

LT6375 Configurable High Voltage Amplifier

DESCRIPTION

Demonstration Circuit 2443 is a Configurable High Voltage Amplifier featuring the [LT®6375](#).

This demo board translates a high common mode signal to an output related to a low voltage reference level. The demo circuit is equipped with jumpers to facilitate setting the pin-strapped internal divider ratio configuration. The LT6375 is unique in that it may be powered from a low voltage (down to 3.3V) while it accepts signals well outside the supply range. This device is also unusual in

that it can operate with high supply voltages (up to 50V). Connection points are provided to wire the amplifier in other configurations besides the simple translator.

The key performance characteristics of the LT6375 and DC2443 are shown in the Performance Summary table.

Design files for this circuit board are available at <http://www.linear.com/demo/DC2443>

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PERFORMANCE SUMMARY

Specifications are at $T_A = 25^\circ\text{C}$

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
V_{IN+}, V_{IN-}	Input Range	$V^+, V^- = \pm 15\text{V}$, $V_{REF} = 0$	-270		270	V
V^+, V^-	Amplifier Supply Range (Total if Split Supplies)		3.3	5...24	50	V
V_{OUT}	Output Signal		$V^- + 0.35$		$V^+ - 0.7$	V
I_{OUT}	Output Current Range		± 10	± 25		mA
I_S	Supply Current	$I_{OUT} = 0$			385	μA
BW	Small Signal -3dB Bandwidth	Divider Ratio = 25		300		kHz

OPERATING PRINCIPLES

The LT6375 is an op amp that includes integrated precision resistors for providing many useful high accuracy functions with minimal external components. As a default on the demo circuit, the gain is 1.000 and includes pin-strappable common mode attenuations. Large vias and

some spare pads are also provided so that other more specialized configurations can be evaluated, such as precision gain blocks or summing amplifiers. The demo circuit also includes connector footprints for user-furnished BNC connectors if cable connectivity is desired.

QUICK START PROCEDURE

Demonstration Circuit 2443 is easy to set up to evaluate the performance of the LT6375. Refer to Figure 1 for proper evaluation equipment setup and follow the procedure below:

1. Place jumpers in the following positions:

JP1 – JP4, JP6 – JP8 to the GND position

JP5 to the SPLIT position

2. With power off, connect the power supply positive to V^+ , the supply negative to V^- and the common to GND. The supply should be preset in the range of $\pm 1.7V$ to $\pm 25V$.

3. Connect a voltmeter or oscilloscope probe to the OUT terminal, with the common connection or ground clip tied to GND.

4. Connect a signal source to the IN^+ and IN^- .

Note: Generators will typically be referenced to earth ground. An AC “cheater” plug may be needed so that a deliberate offset can be introduced with another power supply.

5. Turn on the power supplies.
6. Check for an output voltage that is a replica of the input source.

QUICK START PROCEDURE

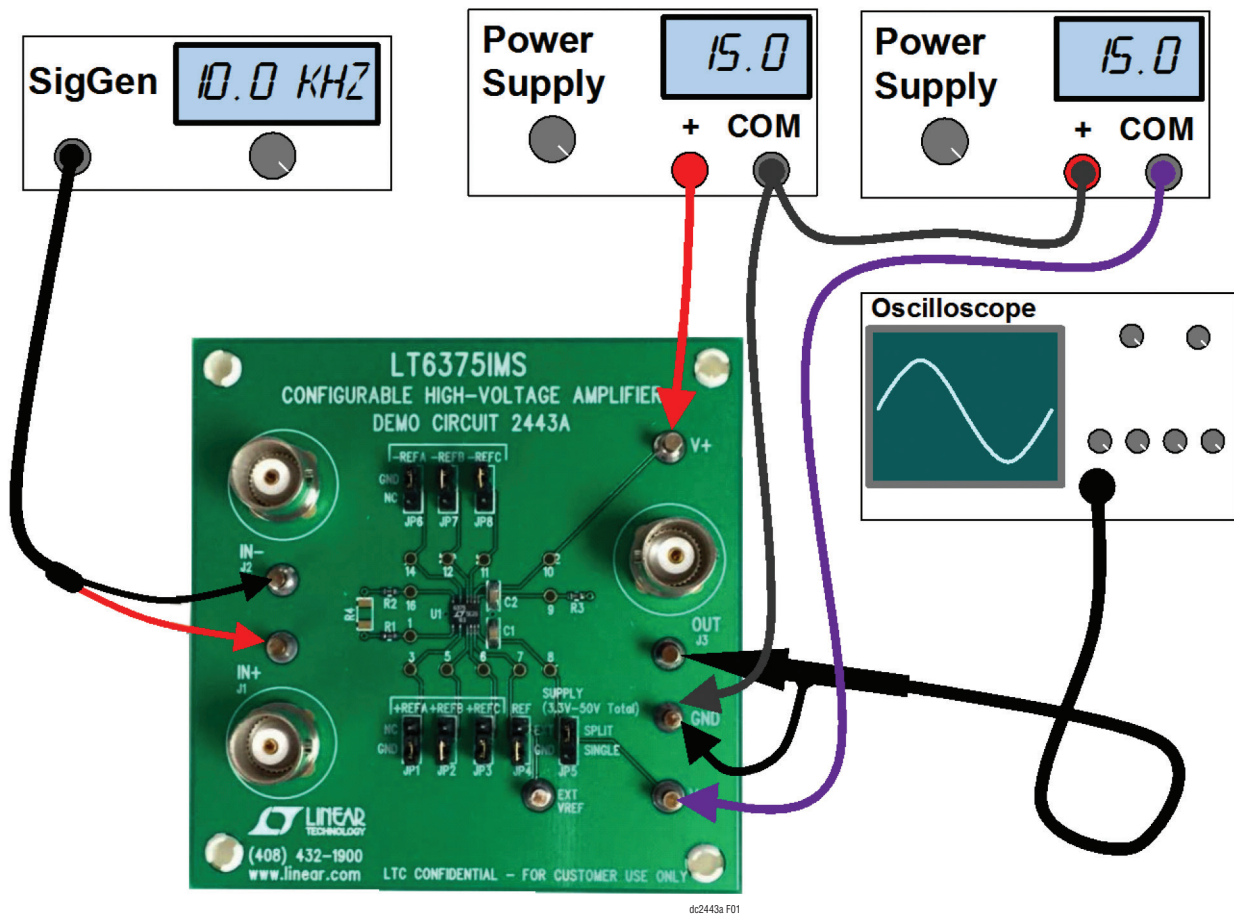


Figure 1. Proper Evaluation Equipment Setup

DEMO MANUAL DC2443

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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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