires that only insulated conductors are used as primary circuit with this transducer

<sup>2)</sup> Between primary (completely filling the aperture) and secondary.

### Transfer characteristics



## Current Transducer DHR-C5

### 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

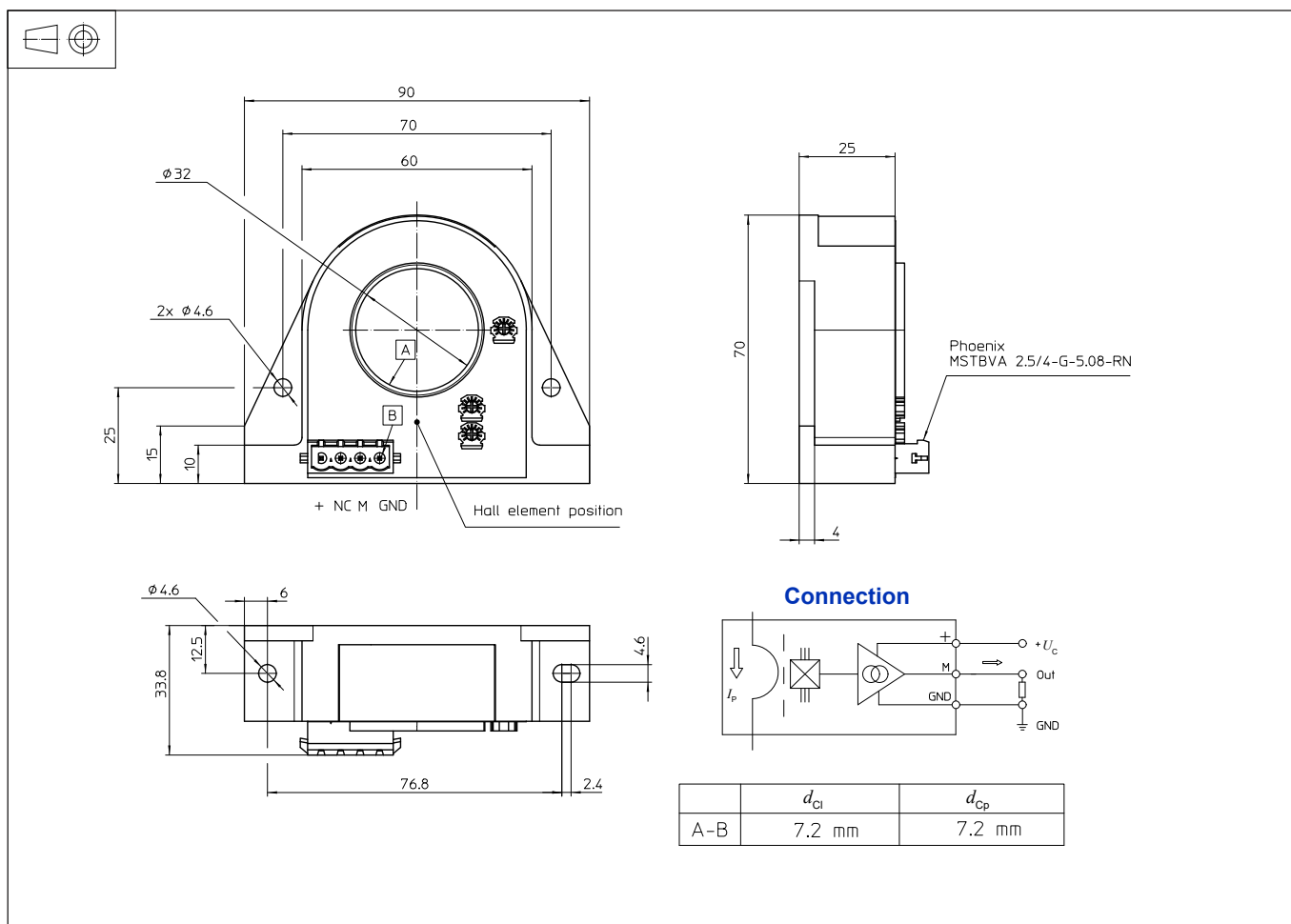
When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply).

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 DHR-C5 (in mm)



## Connections

- Wires up to  $\phi 2$  mm
- Female connector provided (spring terminal blocks)
- User-friendly spring-cage connection for no-tool direct conductor connection.

## Mechanical characteristics

- General tolerance  $\pm 1$  mm
- Primary aperture  $\phi 32.0$  mm
- Transducer fastening
  - Vertical
    - 1 hole
    - and 1 notch  $\phi 4.6$  mm
    - 2 steel screws M4
  - Horizontal
    - 2 holes  $\phi 4.6$  mm
    - 2 steel screws M4
- Recommended fastening torque 0.75 N·m
- Distance between holes 70.0 mm & 78 mm

## Remarks

- $I_s$  is positive when  $I_p$  flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 90 °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/>.
- Dynamic performances ( $di/dt$  and delay 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.