



# QUANTUM

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SYNTHESIZER

## Quickstart Manual

Für deutsche Version  
bitte umdrehen!



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## Foreword

Thank you for purchasing the Waldorf Quantum. You now own a high-class hybrid synthesizer featuring a wide range of unique sounds with approved Waldorf quality – made in Germany!

### About this Quickstart

In this quickstart manual you will find the basic knowledge to get in touch with your Quantum.

! The complete manual can be downloaded here:  
<http://waldorfmusic.com/quantum>

And now have fun with your Quantum!

Your Waldorf Team

### Hint

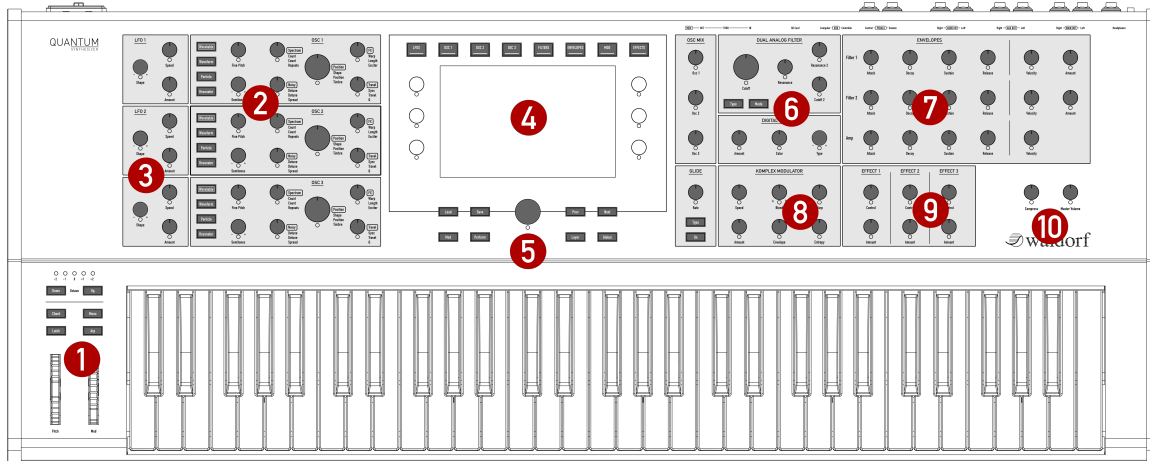
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This manual or any portion of it may not be reproduced in any form without the manufacturer's written consent.

Waldorf Music GmbH, Lilienthalstraße 7,  
D-53424 Remagen, Germany

# Control Features & Connections

## Front Panel



1) Wheel Section

2) Oscillator Section

3) LFO Section

4) Touchscreen Display

5) Selection Dial & Mode Pages Buttons

6) Dual Analog Filter & Digital Filter Sections

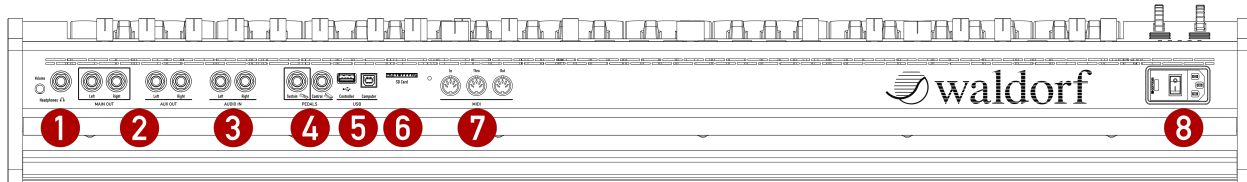
7) Envelopes Section

8) Komplex Modulator

9) Effects Section

10) Output Section

## Rear Panel & Connections



- |                       |                              |
|-----------------------|------------------------------|
| 1) Headphones Output  | 5) USB Connections           |
| 2) Main & Out Outputs | 6) SD Card Slot              |
| 3) Audio Inputs       | 7) MIDI In / Out /Thru Jacks |
| 4) Pedal Inputs       | 8) Power Jack & Switch       |

## General Safety Guidelines



Please read the following safety tips carefully! They include several precautions you should always observe when dealing with electronic equipment. Read all of the instructions before operating your device.

### Suitable Operating Conditions

- Use the device in enclosed rooms only.
- Never use the device in damp conditions such as bathrooms, washrooms, or around indoor swimming pools.
- Do not use the device in extremely dusty or dirty environments.
- Make sure that adequate ventilation is available on all sides of the device.
- Do not place the device near heat sources such as radiators.
- Do not expose the device to direct sunlight.
- Do not expose the device to extreme vibrations.

### Power Supply

- Only use the power cable that came with the Quantum.
- Unplug the device when you are not using it for longer periods.
- Never touch the plug with wet hands.
- Always pull the plug when unplugging the device - never the cable.

### Operation

- Never place objects containing liquids on or near the device.
- Place the device on a stable base only. Use a suitable platform.
- Make sure no foreign objects find their way into the chassis. If for some reason this occurs, switch the power off, unplug the device, and consult a qualified repair center.
- This device can generate volume levels that may do irreparable damage to your hearing when used on its own or with amplifiers, speakers, or headphones. For this reason you should keep the volume at tolerable levels.

## Maintenance

- Do not open the device or remove the cover. Refer all service and repair tasks to qualified personnel. The interior of the chassis contains no components that require user maintenance.
- Use only a dry, soft cloth or brush to clean the device. Never use alcohol, cleaning solutions or similar chemicals. They will damage the surface of the chassis.

## Proper Use

This device is designed exclusively to produce low-frequency audio signals for the purpose of generating sound. Any other use is prohibited and voids the warranty extended by Waldorf Music. Waldorf Music is not liable for damages due to incorrect use.



Do not place your Quantum anywhere near children, mothers-in-law or pets. This could lead to critical interactions.



## Setup and Connections

The Waldorf Quantum comes complete with:

- The Waldorf Quantum Synthesizer itself
- A power cable
- This printed Quick Start manual

Please ensure all the above items were included. If something is missing, contact your local dealer.

We recommend that you save the original packing material for future transport.

### Setup

Place the Quantum on a clean, even surface.

### Connections

In order to get started with your Quantum you will need an AC power outlet, a mixing console, an amp, and/or an audio monitor such as a speaker cabinet or a headphone.

You can also use a computer or sequencer to make use of Quantum's MIDI features.

⊗ To connect the devices:

1. Turn all units off.
2. Connect the Quantum's **Main Out** audio outputs to your mixing console or your computer audio interface. Optionally connect the stereo **Headphones** outputs to a headphone.
3. If you want to use a computer, connect the Quantum's **Computer USB** port with a USB cable to your computer (Windows or macOS). Thereafter, the Quantum becomes automatically available as a MIDI device.
4. Optionally you can connect the Quantum's MIDI ports to a computer MIDI interface or other MIDI devices.
5. If desired, connect the **Controller USB** input to any suitable class-compliant USB hardware controller to send MIDI data to control functions of the Quantum.
6. Connect the power cable that came with the Quantum to a suitable AC power outlet.
7. Press the power switch on the rear panel of your Quantum.

8. Then switch on your computer (if connected), the mixing console and finally the amplifier or active monitor speakers.

- ⚠ The startup procedure is about 10-15 seconds. After this, the Quantum is ready to play.
- ⚠ The overall volume of the Quantum can be controlled with the **Master Volume** dial. This also affects the **Headphones** output but not the **AUX** output.
- ⚠ If you do not choose to connect a mixing console, you can patch the Quantum's output signals directly to an amplifier or an audio interface. Use an input usually called Line, Aux or Tape input.
- ⚠ The Quantum's audio outputs deliver unbalanced line levels. When connecting to an amplifier, a mixing console or an audio interface with automatic balanced/unbalanced sensing inputs, please make sure to use TS mono jack cables and not TRS stereo jack cables.

⚠ Before connecting and disconnecting the Quantum to a power supply source, turn your amp's volume con-

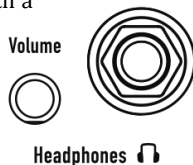
trol all the way down to avoid damage due to on/off switching noise. The Quantum produces a high level output signal. Please take care that the connected playback device is suitable for the high level of an electronic instrument. Never use the microphone or phono input of the connected amp!

## The Rear Panel Connections

The Quantum provides two analog stereo audio outputs and a headphones output. The Main and Headphone outputs are affected by the setting of the Master Volume control and the Comp(ressor) dial. Use 2 TS mono jack cables to connect the Main output to a mixer. The Quantum is a stereo instrument. There is no inherent mono output. Use your mixing console to appropriately distribute the stereo channels in case.

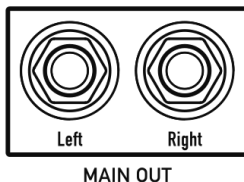
### Headphones Output and Headphone Volume

Here you can connect any headphone with a 1/4-inch stereo plug. The headphone output uses the same signal as the main output. The **Headphones Volume** controls the Quantum's headphone volume in addition to the Main Volume knob. Use this knob to amplify or attenuate headphones level to adjust for individual headphone loudness and impedance.



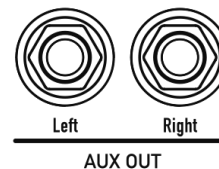
### Main Output

Connect the left and right jack with 1/4-inch mono plugs.



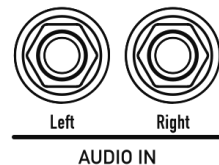
### Aux Output

Connect the left and right jack with 1/4-inch mono plugs. The Aux Output contains no signal unless specified in the **Layer** page for example when using split or layered sounds. The Aux Outputs are neither affected by the **Master Volume** nor are using the master compressor.



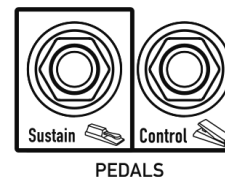
### Audio Input

The Quantum offers a stereo audio input (2x mono jacks) that can be used to feed an external audio signal into the Quantum. Therefore, the signal can either be routed through the Quantum's signal path for realtime live processing or directly recorded by using the Audio Recorder on the Global page.



### Pedal Inputs

A sustain pedal switch connected to the **Sustain** input enables you to hold played notes as long as you press the pedal. As some

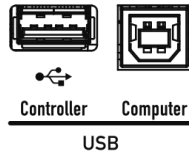


pedals open contacts when pressed and others close, it is necessary that the connected pedal is not pressed when switching on the Quantum. This enables the Quantum to match the pedal.

The **Control** Pedal input allows you to connect any suitable pedal. In the simplest case, you can plug in an expression pedal.

### The USB Connections

Quantum offers two USB ports. The **Controller USB** input lets you connect any suitable class-compliant USB hardware controller to send MIDI data to control functions of the Quantum. You can also use the MIDI Learn function for most of the Quantum's parameters that can be controlled by an external MIDI hardware controller. Further any sound module with an appropriate USB input could be connected and played from the Quantum keyboard.



! Make sure that you use a USB 2 port on your computer and a USB 2 compatible cable to avoid problems with data transmission.

The **Computer USB** port connects the Quantum to your computer or iOS device with the following system requirements:

- Windows PC: Windows 7 or newer, a USB 2 port
- Apple: Intel Mac with macOS 10.9 or newer, a USB 2 port
- Apple iPad with iOS 9 or newer by using an optional Apple "Lightning to USB Camera Adapter" cable

The Computer USB connection of the Quantum allows transmitting and receiving of MIDI data

### SD Card Slot

- ! It is important to use a FAT or FAT32 file system formatted SD card. Other file formats won't work.
- ! Please insert the SD Card **upside down**, i.e. with the contacts showing to the upper side. This is due to the mechanical construction of the Quantum. Please insert the card with normal force to avoid any damage.

A connected SD card allows:

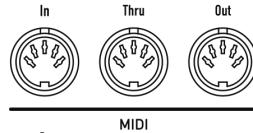
- Updating the Quantum's operating system. Read more in 'The Global Page' chapter.
- Importing and saving audio files.
- Importing and saving Quantum-specific data – e.g. sound patches, oscillator presets, wavetables, MIDI Maps, etc.



SD Card

### MIDI In/Thru/Out Jacks

Although we can hardly believe it, the Quantum might not be enough for some people, so we added an elegant way to control external sound modules with



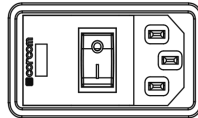
the Quantum keyboard: just connect the **DIN** MIDI out (or USB Controller port) to your external gear and play. For use with a computer we recommend the **Computer USB** port.

# First Start

## Switching On / Off

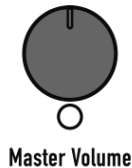
➤ Switch the Quantum on:

- Press the Power switch to switch on the Quantum. The boot procedure may take a few seconds. After this, the display is lit and the Quantum is ready to play.



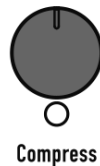
## Master Volume

Use the **Master Volume** to control the Quantum's overall volume. The volume setting is global and affects the level of the Main audio outputs including the Headphones output. The level of the Aux audio output is not affected.



## Compress

A 'one knob - one function' tool. Reduces the dynamic range of the audio signal. The signal seems to be louder and more assertive. The

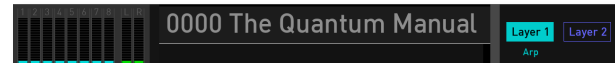


compressor effect is positioned after the effect units and before the **Master Volume**.

⚠ Keep in mind that the setting of the Compress knob is not saved within a sound preset.

## About the Touchscreen Display

The Touchscreen display gives you an overview of the actual Mode page, parameter changes, and delivers additional information. To select a desired function, open a pop-up menu, or to edit a graphic (e.g. envelopes) just tap on it and move your finger up and down or from left to right (and vice versa). The six silver endless dials on the left and the right side of the display control the corresponding parameter that is shown in the display next to the dials. The display presentation depends on the selected mode, but the lower part always shows the same overview:



The **Sound Name** section shows the current loaded sound program. Left to the sound name the program number is shown. Tap on the program number to select a program by entering its number.

The **Layer** buttons show which Layer is active. Tap on the corresponding button **Layer 1** or **Layer 2** to switch between the layers. Under each layer button it is noted, if its program uses specific modes like Arp, Sequencer, Unisono, Mono and such. In case of an active split-mode, an appropriate icon of the split is displayed above the layer buttons. For a layered sound played by both layers simultaneously, an icon is displayed above the layer buttons.

## Loading Programs

The Quantum offers different ways of loading sound programs:

- When in Load mode (**Load** button lights), use the **Selection** dial to select the desired sound program in the sound list. Turning the dial clockwise increases the Program number, turning the dial counterclockwise decreases it. To load the desired sound program, press the **Selection** dial once. You can also tap on the **1234** button to enter a desired sound number. After that, tap on **Return** to load this sound program. Tapping a sound in the list will select the sound and the details section on the right is shown more information about the sound. Selection is depicted by showing a turquoise frame. Tapping the sound a second time, i.e. tapping an already selected sound will load it. The



loaded sound in the list is depicted by a white background.

- ! You can also enter the **Load** mode page by tapping on the sound program name.
- ! You can also enter the sound number by tapping on the sound program number.
- ! You can filter sounds by attributes, banks, and authors. Use the three silver endless knobs to the left of the display. When set to *All* you have access to all existing sounds.

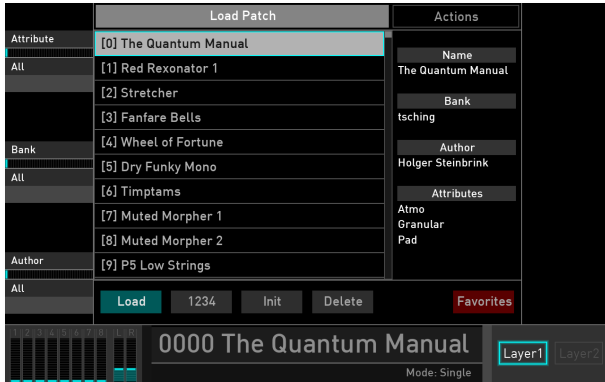
- Press the **Next** or **Prev** buttons to load the next or previous sound program immediately. This function is available in nearly every mode and on every display page.



The right section of the Load Patch page gives you more information about the selected sound. Beside the sound name, here you find the **Bank**, the **Author** and also the **Attributes**. These settings can be made while saving a sound program (see chapter 'Saving Sounds').

Tap on the **Favorites** button to open a new page for managing your favorite sounds. You can select any sound

from the left list and add it to the Favorites list on the right side. You can add sounds to empty slots, replace or remove sound programs or change their positions (Up & Down). Tap on **Back** to leave the Favorites page.



*The Load mode display page*

## Editing Program Parameters

In order to change or edit a sound program, you must access the appropriate parameters. Depending on the type of parameters, there are different ways to achieve this:

- The controls on the Quantum's front panel offer direct access to the most important sound parameters. The panel is divided into several sections, each containing knobs and dials associated with that section. By adjusting the controls on the panel you have instant access to the sound. These parameters are called **Panel Parameters**. When editing a Panel parameter, this is displayed in the lower part of the touchscreen display (parameter name and corresponding value).
- Most sections offer additional sound parameters that are available through the touchscreen display. To edit an additional parameter, press the corresponding mode button above or below the touchscreen (e.g. **LFOs**) and use the six display knobs to the left and the right of the touchscreen display. The touchscreen display page includes additional parameters that are not accessible directly via the control elements on the panel. These parameters are called **Display Menu Parameters**. For each parameter the original value from a loaded patch is indicated by a vertical bar in the main bottom area and in the encoder displays.



- Some functions can be edited via the touchscreen display directly. Use your finger to tap on the corresponding parameter/option/button on the touchscreen to open pop-up menus or sliders which can be moved to change values or to edit graphics (e.g. envelopes).
- On most display pages the **Selection** dial can be used to control the most important parameter – for example **Cutoff 1** on the Dual Analog Filter page.

ⓘ Some parameters can be found on the panel and also as touchscreen display parameters – for example the Envelope phases.

All rotary controls consist of endless dials or potentiometers. Turning a dial clockwise increases the corresponding value; turning it counterclockwise decreases it. Bipolar parameters (parameters with positive and negative values) use special gradation when changing their values. As soon as the value 0 is reached, the sweep is stopped for a short period to make it easier to edit the Quantum.

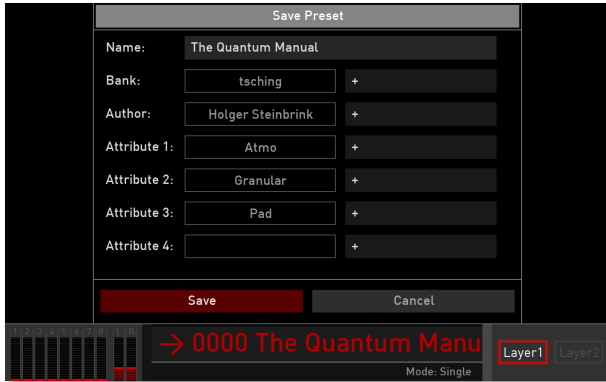
ⓘ Some useful hint: Press a button above the display several times to switch through the corresponding function tabs.

ⓘ The **Monitor** section in the lower left corner displays a VU meter unit to show the sound level of the left/right channels of the main output signal and the eight played voices. Here you can also see the polyphonic workload as well as the used voices for each Layer with its own color code. Tap on the monitor section to open a pop-up menu. Here you can choose other representations of this section. Finally, a *MIDI Monitor* displays all MIDI messages that Quantum creates (Internal) as well as incoming MIDI messages (from MIDI In and the USB ports).

ⓘ Want to start with a clean initialized sound? By tapping on the **Init** button, you can initialize the current loaded sound. No sound program is overwritten during this action. If in Layered mode, a pop-up window will open where you can choose, if the current selected layer (**Current**) or the complete sound program (**Reset**) will be initialized. If **Reset** is chosen, the initialized sound programm will be a single layer program.

## Saving Programs

After you have finished editing a sound program you must save it if you intend to use it again. All of the Quantum's memory locations are available for this purpose.




🕒 To save a sound program:


1. Press the **Save** button to activate the Save Preset page. The **Save** button is red lit.
2. Edit the **Name** (if desired). Tap on the sound name on the touchscreen to open a virtual key-

board. The program name can use up to 40 characters. Tap on **Return** to confirm. Tap on **Cancel** to cancel the naming procedure.

3. Tap on the **Bank** name to open a pop-up menu for selecting a desired sound bank. You can also add a new bank by tapping on + next to the bank name.
4. Tap on the **Author** name to select a desired author in the pop-up menu. You can also add a new author name by tapping on + next to the author name.
5. You can also choose up to four attributes for your sound. Tap on the corresponding **Attribute 1 to 4** on the touchscreen to open a pop-up menu selection list. Select the desired attribute. You can also add a new attribute by tapping on + next to the corresponding attribute name. It is strongly recommended to select an appropriate attribute for your sound. This helps you to locate your sound later.
6. Use the **Prev/Next** button or the **Selection** dial to select the desired sound program number, where the sound is saved to. Alternatively, tap on the number field at the bottom of the screen to enter the sound program number manually.

7. Finally, tap on **Save** on the touchscreen to store the sound program at the selected location.
8. By tapping on **Cancel** in the touchscreen or pressing any button on the front panel, you can discard the storing process at any time.

 Whenever you save a program, the selected memory location is overwritten. Therefore, any previously stored program at this location will be erased and there is no way to get it back. So, you should do backups of your sounds regularly by using **Export** in the Load screen's **Action** pop-up menu.

 Use the **Save** function for copying sound programs. There is no need to edit a program before storing it.

## What about MIDI and System settings?

Press the **Global** button below the touchscreen display to enter the Global mode.



Here you can make all settings regarding the overall tuning (**Pitch** tab).

You will find an easy-to-use Audio Recorder (**Audio** tab).

You can make further settings relating to the MIDI inputs and outputs as well as for the synchronisation (**MIDI** tab).

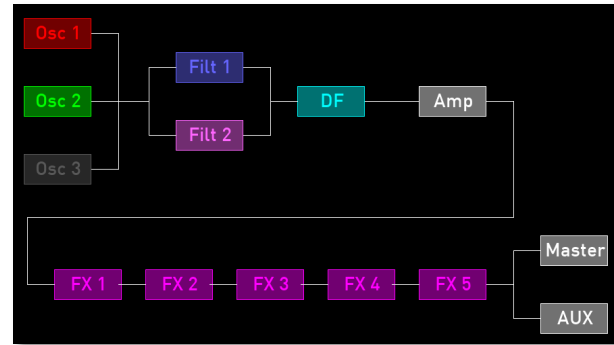
And finally, you can make general settings relating to the dials, the display, and further options (**Setting** tab).

## A Short Overview

The Waldorf Quantum consists of numerous sound-shaping components.

Note that the Quantum consists of two different types of components for sound generation and sound shaping:

- Sound synthesis: Oscillator models, Filters, Digital Former, Amplifier, Effects. These modules represent the audio signal flow. Sound generation actually occurs within the oscillators. They can produce different shapes based on the selected model – e.g. classic waveforms such as square, sawtooth, triangle, and sine, or wavetables and samples. The analog filter shapes the sound by amplifying (boosting) or attenuating (dampening) certain frequencies. Digital Former delivers digital filters and effects for sound processing. The Amplifier and the Effects are located at the end of the signal chain. They determine the overall volume of the signal and add up to five effects like chorus, flanger, delay, and reverb, etc.



*Potential signal routing for an audio signal*

- Modulators: LFOs, Envelopes, Komplex Modulator, Modulation Matrix. These modules are called Modulators. The Modulators are designed to manipulate or modulate the sound generating components to add dynamics to sounds. The Low-frequency Oscillators (LFOs) are designed for periodic or recurring modulations while Envelopes are normally used for modulations that only occur once on each note. These generators are assigned to parameters through the Modulation Matrix and influence these parameters to alter a sound.

## Oscillator Section

The Quantum offers three oscillators with different capacities: **Wavetable Oscillator**, **Waveform Oscillator**, **Particle Generator**, and **Resonator**.

! If you press an active oscillator model button, the current oscillator is switched off completely. This gives you a better overview when editing sounds because you can use it as a mute function.

### The Wavetable Oscillator

Quantum offers wavetable oscillator.

⤵ Press the **Wavetable** button to activate the Wavetable oscillator for the corresponding oscillator 1, 2, or 3. The whole oscillator section lights up in turquoise.



A wavetable is a table consisting of single waveforms. Each waveform is classified by its own special sound character. The main difference of wavetable synthesis in comparison with other sound-generation principles is the ability to not only to play one waveform per oscillator but also to step through the wavetable via different modulations, thereby creating wavetable sweeps. The results can be dramatic –

much more so than anything any sample playback-based system could ever produce.

This principle offers powerful capabilities. To give some examples:

- Each note on a keyboard can access a different wave of a wavetable.
- The Travel parameter allows a cyclic run through all waves of a wavetable.
- An LFO can modulate the position within the wavetable. You can create subtle to drastic sound changes.
- User-selected controllers, such as the mod wheel, can change the position within the wavetable. When you turn the wheel while playing a chord, each note's wave will be modified instantly.

## The Waveform Oscillator

Quantum offers a standard oscillator model to create typical analog waveforms.

- Press the **Waveform** button to activate the Waveform oscillator for the corresponding oscillator 1, 2, or 3. The whole oscillator section lights up in green.



The Waldorf Quantum provides typical analog synthesizer waveforms (sawtooth, triangle etc.) plus other classic waveforms like square (which is the father of the pulse waveform) and the sine wave (also part of every other waveform). Also, different noise signals can be chosen.

The waveform oscillator can generate up to eight oscillator signals (called Kernel) simultaneously. Here, you can produce super-saw like waves, for example.

The **Warp** parameter blends a waveform into another waveform, depending on the selected one. For example, a double saw wave can be blended into a regular saw wave to a square wave.

## The Particle Generator

This generator creates its sound by playing back audio samples.

- Press the **Particle** button to activate the Particle Generator for the corresponding oscillator 1, 2, or 3. The whole oscillator section lights up in blue.



There are two different ways of sample playback: normal playback and granular playback.

The Particle Generator needs to be fed with one or more samples. The Particle Generator can use one single sample as well as multi samples that are mapped over the keyboard.

- ⚠ Want to know how samples are imported? Take a look at the page after next!

Granular synthesis is based on a simple idea: instead of playing back an entire sample, only short portions of the sample – the so-called grains – are played. These grains can be played back in any order. Each time a grain ends, a new one starts. To avoid discontinuities in the playback, and to minimize artefacts, envelopes are applied to the grains. Granular synthesis can be used to extract inte-

resting spectra from all kinds of samples creating sound effects by completely scrambling a sample, or for low-fidelity time stretching, for example.

Very short grains produce sounds with an individual pitch. For that reason you can also use samples without a distinct pitch – such as drum loops and sound effects – to extract pitched spectra from them. Sounds with longer grains usually play back with the pitch of the original sample.

If you play back the same portion of a sample over and over again, the sound may become too static. You can use the Particle Generator parameters to compensate for this and bring more liveliness into the sound. By adding more grain streams (kernels) the grain and sound density can be increased to produce a richer sound.

## The Resonator

The basic concept of the Resonator is sound creation by using an initial exciter signal (mostly a short noise impulse) which goes through a bandpass filter bank, where its resonating filters finally produce a ringing sine-like sound.

- Press the Resonator button to activate the Resonator for the corresponding oscillator 1, 2 or 3. The whole oscillator section lights up in red.



Based on different Timbre modes, the partials of this signal can be adjusted in many ways.

The Resonator can also feed with one or more samples (instead of using a noise impulse). You can load one single sample as well as multi samples that were mapped over the keyboard range.



For a better understanding on how the Resonator works, we recommend initializing a sound program and starting with a default Resonator. Try out all parameters to become familiar with the functionality of this powerful sound creation tool.

## Loading & Editing Samples

As you may know, the Quantum can play back samples via the Particle generator or as an exciter for the Resonator.

Out of the box the Quantum is delivered with a bunch of audio samples, but you can also use your own samples to create interesting sounds.

❗ Quantum is capable of loading WAV and AIFF/AIFC samples with bit rates from 8 to 32 (including floating point format) and all sample rates. We recommend using 44.1 kHz as the sample rate, otherwise you have to use the Pitch parameter to set the sample pitch accordingly. Sample loops are also recognized by Quantum.

❗ Stereo samples are supported, but you can also use mono samples and multichannel files. In the latter case, only channels 1 and 2 are used.

There are three ways to load/import samples for further usage:

- **Factory samples:** you can load and edit all of the factory samples. This is the easiest way to start exploring the sample capabilities of your Quantum.

- **Import own audio samples:** you can import your own samples from a connected SD card and load them in the Quantum's Flash memory. Here the samples are stored permanently and can be used for loading and further editing.
- **Record own audio samples:** you can use the Audio Recorder on the Global page to record samples via the external audio input or they can be resampled via the Main/Aux outputs. Recordings are stored in the Quantum's Flash memory. Here they can be used for loading and further editing.



Here is how to import samples from a SD card: Navigate to the corresponding **Timbre** tab of the Resonator or Particale generator. Tab on the **Actions** pop-up menu and select **Import**. This lets you import samples from a connected SD card.



## Oscillator Mixer (OSC MIX) Section

In the Oscillator Mixer section you control the volumes of the three oscillators. If an oscillator volume dial is turned fully counterclockwise, no signal is passed. The LED below the dial doesn't light up.

## Glide Section

'Glide' or 'Portamento' describes the continuous gliding from one note to another. This effect can be created on fretless stringed instruments or some brass instruments (e.g. trombone). Please note that Glide affects the pitch of all oscillators.

## Dual Analog Filter Section

Quantum offers two analog lowpass filters with additional settings (12 dB/24 dB Lopass with resonance - clean, saturated or dirty). With the **Mode** parameter different filter routings can be realized (e.g. Boost, Twin Peaks, Escaping, Opposition and many more).

In the **Routing** tab the signal routing of the audio signal that comes from the oscillators can be altered in many ways.

- ❗ Due to the fact that the Quantum offers eight analog filter voices the maximum polyphony is about eight voices.
- ❗ The Dual Analog Filter section can be bypassed by setting all **Osc Dest** parameter on the corresponding Oscillator display pages to *DF100*. This allows you to get the full signal path in real stereo.

## Digital Former Section

This section offers additional digital filters and signal enhancer effects, such as Drive and Bit Crusher.

## Envelopes Section

The Quantum's envelopes allow you to manipulate sound parameters via rate or timed modulations. The Quantum offers six independent programmable envelopes for every sound program:

- Two Filter Envelopes. These envelopes are designed to control the Dual Analog Filter 1 and 2 but can also be used for other modulations.
- An Amplifier Envelope. This envelope is designed to control the sound volume, but can also be used for other modulations.

- Three additional Free Envelopes. These envelopes can be used freely to perform additional modulations on any module.

⚠ Only the Filter 1 + 2 and Amplifier envelopes can be edited via the front panel parameter controls. All envelopes are completely accessible via the Envelopes display page.

Most traditional synthesizers feature ADSR envelopes. These envelopes are made up of four parameters that determine their response: Attack, Decay, Sustain, and Release.

The envelope is started by pressing a key. It ascends to its maximum value at the rate determined by the Attack parameter. It then descends at the rate determined by the Decay value until it reaches the predetermined Sustain value. It remains at this value until the key is released. The envelope then descends to zero at the rate determined by the Release parameter.

## LFO Section

In addition to the main oscillators, the Quantum is equipped with six low frequency oscillators (LFOs) that can be used for modulation purposes. Each LFO generates a periodic waveform with adjustable frequency and shape.

⚠ The basic parameters of LFO1, LFO2, and LFO3 can be edited via the Panel parameter controls. LFO 4 through to 6 are completely accessible via the LFO display page.

⚠ Tap on the corresponding LFO waveform on the touchscreen display to modify the **Speed** and **Warp** parameters.

## Komplex Modulator Section

The Komplex Modulator could be described as a complex LFO with two different curves that can be mixed together, if desired. The output signal of this section can be used as modulation source to create morphing atmospheres, drones, and blurring sounds.

⚠ To hear result of the Komplex Modulator you should define it as a modulation source for a desired parameter like pitch, filter cutoff frequency, or any other parameter you like.

## The Effects Section

Quantum offers five effect units with a bunch of different effect types. Two basic parameters of the first three effect units can be controlled via panel parameters while deeper editing is done on the Effect display page.

⚠ Keep in mind that the five effect units provide insert effects with a serial routing. That means that the signal will first go through Effect 1, then through Effect 2 after that, and so on.

## How to select an effect?

- 1) Tap on the desired Effect tab (Effect 1 to 5) you wish to use.
- 2) Tap on the Effect pop-up menu below the Effect tab button. Hint: you can skip step 1, because opening an Effect pop-up menu jumps automatically to the corresponding Effect unit.
- 3) Select the desired effect from the effect list.
- 4) All effect types can only be used once. This means, for example, that if you have set up a Delay for Effect 2 and you also select a Delay for Effect 4, Effect 2 is set to Off. All parameter edits made will be adopted. This enables you to perform an insert swapping of effects.
- 5) After an effect is loaded it can be edited by using the display page parameters.

## The Modulations of Quantum

Modulation can be described as a signal-generating unit's influence upon a sound parameter. The terms used in this context are 'Source' and 'Destination'. The Quantum offers 40 independent modulation assignments (slots) each with individual settings of source, destination, and amount. The Modulation Matrix (Mod Matrix) is key to the power of every Waldorf synthesizer, so start experimenting with it *right now*.

### Direct Panel Modulations

Quantum offers an easy way to determine modulation by using the dials on the panel. This modulation assignment can be called up in different ways:

- Press the **Mod** button  
or
- Tap on one of the display parameter names (the three parameters on the left and right side) to open a pop-up menu. Select the **Modulation** option. Keep in mind that not all parameters include this option.

The display shows the **Modulation Assignment** window. The basic concept is to select a modulation destination first (a parameter or function to be modulated), then select

a modulation source (a function, such as an LFO or a wheel, that will modulate the destination) and finally determine the amount of modulation. This is also called modulation depth or intensity.

❗ If you have opened the Modulation Assignment window by clicking on a display parameter, the modulation destination is already defined by this parameter.

### Additional Modes

#### Perform Mode Page

To access the Perform display page press the **Perform** button below the touch-screen display. To select the desired option tap on the corresponding tab in the upper display area.



#### Favorites Tab

This is a special perform mode for live musicians. Here you can set up 20 sound programs per **Set** for faster selection. You can define up to six Sets, which means that you have fast access to 120 sound programs with just two taps.

! You can also access the Favorites tab by pressing the selection dial. This is valid from every location except when the Load, Save, or Favorites display page is open.



### Arpeggiator (Arp) Tab

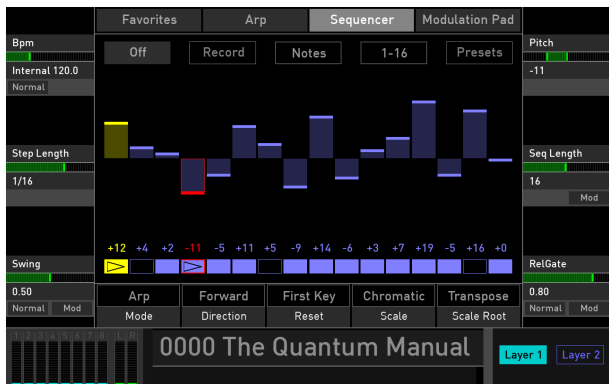
An Arpeggiator is a device that splits an incoming chord into its individual notes and repeats them rhythmically. Different sequence modes can be defined for the Arpeggiator to cover a wide range of applications. In addition to the synthesis features Quantum offers a programmable arpeg-

giator. It can play a wide range of different rhythm patterns.

! Push the **Arp** button in the Wheel section to activate or deactivate the arpeggiator. We recommend to press the **Chord** button instead of Latch. In **Latch** mode, all played notes are held until their key is pushed again.

### Sequencer Tab

This display page contains a programmable step sequencer, where you can use up to 32 steps per measure. For each step the note length, velocity, and pitch can be defined. You can also create four additional controller sequences that can be used as modulation sources.



- To start the sequencer playback, tap on the **Off** button (it switches to **Running**) and play one or more notes on the keyboard. You can also press the **Arp** button in the Wheel section to start the sequencer.

### Layer Mode Page

Here you can make settings regarding the two sound layers as well as the audio output routing. You will also find the display controls for the Unisono voices mode.

To select the desired mode tap on the corresponding tab (**Levels & Routing** or **Voices**).

## Updating the System Software

The Quantum has a service-friendly feature that makes it possible to update the system software without changing any parts.

All software updates come in the form of a .bin file that can be copied on every FAT file formatted SD card. The fastest way to get this file is by downloading it from our web site at:

<http://www.waldorfmusic.com/quantum>

Please make sure to download the following files:

- quantum.update.bin
- To update the Quantum's system software:
- Copy the .bin file onto the top-level of a suitable SD card.
  - Insert the SD card into the Quantum's SD card slot.
  - Press the **Global** button to enter the Global page.
  - Tap on the **System** tab to open the System sub page. Tab on the Info tab.
  - Tap on the Update button and follow the onscreen instructions.

- After the file is installed correctly, the Quantum burns the update into its FLASH memory.
- Wait until the operation is completed. If updating was successful, the Quantum will perform a system reset and start up.



Do not under any circumstances turn off the Quantum while the update step is in progress. A complete loss of data may occur and it will be impossible for you to make your machine work again!

## Technical Data

### Power Supply

Supply Voltage	100 – 240 V AC / 47-63 Hz
Maximum current consumption:	1.3 A
Maximum power consumption:	50 W

### Dimensions and Weight

Width:	1006 mm
Depth:	401 mm
Height (including knobs):	131 mm
Total weight:	17,8 kg

## Product Support

If you have any questions about your Waldorf product, feel free to contact us via one of the three options listed below:

① Send us an email message. This is the most efficient and fastest way to contact us. Your questions will be forwarded immediately to the resident expert and you will quickly receive an answer.

**support@waldorfmusic.de**

② Send us a letter. It will take a bit longer, but it is just as dependable as an email.

Waldorf Music GmbH  
Lilienthalstr. 7  
53424 Remagen, Germany

③ Visit our support forum at [www.waldorfmusic.com](http://www.waldorfmusic.com)