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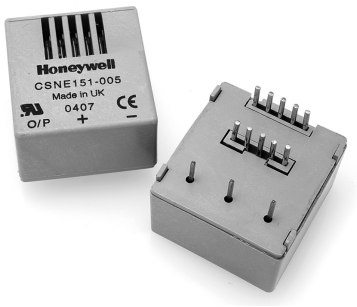
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Honeywell

# Current Sensors Line Guide




**Past, future, and current excellence.** Honeywell Sensing and Control (S&C) offers a wide variety of current sensors to monitor alternating (ac) or direct (dc) current. From digital output detectors sensing a few hundred milliamps to linear sensors monitoring over one thousand amps, our comprehensive line provides superior, often accurate performance at a reduced cost. As well as the advantages you'd expect from an experienced provider offering decades of engineering expertise: thru-hole design, fast response times, output voltage isolation from input, minimum energy dissipation, and enhanced reliability with adjustable performance and built-in temperature compensation.

## FEATURES

### DIGITAL/INDUCTIVE CURRENT SENSORS
### CSDA Series.

**Features:** Open collector output • Digital output • ac or dc currents • Thru-hole design • Output voltage isolation from input • Minimum energy dissipation • Maximum current limited only by conductor size • Enhanced accuracy, low-cost sensing • RoHS compliant

**Benefits:** Single digital (TTL logic level, open collector) output that will sink 20 mA of output current. Provides logic level output that changes from Vcc to 0.4 V when sensed current exceeds the operate point. Will not be damaged by overcurrent in the sensed conductor. Potential applications include variable speed drives, overcurrent protection, ground fault detectors, current feedback control systems, robotics, UPS and telecommunication power supplies, welding power supplies, battery management systems, and wattmeters.

### CLOSED LOOP CURRENT SENSORS
### CSNB, CSNA, CSNC, CSNE, CSNF, CSNG, CSNJ, CSNK, CSNL, CSNM, CSNP, CSNR, CSNS, CSNT, and CSNX Series.

**Features:** Current sensing up to 1275 A • ac, dc, and impulse currents • In-line or thru-hole design • Competitive cost/performance ratio • Rapid response • Reduced overshoot • High overload capability • High level of electrical isolation between primary and secondary circuits • Industrial operating temperature range • Small size and weight • RoHS compliant • CE, UL approvals

**Benefits:** Based on the principles of the magnetoresistive or Hall effects, and the null balance or zero magnetic flux method (feedback system). Magnetic flux in the sensor core is constantly controlled at zero. Potential applications include variable speed drives, overcurrent protection, ground fault detectors, current feedback control systems, robotics, UPS and telecommunication power supplies, welding power supplies, battery management systems, and wattmeters.

### OPEN LOOP CURRENT SENSORS
### CSCA-A Series.

**Features:** 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

**Benefits:** 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. HED output is directly proportional to the amplitude and phase of the primary current. Potential applications include variable speed drives, overcurrent protection, ground fault detectors, current feedback control systems, robotics, UPS and telecommunication power supplies, welding power supplies, battery management systems, and wattmeters.

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# Current Sensors Line Guide

**Common sense. Global leadership.**
Honeywell S&C offers linear (analog) open loop, digital, or closed-loop current sensors. When any of these sensors detect predetermined signals, the system then performs the designated task. For instance, the digital signal's logic level output may sound an alarm, start a motor, or open a valve. The linear signal duplicates the waveform — often ideal for feedback elements to control a motor, or regulate machine function. And Honeywell's new closed-loop current sensor with magnetoresistive (MR) technology offers amazing offset drift performance over a wide temperature range — with almost no thermal drift, for enhanced accuracy.

For proven engineering expertise, component dependability, and global support, trust Honeywell S&C.



| Digital/Inductive Current Sensors | CSDA Series |
|---|---|
| **Operate current** | 0.5 A.t. nom., 3.5 A.t. nom. |
| **Sensed current type** | ac or dc |
| **Output** | voltage |
| **Response time** | 100 µs |
| **Accuracy** | better than 0.5 % |
| **Mounting** | PCB mounting pins or screw mount |
| **Pinout style** | 3-pin PCB or 3-pin AMP connector |
| **Operating temperature** | -25 °C to 85 °C [-13 °F to 185 °F] |
| **Supply voltage** | 6 Vdc to 16 Vdc |









| Closed Loop Current Sensors | CSNX Series | CSNA Series | CSNF Series |
|---|---|---|---|
| **Sensed current range** | ±56 A | ±70 A, ±90 A, ±100 A | ±150 A, ±180 A, ±200 A |
| **Sensed current type** | ac, dc, impulse | ac, dc, impulse | ac, dc, impulse |
| **Output** | current | current | current |
| **Coil turns** | 2000 (50 Ohm coil) | 1000 (90 or 50 Ohm coil)<br>2000 (160 or 130 Ohm coil) | 1000 (30 Ohm coil)<br>2000 (100 Ohm coil) |
| **Response time** | < 0.2 µs | < 1 µs | < 0.5 µs |
| **Accuracy** | ±0.24 % | ±0.5 % | ±0.5 % |
| **Mounting** | PCB on 11-pins | PCB on 3-pins | PCB on 3-pins |
| **Pinout style** | unipolar | offset | center |
| **Operating temperature** | -40 °C to 85 °C<br>[-40 °F to 185 °F] | 0 °C to 70 °C<br>[32 °F to 158 °F] | -40 °C to 85 °C<br>[-40 °F to 185 °F] |
| **Supply voltage** | 4.75 Vdc to 5.25 Vdc | ±13 Vdc, ±15 Vdc | ±12 Vdc to ±15 Vdc |

## Closed Loop Current Sensors









| | CSNB Series | CSNC Series | CSNE Series |
|---|---|---|---|
| **Sensed current range** | ±100 A | ±90 A | ±36 A, ±90 A |
| **Sensed current type** | ac, dc | ac, dc | ac, dc, impulse |
| **Output** | current | current | current |
| **Coil turns** | 2000 | 1000 (50 Ohm coil) | 1000 (110 Ohm or 66 Ohm coil) |
| **Response time** | < 1 µs | < 1 µs | < 1 µs |
| **Accuracy** | ±0.5 % | ±0.5 % | ±0.5 % |
| **Mounting** | PCB on 3 pins | PCB on 3 pins | PCB on 13 pins |
| **Pinout style** | Offset | Offset | 5-pin |
| **Operating temperature** | 0 °C to 70 °C [32 °F to 158 °F] | -25 °C to 85 °C [-13 °F to 185 °F] | 0 °C to 70 °C [32 °F to 158 °F] |
| **Supply voltage** | ±15.0 Vdc | ±13.0 Vdc | ±12 Vdc to ±15 Vdc |

## Closed Loop Current Sensors









| | CSNG Series | CSNJ Series | CSNK Series |
|---|---|---|---|
| **Sensed current range** | ±180 A, ±200 A | ±600 A | ±1200 A |
| **Sensed current type** | ac, dc | ac, dc, impulse | ac, dc, impulse |
| **Output** | current | current | current |
| **Coil turns** | 2000 | 2000 | 5000 (50 Ohm coil) |
| **Response time** | < 0.5 µs | < 0.5 µs | < 1 µs |
| **Accuracy** | ±0.5 % | ±0.5 % | ±0.5 % |
| **Mounting** | PCB on 3 pins | panel | panel |
| **Pinout style** | offset | spade terminals (x 3) | Molex (3-way) |
| **Operating temperature** | -40 °C to 85 °C [-40 °F to 185 °F] | -40 °C to 85 °C [-40 °F to 185 °F] | -40 °C to 85 °C [-40 °F to 185 °F] |
| **Supply voltage** | ±15.0 Vdc | ±12.0 Vdc to ±18.0 Vdc | ±15 Vdc to ±18 Vdc |

# Current Sensors Line Guide

## Closed Loop Current Sensors










| | CSNL Series | CSNM Series | CSNP Series |
|---|---|---|---|
| **Sensed current range** | ±600 A | ±1000 A | ±90 A |
| **Sensed current type** | ac, dc | ac, dc | ac, dc |
| **Output** | current | current | current |
| **Coil turns** | 2000 | 3000 | 1000 |
| **Response time** | < 0.5 µs | < 1 µs | < 0.5 µs |
| **Accuracy** | ±0.5 % | ±0.5 % | ±0.5 % |
| **Mounting** | panel | panel | PCB on 3 pins |
| **Pinout style** | Molex (3-way) | Molex (3-way) | offset |
| **Operating temperature** | -40 °C to 85 °C [-40 °F to 185 °F] | -40 °C to 85 °C [-40 °F to 185 °F] | -40 °C to 85 °C [-40 °F to 185 °F] |
| **Supply voltage** | ±12.0 Vdc to ±18.0 Vdc | ±12.0 Vdc to ±18.0 Vdc | ±12.0 Vdc to ±15.0 Vdc |

## Closed Loop Current Sensors










| | CSNS Series | CSNR Series | CSNT Series |
|---|---|---|---|
| **Sensed current range** | ±320 A, ±600 A | ±200 A | ±150 A |
| **Sensed current type** | ac, dc, impulse | ac, dc | ac, dc |
| **Output** | current | current | current |
| **Coil turns** | 2000 | 1000, 2000 | 2000 |
| **Response time** | < 0.5 µs | < 0.5 µs | < 0.5 µs |
| **Accuracy** | ±0.5 % | ±0.5 % | ±0.5 % |
| **Mounting** | panel | PCB on 3 pins | PCB on 3 pins |
| **Pinout style** | Molex (3-way) | center, offset | offset |
| **Operating temperature** | -40 °C to 85 °C [-40 °F to 185 °F] | -40 °C to 85 °C [-40 °F to 185 °F] | -40 °C to 85 °C [-40 °F to 185 °F] |
| **Supply voltage** | ±12 Vdc to ±18 Vdc | ±12.0 Vdc to ±15.0 Vdc | ±12.0 Vdc to ±15.0 Vdc |

## Open Loop Current Sensors







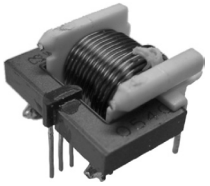
| | CSCA-A Series | CSLA Series | CSLH Series |
|---|---|---|---|
| **Sensed current range** | ±150 A, ±300 A<br>±600 A, ±900 A | ±57 A to ±950 A | ±9 A, ±45 A |
| **Sensed current type** | ac, dc, impulse | ac, dc | ac, dc |
| **Output** | voltage | voltage | sink/source |
| **Response time** | 3 µs to 7 µs | 3 µs, 8 µs | 3 µs |
| **Sensitivity** | – | various | 18.5 mV N* ±3.5 mV N* @ 5 Vdc or<br>282 mV N* -42, +82 mV N* @ 10 Vdc |
| **Mounting** | Molex connector<br>Gallant connector | PCB on 3-pins | PCB on 3-pins |
| **Pinout style** | – | 3-pin | 3-pin |
| **Operating temperature** | -10 °C to 80 °C<br>[14 °F to 176 °F] | -25 °C to 85 °C<br>[-13 °F to 185 °F] | -25 °C to 85 °C<br>[-13 °F to 185 °F] |
| **Supply voltage** | ±15 Vdc ±5 % | 8 Vdc to 16 Vdc<br>6 Vdc to 12 Vdc | 4.5 Vdc to 10.5 Vdc |

N = Number of turns

## Open Loop Current Sensors







| | CSLS Series | CSLT Series | CSLW Series |
|---|---|---|---|
| **Sensed current range** | ±60 A | ±100 A | ±1 A, ±5 A, ±40 mA, ±200 mA |
| **Sensed current type** | ac, dc | ac, dc | ac, dc |
| **Output** | sink/source | sink/source | sink/source |
| **Coil turns** | – | – | 12, 60, 300, 1500 |
| **Response time** | 3 µs | 3 µs | 3 µs |
| **Sensitivity** | 15 mV/AT ±2 mV/AT @ 5 Vdc | 15 mV/AT ±2 mV/AT @ 5 Vdc | various |
| **Mounting** | PCB | PCB | PCB |
| **Pinout style** | 3-pin | 3-pin | 5-pin |
| **Operating temperature** | -25 °C to 100 °C [-13 °F to 212 °F] | -25 °C to 100 °C [-13 °F to 212 °F] | -25 °C to 100 °C [-13 °F to 212 °F] |
| **Supply voltage** | 4.5 Vdc to 10.5 Vdc | 4.5 Vdc to 10.5 Vdc | 4.5 Vdc to 10.5 Vdc |

### CSLA Series.

**Features:** Linear output • ac or dc currents • Thru-hole design • Enhanced response time • Output voltage isolation from input • Minimum energy dissipation • Maximum current limited only by conductor size • Adjustable performance and built-in temperature compensation assures reliable operation • Enhanced accuracy, low-cost sensing • RoHS compliant

**Benefits:** Incorporates Honeywell's 91SS12-2 and SS94A1 linear output Hall-effect transducter (LOHET™). Sensing element is assembled in a printed circuit board mountable housing, available in four configurations. Potential applications include variable speed drives, overcurrent protection, ground fault detectors, current feedback control systems, robotics, UPS and telecommunication power supplies, welding power supplies, battery management systems, and wattmeters.

### CSLH Series.

**Features:** ac or dc currents • Miniature • Linear ratiometric output • Current sinking or sourcing output for interfacing flexibility • No insertion loss • Enhanced response time • Low-cost sensing • Minimum energy dissipation • Maximum current limited only by conductor size • Built-in temperature compensation promotes reliable operation • RoHs compliant

**Benefits:** Open-loop sensor incorporates Honeywell's SS490 Series miniature ratiometric linear Hall-effect sensor. Element is encapsulated in a PCB-mountable plastic package. Combination of sensor, flux collector, and housing comprises the current sensor assembly. Potential applications include motor control, HVAC and consumer tools, current monitoring of electronic circuits, overcurrent protection, ground fault detectors, robotics, industrial process control, UPS and telecommunication power supplies, welding current monitoring, battery management systems in mobile equipment, watt meters, and variable speed drives.

### CSLS, CSLT, CSLW Series.

**Features:** ac or dc currents • Linear ratiometric output • Current sinking or sourcing output for interfacing flexibility • No insertion loss • Enhanced response time • Compact size for applications with limited space • Enhanced accuracy, low-cost sensing • Minimum energy dissipation • Maximum current limited only by conductor size • Built-in temperature compensation promotes reliable operation • RoHs compliant

**Benefits:** Incorporate Honeywell's SS490 Series miniature ratiometric linear Hall-effect sensor. Element is encapsulated in a printed circuit board-mountable plastic package. Sensors are ratiometric. Potential applications include motor control in HVAC and consumer tools, current monitoring of electronic circuits, overcurrent protection, ground fault detectors, robotics, industrial process control, UPS and telecommunication power supplies, welding current monitoring, battery management systems in mobile equipment, watt meters, and variable speed drives.

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- 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.**

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