

# Keysight B2961B/B2962B Low Noise Power Source



Quick Reference

## Preparing the Instrument for Use

### To position the instrument:

1. Grab the handle by the sides and pull outward.
2. Rotate the handle.
3. Position the instrument.

### To turn the instrument ON:

1. Connect the power cord from AC input connector to an AC power outlet at your site.
2. Press the line switch.

### To set the power line cycle:

1. Press the More > System > PLC function keys.
2. Press the 50 Hz or 60 Hz key to specify the power line cycle at the site.

### To connect the instrument output, optional:

1. Output terminals use banana jacks. Prepare test leads that use banana plugs.
2. Connect the test leads as shown in the figures.

To simplify the connections, use 2-wire connection by connecting the Force terminals only and opening the Sense terminals.

To apply voltage accurately, use 4-wire connection. Connecting the Force and Sense lines together at the device end eliminates the voltage drop caused by the residual resistance of the test leads or cables.

For using 4-wire connection, set the Sensing Type to 4-WIRE on the Output Connection dialog box. With the default setting, it is set to 2-WIRE. The dialog box is opened by pressing the Config > Source > Connection function keys.

### Low terminal state, Grounded or Floating:

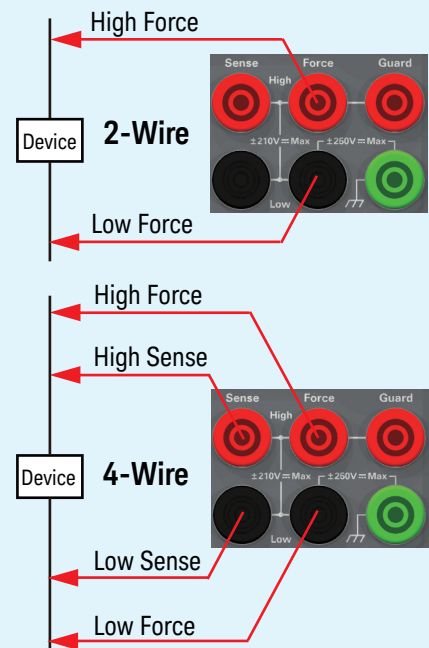
When the instrument is turned ON, Low Force and Low Sense terminals are connected to the chassis ground. However, they can be internally disconnected from the ground for making the floating condition. This setup is used for connecting the source channels in series. For floating the Low terminals, set the Low Terminal State to FLOATING on the Output Connection dialog box. The dialog box is opened by pressing the Config > Source > Connection function keys.

With the FLOATING setting, the Low Force and Low Sense terminals can be connected to the maximum of  $\pm 250$  V.

**WARNING:** Potentially hazardous voltages of up to  $\pm 250$  V may be present at the Low Force and Low Sense terminals. To prevent electrical shock, use accessories that comply with IEC 61010-031. The terminals and the extended conductors must be isolated by using insulation caps, sleeves, etc.

## Latest Information

To get the latest firmware, software, manuals, and support information, go to [www.keysight.com](http://www.keysight.com). You can then search them by product number.



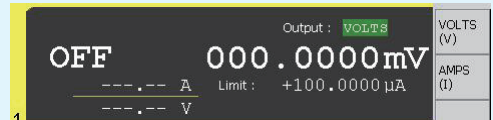


1. Line switch: Turns the instrument on or off.
2. USB-A connector: Used to connect a USB memory.
3. Auto key: Starts an output monitor or aborts the output monitor.
4. Trigger key: Initiates trigger system or aborts the output monitor.
5. Assist keys: Five keys for setup assistance. Mode, Source, Limit, Measure, More, etc.
6. Numeric/alpha keys: Used to enter the value of setup parameters specified by the field pointer.
7. Rotary knob:
  - In MOVE (blue) status: Turning it moves the field pointer. Pressing it fixes the pointer position.
  - In EDIT (green) status: Turning it changes the field pointer parameter value. Pressing it fixes the value.
8. Left and right keys:
  - In MOVE (blue) status: Moves the field pointer.
  - In EDIT (green) status: Changes the field pointer parameter value. If the field pointer is on a numeric value entry field, pressing the key changes the pointer to a digit pointer.
9. Channel 1 terminals: High Force, High Sense, Low Force, Low Sense, Guard, and chassis ground
10. On/Off switch(es): Used to enable or disable the channel. Turns the channel off if it is in the output status even if it is in the remote status. Two switches on 2-channel models. The switch turns green if the channel is enabled. The switch turns red if the channel is in the high voltage state.
11. View key: Changes the display mode.
12. Cancel/Local key:
  - Cancels the setup operation if the instrument is in the local status.
  - Returns the instrument to the local status if it is in the remote status.
13. Function keys: Six keys for detail setup of several functions. Config, Function, Trigger, Result, File, Program, I/O, System, and More.
14. Channel 2 terminals: Only on 2-channel models.
15. GPIB interface connector: Connects to GPIB interface of an external computer or equipment.
16. USB-B connector: Connects to USB interface.
17. LAN interface connector: Connects to 10/100 Base-T interface. Left LED indicates activity. Right LED indicates link integrity.
18. Digital I/O connector: D-sub 25 pin female connector for general purpose I/O (GPIO). For trigger input/output, interface to a handler, interface to an interlock circuit, etc. If the interlock terminals are open, the instrument output is limited to  $\pm 42$  V.
19. AC input connector: AC power cord is connected to this receptacle.

## Applying DC Output

B2961B/B2962B channel 1 applies a constant voltage of +500 mV by the following procedure.

- Set the source mode and the DC output as follows.
  - Press the **View** key to display the Single view.
  - Press the **Mode** assist key to enter into the Edit mode.
  - Press the **VOLTS (V)** assist key to set the voltage source.
  - Press the **Source** assist key to enter into the Edit mode.
  - Set the output voltage by using the rotary knob, arrow keys, or numeric/alpha keys.



For example, press 5, 0, 0, and the **mV** assist key.

- Set the Limit value (compliance) as follows.
  - Press the **Limit** assist key to enter into the Edit mode.
  - Set the current limit by using the rotary knob, arrow keys, or numeric/alpha keys.



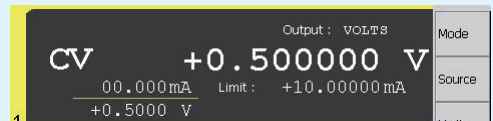
For example, press 1, 0, and the **mA** assist key.

- Enable the source output as follows.
  - Press the Ch1 **On/Off** switch to enable channel 1.

This turns the Ch1 **On/Off** switch green. And the channel status is changed from OFF to CV (Constant Voltage).

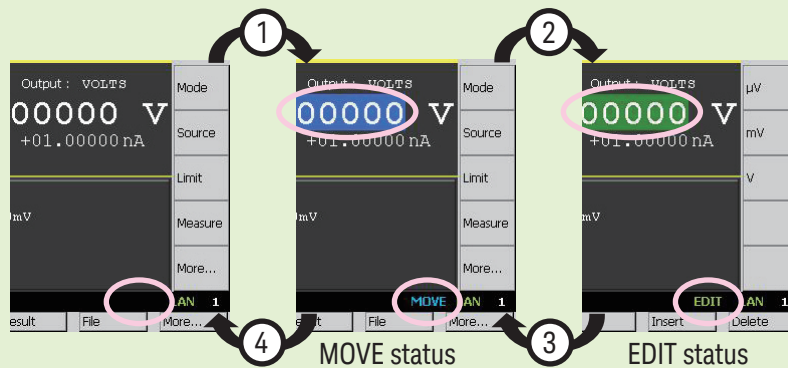
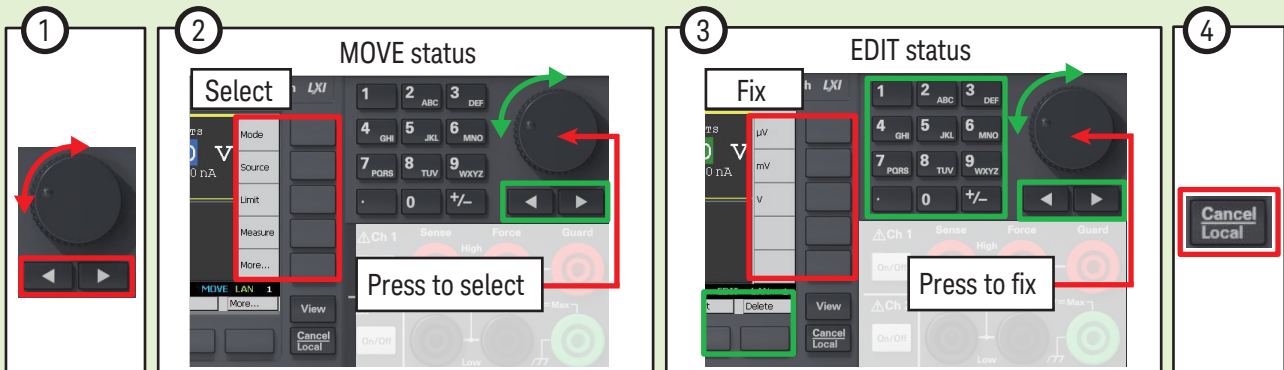
The channel 1 starts DC output and monitors the output.

Note: Changing the setup changes the channel output immediately.



↑  
Monitor data

## Editing the Setup



## Performing Output Monitor

Press **Auto** to perform output monitor repeatedly or to abort the output monitor.

Note: You can change the monitor parameter by using the **Measure** assist key.

## Disabling the Channel

Press the Ch1 **On/Off** switch to disable channel 1. This turns off the switch light.

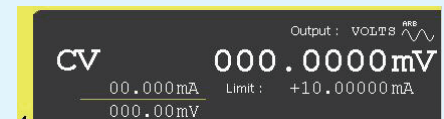
## Applying Waveform Output

B2961B/B2962B channel 1 applies a sinusoidal wave of 1 V and 1 Hz by the following procedure.

- Set the source mode and the DC output as follows.
  - Press the **View** key to display the Single view.
  - Press the **Mode** assist key to enter into the Edit mode.
  - Press the **VOLTS (V)** assist key to set the voltage source.
  - Press the **Source** assist key to enter into the Edit mode.
  - Set the output voltage by using the rotary knob, arrow keys, or numeric/alpha keys.  
For example, press 0 and the **V** assist key.
- Set the Limit value (compliance) as follows.
  - Press the **Limit** assist key to enter into the Edit mode.
  - Set the current limit by using the rotary knob, arrow keys, or numeric/alpha keys.  
For example, press 1, 0, and the **mA** assist key.
- If the screen does not display the Function setup, press the **More** assist key and the **Hide xxxx** assist key.
- Set the sinusoidal wave output as follows.
  - Press the rotary knob on Function: **OFF** to enter into the Edit mode.
  - Press the **More** assist key twice, and press the **ARB SINUSOID** assist key to display the sinusoidal wave output setup.
  - Move the cursor to Amplitude: by using the rotary knob or arrow key.
  - Press the rotary knob to enter into the Edit mode.
  - Set the amplitude by using the rotary knob, arrow keys, or numeric/alpha keys. For example, press 1 and the **V** assist key.
  - Move the cursor to Frequency: by using the rotary knob or arrow key.
  - Press the rotary knob to enter into the Edit mode.
  - Set the frequency by using the rotary knob, arrow keys, or numeric/alpha keys. For example, press 1 and the **Hz** assist key.
- Enable the source output as follows.
  - Press the Ch1 **On/Off** switch to enable channel 1.  
The channel 1 starts DC output and monitors the output.
  - Press **Trigger** to start the sinusoidal wave output.  
The channel 1 starts sinusoidal wave output and monitors the output.



The **Show Preview** assist key displays:



↑  
Monitor data

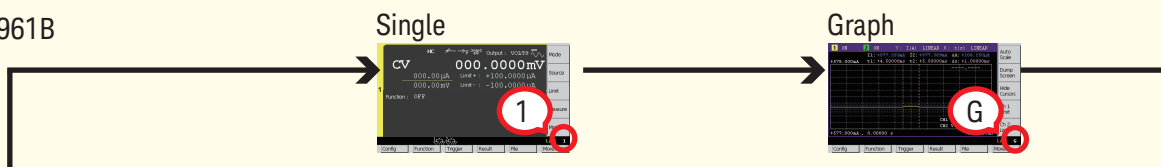
## Performing Waveform Output Again

Press **Trigger** to initiate the trigger system. Waveform output and output monitor are performed as defined in the Trigger setup.

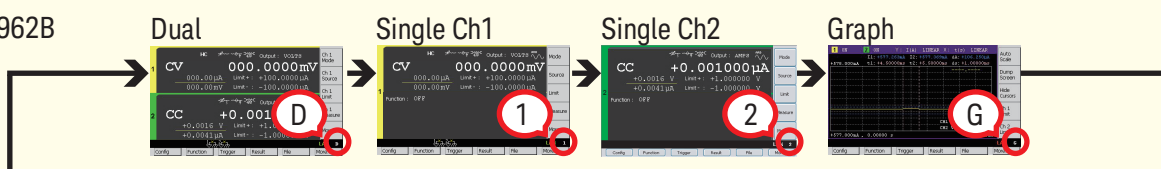
## Changing the View Mode



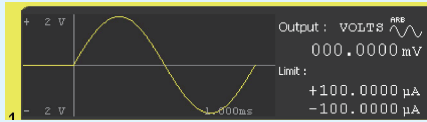
B2961B



B2962B



## Single View



Display information is changed by the Show Preview / Hide Preview assist key.

1. Channel number. 1 or 2.
2. Channel status. OFF, CV, CC, or EMUL
3. Over voltage/current status indicator (OV or OC)
4. Monitor data, 4½ digit resolution  
(current or voltage measurement value, resistance, power, or % of Limit value)
5. High capacitance mode indicator (HC)
6. Output resistance indicator
7. External filter indicator
8. Remote sensing (4-wire connection) status indicator
9. Source mode. VOLTS or AMPS.
10. Source shape indicator. DC, waveform, pulse, sweep, or pulsed sweep. DC does not show the indicator.
11. Source output value, 6½ digit resolution
12. Limit (Compliance) value

## Function Setup

Function : OFF

### Function

Source function. OFF, sweep (linear single, linear double, log single, log double, or list), or arbitrary waveform (exponent, ramp, square, sinusoid, trapezoid, triangle, or user defined)

## Option Setup (More > Show Options)

Measure Speed : AUTO  
Source Ranging : AUTO 200mV  
Output R : OFF

### Measure Speed

Measurement speed. AUTO, SHORT, MEDIUM, NORMAL, LONG, or MANUAL

### Source Ranging

Voltage or current output range. AUTO or FIXED

### Output R

Output resistance. OFF, CONST (constant), or EMUL (emulation)

## Pulse Setup (More > Show Pulse)

Pulse : ON Peak : +05.00000 V  
Delay : 001.2000 mS  
Width : 025.0000 mS

### Pulse

Pulse output. ON or OFF

### Peak

Pulse peak value

### Delay

Pulse delay time

### Width

Pulse width

Pulse base value is the same as the Source output value.

## Trigger Setup (More > Show Trigger)

Trigger	MANUAL	Source	Measure
Count :		1	1
Delay :		0.000 μs	0.000 μs
Period :		0.000 μs	0.000 μs
Trigger :	AUTO	AUTO	AUTO

### Trigger

Trigger type. AUTO, SYNC, TIMER, or MANUAL

### Count

Trigger count (number of triggers)

### Delay

Trigger delay time

### Period

Trigger period

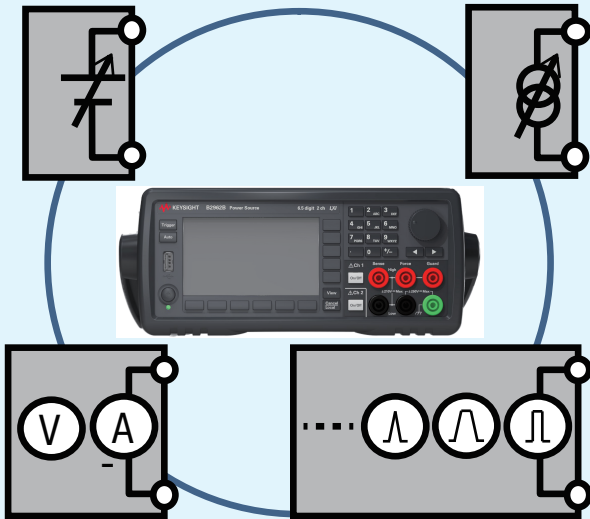
### Trigger

Trigger source. AUTO, BUS, TIMER, INTn (n=1 or 2), LAN, or EXTm (m=1 to 14)

## What is the B2961B/B2962B Power Source?

Voltage source

Current source



Voltage/current monitor

Arbitrary waveform generator

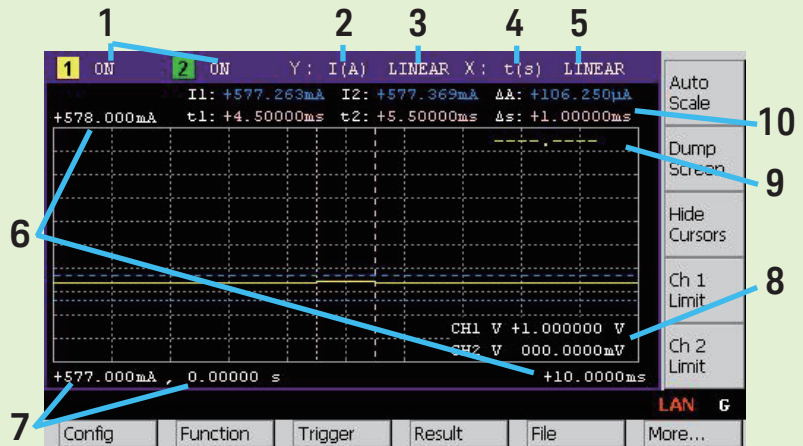
Keysight B2961B/B2962B combines the capabilities of a constant current source, a constant voltage source, and an arbitrary waveform generator along with the capability to switch easily between these various functions into a single instrument.

In addition to its source functions, the B2961B/B2962B also has the ability to monitor DC current and voltage.

## Graph View

Displays the graph for plotting the channel 1 and/or 2 measurement or math result.

1. Graph display status ON or OFF. Only on 2-channel models. [n] is for channel n.
2. Y-axis data type I (A), V (V), R ( $\Omega$ ), P (W), or MATH
3. Y-axis scale LINEAR or LOG
4. X-axis data type t (s)
5. X-axis scale LINEAR or LOG
6. Graph maximum value
7. Graph minimum value
8. Channel 1 and/or 2 source output value, limit value, or none (controlled by the Ch n Source, Ch n Limit, or Hide Ch n assist key)
9. Channel 1 and/or 2 Y-axis data at the active X-cursor position. ----.---- is displayed for the no-data position.
10. Cursor data (controlled by the Show Cursors or Hide Cursors assist key)
  - First line Positions and distance (e.g. I1, I2,  $\Delta A$ ) of Y-cursors 1 and 2
  - Second line Positions and distance (e.g. t1, t2,  $\Delta t$ ) of X-cursors 1 and 2



## Status Information

