

## DESCRIPTION

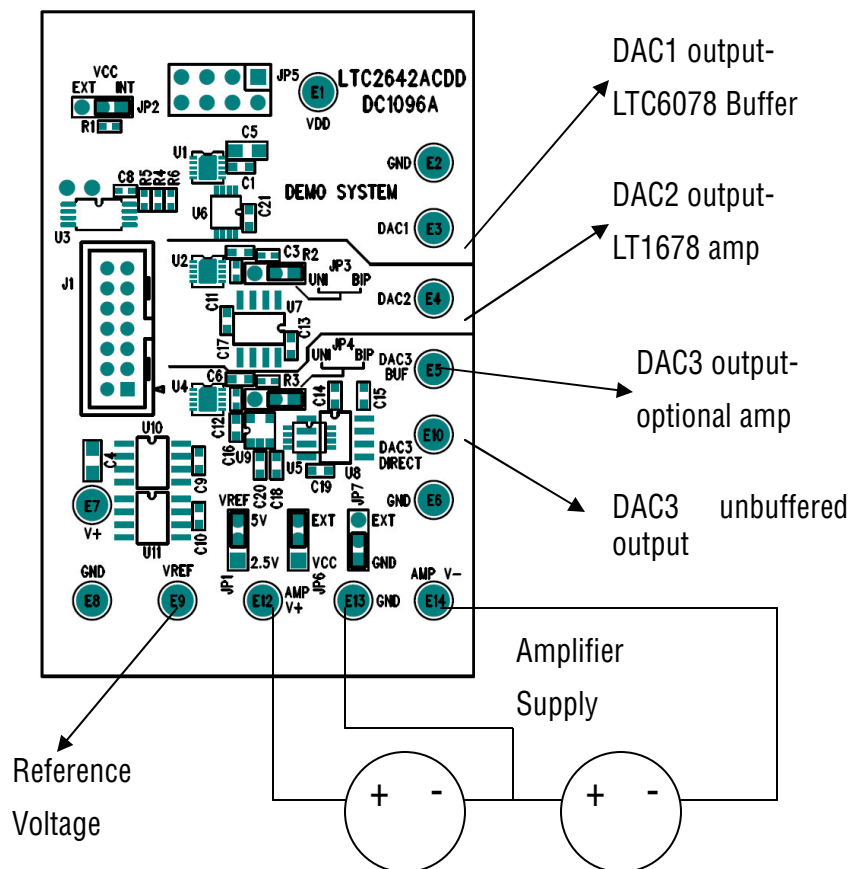
Demonstration circuit 1096 features the LTC2642, a 16 bit voltage output DAC. The LTC2642 output is unbuffered, allowing it to swing all the way to the supply rails.

DC1096 is a member of Linear Technology's QuickEval™ family of demonstration boards. It is designed to allow easy evaluation of the LTC2642 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. Call the LTC factory.**

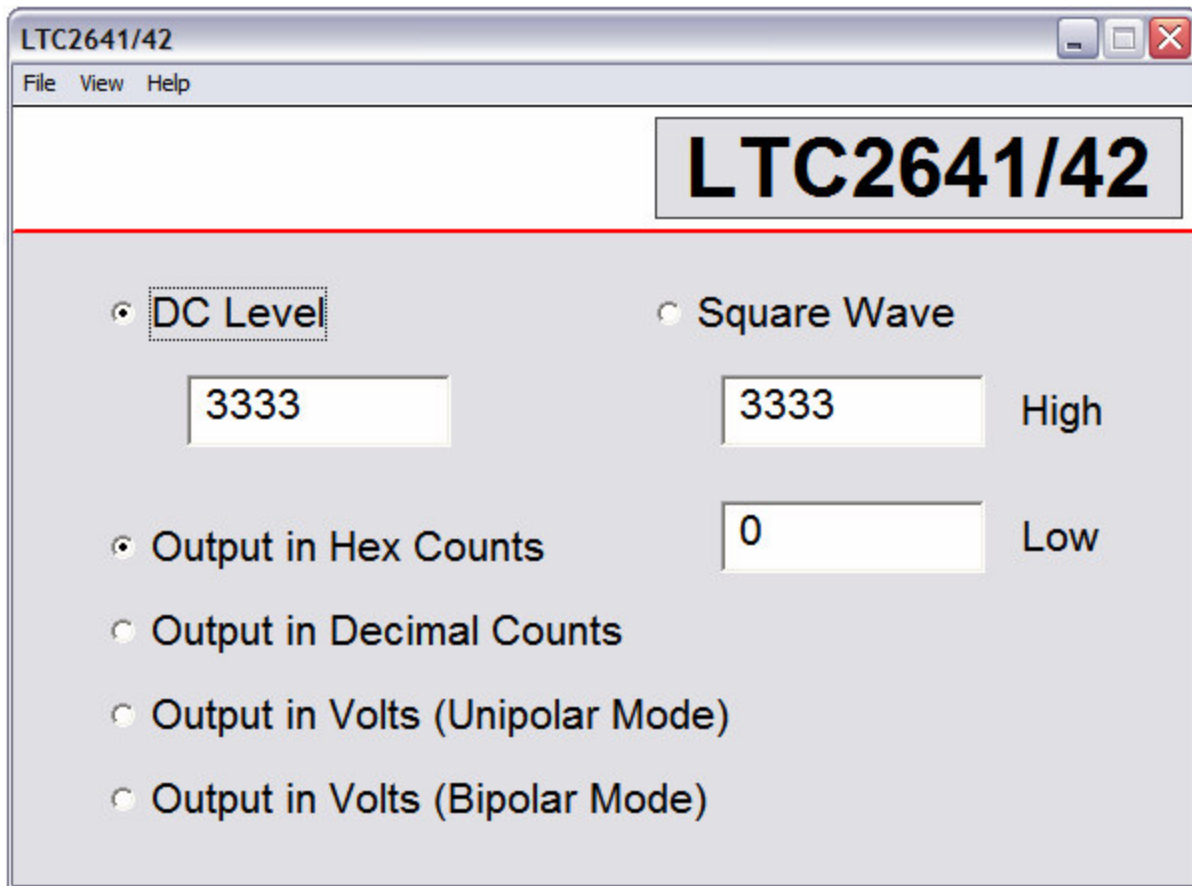
Figure 1. Connection Diagram



## QUICK START PROCEDURE

Connect DC1096 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 [www.linear.com](http://www.linear.com). The correct program will be loaded automatically. By default, the control program will load a DC value

into the LTC2642. The value may be changed by typing hexadecimal counts (0000 - FFFF), or decimal counts (0 – 65535), or the voltage desired depending on the option selected. Setting the software to Unipolar or BiPolar will not set the hardware to bipolar mode. The jumpers need to be placed in their proper positions in order to accomplish this.



The other option is a square wave output. The frequency of the square wave is not tightly controlled; it is intended to allow measurement of settling time and glitch impulse.

Features may be periodically added to the software, see the software's help menu for the latest information.

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## HARDWARE SET-UP

### POWER CONNECTIONS

A low-noise, bipolar power supply can be connected to the AMPV+ , AMPV- and GND turret posts.

If an external supply is connected, the respective jumpers must be placed in the EXT position.

This provides power to the LT1678 amplifier and optional amplifiers U5, U8, or U9. The LT1678 will work with supplies as high as +/-15V, consult the datasheet for supply limitations on any optional amplifiers that are installed.

### JUMPERS

JP1 – Select the source for REF+, either 2.50 volts or 5.00 volts from the onboard LT1236 reference (default.)

JP2 – Select the Vcc source, either provided by a connected DC590 or an external source.

JP3 – Sets DAC2 to either unipolar or bipolar mode. JP7 may also need to be modified in order to provide the proper behavior.

JP4 – Sets DAC3 to either unipolar or bipolar mode. JP7 may also need to be modified in order to provide the proper behavior.

JP6 – Sets V+ for the amplifiers to either external (AMP V+) or VCC.

JP7 – Sets V- for the amplifiers to either external (AMP V-) or ground.

### CONNECTION TO DC590 SERIAL CONTROLLER

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

### OUTPUT CONNECTIONS

E3 is the output from U1, which is buffered by an LTC6078 op amp

E4 is the output from U2, which is buffered by an LT1678 op amp. JP3 allows this DAC to be configured for either unipolar or bipolar operation.

E5 is the buffered output of U4, if an optional amplifier is installed. There are three standard op amp footprints that allow other amplifiers to be evaluated.

E10 is directly connected to U4's output.

### REFERENCE CONNECTIONS

JP1 selects between the onboard 5V reference and the onboard 2.5V reference. The reference voltage can be monitored on E9, or an external reference may be applied to E9 if JP1 is removed.

