



QSDR Amp#1 Dual-channel operational amplifier module

Overview: The Amp#1 unit is designed to boost weak stereo signals, audio or DC-10MHz, with minimal distortion and very low noise levels. It is based on the latest version of the Texas Instruments NE5532 and includes reverse power connection protection.

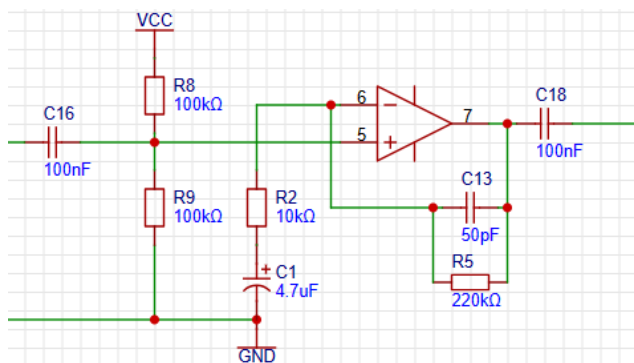
The amplifier was designed to boost signals from transceivers such as Elecraft, Xiegu, uSDX, QRP Labs, Icom, etc. It can be used for SDR applications with HSDR PC or Spectrum DSP units, but is equally well suited to stereo audio or other wide-band signal amplification.

The module is also available with an 18 MHz version of the NE5532.

Weak signal boosting: Tests with the Elecraft KX3 IQ output resulted in stations that were unreadable becoming readable on the external HSDR and Spectrum DSP audio channel.



Operating Supply Current	5.5~9.0mA
Input Bias Current	30nA
Gain Bandwidth Product (GBP)	10MHz
Gain (supply voltage > 12V)	24-28dB
Noise	5nV/Hz
Pendulum Rate	11V/μs
Operating Temperature	0 to +70°C
Supply Voltage, single rail design	10 to 18V DC
Power Supply Rejection Ratio(PSRR)	100dB
CMRR - Common Mode Rejection Ratio	100dB

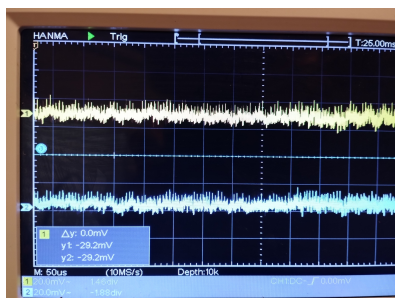


Circuit of single channel

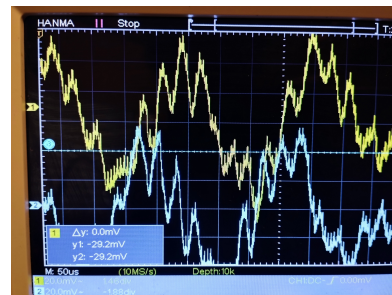
Input pins:
 1 - Channel 1 in
 2 - Ground
 3 - Channel 2 in

Output pins:
 1 - Channel 1 out
 2 - Ground
 3 - Channel 2 out

Power connection: Pin 1 Supply +10 to +18V DC Pin 2 & 3 Ground



Input signals



Amplified output signals

Recommended signal levels:

Over-driving the input can cause alias signals to appear, signals that run in opposite directions or repeat on the SDR spectrum display. Elecraft KX3: keep the internal pre-amp to 20 dB or less as at 30dB aliases start to appear.

IQ signal fault detection:

If only one channel is connecting, check the Jack connectors, clean and rotate watching the Spectrum display with a strong signal positioned to one side. Check the jack plug internals for loose parts and replace if necessary.

If while tuning there is a mirror image showing signals that move into the centre and out, only 1 channel is connecting.

If the signals on the Spectrum run in the opposite direction to the transceiver or other spectrum display, the IQ channels are reversed. USB will operate as LSB and visa versa.

Note: The I signal is always 90° in advance of the Q signal.