

Reference Cards

KORG Kronos **Polysix**EX



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Sources:

KORG Kronos Music Workstation - Parameter Guide
KORG Polysix Programmable Polyphonic Synthesizer - Owner's Manual
KORG Polysix Programmable Polyphonic Synthesizer - Settings Charts

Level: Beginner, Intermediate

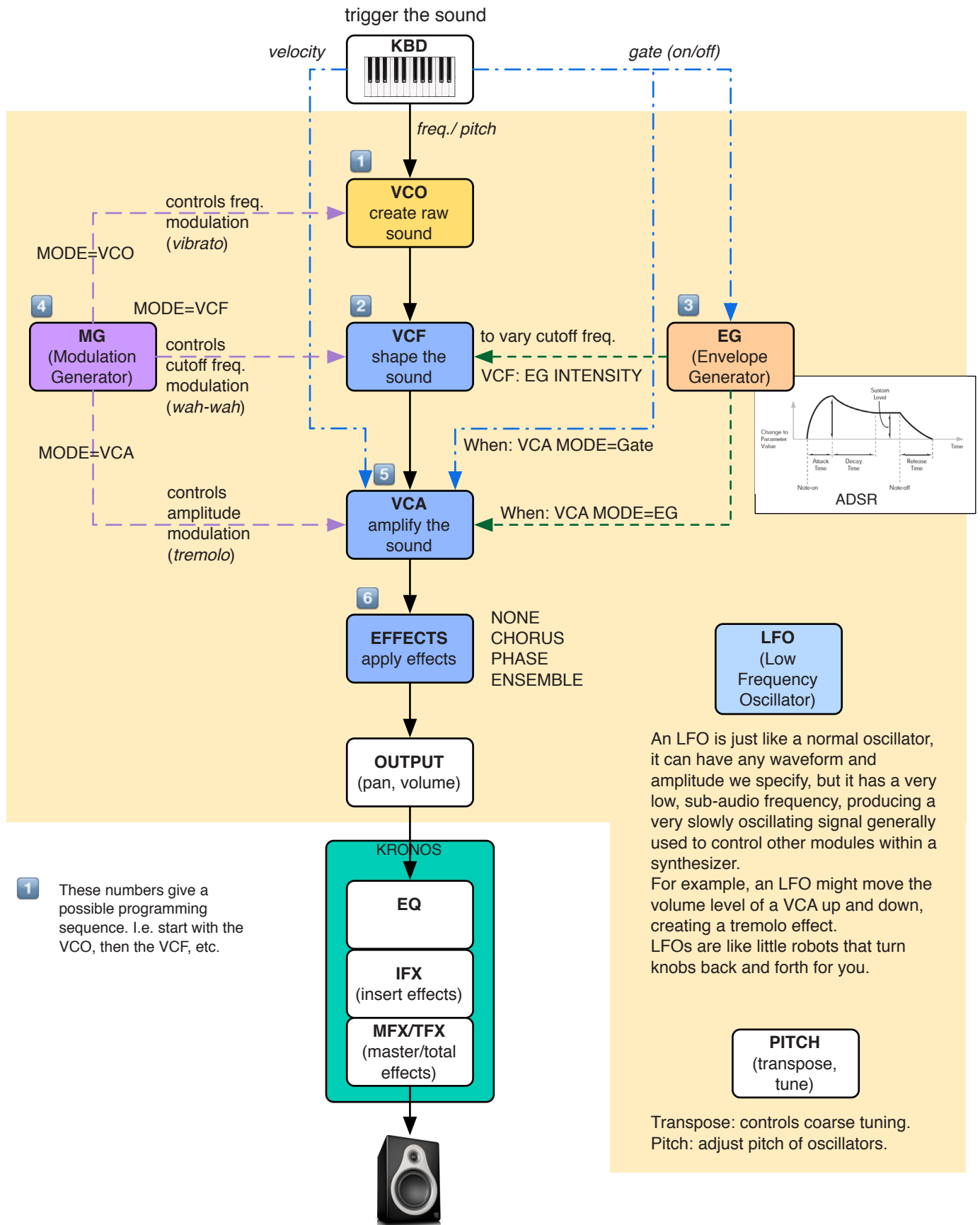
Does not cover the complete Kronos PolysixEX

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Polysix EX flowchart - overview of the parts
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PolysixEX: Tone Adjust reference card
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KORG PolysixEX Flowchart



VCO (Voltage Controlled Oscillator)

The **basic sound source**.

Easy start: set OCTAVE, select WAVEFORM, and select SUB OSC.

VIBRATO INT [0.00...10.00]
Modulation control with JS.
The amount of the MG applied to the VCO pitch.

OCTAVE [16', 8', 4']
4' = one octave lower.
16' = one octave higher

WAVEFORM [SAW,PW,PWM]
Sawtooth = rich in even and odd harmonic overtones. Tone color.
E.g. bass, strings, brass.
PW = Pulse Width - square and pulse waveforms.
PWM = Pulse Width Modulation. Continuously change waveform.

Pulse Width = 0.00 Pulse Width = 5.00 Pulse Width = 9.00

PW/PWM [0.00...10.00]
PW = 0: dull "hollow" as clarinet (odd harmonics); higher values: brighter/"nasally" as oboe or harpsichord.
PWM = Fat "chorusing" sound.
0: no modulation

SUB OSC [2OCT,1OCT,OFF]
Add second tune 1 or 2 octaves below VCO pitch for fatter and fuller sounds. E.g full strings. ("waveform staircasing")

PWM SPEED [0.00...10.00]
Speed of modulation.

Parameter Details area

VCF (Voltage Controlled Filter)

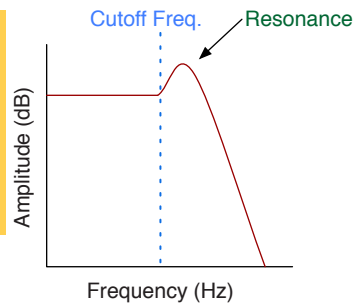
To modify the **tonal quality (timbre)** of the waveforms produced by the VCOs by eliminating certain harmonics (overtones) and emphasizing other tones.

4 pole, 24dB/octave low pass filter with voltage controlled cutoff frequency, variable resonance, positive and negative EG modulation ("enveloping"), and variable keyboard tracking.

A filter cuts away.
Resonance boosts a narrow or wide band with of what is left.
Low pass filter cuts the high freqs.

CUTOFF [0.00...10.00]

Cutoff frequency is the point in the audio spectrum where the filter starts to affect the sounds passing through it.
Used for special effects, punchy synth voicings.



EG INTENSITY [-5.00...+5.00]

How much the cutoff freq. is varied by the EG.
Pos. modulation, filter is swept up.
Neg. modulation, filter is swept down.
Wide sweep depth: dramatic effects, "electronic" lead bass sounds, clav type sounds.
Small sweep depth: add subtle extra dimension to more "natural" sounds like french horn, woodwinds, other orchestral sounds.

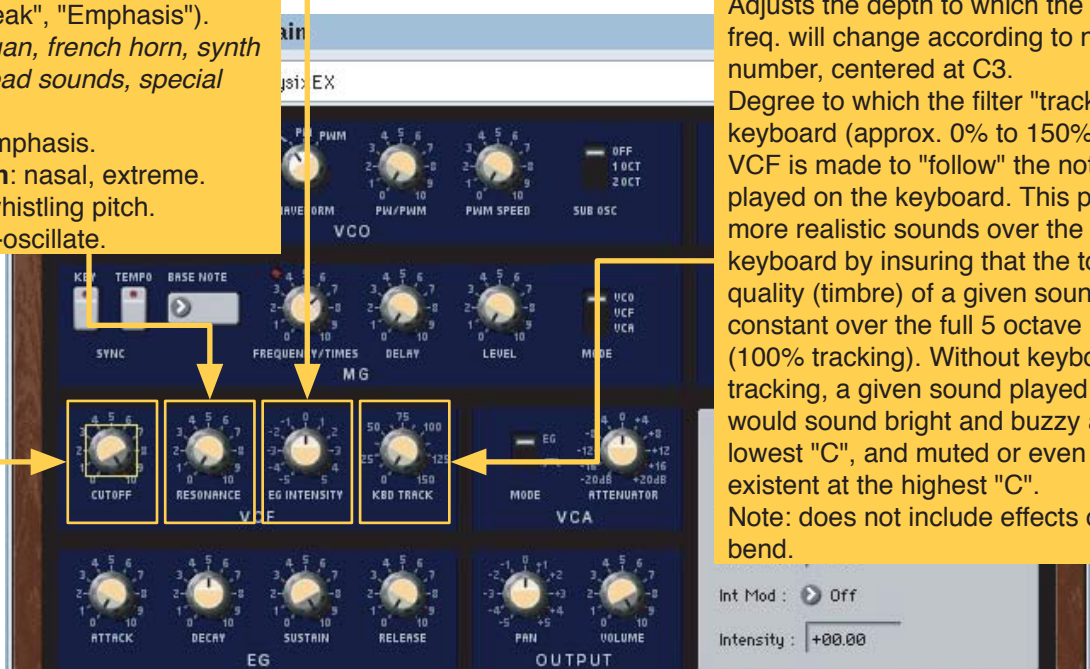
RESONANCE [0.00...10.00]

Emphasizes frequencies around the cutoff frequency. It is adding resonance (aka "Q", "Peak", "Emphasis").
E.g. organ, french horn, synth bass, lead sounds, special effects.
0: no emphasis.
Medium: nasal, extreme.
High: whistling pitch.
10: self-oscillate.

Low pass filter + resonance

KBD TRACK [0.0...150.0]

Adjusts the depth to which the cutoff freq. will change according to note number, centered at C3.
Degree to which the filter "tracks" the keyboard (approx. 0% to 150%).
VCF is made to "follow" the note as it is played on the keyboard. This produces more realistic sounds over the whole keyboard by insuring that the tonal quality (timbre) of a given sound remains constant over the full 5 octave range (100% tracking). Without keyboard tracking, a given sound played at "C" would sound bright and buzzy at the lowest "C", and muted or even non-existent at the highest "C".
Note: does not include effects of pitch bend.



More on KBD TRACK (original manual)

The Polysix also allows deliberate over- and under-tracking. This produces smooth and controlled tone quality changes as you move up and down the keyboard, for special effects, or to simulate instrument with changing timbres (e.g., many orchestral and keyboard instruments). At settings of approximately "7", the VCF follows the note on a 1 for 1 basis (100%). Below 7, the VCF in effect "legs behind" the note played; this causes notes to sound brighter as you go down in pitch, and rounder or mellower as you ascend. Conversely, at settings above 7, the VCF cutoff increases "faster" than does the keyboard pitch, which causes notes to sound brighter as you go up in pitch and darker as you go down. The further the control is from 7, the more pronounced this tonal change will be.

When the VCFs are self-oscillated and used as sound sources, the KBD TRACK control allows you to "play" the filters from the keyboard as if they were regular oscillators (100% tracking). Additionally, special scales known as Microtonal (e.g., "quartertone") and Macrotonal can be created at settings less than, or greater than 7, respectively.

Variable keyboard tracking is extremely useful in producing realistic instrumental sounds, and in helping to make any particular program sound good over a full five octave keyboard range.

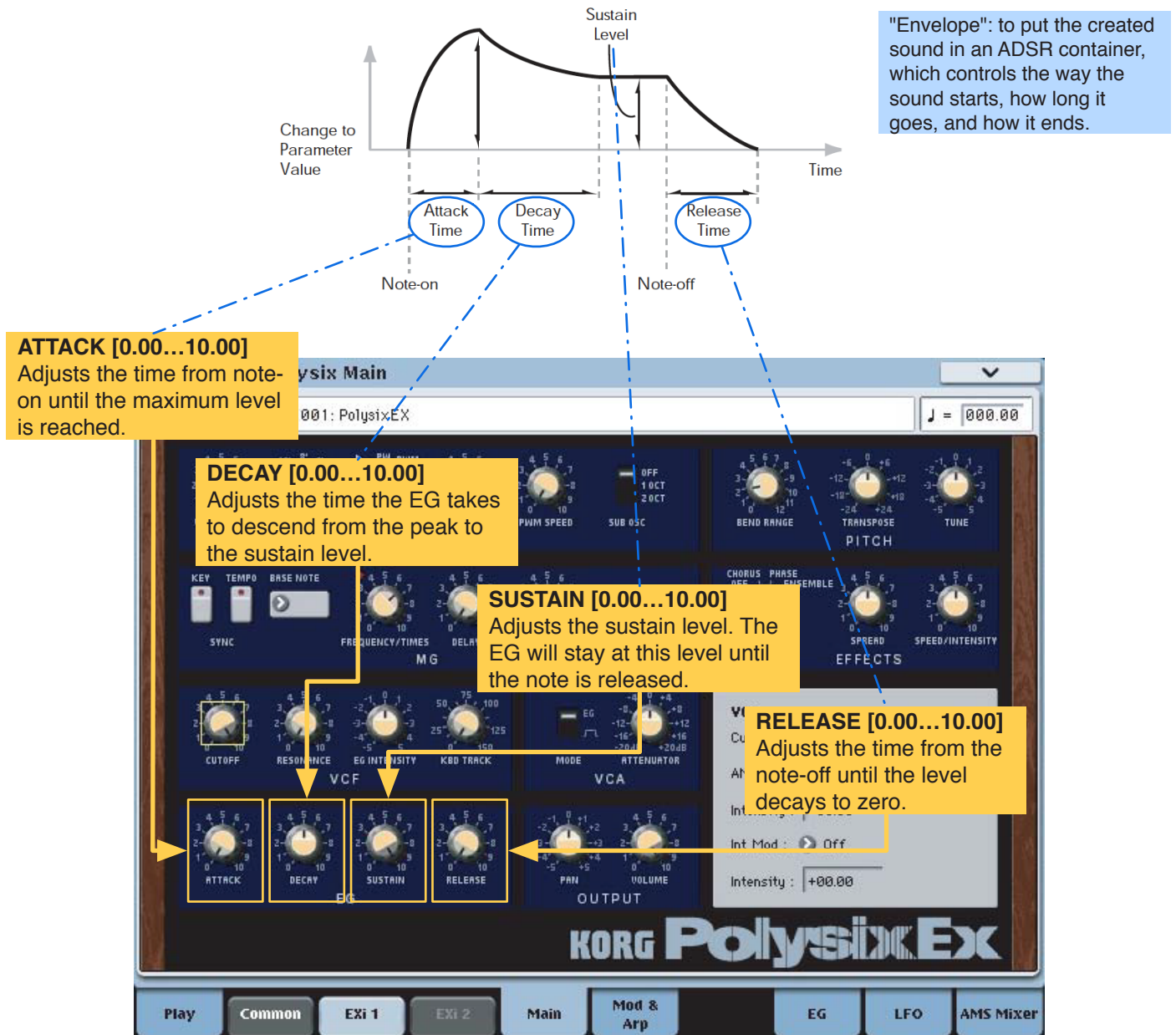
EG (Envelope Generator)

Used to create *contouring effects*, in combination with the VCF, VCA, or both.

Contouring effects allow the sound of a note *to change and evolve as time passes*. This evolution in timbre (tonal quality) can take anywhere from a small part of a second to thirty seconds or more, different parts of the contour (attack, decay, etc.) can proceed at a different rate.

These effects are extremely important in producing expressive sounds - sounds that are punchy, gentle, sassy, funky, orchestral, futuristic, or just about anything you want.

Unlike the original Polysix, the PolysixEX lets you use separate EGs for the VCF and the VCA.



MG (Modulation Generator)

Used for cyclic or repetitive modulation effects like:

- **VCO** frequency modulation (**vibrato**);
- **VCF** cutoff frequency modulation (**wah-wah**);
- **VCA** amplitude modulation effects (**tremolo**).

The MG is shared between all PolysixEX voices, similar to the Common LFO. For per-voice modulation, use LFO1 or 2 instead.

The MG is available as an AMS source throughout the PolysixEX, in two different versions: MG is the unaltered MG signal, and MG + Delay is at 0 until the programmed DELAY time has elapsed.

SYNC

This parameter is not modulatable via AMS.
KEY [Off, On]

If this setting is **ON**, the phase is reset for the first note-on in each legato phrase. Subsequent notes in a chord, or notes played legato, do not cause the phase to be reset.

TEMPO [Off, On]

When **ON**, the MG synchronizes to the system tempo, as set by either the Tempo knob or MIDI Clock.

The MG speed is controlled by the combination of the **BASE NOTE** and **FREQUENCY/TIMES** parameters.

DELAY [0.00...10.00]

Adjusts the time delay between when you play a key (note-on) and the effect (vibrato, etc.) begins.

At 0, the effect begins simultaneously with the pressing of a key. Delay time increases as you turn the knob up towards 10, to a maximum of about 8 seconds.

The delay function is single-triggered, which means that a delay is initiated whenever all keys are released and new key(s) are then depressed.

*Note that this affects only the routing selected by the **MODE** parameter, below; the **VIBRATO** always uses the un-delayed MG signal.*

MODE [VCO,VCF,VCA]

Selects whether the MG modulates:

- VCO (Pitch) - *vibrato*,
- VCF (Filter) cutoff - *wah-wah*,
- VCA (Amplitude) - *tremolo*.

LEVEL [0.00...10.00]

Adjusts the depth of the effect produced by the MG.

BASE NOTE [1/1...1/32]

This parameter is not modulatable via AMS.

When **TEMPO SYNC=ON**, this sets the basic speed of the MG, relative to the system tempo. The values range from a 32nd note to a whole note, including triplets. This value is then multiplied by the **FREQUENCY/TIMES** knob.

When "BASE NOTE": 1/4 (♩), then the MG cycle will be:

- ♩ (one beat = one cycle) if "TIMES": 1
- ♪ (two beats = one cycle) if "TIMES": 2
- ♫ (four beats = one cycle) if "TIMES": 4

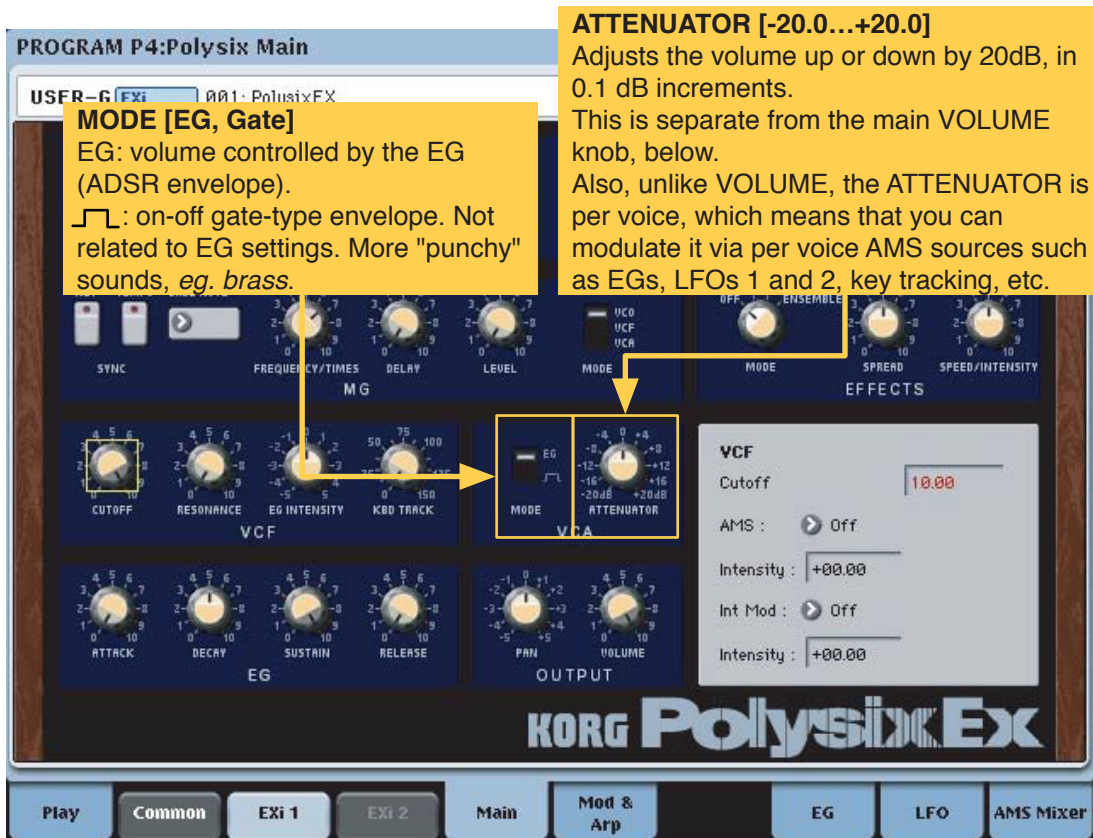
FREQUENCY/TIMES [0.00...10.00/16...1]

If **TEMPO SYNC** is OFF, this controls the frequency of the MG.

If **TEMPO SYNC** is ON, this multiplies the length of the **BASE NOTE**. For instance, if the **BASE NOTE** is set to a sixteenth note, and **Times** is set to 3, the MG will cycle over a dotted eighth note. Note that higher values mean a faster MG.

VCA (Voltage Controlled Amplifier)

The **volume** control.



The screenshot shows the 'PROGRAM P4: Polysix Main' window. The 'VCA' section is highlighted with a yellow box. It contains a 'MODE' switch set to 'EG' and an 'ATTENUATOR' knob. A yellow arrow points from the 'ATTENUATOR' knob to a text box on the right. Another yellow arrow points from the 'EG' mode switch to a text box on the left. The interface also shows other sections like 'MG', 'VCF', 'EG', and 'OUTPUT'.

MODE [EG, Gate]
EG: volume controlled by the EG (ADSR envelope).
⌏: on-off gate-type envelope. Not related to EG settings. More "punchy" sounds, *eg. brass*.

ATTENUATOR [-20.0...+20.0]
Adjusts the volume up or down by 20dB, in 0.1 dB increments.
This is separate from the main VOLUME knob, below.
Also, unlike VOLUME, the ATTENUATOR is per voice, which means that you can modulate it via per voice AMS sources such as EGs, LFOs 1 and 2, key tracking, etc.

VCA
MODE: EG
ATTENUATOR: -4.0, 0.0, +4.0, -12.0, -16.0, -20.0dB, +12.0, +16.0, +20.0dB

VCF
Cutoff: 10.00
AMS: Off
Intensity: +00.00
Int Mod: Off
Intensity: +00.00

EG
ATTACK, DECAY, SUSTAIN, RELEASE

OUTPUT
PAN, VOLUME

KORG Polysix Ex

Buttons at the bottom: Play, Common, EX1, EX2, Main, Mod & Arp, EG, LFO, AMS Mixer

EFFECTS - PITCH - OUTPUT

Apply effects.

Transpose or tune the sound.

Control volume level and panning of the output.

PITCH

BEND RANGE [0.00...12.00]

Maximum amount of pitch bend up and down.

TRANPOSE [-24.00...+24.00]

Max up or down 2 octaves in half-steps and cents. Can be modulated by AMS.

TUNE [-5.00...+5.00]

Adjusts pitch of oscillators, in steps of 1/5 of a cent.

EFFECTS

MODE [OFF, CHORUS, PHASE, ENSEMBLE]

OFF: no effects processing.
CHORUS: relatively subtle, "ambience" type of effect.
PHASE: more pronounced, with a mild resonant edge.
ENSEMBLE: heavy, complex modulation, useful for strings, orchestral sounds, and massive textures.

SPREAD [0.00...10.00]

Adjusts the width to which the effect sound will be panned.

SPEED/INTENSITY [0.00...10.00]

In Chorus and Phase mode, it determines both cycle *speed* (frequency) [and *depth* of effect (built-in MG)].
In Ensemble mode, determines only the intensity of the effect (*depth*).

PAN [Random, L001...C064...R127]

Controls the stereo pan.
At *random*: pan position will be different for each note-on.

VOLUME [0.00...10.00]

Controls main output level.
Affects all voices at once.
Cannot be modulated.

OUTPUT

ARPEGGIATOR

The Polysix Arpeggiator automatically “sequences” (i.e. plays in sequence, one after the other) individual notes of a chord being held down, at any desired speed and in three different patterns. This effect is often used to create a feeling of musical “movement” via a rapid cascade of notes. Chords may be latched so as to arpeggiate indefinitely, if desired.

SYNC

Not modulatable with AMS.

KEY [Off, On]

If this setting is *ON*, the arpeggiator will be reset at the beginning of each legato phrase.

TEMPO [Off, On]

When ON, the arpeggiator synchronizes to the system tempo, as set by either the Tempo knob or MIDI Clock.

The arpeggiator speed is controlled by the combination of the BASE NOTE and SPEED/TIMES parameters.

When OFF, the SPEED/TIMES knob determines the *speed of the arpeggiator*. BASE NOTE setting has no effect.

Latch Note: You can build up a complex arpeggio by holding down at least one key and then adding any other notes desired, one at a time. In this way you can start with a simple arpeggio and gradually make it as complex as you like.

Of course you can start a new arpeggio at any time by lifting all fingers from the keyboard and then playing at least one new note to cancel the old arpeggio and begin the new one.

ON/OFF [Off, On]

Switches the arpeggiator on/off.

SPEED/TIMES [0.00...10.00/16..1]

If TEMPO SYNC=OFF: controls speed of arpeggiator. (Led=red)

If TEMPO SYNC=ON: multiplies length of BASE NOTE. (Led=blue)

Higher values mean faster arpeggio.

LATCH [Off, On]

ON: any notes played are automatically “memorized” (latched), and will continue to be arpeggiated even after you lift your fingers completely from the keyboard.

Can be stopped by: switching LATCH=OFF or turn OFF the arpeggiator. The latched pattern is then forgotten.

BASE NOTE [1/1...1/32]

This parameter is not modulatable via AMS.

If TEMPO SYNC=ON, this sets the basic speed of the arpeggiator, relative to the system tempo. The values range from a 32nd note to a whole note, including triplets. This value is then multiplied by the SPEED/TIMES knob.

When “BASE NOTE”: 1/4 (♩), then the arpeggiator cycle will be:

♩ (one beat = one cycle) if “TIMES”: 1

♩ (two beats = one cycle) if “TIMES”: 2

♩ (four beats = one cycle) if “TIMES”: 4

MODE [UP/DOWN, DOWN, UP]

UP: arpeggio is ascending

DOWN: arpeggio is descending

UP/DOWN: arpeggio is ascending and descending.

RANGE [1 OCT, 2 OCT, FULL]

1 OCT: arpeggiates only the notes you are currently holding, or have latched.

2 OCT: arpeggiates the notes you are currently holding, plus the same notes one octave higher.

FULL: arpeggiates the notes held over 6 octaves.

EXTERNAL MODULATION - ANALOG

The External Modulation section offers an easy way to assign modulation to multiple destinations at once, using any AMS source (Alternate Modulation Source). Note that most parameters also include dedicated AMS modulation, via the Parameter Details area.

Note: Source 2 is the same as Source 1

Example:

Set SOURCE 1 = Velocity.

If VCA GAIN = +10, then the volume is touch sensitive. That is, by hitting the keys harder, the sound has more volume.

If VCA GAIN = -10, then it's the other way around. Hitting the keys harder produces sounds at a lower volume.

SOURCE [List of AMS Sources]

Selects the Alternate Modulation Source (AMS) to control the VCO PULSE WIDTH, VCF CUTOFF, VCA GAIN, and MG LEVEL parameters.

VCF CUTOFF [-10.0...+10.00]

Specifies the depth and direction of the modulation applied to the filter (VCF) CUTOFF.

MG LEVEL [-10.0...+10.00]

Specifies the depth and direction of the modulation applied to the Modulation Generator (MG) LEVEL.

VCA GAIN [-10.0...+10.00]

Specifies the depth and direction of the modulation applied to the amp (VCA).

VCO PULSE WIDTH [-10.0...+10.00]

Specifies the depth and direction of the modulation applied to the oscillator (VCO) PW/PWM.



ANALOG [0.00...10.00]

Models the instability of an analog system by adding subtle randomization to the VCO and VCF frequencies.

PolysixEX: Tone Adjust

PolysixEX Tone Adjust Default Settings (Param_Guide p. 335).



Settings Tables

The tables below contain some example sound settings of the PolysixEX.

Module	Parameter	Strings	Phunky Power Bass	PS Organ (Fast)	PS Oriental Sound
VCO	VIBRATO INT	4.2	5	0	0
	OCTAVE	8'	8'	4'	8'
	WAVEFORM	Saw	Saw	PW	PWM
	PW/PWM	8.25	0	0	5
	PWM SPEED	0	0	0	2
	SUB OSC	OFF	1 OCT	2 OCT	OFF
VCF	CUTOFF	7.73	1.56	4	4
	RESONANCE	1.25	2	3	2
	EG INTENSITY	+3.0	+2.54	+1	+2
	KBD TRACK	30.7	65	45	40
VCA	MODE	EG	Gate	Gate	EG
	ATTENUATOR	-2.5	+1.5	0	0
EG	ATTACK	2.75	0	0	0
	DECAY	7	3.61	0	6
	SUSTAIN	5.35	0	0	4
	RELEASE	4.6	0	0	7
MG	SYNC KEY	OFF	OFF	OFF	OFF
	SYNC TEMPO	OFF	OFF	OFF	OFF
	BASE NOTE	-	-	-	-
	FREQUENCY/TIMES	6.4	6.35	0	7
	DELAY	4.5	0	0	0
	LEVEL	0.06	0	0	3
	MODE	VCO	VCO	VCO	VCA
EFFECTS	MODE	ENSEMBLE	OFF	ENSEMBLE	CHORUS
	SPREAD	7.55	8.66	5	5
	SPEED/INTENSITY	3.8	10	4	4
OUTPUT	PAN	0	0	0	0
	VOLUME	7.8	3	10	10
PITCH	BEND RANGE	2	2	2	2
	TRANSPOSE	0	0	0	0
	TUNE	0	0	0	0

Settings Tables

		Sound				
Module	Parameter					
VCO	VIBRATO INT					
	OCTAVE					
	WAVEFORM					
	PW/PWM					
	PWM SPEED					
	SUB OSC					
VCF	CUTOFF					
	RESONANCE					
	EG INTENSITY					
	KBD TRACK					
VCA	MODE					
	ATTENUATOR					
EG	ATTACK					
	DECAY					
	SUSTAIN					
	RELEASE					
MG	SYNC KEY					
	SYNC TEMPO					
	BASE NOTE					
	FREQUENCY/TIMES					
	DELAY					
	LEVEL					
	MODE					
EFFECTS	MODE					
	SPREAD					
	SPEED/INTENSITY					
OUTPUT	PAN					
	VOLUME					
PITCH	BEND RANGE					
	TRANSPOSE					
	TUNE					