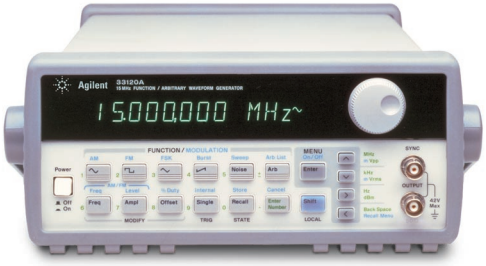
Know Your Function/Arbitrary Waveform Generator



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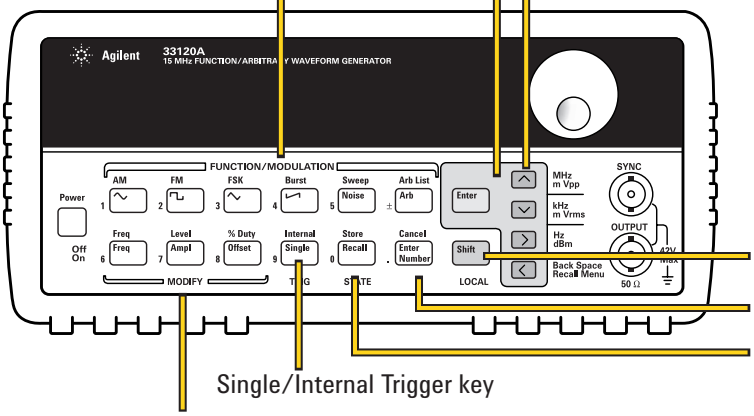
Overview

Front Panel



Function/Modulation keys

Menu Operation keys

Enter Number "units" keys

Use the front panel Input/Output Menu to:

- Select the GPIB or RS-232 interface
- Set the GPIB bus address
- Set the RS-232 baud rate and parity

Shift/Local key

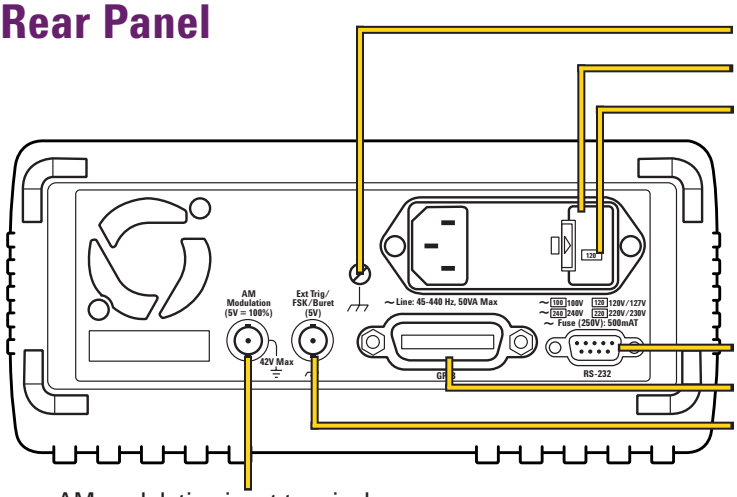
Enter Number key

Recall/Store instrument state key

Single/Internal Trigger key

Waveform Modify keys

Rear Panel



Chassis Ground

Power-line fuse-holder assembly

Power-line voltage setting

RS-232 interface connector

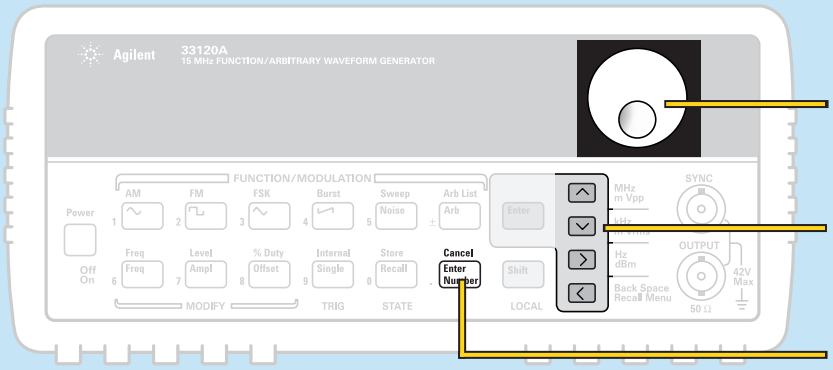
GPIB (IEEE-488) interface connector

External Trigger / FSK / Burst modulation input terminal

AM modulation input terminal

Agilent Technologies

Front Panel Number Entry



You can enter numbers from the front panel using one of three methods.

Use the knob and the arrow keys to modify the displayed number.

Use the arrow keys to edit individual digits.

Use the "Enter Number" mode to enter a number with the appropriate units.

The Front Panel at a glance

A: MODulation Menu

1: AM SHAPE → 2: AM SOURCE → 3: FM SHAPE → 4: BURST CNT → 5: BURST RATE

→ 6: BURST PHAS → 7: BURST SRC → 8: FSK FREQ → 9: FSK RATE → 10: FSK SRC

B: SWP (Sweep) MENU

1: START F → 2: STOP F → 3: SWP TIME → 4: SWP MODE

C: EDIT MENU*

1: NEW ARB → [2: POINTS] → [3: LINE EDIT] → [4: POINT EDIT] → [5: INVERT]

→ [6: SAVE AS] → 7: DELETE

* The commands enclosed in square brackets ([ ]) are "hidden" until you make a selection from the NEW ARB command to initiate a new edit session.

D: SYStem MENU

1: OUT TERM → 2: POWER ON → 3: ERROR → 4: TEST → 5: COMMA → 6: REVISION

E: Input/Output MENU

1: HPIB ADDR → 2: INTERFACE → 3: BAUD RATE → 4: PARITY → 5: LANGUAGE

F: CALibration MENU*

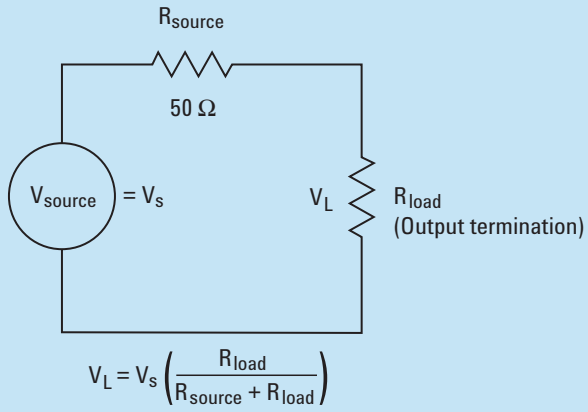
1: SECURED → [1: UNSECURED] → [2: CALIBRATE] → 3: CAL COUNT → 4: MESSAGE

* The commands enclosed in square brackets ([ ]) are "hidden" unless the function generator is UNSECURED for calibration.

(continued)

The Front Panel at a glance *(continued)*

Agilent 33120A Equivalent Output Circuit



$$V_L = V_s \left(\frac{R_{load}}{R_{source} + R_{load}} \right)$$

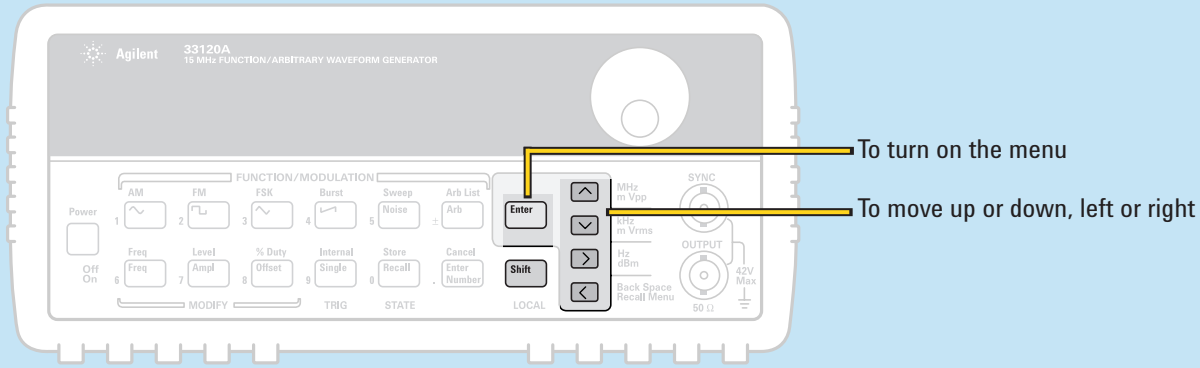
If $R_{load} = 50\Omega$, then $V_L = \frac{1}{2} V_s$

If R_{load} is open circuit, then $V_L = V_s$

The output impedance (R_{source}) for the 33120A is always 50 ohms. In the System Menu under 1:OUT TERM, you can select either 50 OHM or HIGH Z. Changing this menu setting from 50 OHM to HIGH Z does not change the 33120A's output impedance. It changes the reading on the 33120A's display to what the voltage will be when a high impedance load is connected to the generator's output. When the menu is set to 50 OHM, the 33120A display will read the correct voltage that will appear across a 50 ohm load connected to the generator's output. Note that if the menu is set to 50 OHM and the actual load is a high impedance, the voltage that appears across the high impedance load will be 2 times the voltage shown on the display.

Front Panel Menu Reference

The menu is organized in a top-down tree structure with three levels.



A: MOD MENU → **B: SWP MENU** → **C: EDIT MENU** → **D: SYS MENU** → **E: 1/0 MENU** → **F: CAL MENU**

- **A: MOD MENU** → 1 AM SHAPE → 2 AM SOURCE →
- **B: SWP MENU** → 1 START F →
- **C: EDIT MENU** → 1 NEW ARB →
- **D: SYS MENU** → 1 OUT TERM →
- **E: 1/0 MENU** → 1 HPIB ADDR →
- **F: CAL MENU** → 1 SECURED →

To enter command, press "Enter".

A: MODulation Menu

1: AM SHAPE	Selects the shape of the AM modulating waveform.
2: AM SOURCE	Enables or disables the internal AM modulating source.
3: FM SHAPE	Selects the shape of the FM modulating waveform.
4: BURST CNT	Sets the number of cycles per burst (1 to 50,000 cycles).
5: BURST RATE	Sets the burst rate in Hz for an internal burst source.
6: BURST PHAS	Sets the starting phase angle of a burst (-360 to +360 degrees).
7: BURST SRC	Selects an internal or external gate source for burst modulation.
8: FSK FREQ	Sets the FSK "hop" frequency.
9: FSK RATE	Selects the internal FSK rate between the carrier and FSK frequency.
10: FSK SRC	Selects an internal or external source for the FSK rate.

(continued)

Front Panel Menu Reference *(continued)*

B: SWP (Sweep) MENU

1: START F	Sets the start frequency in Hz for sweeping.
2: STOP F	Sets the stop frequency in Hz for sweeping.
3: SWP TIME	Sets the repetition rate in seconds for sweeping.
4: SWP MODE	Selects linear or logarithmic sweeping.

C: EDIT MENU*

1: NEW ARB	Initiates a new arb waveform or loads the selected arb waveform.
2: POINTS	Sets the number of points in a new arb waveform (8 to 16,000 points).
3: LINE EDIT	Performs a linear interpolation between two points in the arb waveform.
4: POINT EDIT	Edits the individual points of the selected arb waveform.
5: INVERT	Inverts the selected arb waveform by changing the sign of each point.
6: SAVE AS	Saves the current arb waveform in non-volatile memory.
7: DELETE	Deletes the selected arb waveform from non-volatile memory.

* The commands enclosed in square brackets ([ ]) are "hidden" until you make a selection from the NEW ARB command to initiate a new edit session.

D: SYStem MENU

1: OUT TERM	Selects the output termination (50Ω or high impedance).
2: POWER ON	Enables or disables automatic recall of the power-down state.
3: ERROR	Retrieves errors from the error queue (up to 20 errors).
4: TEST	Performs a complete self-test.
5: COMMA	Enables or disables a comma separator between digits on the display.
6: REVISION	Displays the function generator's firmware revision codes.

E: Input/Output MENU

1: HPIB ADDR	Sets the GPIB bus address (0 to 30).
2: INTERFACE	Selects the GPIB or RS-232 interface.
3: BAUD RATE	Selects the baud rate for RS-232 operation.
4: PARITY	Selects even, odd, or no parity for RS-232 operation.
5: LANGUAGE	Verifies the interface language: SCPI.

F: CALibration MENU*

1: SECURED	The function generator is secured against calibration; enter code to unsecure.
1: UNSECURED	The function generator is unsecured for calibration; enter code to secure.
2: CALIBRATE	Performs individual calibrations; must be UNSECURED.
3: CAL COUNT	Reads the total number of times the function generator has been calibrated.
4: MESSAGE	Reads the calibration string (up to 11 characters) entered from remote.

* The commands enclosed in square brackets ([ ]) are "hidden" unless the function generator is UNSECURED for calibration.