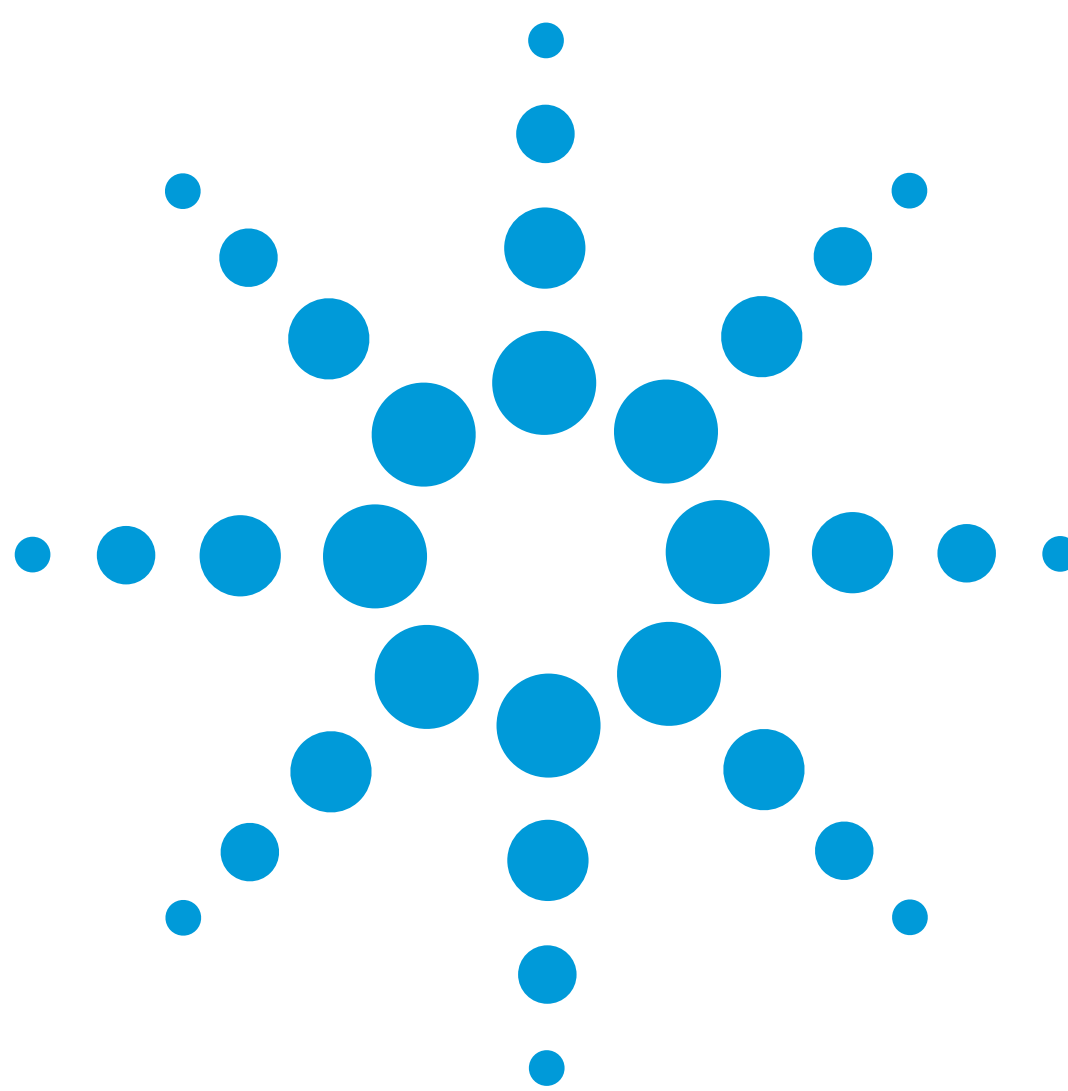


# Know Your Function/Arbitrary Waveform Generator



## 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

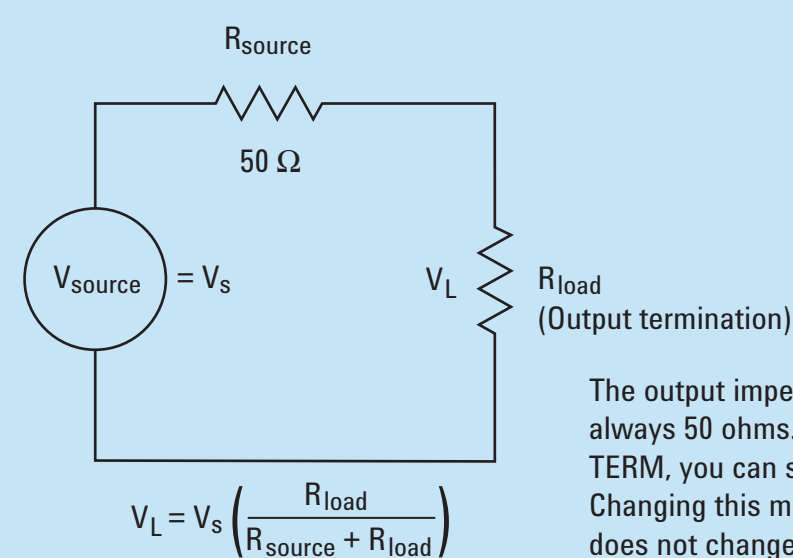
- 1: HPIB ADDR → 2: INTERFACE → 3: BAUD RATE → 4: PARITY → 5: LANGUAGE

### F: CALibration MENU\*

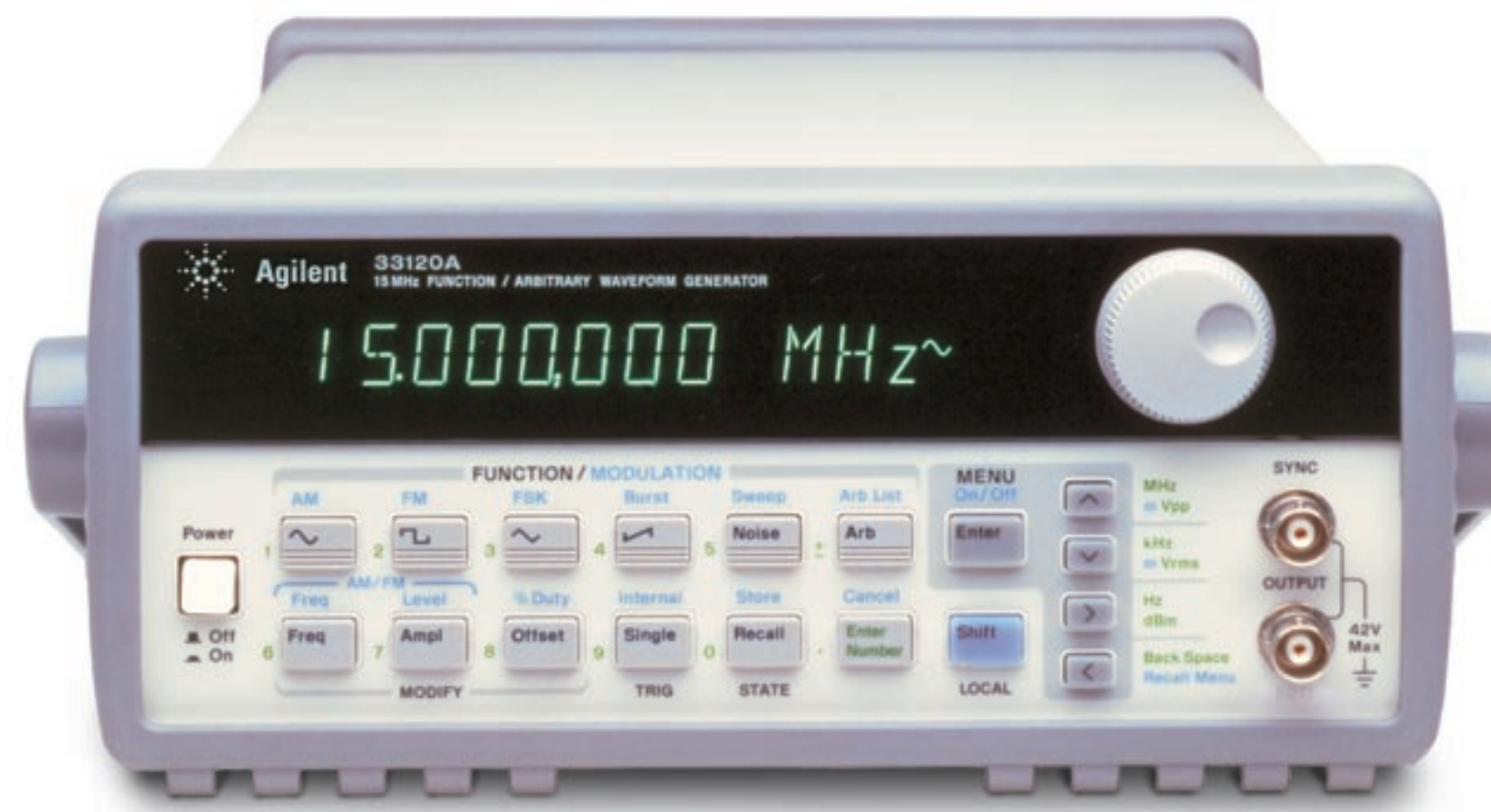
- 1: SECURED → [ 1: UNSECURED ] → [ 2: CALIBRATE ] → 3: CAL COUNT → 4: MESSAGE

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

## Agilent 33120A Equivalent Output Circuit

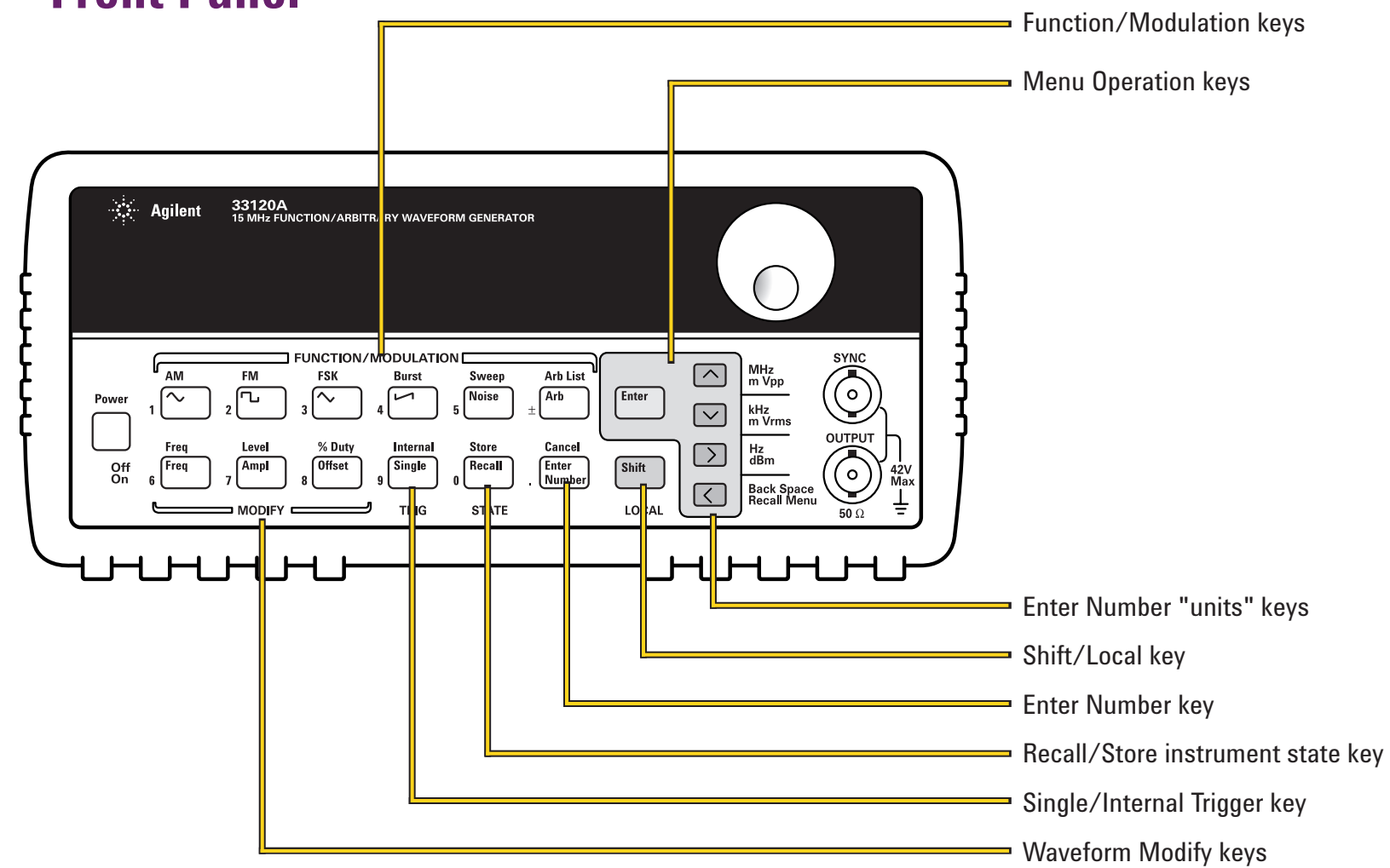


The output impedance ( $R_{source}$ ) for the 33120A is always 50 ohms. In the System Menu under 1:OUT TERM, you can select either 50 OHM or HIGH Z. Changing this menu setting from 50 OHM to HIGH Z does not change the 33120A's output impedance. It changes the reading on the 33120A's display to what the 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.

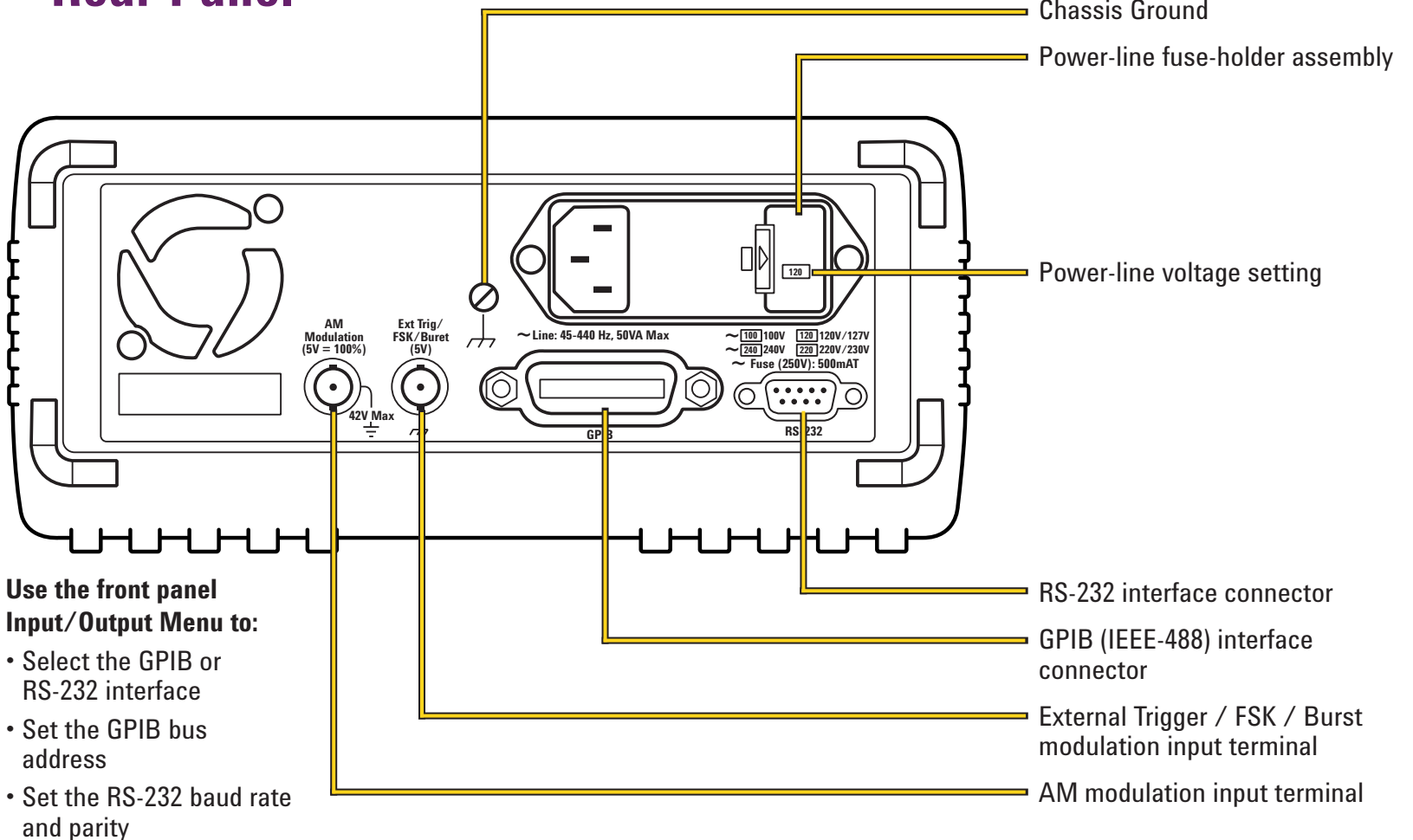


## Overview

### Front Panel

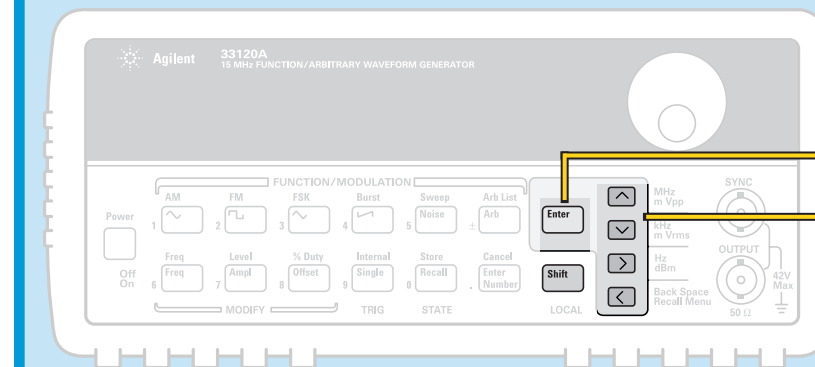


### Rear Panel



## 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: I/O MENU → F: CAL MENU
- 1 START F → 1 NEW ARB → 1 OUT TERM → 1 HPIB ADDR → 1 SECURED
- 1 AM SHAPE → 2 AM SOURCE
- 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.

### 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.

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