

# iSyn Poly



Electronic Music Studio  
for iPad

Operation manual

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# 1 Introduction

## 1.1 Welcome to iSyn Poly

iSyn Poly is an electronic music studio for use with Apple iPad. iSyn Poly places an unbelievable number of features including three studio-quality, fully programmable virtual analog synthesizers and a drum machine packed in just three different screens on your iPad !

Each synthesizer is a full-featured analog modeling synth with three oscillators, a classic 24 db/oct ladder-style lowpass filter, independent filter and amp envelope generators, and full modulation routings. With our 10+ years of experience with analog simulations you can expect some serious sound easily covering all those fat frequencies so prevalent in modern production.

iSyn Poly also includes a sample playback-based drum machine with seventeen kits, each containing eight samples. Drum samples include 808, 909, modular synth drums and numerous 80's drum machines. Volume, pan and decay time are individually adjustable and pitches are tunable over a wide range for crazy effects.

The full fledged sequencer let you arrange complete songs and can record the notes and controller movements of your performance. The unique gesture oriented user interface makes it ideal for live editing of notes and automations.

Play the three synths or drum machine with the onscreen keyboard/drum pads for fun live jam sessions, or let iSyn Poly do the playing for you with its full featured piano roll sequencer editable while playing. Play the keyboard by touching notes, or sliding up and down for amazingly expressive pitch glides and vibrato. iSyn Poly can even play a beat and synth track while you jam over sequenced tracks for a one-man iPad band!

With the Apple iPad Camera Connection Kit you can use a CoreMIDI compatible MIDI Keyboard to control iSyn Poly.

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## 1.2 Features

### Three Independent Synthesizers

One polyphonic synth with eight voices and two monophonic synths with:

- Three oscillators with sawtooth, pulse, triangle and sine waves.  
Modulations routings: LFO->pitch, filter ADSR->cutoff, LFO ->pulse width.
- White/Pink noise generator.
- Classic 24 dB/oct ladder-style lowpass filter with drive parameter.  
Modulations routings: LFO->Cutoff, Filter ADSR->Cutoff, Velocity sensitivity with external keyboard.
- Amp section includes distortion with drive, asymmetry and crusher (bit reducer) parameters.
- Control matrix allows real time control of five parameters using the X/Y touch pad, the modulation wheel of an external keyboard and the tilt sensors of the iPad.
- Arpeggiator for automated sequences.
- 64 factory presets, unlimited user presets can be shared.

### Drum Machine

- Eight simultaneous instruments arranged into eight user-selectable drum kits.
- Editor page allows tuning, panning, level and decay time for individual instruments.

### Effects Section

- iSyn Poly features one global effects unit with phaser, flanger, chorus and stereo/cross delay.
- Effects amount is individually settable for each of the synths and drum machine.

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## **Live**

- Play melodies live with onscreen keyboard/drum pads. Drag fingers for slides and vibrato.
- Optionally use CoreMIDI compatible hardware keyboard.

## **Full featured Sequencer**

- Four track sequencer with piano roll and automation editor.
- Record what you play live with the onscreen keyboard/drum pads or using an external CoreMIDI compatible keyboard.
- Real time quantize function and metronome for recording.
- Arrange your songs with variable length patterns ( 1 - 99 bars ). Move and copy/paste patterns.
- Recording and playback of X/Y Pad movements, modulation wheel, pitch bend and key velocity.
- Full set of editing functions with unlimited undo.
- Modeless gesture optimized editing.

## **Global**

- Manage unlimited number of songs.
- Render song or patterns to audio and midi files.
- Audio pasteboard.
- Exchange songs and user presets with File Sharing in iTunes.

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# 2 Basics

## 2.1 User Interface

The user interface of iSyn Poly is quite simple and is divided into three different main screens:

- Synthesizer with Keyboard
- Drum machine with Keypads
- Sequencer

iSyn Poly can use up to four tracks with fixed instrument assignment simultaneously:

- MONO1 – monophonic analog synthesizer
- MONO2 – monophonic analog synthesizer
- POLY – polyphonic analog synthesizer with 8 voices
- DRUMS – drum machine with sample based drum kits

Select the part you want to play with or edit here:



Each part has its own sequencer, the buttons “LIVE” and “SEQU” switch between the Synthesizer/Drums page and the sequencer page of the currently selected part.

The VirSyn icon in the middle of the bar let you open the About page with information about the companies and version information.

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The right side of the top bar contains the transport functions for the sequencer, the current song position and tempo:



From left to right:

- **Rewind**: song pointer goes back to beginning of the song (i.e. 001:01:01)
- **Loop**: if on playback loops between loop markers.
- **Play**: starts and stops playback of song.
- **Record**: records note and controller events from on-screen and external keyboard.
- **Tempo**: current song tempo. Tap on this window to open metronome settings and to “Tap” the tempo you like to set.
- **?**: opens an overlay with help ballons explaining the most important ui elements.

Example for help overlay:



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## 2.2 Tempo/Metronome

The Tempo/Metronome popover let you enter the tempo and set some Metronome parameters:



- record : Metronome audible while recording
- play: Metronome audible on playback
- count in: Metronome starts 4 beats before actual recording starts.
- Level: Metronome audio level.

Note that you can enter the tempo also with the "Tempo" knob in the Arpeggiator module on the synthesizer page.

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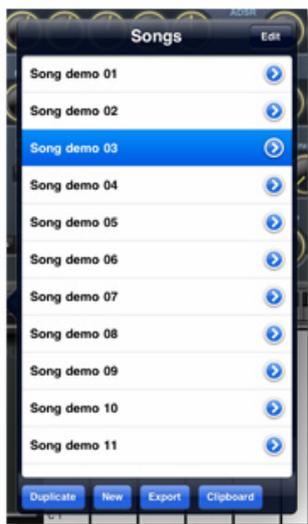
## 2.3 Song

The complete set of parameters and settings of iSyn Poly can be saved and recalled as Song. Tap the song field to open the list of currently available songs together with some management functions:



Before the song list opens you'll be asked if you want to save the current song.

Song list:



- Edit: delete songs from the list
- Right arrow: rename song
- Duplicate: makes a copy of the currently selected song
- New: creates an empty song
- Exports part of the song as defined by the loop markers in the sequencer to Audio and MIDI File.
- Export part of song as defined by the loop markers and put the audio into the Audio clipboard for usage in other Apps.

Songs are saved as files with the extension ".syn" and they can be directly accessed within the iTunes File Sharing section of the App. This is the place where you can manage to share complete songs with other users of iSyn Poly.

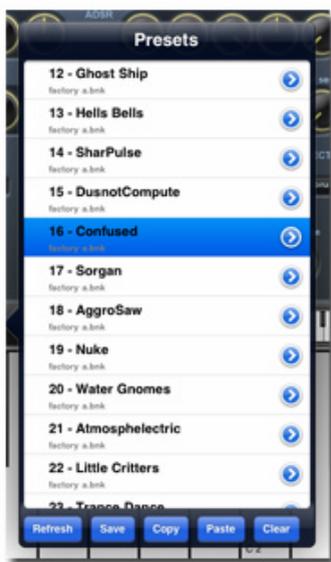
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## 2.4 Presets

The presets in iSyn Poly are organized in banks of 32 presets each. These banks are saved as files with the extension “.bnk” and they can be directly accessed within the iTunes File Sharing section of the App. This is the place where you can manage to share preset banks with other users of iSyn Poly.

Tap on the preset field to open a popup window with a list of all available presets. For quick zapping through the list of available presets use the left/right arrow buttons in the preset field.

Popup window for presets:



- right arrow: name preset
- Refresh: refresh list after you've copied a new bank to the iTunes file sharing folder.
- Save: saves the current preset.
- Copy: copies current preset to the clipboard
- Paste: paste clipboard to current preset.
- Clear: current preset will be set to initial state.

2 banks with 32 presets each are already filled with factory sounds. A third bank “User” is there for your own creations. If you need more, just make copies of “User.bnk” and put them into the iTunes file sharing folder.

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# 3 Synthesizer

## 3.1 Overview

Each of the analog modeling synthesizers feature 3 oscillators, 24 db/oct lowpass filter, envelopes, a noise generator, LFO, AMP section for overdrive and crushing, and a full arpeggiator.

Also available to shape your sound are multiple effects including a phaser, flanger, chorus, delay, stereo/cross delay. Independent volume controls are included for mixing.

All three synthesizer in iSyn Poly share the same modul architecture based on the classic architecture of the legendary MiniMoog.

Control of the iSyn Poly can be achieved with either the iPad's touchscreen or a CoreMIDI compatible keyboard using Apple's Camera Connection Kit.

The screen features a two-octave keyboard, assignably X/Y Pad, and the revolutionary Tilt Control to assign two of the synth parameters to the iPad's tilt sensors.



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## 3.2 Modules

### OSC 1-3 Oscillator



Oscillators provides you with the base material for sound synthesis. They generate periodic oscillations of different analog waveforms with controllable frequency. The oscillators in iSyn Poly use anti-aliasing algorithms to produce waveforms without digital distortion even in the highest register. Nevertheless, iSyn Poly's oscillators provide you with an outstandingly fat sound in the lower registers.

- **wave:** select one of the waveforms/noises ( sawtooth / pulse / triangle / sine )
- **level:** adjust audio level for this oscillator
- **pw:** width of pulse wave (this control is only effective if pulse wave is selected).
- **fine ,tune:** allows tuning of the oscillator +/- 2 octaves.
- **pulse:** amount of pulse width modulation, source is LFO.
- **lfo:** amount of pitch modulation, source is LFO.
- **adsr:** amount of pitch modulation, source is filter ADSR.

#### **Tip:**

*Double tap on any parameter knob to set the parameter to its default value.*

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## NOISE White/Pink noise generator



The noise generator provides you with two different types of noise. Use the noise generator to produce sounds simulating wind, ocean breakers or unpitched drums:

- **White noise:** The spectrum of white noise contains all frequencies with equal power. It sounds very bright and sharp.
- **Pink noise:** Lowpass filtered white noise. The lowpass filter has a fixed cut-off frequency of 0 Hz and a slope of 3dB/octave. Pink noise sounds darker and smoother than white noise.

## LFO Low frequency oscillator



This module provides you with a Low Frequency Oscillator useful for periodic and random sound parameter modulations. The LFO can produce five different modulation waveforms.

- **rate:** sets the speed of modulation from 0.01 Hz -100.0 Hz. Values over 20Hz are in the audible audio spectrum which can cause raunchy and cool-sounding sideband overtones when modulating pitch, cutoff or amplitude.
- **wave:** select from one of the following waveforms:
  - Sine wave
  - Ramp up
  - Ramp down
  - Square wave
  - Pulse wave
  - Random
- **polyphony:** if set, each note of a chord gets an independant lfo.

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## FILTER 24db lowpass filter



Filters are the most important sound shaping tools in analog synthesis. This one simulates the characteristics of the famous Moog ladder-style 24 dB/Octave filter. With the built-in overdrive you get a soft distortion. The filter resonance can be adjusted up to the level of self-resonance, where the filter behaves like a sine oscillator.

- **cutoff:** Adjusts the filter cutoff frequency. For a lowpass filter higher values result in brighter tones and lower values result in darker tones.
- **resonance:** Adjusts the filter resonance which emphasizes frequencies close to the cutoff frequency.
- **drive:** parameter controls internal distortion.
- **track:** set to zero for pitch independent cutoff frequency. If set to 1.00, the cutoff frequency accurately tracks the pitch of the note. When resonance is all the way up, this lets you 'play' the filter as an additional sine wave oscillator. But be careful- it can get super squelchy loud and hurt your ears!
- **lfo:** amount of cutoff frequency modulation, source is LFO.
- **adsr:** amount of cutoff frequency modulation, source is filter ADSR.

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## FILTER ADSR    Filter envelope



ADSR envelope used for filter cutoff and pitch. Sometimes extremely short attack or release settings can cause clicks, so be aware of this (this is never an issue with 'real' analog synths, because analog circuitry isn't that fast).

- **attack:** Sets the time the envelope needs to reach the maximum level. The curvature is logarithmic, that means from start the signal builds up quickly and rising slower when approaching the max level.
- **decay:** Sets the time the envelope needs to reach the sustain level after the attack phase has ended. The curvature is exponential, that means from start the signal decays quickly and falling slower when approaching the sustain level. The decay time has no effect if the sustain level is at maximum.
- **sustain:** Sets the sustain level the envelope will stay until release.
- **release:** Sets the time the envelope needs to die out after the key is released. The curvature is exponential, that means from start the signal decays quickly and falling slower when approaching zero.
- **filter sens:** velocity value from external CoreMIDI keyboard controls effect of filter envelope.

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## AMP ADSR    Amplitude envelope



ADSR envelope used for volume/level. As with the filter envelope, extremely short attack or release settings can cause clicks.

- **attack:** time to reach maximum level after note start.
- **decay:** time until level goes down to sustain.
- **sustain:** level hold during course of the note.
- **release:** time for the sound to die out after note release.
- **vol sens:** velocity value from external CoreMIDI keyboard controls overall sound volume.

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## AMP Amp simulation



Final level / pan position for synth sound.

In addition to this base functionality the following special effects are built into the amplifier module:

- **drive:** A soft tube-like distortion unit is inserted between the input of the amplifier and the level unit. For this reason the degree of distortion is independent of the level setting. The degree of distortion is also independent of the dynamic amp envelope. Every voice has its own distortion unit, so there's no inter-modulation between the notes in polyphonic play. Therefore the sound is quite different in comparison to a standard distortion effect unit.
- **asymmetry:** changes the character of the distortion, a slight value is typical for tube distortion.
- **crush:** The amplitude resolution of the amplifier output can be reduced down to 1 bit by this parameter. This adds some kind of „digital“ noise to the output comparable to the noise produced by the first generation of digital synthesizers. Good for Lo-Fi sounds !

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## MODWHEEL/PAD CONTROL/TILT CONTROL



Sets the modulation routings for the real-time parameters 'ModWheel', 'Pad X', 'Pad Y', 'Tilt X', 'Tilt Y'.

Possible modulation destinations for synth sounds:

- Pitch (all oscillators)
- Pulse width
- Filter cutoff
- Filter resonance
- Filter modulation amount
- Amplitude
- LFO rate
- LFO modulation amount
- FX Depth

Possible modulation destinations for drum sounds:

- Pitch ( all drum instruments )
- Pitch 1-4 (only instruments 1-4 affected)
- Pitch 5-8 (only instruments 5-8 affected)
- Pitch even (only instruments 2, 4, 6, 8 affected)
- Pitch odd (only instruments 1, 3, 5, 7 affected)
- FX Depth

Be sure to experiment with these - routing X/Y tilt to the drum pitch controls can result in seriously wild effects!

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## KEY Keyboard controller



If legato is on, the pitch slides from one note to the next legato played note. The slide times can be individually set for up/down glide with attack and release.

If Scale is set to another value than 'Chromatic', notes played on the live keyboard or entered in the sequencer 'snap' to notes allowed by the scale set. The following scales are available:

- Chromatic
- Diatonic major
- Diatonic minor
- Pentatonic major
- Pentatonic minor
- Arabic

The base note transposes all live played/sequenced notes if set to another value than 'C'.

The bend range sets the amount of pitch variation using the modulation wheel of an external MIDI keyboard.

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## ARPEGGIO Arpeggio controller



- trigger Off/On/Hold: switch Arpeggio on with optional hold mode.
- mode: Up/Down/Alternate/Random/Incl/Excl: note sequence order.
- range: Number of octaves used.
- clock: base note time.
- tempo: Tempo in bpm (40-300) for Sequencer and Arpeggiator. To enter a tempo value by tapping a rhythm tap on the sequence position window.
- Swing 50-75% on 16<sup>th</sup>.

## MASTER Output mixer



- mute: switch off this part
- fx level: level for effect signal.
- part level: level for current part.
- Master level: final volume

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## EFFECT Multieffect unit



The effects are global: that is, only one can be active at any time. Available are phaser, flanger, chorus and delay. Effects settings are stored individually for each saved song

### **Delay:**

The echo/delay effect provides two different types of delay effects using two delay lines. The delay times are automatically synchronized to the tempo setting and are entered as note values.

### **Stereo delay:**

Both delay lines are used independently for the left and right input.

### **Cross delay:**

The feedback loops of the two delay lines are cross coupled causing the delayed sound to bounce between the stereo channels.

### **Phaser:**

Analog-style 8-pole phaser for deep effect.

### **Chorus:**

The chorus effect changes the sound of a single instrument into that of a group of instruments playing in unison. Two modulated delay lines are used to achieve this effect. The amount of delay of each line is modulated by a separate LFO. The outputs of the two delay lines are spread throughout the stereo image.

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### 3.3 Keyboard



From right to left in the top bar of the keyboard:

- song: tap to save current song and select another one. The song list also lets you export your song as audio/MIDI file or to the audio pasteboard.
- preset: tap to select preset from list or use the arrow keys to zap through the list.
- Q: key quantize: if active swiping on the keyboard is restricted to exact note values, otherwise pitch bending is continuous. In record mode pitch bending gets recorded.
- Small keyboard: Tap to select keyboard range. Double tap to size the keyboard.

X/Y Pad: Rel time control of two synth/drum parameters assignable in the "PAD CONTROL" module.

Keyboard: swipe your finger(s) to the left or right for pitch bending. Swiping up or down simulates modulation wheel (ModWheel) movements.

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# 4 Drum machine

## 4.1 Overview

The drum machine boasts drum samples from all of the classics, including the 808, 909, modular synth drums and numerous 80's drum machines. Volume, pan and decay time are individually adjustable and pitches are tunable over a wide range for crazy effects.



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## 4.2 Drum editings

The drum mixer let you edit the the following parameters separately for each drum:

- pitch: drum pitch can be adjusted in the range of +/- 2 octaves.
- decay: drum decay time can be shortened by this parameter
- pan: panorama position in the mix
- level: individual drum level.

Use the drum pads for live play and recording.

The effects and master section is as already described in the Synthesizer chapter.

The control matrix for drums sounds have different modulation destinations:

- Pitch ( all drum instruments )
- Pitch 1-4 (only instruments 1-4 affected)
- Pitch 5-8 (only instruments 5-8 affected)
- Pitch even (only instruments 2, 4, 6, 8 affected)
- Pitch odd (only instruments 1, 3, 5, 7 affected)
- FX Depth

Be sure to experiment with these - routing X/Y tilt to the drum pitch controls can result in seriously wild effects!

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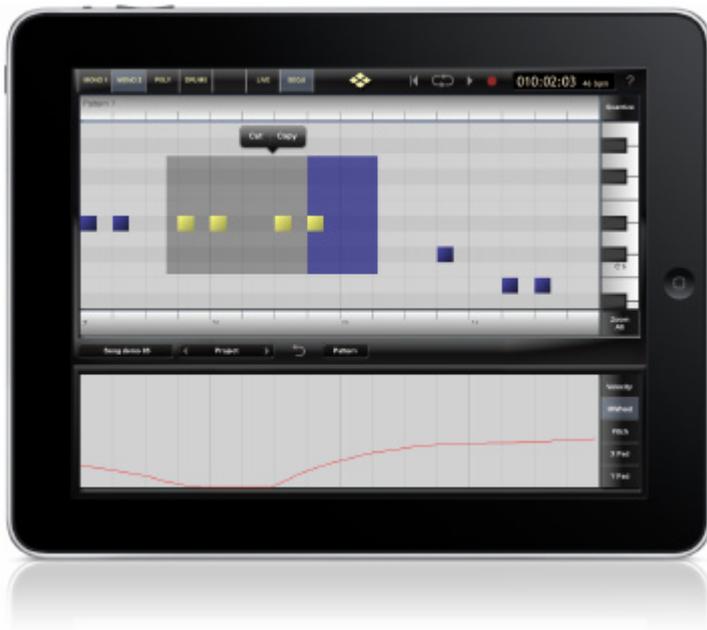
# 5 Sequencer

## 5.1 Overview

The sequencer is at the heart of the iSyn Poly.

There are four recording tracks that correspond to each instrument, and each is laid out in a familiar piano roll style. Real-time recordings can be cleaned up with quantization, and notes can be selected, edited, and copied; just like a computer sequencer.

Each track also includes five lanes of automation for controlling velocity and pitch, and any parameters assigned to the mod wheel and X/Y pad.



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## 5.2 Song/pattern structure

iSyn Poly's sequencer is pattern oriented:

- a pattern is a named sequence containing notes and controller data for all tracks. The length of a pattern can be specified by the user from 1 to 99 bars and changed anytime later. The background color in the sequencer display indicates the borders between patterns.
- A song is a sequence of patterns. The sequence order can be changed even while playing the sequencer. The same is true for deleting and copying patterns.

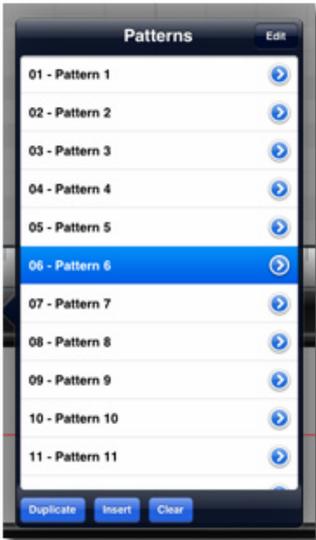
This structure makes it very easy to arrange complex songs. But if you prefer a plain sequencer model you can just use one very long pattern instead.

Please note that note editings – notably copy/paste selected notes – can only be done within one pattern. You'll get a warning message if you've selected notes from more than one pattern. What you can do of course is copying selected notes from one pattern and paste them into another one.

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## 5.3 Patterns

Touch on the "Pattern" field to open a popup window listing all patterns for the current song:



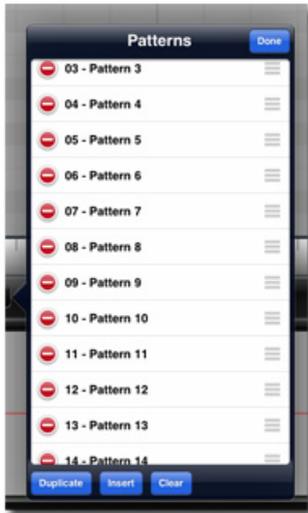
- **right arrow:** window opens where you can name the pattern and specify the number of bars used for this pattern.



- **Duplicate:** makes a copy of the currently selected pattern
- **Insert:** empty pattern is inserted before the currently selected pattern.
- **Clear:** the content (notes and automation data) of the currently selected pattern is cleared. Please note that only the content for the current part is cleared (e.g. MONO1/2, POLY or DRUMS).

---

To rearrange the sequence of patterns or to delete a pattern touch the “Edit” button:



**Rearrange sequence order:**

- Drag a pattern up or down in the list by the handle on its right edge.
- Tap “Done” when you’re finished.

**Delete pattern:**

- Tap the red circle to the left of the pattern you want to delete.
- Tap “Done” when you’re finished.

---

## 5.4 Sequencer interface

The sequencer display from top to bottom:



- **top bar:** part selection, transport buttons and position display
- **loop bar:** tap to set loop markers
- **Quantize button:** use to quantize notes to strict time values.
- **Piano roll:** pinch in or out to zoom in either direction.
- **Keyboard on the right:** drag to scroll visible note range, pinch to zoom note range.
- **Time line:** drag to scroll visible time range, pinch to zoom time range. Double tap zooms to display exactly one bar. Tap to set position mark for playback/recording or for paste position.
- **Zoom All Button:** tap to zoom out to display complete song.
- **Middle bar:** select song and preset. Undo button for undoing the last changes. Pattern list where you can manage patterns (see 5.3).
- **Automation window:** select the controller, then drag to the right to draw curves. Drag to the left to reset curves to default value.

---

## Set loop markers:

Tap on the position in the loop bar where you want to set a loop marker:



Now select the option you want to have, with "Loop pattern" and "Loop song" both loop markers are set automatically to the begin/end of the pattern or the complete song.

Please note that loop playback is only active if you tap on the loop icon to the left of the play button in the top bar.

## Quantize options:

To select one of the quantize options tap on the quantize button:



Please note that the note positions are only quantized for playback and sequencer display. You can always go back to the original state with the option "free".

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### Set sequencer position:

The sequencer position is used

- to set the current playback position
- in record mode to select the pattern you want to record
- to set the position where to copy notes in a copy/paste operation.

To set the position tap just tap on the time line bar at the appropriate position:



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## 5.5 Recording

iSyn Poly allows you to record patterns in real-time using the on-screen keyboard or an external hardware keyboard. The sequencer can record note events together with velocity and the following controllers:

- pitch bend
- modulation wheel
- X/Y Pad movements

Here are the steps to start recording:

- Set sequencer position inside the pattern you want to record.
- Select the part you want to record ( MONO1/2, POLY or DRUMS )
- Tap the record button ( red circle to the right of the play button )
- Start recording with the play button.

The current part is always looped on recording (indicated by the red loop bar) and notes are always added to those already recorded. To start fresh tap on the Pattern field and select "Clear" to erase the recording.

---

## 5.6 Note editing

The piano roll editor in iSyn Poly is explicitly designed for the touch interface. Therefore you won't find the usual mode buttons for deleting, selecting or erasing notes. This gives you a much more intuitive way of editing notes on the fly ( at least after a very short learning period ).

To draw a note either:

- tap on the position and you'll get a note with 1/16<sup>th</sup> duration.
- tap on the position and drag to the left until the desired note length is reached.

To move one note:

- tap inside the note near the note start and then move it around by dragging. Always start with dragging to the right otherwise its interpreted as a note selection gesture.

To edit the note length:

- tap inside the note near the note end and then drag to the desired note length. Always start with dragging to the right otherwise its interpreted as a note selection gesture.

Select note(s) for editing/erasing:

- tap at the upper/right or lower/right of the region you want to select.
- Drag to the left until the selection rectangle is touching all notes you want to be selected.
- Lift your finger and the selection rectangle stays together with a Cut/Copy menu drawn.



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Move selected notes:

- Select the notes as explained above.
- Tap into the gray region of the selection rectangle and move the notes to the desired position.
- Tap anywhere outside of the selection rectangle to deselect the notes.

Edit length of selected notes:

- Select the notes as explained above.
- Tap into the blue region of the selection rectangle and drag to the desired note length. With multiple notes selected the length is changed proportionally to their original length.
- Tap anywhere outside of the selection rectangle to deselect the notes.

Erase selected notes:

- Select the notes as explained above.
- Select "Cut" from the floating menu. The selected notes are erased and copied into the clipboard.

Copy selected notes:

- Select the notes as explained above.
- Select "Copy" from the floating menu. The selected notes are copied into the clipboard.

Paste notes from clipboard:

- Set the paste position by tapping on the time line bar.
- Select "Paste" from the floating menu.