Quantoct V1.1 – User Guide

The unit is designed for a modular analog synthesizer.

WARNING - IMPORTANT

When supplying voltages to your Quantoct for calibration or playing - DO NOT just connect a power supply voltage directly to the inputs. If the voltage from the power supply touches the grounded jack sleeve, it will short whatever you are putting in to ground. Use only keyboard controllers/sequencers or other current limited control voltage sources.

The module is designed and sized for Eurorack systems. You will need a 16 pin Eurorack power ribbon connector with –12/0/+12 and +5V which is connected to a synth power supply.

Programming the Quantoct

If the PIC24 chip is preprogrammed there is nothing else to do here and you can ignore this section.

1. You must remove IC3 on the main board if you want to program the PIC yourself. This IC shares pins with the PIC. After programming, reinstall IC3.

2. If you intend to program the chip yourself with our .HEX file, use your favorite method to program the chip. If using the ICSP port on the board and MPLAB-X IDE , you can follow this tutorial to set up a pre-built project with our HEX file:

http://microchip.wikidot.com/mplabx:projects-prebuilt

Calibrating the (Analog-Digital Converter inputs) ADC

This adjusts the input conditioner so that a fixed formula in the PIC code can determine the input voltages.

If you bought PCBs or a kit, you should only need to calibrate the unit once. If you bought a pre-built and tested unit, you can skip this section.

1. Power up the module and allow it to warm up for a few minutes
2. Connect the –VE probe of a multimeter to a GND pin of the power connector or other ground point on the board..
3. Measure the voltage at U1 pin 28. Record this voltage as **Vref.**
4. Input 1.000V into input CV jack A.
5. Connect the +VE probe of the multimeter to the testpoint marked **IN A** on the Main board.
6. Adjust trimmer **IN A** until the voltage at testpoint **IN A** is: **Vref/11.0**
   e.g. if Vref = 3.259V, IN A = 3.259/11.0 = 0.2963V
7. Repeat for testpoint INB-IND using trimmers INB-IND.

Calibrating the (Digital-Analog Converter outputs) DAC

This adjusts the output buffers so that a digital representation of the scaled voltage is converted to an analog output voltage.

If you bought PCBs or a kit, you should only need to calibrate the unit once. If you bought a pre-built and tested unit, you can skip this section.

1. Power up the module and allow it to warm up for a few minutes
2. Set the scale to Scale 1. (Green LED 1 on and Red LED off).
3. Connect the –VE probe of a multimeter to a GND pin of the power connector or other ground point on the board.

4. Disconnect all inputs and outputs.
5. Connect the +VE probe of the multimeter to the testpoint marked **Offset A** on the Output board.
6. Adjust trimmer **Offset A** until the voltage at testpoint **Offset A** is 0.000V.
7. Now input +9.000V DC into **Input A** from a keyboard controller, sequencer etc**.**
8. Connect the +VE probe of the multimeter to the testpoint marked **CV A** on the Output board.
9. Adjust trimmer **Gain A** until the voltage at testpoint **CV A** is 9.000V.
10. Now input +1.000V DC into **Input A.**

13. Repeat Steps 4-12 for **Offset B, Gain B and CV B**.
14. Repeat Steps 4-12 for **Offset C, Gain C and CV C**.
15. Repeat Steps 4-12 for **Offset D, Gain D and CV D**.

Scales

Press the scale button to step through the two banks of scales. For bank 1, the red LED is **not** lit and the first 7 scales are available. For bank 2, the red LED is lit and the second 7 scales are available.

Bank 1
1 chromatic (semi-tones),
2 whole tones,
3 major,
4 major pentatonic,
5 harmonic minor,
6 Aolian minor,
7 minor pentatonic.

Bank 2
1 dorian,
2 lydian,
3 7th,
4 Minor 7th,
5 3rd,
6 Minor 3rd,
7 1V steps for testing

Octave Shift

The octave shift control adds or subtracts a fixed voltage from the scale output. +2V, +1V, -2V or -1V. Although the control has a continuous movement, the voltages are at discrete positions as marked on the panel.