Beaglebone Black – Signal generator

User Manual

Version 1.0

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How to operate the signal generator

It is mandatory to read this User manual before using the signal generator in order to avoid damage of the device.

Powering up the device

Make sure the power connector is properly attached and connected to a power source between 100 V and 240 V AC at 50/60 Hz.

The device is powered up by flipping the Power Switch on the back of the device to the “ON” position and pressing the power-button afterwards.

The device is ready when the seven-segment-displays on the front panel light up.

Choosing a Channel

This signal generator is equipped with two separated output channels. In order to save space and components only the settings for one channel can be displayed at once. To change the channel, press the CH-Select Button on the front panel. The LED next to the CH-Select Button indicates which channel is selected. According to the selected channel, the seven-segment-displays and LEDs are updated to show the corresponding values. See figure 1.

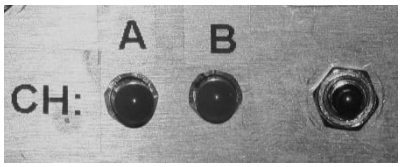

Figure 1 choosing a channel

Choosing a Waveform

Choose between one of the given Waveforms by pressing the function-select-button on the front panel. Every push of the button will switch to the next waveform. The selected waveform is indicated by the LEDs below the corresponding waveform symbol. See figure 2.

Figure 2 choosing a waveform

Setting up the frequency

First, select in which range (Hz, kHz, MHz) you want to set up a frequency with the frequency-unit-button in the lower right corner. The 3 LEDs on the right indicate which range is selected. Afterwards the actual frequency can be set. The LEDs under the individual seven-segment-display indicate which position can be changed. To change this position, press the position-button below the seven-segment-display. By pressing the frequency-up or frequency-down-button on the right of the seven-segment-display, the selected position will be incremented/decremented. See figure 3.

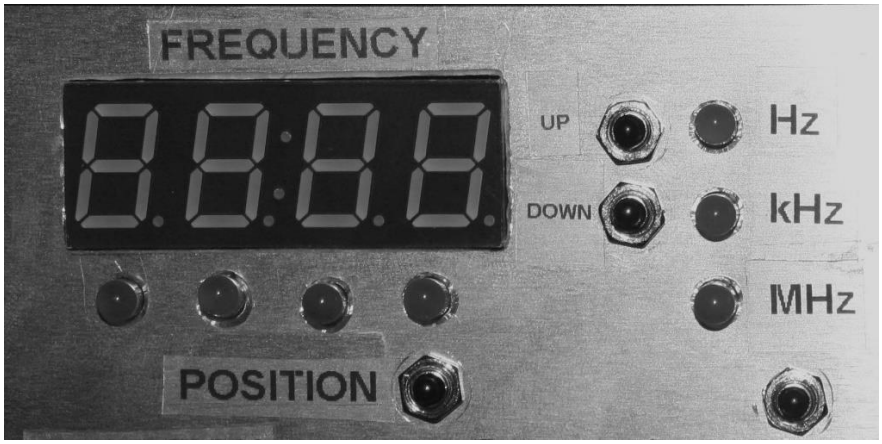

Figure 3 choosing a frequency

Setting up the amplitude

Setting up the amplitude works similar to setting up the frequency. The LEDs under the individual seven-segments indicate which position can be changed. To change this position, press the amplitude-position-button below the seven-segment-display. By pressing the amplitude-up or amplitude-down-button the selected position will be incremented/decremented. See figure 4.

Figure 4 setting up the amplitude

Output of a signal

After the waveform, the frequency and the amplitude is set up you can output the signal. To activate the output press the output-button of the desired channel. The LED left to the output-button indicates whether a channel is active or not. While a channel is active it is not possible to change its settings. However, it is possible to change the settings of one channel while the other already outputs a signal. If you wish to change settings of a channel or stop the output of the channel, press the corresponding output-button again. The LED next to the output-button goes dark to indicate that the channel output is no longer active. See figure 5.

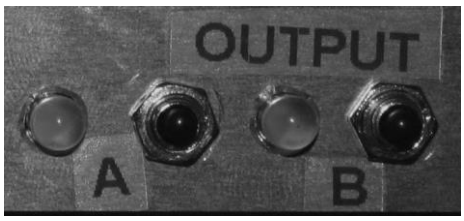

Figure 5 output of a signal

Powering down the signal generator

To avoid damage to the board, it is necessary to first power down the system before disconnecting from the power source. To issue a power down of the system, press the power-button [1] on the back of the signal generator. Wait for about 10 seconds for the board to shut down. It is save to switch off the signal generator as soon as the seven-segment-displays go dark. Flip the power-switch [2] to the "OFF" position. See figure 6.

Figure 6 powering down the signal generator