

# 16-Bit Differential, $\Delta\Sigma$ ADC with I<sup>2</sup>C Interface

## DESCRIPTION

Demonstration circuit 1493A features the LTC<sup>®</sup>2463, a 16-bit high performance  $\Delta\Sigma$  analog-to-digital converter (ADC) with an I<sup>2</sup>C interface. The input is differential with a range of  $\pm\text{REF}$ . The modulator's proprietary sampling technique reduces the average input current to less than 50nA—orders of magnitude lower than typical delta sigma ADCs.

DC1493A is a member of Linear Technology's QuikEval family of demonstration boards. It is designed to allow easy evaluation of the LTC2463 and may be connected directly

to the target application's analog signals while using the DC590 USB Serial Controller board and supplied software to measure performance. The exposed ground planes allow proper grounding to prototype circuitry. After evaluating with Linear Technology's software, the digital signals can be connected to the end application's processor/controller for development of the serial interface.

**Design files for this circuit board are available at <http://www.linear.com/demo>**

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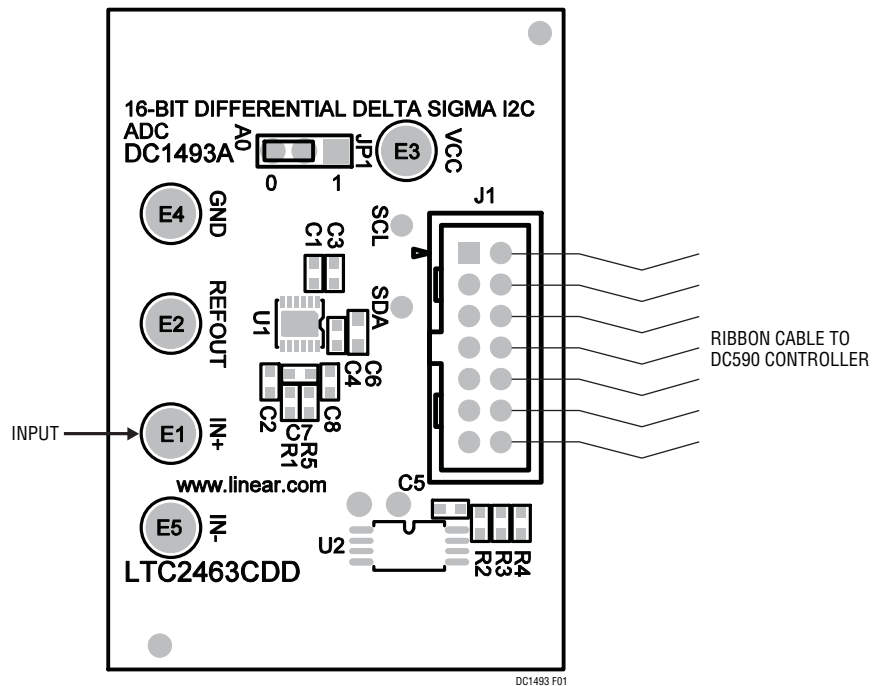


Figure 1. Proper Measurement Equipment Setup

## QUICK START PROCEDURE

Connect DC1493A to a DC590 USB Serial Controller using the supplied 14-conductor ribbon cable. Connect DC590 to host PC with a standard USB A/B cable. Run the evaluation software supplied with DC590 or downloaded from <http://www.linear.com/software>. The correct program will be loaded automatically. Click the COLLECT button to start reading the input voltage. Details on software features are documented in the control panel's help menu.

Tools are available for logging data, changing reference voltage, changing the number of points in the strip chart and histogram, and changing the number of points averaged for the DVM display.

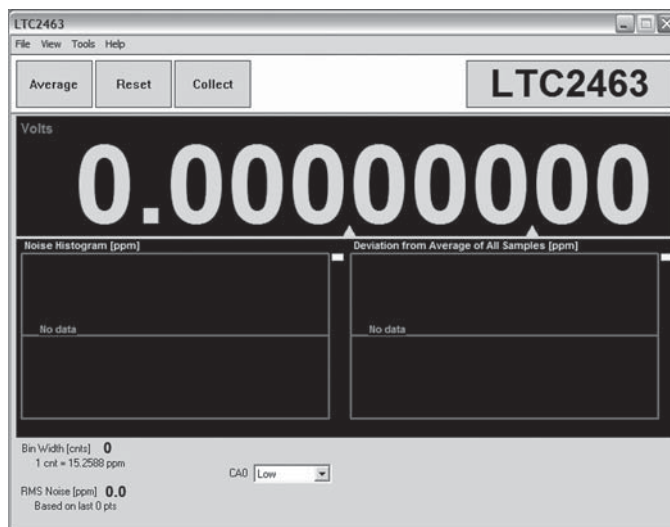


Figure 2. Software Screenshot

## HARDWARE SETUP

### CONNECTION TO DC590 SERIAL CONTROLLER

J1 is the power and digital interface connector. Connect to DC590 serial controller with supplied 14-conductor ribbon cable.

#### Jumpers

**A0:** Selects I<sup>2</sup>C address of the LTC2463. This is set to GND by default. Should this jumper be set to a different setting, the software should be changed to reflect this.

### ANALOG CONNECTIONS

Analog signal connections are made via the row of turret posts along the edge of the board. Also, when connecting the board to an existing circuit the exposed ground planes along the edges of the board may be used to form a solid connection between grounds.

**GND:** This turret is connected directly to the internal ground planes.

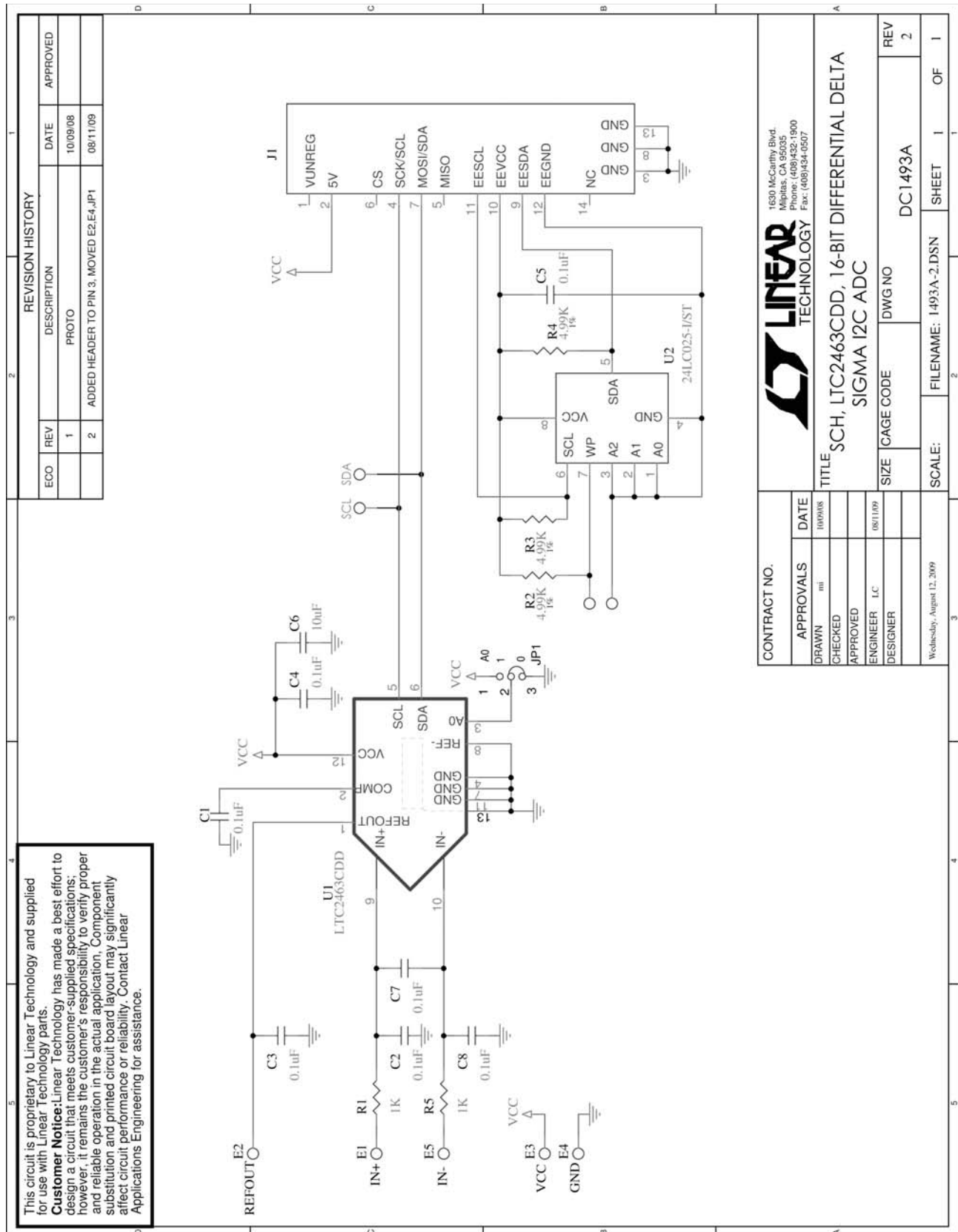
**VCC:** This is the supply and reference voltage for the ADC. Do not draw any power from this point.

**IN+:** This is the positive input to the ADC

**IN-:** This is the negative input to the ADC.

**REFOUT:** This turret is connected to the LTC2463 REFOUT pin. This pin may be used to provide a reference voltage to an external circuit and can source up to 100μA. Do NOT drive this pin.

## SCHEMATIC DIAGRAM



dc1493af

# DEMO MANUAL DC1493A

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This notice contains important safety information about temperatures and voltages. For further safety concerns, please contact a LTC application engineer.

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