

### FEATURES

- mSure sensor monitoring**
  - Noninvasive, real-time direct, precision measurement of the input signal path
  - Identifies sensor malfunction
  - Companion microcontroller unit firmware to facilitate diagnostic data reporting
  - Supported for current shunts and potential divider
- mSure self calibration**
  - Automatic calibration based on a direct measurement of the full signal path
  - Allows calibration up to 0.25% error for each channel
- 2 high performance  $\Sigma$ - $\Delta$  ADCs**
  - Pseudo differential input voltage range:  $\pm 41.67$  mV peak, +29.46 mV rms input on the current channel
  - Bit stream output
  - Industrial temperature range:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
  - Integrated temperature sensor with a 12-bit successive approximation register (SAR) ADC

### APPLICATIONS

- Shunt-based polyphase energy meters
- Solar inverters
- Process monitoring
- Smart power distribution units
- Polyphase ac chargers

### GENERAL DESCRIPTION

The ADE9322B<sup>1</sup> has highly accurate, 2-channel  $\Sigma$ - $\Delta$  analog-to-digital converters (ADCs) with mSure<sup>®</sup> that converts two analog input signals into a single bit stream output. The device is enabled with an mSure sensor monitoring feature that allows the user to check the overall accuracy of the sensor and signal path to identify accuracy drifts that occur over time on the current and voltage channels, independently. The mSure sensor monitoring feature enables antitampering and meter health capabilities when incorporated into a larger system, including digital isolation, a digital metrology engine (ADE7979), and cloud analytics service. Self calibration with mSure enables the device to automatically calibrate the current and voltage channels to achieve a 1% energy accuracy.

The ADE9322B incorporates high performance ADCs. The current channel is designed to interface with a shunt resistor. The voltage channel requires an input from a potential divider. A high speed serial peripheral interface (SPI) port and a universal asynchronous receiver and transmitter (UART) port allows access to the ADE9322B registers.

Note that throughout this data sheet, multifunction pins, such as MISO/TX, are referred to either by the entire pin name or by a single function of the pin, for example, MISO, when only that function is relevant.

The ADE9322B operates from a 3.3 V supply and is available in a 32-lead LFCSP.

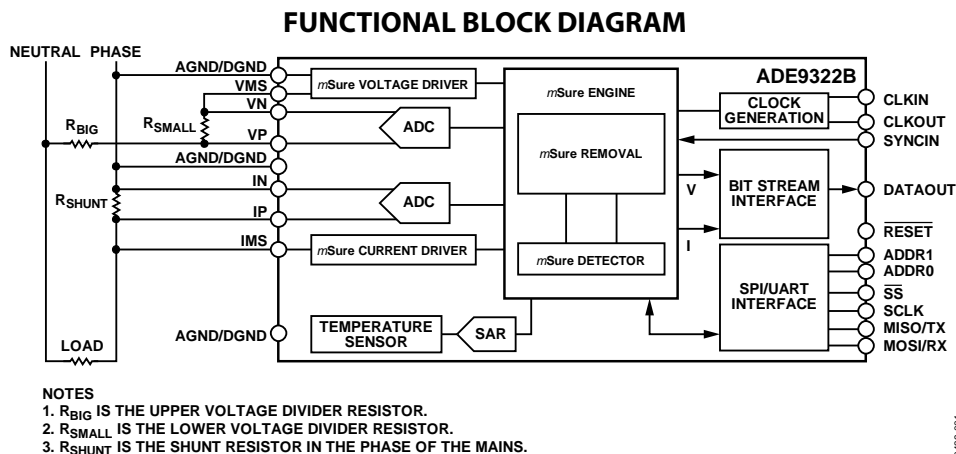


Figure 1.

For more information about the ADE9322B, contact your local [Analog Devices, Inc., Sales Team](http://www.analog.com), email [energy.support@analog.com](mailto:energy.support@analog.com) or visit [www.analog.com/mSure](http://www.analog.com/mSure).

<sup>1</sup> Protected by U.S. Patents 8,350,558; 8,010,304; WO2013038176 A3; 0113507 A1; 0253102 A1; 0354266 A1; and 0154029 A1. Other patents pending.

**NOTES**