

CSCA-A Series

Hall-Effect Based Open-Loop Current Sensors



DESCRIPTION

The CSCA-A Series of open-loop current sensors are based on the principles of the Hall-effect wherein a Hall-effect device (HED) produces an output voltage linearly related to the amplitude and phase of a magnetic field applied to it.

Current flowing through a primary conductor generates a rotating magnetic field around the conductor. This field is collected by a core of magnetically sensitive material and

concentrated in the gap in this core. The HED is located in this core gap. Therefore, the HED output is directly proportional to the amplitude and phase of the primary current.

The HED output is trimmed for gain and offset calibration such that the CSCA-A Series sensor provides a predefined output sensitivity versus primary current.

FEATURES

- Measures ac, dc and impulse currents
- Competitive cost/performance ratio
- Low power consumption
- Compact size
- High level of electrical isolation between primary and secondary circuits
- Large primary aperture
- RoHS compliant
- CE, UL approvals (pending)

POTENTIAL APPLICATIONS

- Variable speed drives
- Ground fault detectors
- Current feedback control systems
- Robotics
- UPS and telecommunication power supplies
- Welding power supplies
- Automotive - Battery management systems
- Watt meters

CSCA-A Series

SPECIFICATIONS (all specifications are at ± 15 Vdc supply and 25 °C [77 °F] ambient temperature unless otherwise specified)

| Characteristic | Symbol | Parameter |
|------------------------------------|----------|------------------------------------------------------------------------------------------|
| Nominal current | I_{PN} | See product selection guide |
| Peak measuring range (ac peak) | I_{PK} | See product selection guide |
| Nominal output voltage at I_{PN} | V_{SN} | 4 V \pm 1 % |
| Supply voltage | V_{CC} | ± 15 Vdc \pm 5 % |
| Supply current | I_{CC} | 17 mA typ. |
| Accuracy at I_{PN} ¹ | X | $\leq \pm 2$ % of I_{PN} |
| Linearity ² | E_I | $< \pm 1$ % |
| Zero current offset | V_O | $\leq \pm 20$ mV |
| Residual offset after I_{PN} | V_{OR} | $\leq \pm 20$ mV |
| Thermal drift of offset | V_{OT} | $\leq \pm 3$ mV/°C @ $I_{PN} = 50$ A $\leq \pm 1.5$ mV/°C @ $I_{PN} = 100$ A to 600 A |
| Thermal drift of gain | V_{ST} | $\leq \pm 4$ mV/°C |
| Response time ³ | t_R | 3 μ s to 7 μ s |
| di/dt accuracy followed | di/dt | ≥ 50 A/ μ s |
| Bandwidth | f | dc to 50 kHz |
| Isolation voltage | V_D | 3 kV, 50 Hz, 60 sec |
| Rated insulation voltage | V_I | 849 V reinforced |
| Output resistance | R_S | ≥ 10 kOhm |
| Ambient operating temperature | T_A | -10 °C to 80 °C [14 °F to 176 °F] |
| Ambient storage temperature | T_S | -25 °C to 85 °C [-13 °F to 185 °F] |

NOTES:

¹ For $I_P > I_{PN}$ then X is the same percentage value but of I_P

² Independent linearity per the Instrument Society of America

³ At 90% of I_P

⁴ Appropriate specification items defined using the guidance of EN50178

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MOUNTING DIMENSIONS (For reference only. mm)

| CSCA-A-001 | CSCA-A-002 |
|-------------------------|-------------------------|
| | |
| Pins arrangement | Pins arrangement |
| 1. + 15 V | 1. + 15 V |
| 2. - 15 V | 2. - 15 V |
| 3. Output | 3. Output |
| 4. Ground | 4. Ground |

ORDER GUIDE

| Catalog listing | Description |
|--------------------|---------------------------------------------------------------------------------------------------------|
| CSCA0050A000B15B01 | Hall-effect based, open-loop current sensor, Molex-type connector, 50 A rms nominal, ± 150 A range |
| CSCA0100A000B15B01 | Hall-effect based, open-loop current sensor, Molex-type connector, 100 A rms nominal, ± 300 A range |
| CSCA0200A000B15B01 | Hall-effect based, open-loop current sensor, Molex-type connector, 200 A rms nominal, ± 600 A range |
| CSCA0300A000B15B01 | Hall-effect based, open-loop current sensor, Molex-type connector, 300 A rms nominal, ± 900 A range |
| CSCA0400A000B15B01 | Hall-effect based, open-loop current sensor, Molex-type connector, 400 A rms nominal, ± 900 A range |
| CSCA0500A000B15B01 | Hall-effect based, open-loop current sensor, Molex-type connector, 500 A rms nominal, ± 900 A range |
| CSCA0600A000B15B01 | Hall-effect based, open-loop current sensor, Molex-type connector, 600 A rms nominal, ± 900 A range |
| CSCA0050A000B15B02 | Hall-effect based, open-loop current sensor, Gallant connector, 50 A rms nominal, ± 150 A range |
| CSCA0100A000B15B02 | Hall-effect based, open-loop current sensor, Gallant connector, 100 A rms nominal, ± 300 A range |
| CSCA0200A000B15B02 | Hall-effect based, open-loop current sensor, Gallant connector, 200 A rms nominal, ± 600 A range |
| CSCA0300A000B15B02 | Hall-effect based, open-loop current sensor, Gallant connector, 300 A rms nominal, ± 900 A range |
| CSCA0400A000B15B02 | Hall-effect based, open-loop current sensor, Gallant connector, 400 A rms nominal, ± 900 A range |
| CSCA0500A000B15B02 | Hall-effect based, open-loop current sensor, Gallant connector, 500 A rms nominal, ± 900 A range |
| CSCA0600A000B15B02 | Hall-effect based, open-loop current sensor, Gallant connector, 600 A rms nominal, ± 900 A range |

WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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