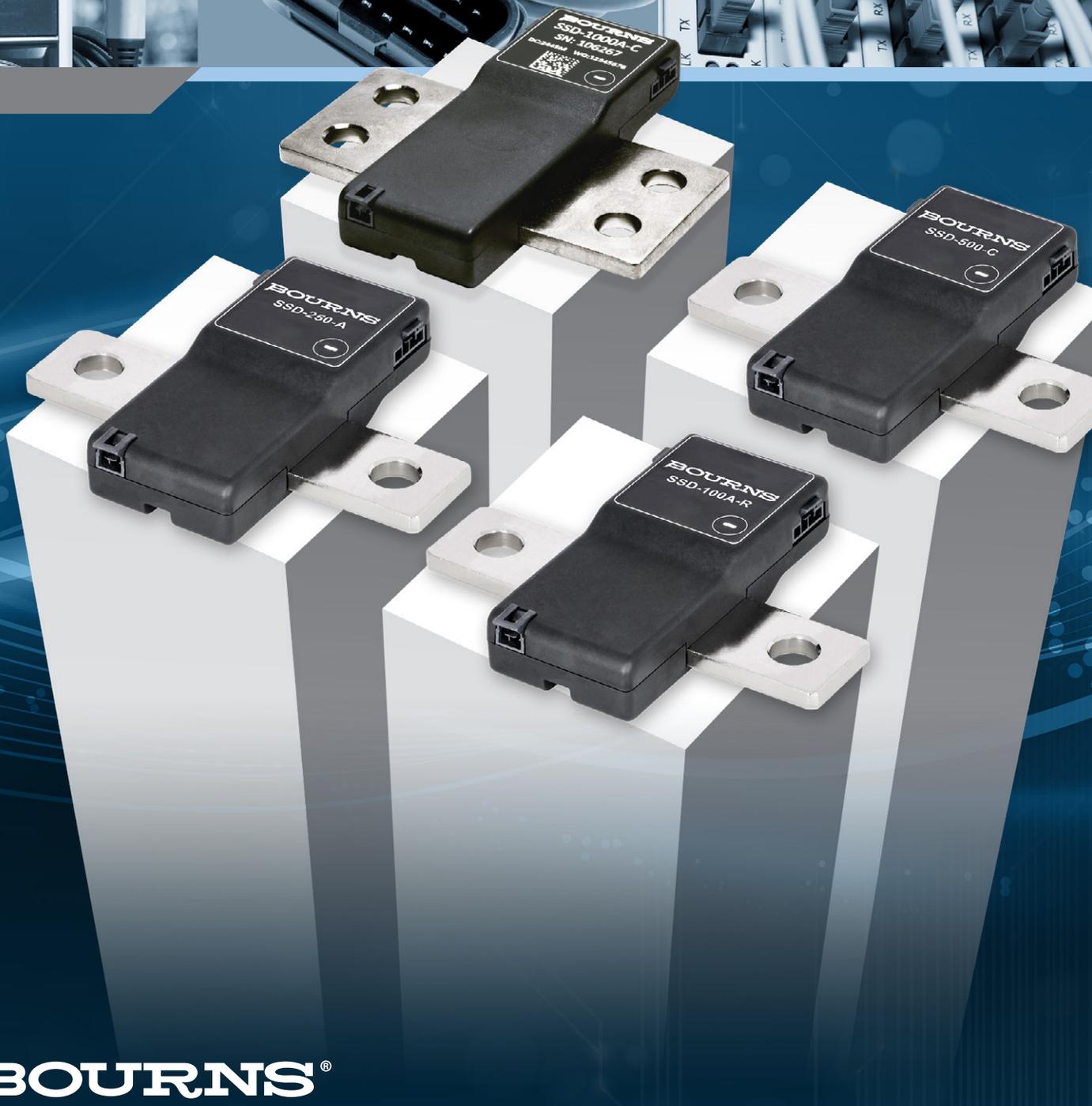


# Bourns® SSD Shunt Sensor Digital Series



**BOURNS®**

# Introduction

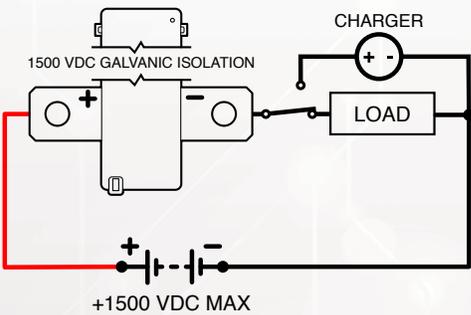
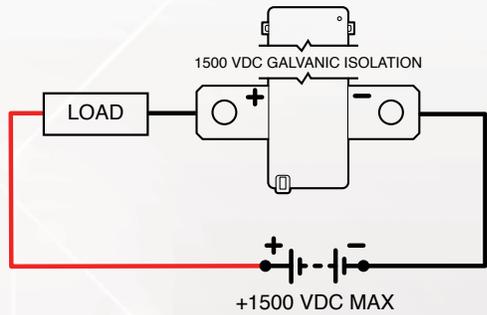
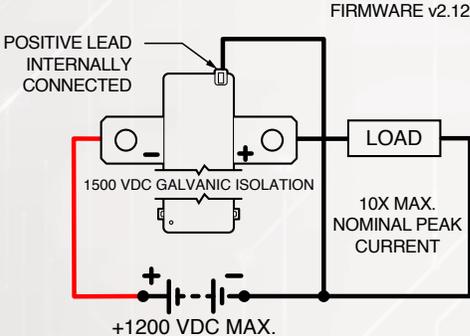
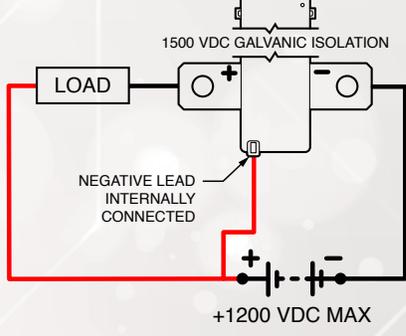
## Bourns® SSD Series Digital Current Sensor

The new Bourns® SSD Series Digital Current Sensor consists of highly integrated digital System-in-Package (SiP) devices that can be used in a wide variety of battery-related current sensing applications. Each features a 16-bit +150 °C Microcontroller Unit (MCU), a 24-bit Analog-to-Digital Converter (ADC) (with buffered analog inputs) and a flash memory resource. This brings plug-and-play simplicity to current measurement, battery voltage monitoring and coulomb counting. Among the places where these devices will be utilized are large-scale energy storage banks, renewable energy generation infrastructure, industrial motor drives, building automation systems, EV charging stations, etc.

The internal ADC converter helps to significantly simplify implementation - enabling customer engineering teams to quickly add high accuracy current measurement into their latest designs or retrofit this function into existing ones. There are two models to choose from. The first is the RS-485 serial interface, which can also be configured as MODBUS RTU. The second is a customizable CANbus model.

The -40 °C to +115°C (ambient) operating temperature range allows these devices to be used in harsher environments than other current sensing products. The built-in flash memory has Error Correction Code (ECC) and autocorrect on single bit errors. The SSD Series is RoHS compliant in accordance with Electrical and Electronic Equipment Directive, 2011/65/EU (commonly called "RoHS2") and amendment of Annex II on March 31, 2015, 2015/863. This model is produced and assembled utilizing state-of-the-art production equipment along with lean manufacturing principles to provide our customers with a high-performance product at a competitive price.

## INSTALLATION

Electrical Wiring		
	High Side	Low Side
<p>Current Only ±1500 VDC MAX.</p>	 <p>The diagram shows a battery at the bottom labeled '+1500 VDC MAX'. A red wire connects the positive terminal to the positive input of the sensor. A black wire connects the negative terminal to the negative input of the sensor. The sensor's output is connected to a 'LOAD' and a 'CHARGER' in series. A '1500 VDC GALVANIC ISOLATION' block is shown between the sensor and the load/charger.</p>	 <p>The diagram shows a battery at the bottom labeled '+1500 VDC MAX'. A red wire connects the positive terminal to the positive input of the sensor. A black wire connects the negative terminal to the negative input of the sensor. The sensor's output is connected to a 'LOAD' and the negative terminal of the battery. A '1500 VDC GALVANIC ISOLATION' block is shown between the sensor and the load.</p>
<p>Bus Voltage Measurements ±1200 VDC</p>	<p>FIRMWARE v2.12</p>  <p>The diagram shows a battery at the bottom labeled '+1200 VDC MAX'. A red wire connects the positive terminal to the positive input of the sensor. A black wire connects the negative terminal to the negative input of the sensor. The sensor's output is connected to a 'LOAD' and the positive terminal of the battery. A '1500 VDC GALVANIC ISOLATION' block is shown between the sensor and the load. Text labels include 'POSITIVE LEAD INTERNALLY CONNECTED' and '10X MAX. NOMINAL PEAK CURRENT'.</p> <p>Use SETMODE Command to Invert Current and Voltage. Keep Positive DC Connection Short to Minimize Bus Voltage Drop Errors.</p>	 <p>The diagram shows a battery at the bottom labeled '+1200 VDC MAX'. A red wire connects the positive terminal to the positive input of the sensor. A black wire connects the negative terminal to the negative input of the sensor. The sensor's output is connected to the negative terminal of the battery. A '1500 VDC GALVANIC ISOLATION' block is shown between the sensor and the load. Text labels include 'NEGATIVE LEAD INTERNALLY CONNECTED'.</p> <p>Keep Negative DC Connection Short to Minimize Bus Voltage Drop Errors.</p>

# Product Portfolio



## What is a Digital Current Sensor?

The new Bourns® SSD Series Digital Current Sensor consists of a highly integrated System-in-Package (SiP) device with a high precision current to provide calibrated and temperature compensated digital output that can be used in a wide variety of battery related current sensing applications.

## APPLICATIONS

- Battery systems
- Renewable energy
- Motor drives
- EV charging stations

## SSD SERIES FEATURES AND BENEFITS

- CANbus
- RS-485
- 16-bit +150 °C Microcontroller
- 24-bit ADC with Buffered Analog Inputs
- ECC Flash Memory with Autocorrect Single Bit Errors
- Internal and External CRC Data Error Detection
- Option of Internal 120 Ω termination resistor available for all nominal current values.
- Assembled using AEC-Q compliant components (optional for Model SSD-1000A only)

The SSD Series Digital Current Sensor is a current sensing solution with both considerably lower insertion resistance than passive current sensors and greater accuracy and operational stability than Hall effect sensors.

With no need to calibrate, the SSD Series is the perfect solution for all your energy monitoring needs with simple implementation. This product is insensitive to magnetic fields, making it ideal for various applications without damaging the product while obtaining accurate measurements.

## MODEL SSD SERIES WITH CANbus INTERFACE

Series	Photo	Package Size	Technology	Normal Current (A)	Shunt Resistance (Microohms)	Initial Accuracy	Bandwidth	ADC Resolution	Operating Temperature	Storage Temperature	Speed	Supply Voltage
SSD-100A-C		110 mm	CANbus	± 100	300	± 0.1 %	5 kHz	24 bits	-40 °C to +115 °C	-55 °C to +125 °C	Up to 1100 RPS	5.0 V, 55 mA Typical
SSD-250A-C		110 mm	CANbus	± 250	120	± 0.1 %	5 kHz	24 bits	-40 °C to +115 °C	-55 °C to +125 °C	Up to 1100 RPS	5.0 V, 55 mA Typical
SSD-500A-C		110 mm	CANbus	± 500	60	± 0.1 %	5 kHz	24 bits	-40 °C to +115 °C	-55 °C to +125 °C	Up to 1100 RPS	24 V, 15 mA Typical
SSD-1000A-C		110 mm	CANbus	± 1000	30	± 0.1 %	5 kHz	24 bits	-40 °C to +115 °C	-55 °C to +125 °C	Up to 1100 RPS	24 V, 15 mA Typical

## MODEL SSD SERIES WITH RS-485/MODBUS INTERFACE

Series	Photo	Package Size	Technology	Normal Current (A)	Shunt Resistance (Microohms)	Initial Accuracy	Bandwidth	ADC Resolution	Operating Temperature	Storage Temperature	Speed	Supply Voltage
SSD-100A-R		110 mm	RS-485	± 100	300	± 0.1 % + 5 mA	5 kHz	24 bits	-40 °C to +115 °C	-55 °C to +125 °C	Up to 1100 RPS	5.0 V, 55 mA Typical
SSD-250A-R		110 mm	RS-485	± 250	120	± 0.1 % + 5 mA	5 kHz	24 bits	-40 °C to +115 °C	-55 °C to +125 °C	Up to 1100 RPS	5.0 V, 55 mA Typical
SSD-500A-R		110 mm	RS-485	± 500	60	± 0.1 % + 5 mA	5 kHz	24 bits	-40 °C to +115 °C	-55 °C to +125 °C	Up to 1100 RPS	24 V, 15 mA Typical
SSD-1000A-R		110 mm	RS-485	± 1000	30	± 0.1 % + 5 mA	5 kHz	24 bits	-40 °C to +115 °C	-55 °C to +125 °C	Up to 1100 RPS	24 V, 15 mA Typical

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