Demo Guide

Keysight Technologies Sourcing Clean Voltage Using B2961A/62A With External Filters

B2961A/62A 6.5 Digit Low Noise Power Source

Procedure overview

1. Turn on Show output noise without external filter
2. Show output noise via Low Noise Filter
3. Show output noise via Ultra Low Noise Filter

Objective

This demo shows excellent low noise output capability of the B2961A/62A Power Source with external filters by monitoring the outputs through the oscilloscope.

Required instrument and accessory

Keysight B2961A/62A 6.5 Digit Low Noise Power Source

Keysight Oscilloscopes (MSO-X 4000 Series is shown)

N1294A-021Ultra Low Noise Filter (ULNF)

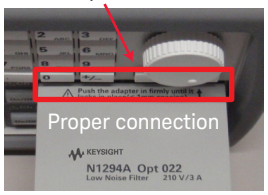
N1294A-022 Low Noise Filter (LNF)

Banana-to-BNC Adapter

BNC Cable

Note: When the filters are attached to the output terminals later, push them in firmly until it locks in-place

There is no space between the adaptor and the output terminals

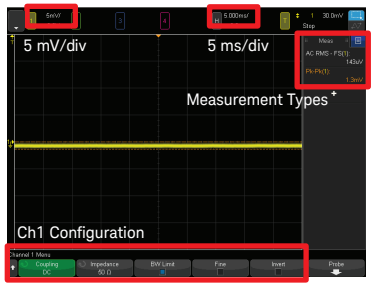


There is some space between the adaptor and the output terminals

Setup

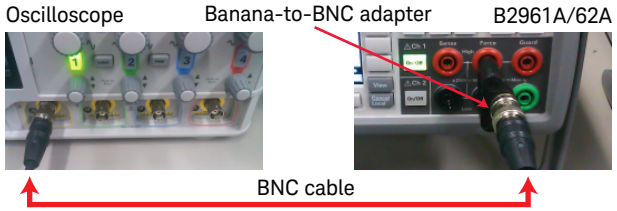
Oscilloscope setup

1. Set vertical scale of Ch1, horizontal scale to 5 mV/div, 5 ms/div.
2. Set Ch1 Input Impedance to 50 Ohm and BW Limit enabled.
3. Select “AC RMS – FS”, “Pk-Pk” as Measurement Type.
4. Confirm the noise floor of those Measurement Type on the scope.



B2961A/62A Power Source

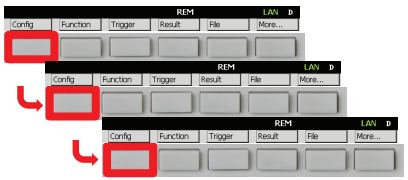
1. Attach a banana-to-BNC adapter to the B2961A/62A’s Ch1 High/Low Force Terminals
2. Connect the scope’s Ch1 and BNC terminal of the banana-to-BNC adapter with a BNC cable.



1. Show output noise without external filter

a. Press View repeatedly until Single View for Channel 1 is shown in the display.

b. Press Config, Source, and then press Connection to open Output Connection dialogue.



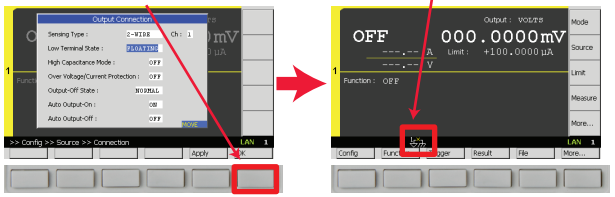
(1) Press Config
(2) Press Source
(3) Press Connection

c. Rotate ◎ to select Low terminal state and press ◎ to edit it. Then select FLOAT to set Low terminal state to Floating.

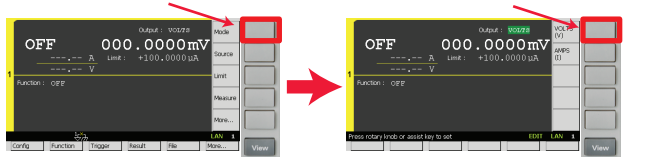
d. Press OK to make the modification effective.

(1) Press OK to make the modification effective

Low terminal status indicator



e. Press Mode to edit Source function, and then select VOLTS (V) to set Source function to Voltage source.



f. Press Source to edit Source value, and then enter 0 V to set Source value to 0 V.

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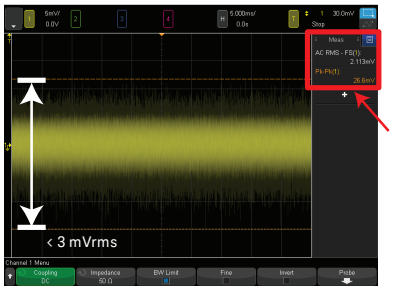
g. Press Limit to edit Limit value, and then enter 100 mA to set Limit value to 100 mA

h. Press On/Off to source the voltage and monitor output via the scope

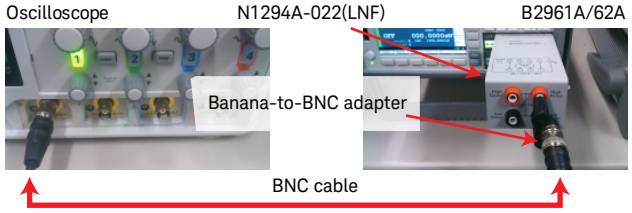


RMS Voltage Noise should be less than 3 mVrms

2. Show output noise via low noise filter

a. Press On/Off to turn off the output.

b. Attach LNF and make a connection between its outputs and the scope.

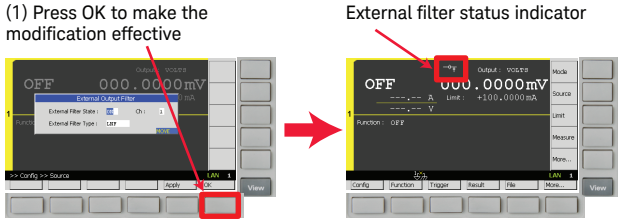


c. Press Config, Source, and then press Ext. Filter to open External Output Filter dialogue.

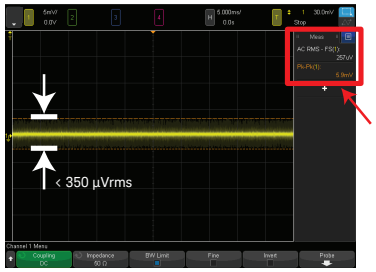
d. Rotate to select External filter type and press to edit it. Then press LNF to select Low Noise Filter.

e. Rotate to select External filter state and press to edit it. Then press ON to set it on.

f. Press OK to make the modification effective.



g. Press On/Off to source the voltage and monitor it via the scope.

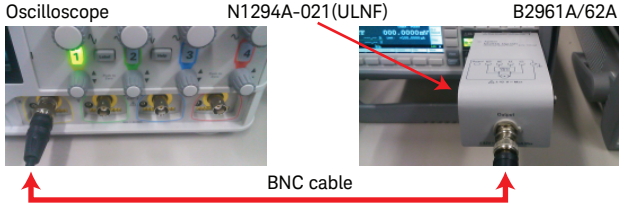


RMS Voltage Noise should be less than 350 µVrms

3. Showing output noise via ultra low noise filter

a. Press On/Off to turn off the output.

b. Attach ULNF and make a connection between its outputs and the scope.

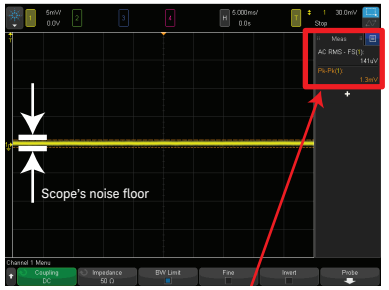


c. Press Config, Source, and then press Ext. Filter to open External Output Filter dialogue.

d. Rotate to select External filter type and press to edit it. Then press ULNF to select Ultra Low Noise Filter.

e. Press OK to make the modification effective

f. Press On/Off to source the voltage.



RMS Voltage Noise should be same as the noise floor of the scope. ULNF dramatically reduces the noise to the level too small for the scope to capture it.

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