

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 $25\text{ }^{\circ}\text{C}$ [$77\text{ }^{\circ}\text{F}$] 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}	$4\text{ V} \pm 1\%$
Supply voltage	V_{CC}	$\pm 15\text{ Vdc} \pm 5\%$
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	$\leq \pm 20\text{ mV}$
Residual offset after I_{PN}	V_{OR}	$\leq \pm 20\text{ mV}$
Thermal drift of offset	V_{OT}	$\leq \pm 3\text{ mV}/^{\circ}\text{C}$ @ $I_{PN} = 50\text{ A}$ $\leq \pm 1.5\text{ mV}/^{\circ}\text{C}$ @ $I_{PN} = 100\text{ A to } 600\text{ A}$
Thermal drift of gain	V_{ST}	$\leq \pm 4\text{ mV}/^{\circ}\text{C}$
Response time ³	t_R	3 μs to 7 μs
di/dt accuracy followed	di/dt	$\geq 50\text{ A}/\mu\text{s}$
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	$\geq 10\text{ k}\Omega$
Ambient operating temperature	T_A	$-10\text{ }^{\circ}\text{C}$ to $80\text{ }^{\circ}\text{C}$ [$14\text{ }^{\circ}\text{F}$ to $176\text{ }^{\circ}\text{F}$]
Ambient storage temperature	T_S	$-25\text{ }^{\circ}\text{C}$ to $85\text{ }^{\circ}\text{C}$ [$-13\text{ }^{\circ}\text{F}$ to $185\text{ }^{\circ}\text{F}$]

NOTES:

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

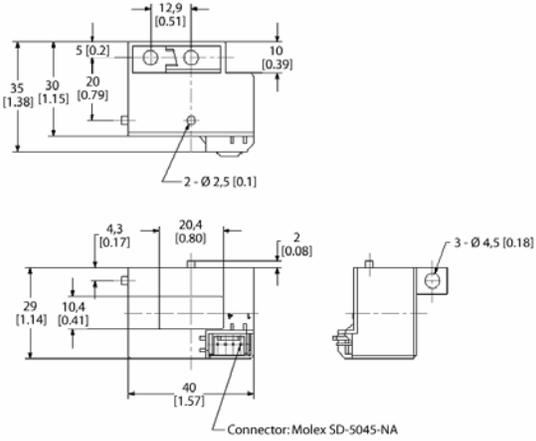
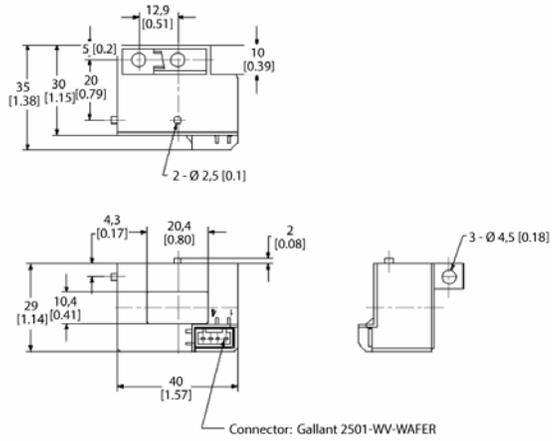
² Independent linearity per the Instrument Society of America

³ At 90% of I_P

⁴ Appropriate specification items defined using the guidance of EN50178

Hall-Effect Based Open Loop Current Sensors

MOUNTING DIMENSIONS (For reference only. mm)

CSCA-A-001	CSCA-A-002
 <p>Technical drawing showing mounting dimensions for CSCA-A-001. Dimensions include: 12.9 [0.51] (width of sensor core), 5 [0.2] (height of core), 10 [0.39] (height of mounting bracket), 35 [1.38] (total height), 30 [1.15] (height to core top), 20 [0.79] (height to mounting hole), 2 - Ø 2.5 [0.1] (two mounting holes), 4.3 [0.17] (width of connector), 20.4 [0.80] (width of connector), 2 [0.08] (height of connector), 29 [1.14] (height to connector top), 10.4 [0.41] (height to connector bottom), 40 [1.57] (width of connector), and 3 - Ø 4.5 [0.18] (three mounting holes for connector).</p> <p>Connector: Molex SD-5045-NA</p>	 <p>Technical drawing showing mounting dimensions for CSCA-A-002. Dimensions include: 12.9 [0.51] (width of sensor core), 5 [0.2] (height of core), 10 [0.39] (height of mounting bracket), 35 [1.38] (total height), 30 [1.15] (height to core top), 20 [0.79] (height to mounting hole), 2 - Ø 2.5 [0.1] (two mounting holes), 4.3 [0.17] (width of connector), 20.4 [0.80] (width of connector), 2 [0.08] (height of connector), 29 [1.14] (height to connector top), 10.4 [0.41] (height to connector bottom), 40 [1.57] (width of connector), and 3 - Ø 4.5 [0.18] (three mounting holes for connector).</p> <p>Connector: Gallant 2501-WV-WAFER</p>
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.