

SEQUENTIAL prophet~6

Operation Manual



Dave Smith
I N S T R U M E N T S

SEQUENTIAL *prophet~6*

Operation Manual

Version 1.0

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Tested To Comply
With FCC Standards
FOR OFFICE USE



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

For Technical Support, email: support@davesmithinstruments.com

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Special thanks to Ikutaro Kakehashi and Yamaha Corporation. Thanks also to Robert Rich for the alternative tunings content. And finally, a shout out to OMOM (Old Men Of MIDI) for their support, camaraderie, and sound design.

A Few Words of Thanks

Thank you for purchasing the Prophet-6. We take a lot of pleasure in creating all of our instruments but bringing the Prophet-6 to life was particularly satisfying. In many ways it brings my 40-plus years of designing synthesizers full circle. I'll tell you why.

In 2014, two events occurred that led to the creation of the Prophet-6. The first was a fairly common one around our office — our usual informal discussion about what would be interesting to build next. (We don't do marketing surveys around here.) We all agreed that an analog poly synth with true voltage-controlled oscillators, filters, and amplifiers would not only be exciting to design, but would also almost certainly sound great. So we decided to do it.

Event two transpired when, unknown to me, my old friend and collaborator in the creation of MIDI, Ikutaro Kakehashi, founder of Roland, asked Yamaha Corporation to consider returning ownership of my original company brand, Sequential Circuits, to me. (Yamaha had purchased Sequential's assets when we closed shop back in 1987.) Yamaha generously agreed and suddenly Sequential was back — almost. All we needed was an awesome new product to bear the name.

Well, you know how the story ends: with the very synth you've just purchased. We figured that building the best-sounding analog poly synth possible would be a fitting tribute to Sequential's most famous instrument, the Prophet-5, the poly synth that started it all.

The *Sequential Prophet-6* takes the best qualities of the Prophet-5 and adds some nice touches that the original never had, such as stereo outputs, velocity and aftertouch sensitivity, dual digital effects, a high-pass filter, a polyphonic step sequencer, an arpeggiator, and of course, MIDI. The result is a synth with vintage analog tone and the reliability of a state-of-the-art, modern instrument.

I hope you enjoy the Prophet-6 as much as we enjoyed designing it for you.

Cheers,

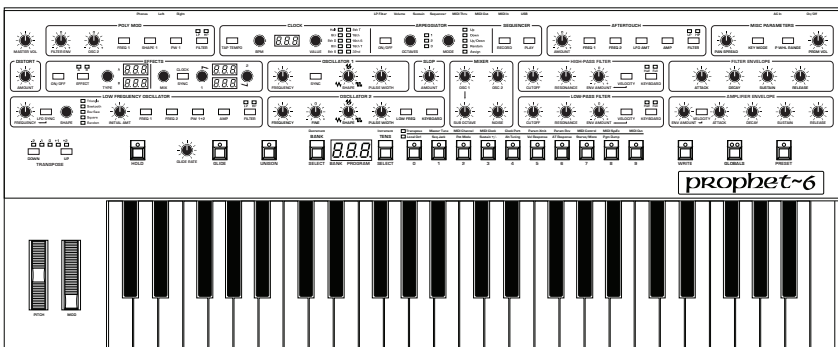
DAVE SMITH

Getting Started

The Prophet-6 is a six-voice, polyphonic analog synthesizer with voltage-controlled oscillators, filters, and amplifiers. It was designed to provide all of the warmth and presence of a vintage-era synth with the added convenience and stability of a state-of-the-art, modern instrument.

The Prophet-6 is first and foremost a performance instrument. All of its sound-shaping controls are immediately accessible on its front panel, packing a tremendous amount of power and versatility into a compact, easy-to-use format.

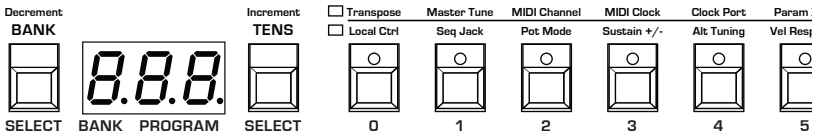
You can find in-depth information about each of the Prophet-6's parameters in later sections of this manual. But don't hesitate to dive right in and start turning knobs and pressing buttons before you begin reading. You can always get back to where you started, even if you have no idea what you're doing. So start exploring and keep your ears and mind open!



Prophet-6 front panel

Sound Banks

The Prophet-6 contains a total of 1000 programs. 500 are permanent and 500 can be overwritten. Banks 0-4 are User Banks that can be overwritten. Banks 5-9 are Factory Banks that are permanent. You can edit the programs of either bank, but you can only save them to Banks 0-4. As shipped from the factory, presets 000-499 are identical to 500-999.



Program bank, tens, and number selectors

Selecting Programs

Use the BANK, TENS, and PROGRAM SELECT buttons to select and recall programs.

To choose a program:

1. Hold down the BANK button then press a PROGRAM SELECT button (0-9) to specify the “hundreds” bank of the program.
2. Hold down the TENS button then press a PROGRAM SELECT button (0-9) to specify the “tens” digit of the program.
3. Press a PROGRAM SELECT button (0-9) to specify the “ones” digit of the program.

To choose program 123, for example:

1. Hold BANK and press 1. Then release the BANK button.
2. Hold TENS and press 2. Then release the TENS button.
3. Press PROGRAM SELECT button 3.

It's not always necessary to enter all 3 digits of a program number to recall it.

For example:

- If the current program is 100 and you want to recall program 101, simply press “1.”
- If the current program is 100 and you want to recall program 110, hold down the TENS button and press “1.”
- If the current program is 100 and you want to recall program 115, hold down the TENS button and press “1.” Then release the TENS button and press “5.”



Pressing the GLOBALS button three times in a row saves the current program as the default program that appears when you turn on the Prophet-6.

Editing Programs

Because all of the sound-shaping controls of the Prophet-6 appear on its front panel, editing an existing program is simple: just turn a knob and listen to its effect. Keep turning knobs and pressing buttons and if you like what you've created, save the program. (See “Saving Programs” on page 5.)



The rotary controls on the front panel are a mixture of “endless” rotary encoders and potentiometers or “pots.” You can choose between three different modes that determine how the synth reacts when parameters are edited with a pot. For details, see “Pot Mode” on page 13.

Comparing an Edited Program to its Original State

When editing a program, it's often useful to compare its edited state to its original state to evaluate your edits. Alternatively, before saving a program to a new location you may want to check the program in the target location before you overwrite it.

To compare an edited program to a saved version:

1. Edit a program.
2. Press the WRITE button. It starts flashing.

3. Press the GLOBAL button. Both LEDs on the button light up, indicating COMPARE mode.
4. Play the keyboard to hear the saved version of the sound.
5. To disable the compare function and return to the edited sound, turn off the GLOBAL button. Programs can't be written while in compare mode.
6. If you want to save the edited sound, the WRITE button is still flashing and ready to save, so enter a location with the PROGRAM SELECTOR buttons. The sound is saved.
7. Alternatively, if you want to cancel saving and continue editing, press the WRITE button. It stops flashing and saving is canceled.

Creating a Program from Scratch

An existing program can be very useful as a jumping off point for new sounds. But it's also useful (and educational) to create a new sound from scratch. The Prophet-6 makes this easy by providing a "Basic Preset" that you can quickly recall at any time. This preset is very simple, with a single oscillator as its basis.

To recall the Basic Preset:

1. Hold down the PRESET button.
2. Press the WRITE button.

Live Panel Mode

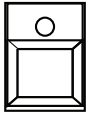
The Prophet-6 also features a "live panel" mode in which its sound switches to the current settings of its knobs and switches. In other words, the current preset is ignored and what you see on the front panel is what you hear. This is a great mode for learning, experimentation, and instant gratification.

To enter live panel mode:

- Press the PRESET button to toggle it off. Note that you can't change programs or banks with Preset off.

To return to preset mode:

- Press the PRESET button again to toggle it on.



PRESET

Toggling off the PRESET button enables “live panel” mode

Saving a Program

If you’ve created a sound that you like, you’ll probably want to save it. Saving a program overwrites a previously saved program. Sound designers often save many incremental versions of a program as they continue to refine it. These intermediate versions often make good jumping off points for new sounds.

To save a program to the same preset location:

1. Press the WRITE button. Its LED begins blinking.
2. Press a PROGRAM SELECTOR button (0-9) to specify the “ones” digit of the program.
3. The WRITE button LED stops blinking and the program is saved.



Be careful when WRITE is enabled. You can change banks and tens without executing WRITE, but once you press a PROGRAM SELECTOR button (0-9) for the “ones” digit, the WRITE command is executed and the program at that location is overwritten.

To save a program to a different bank location:

1. Press the WRITE button. Its LED begins blinking.
2. Hold down the BANK button then press a PROGRAM SELECTOR button to specify the “hundreds” bank of the program. You can only save to Banks 0-4.
3. Hold down the TENS button then press a PROGRAM SELECTOR button (0-9) to specify the “tens” digit of the program.
4. Press a PROGRAM SELECTOR button (0-9) to specify the “ones” digit of the program.
5. The WRITE button LED stops blinking and the program is saved.

Canceling Save

Sometimes you may want to cancel saving a program before you commit.

To cancel the Save process before you commit:

- If the WRITE button LED is flashing, press it again. The LED stops flashing and saving is canceled. You can return to editing if you want.

Comparing Before You Save

Before saving a program to a new location, it's a good idea to listen to the program in the target location to make sure you really want to overwrite it.

To evaluate a program before you overwrite it:

1. Get ready to save by pressing the WRITE button. It starts flashing.
2. Press the GLOBAL button. Both LEDs on the button light up, indicating COMPARE mode.
3. Use the program buttons to navigate to the sound you want to compare and play the keyboard to hear the sound.
4. To disable the compare function and go back to the edited sound, turn off the GLOBAL button. Programs can't be written while in compare mode.
5. If you want to save the edited sound, the WRITE button is still flashing and ready to save, so enter a location with the program buttons. The sound is saved.
6. Alternatively, if you want to cancel saving and continue editing, press the WRITE button. It stops flashing and saving is canceled.

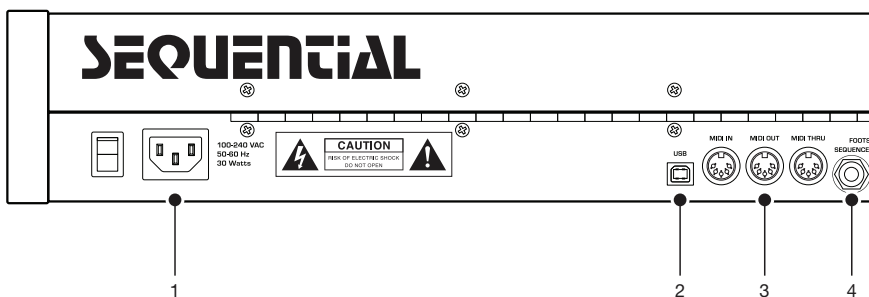
Moving to the Next Level

The Prophet-6 is filled with possibilities for sound creation. Although we realize that you'd rather spend your time exploring its capabilities, we'd like to point you toward a few things that will help you tailor the instrument to your needs.

First, check out the *Global Settings* section of this manual. Read about Pot Modes and determine which works best for you when you're editing sounds. You'll also find information about MIDI setup. Read this to more effectively integrate the Prophet-6 into your MIDI rig. To get the most out of the Prophet-6's live performance capabilities, read up on using a footswitch or expression pedal.

And finally, be on the lookout for tips and notes scattered throughout this manual to gain a better working knowledge of the Prophet-6. The better you know your instrument, the more you'll get out of it. We wish you many hours of musical exploration!

Connections



1. AC Power Connector—Accepts a standard, grounded IEC power cord. Operates over a range of 100 to 240 volts and 50 to 60 Hz.

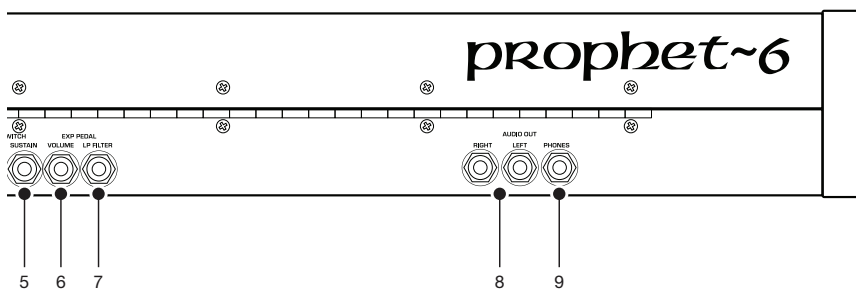
2. USB—For bidirectional MIDI communication with a computer. The Prophet-6 is a Class Compliant USB device and does not require additional drivers when used with Mac OS or Windows. See *Using USB* on page 58 for more information.

3. MIDI In, Out, and Thru—Standard 5-pin MIDI DIN connectors.

4. Footswitch-Sequence—Accepts a momentary, normally open or normally closed footswitch to turn the sequencer or arpeggiator on and off. Alternatively, an audio signal connected to this jack can be used to either control sequencer/arpeggiator playback, or to gate the filter and amplifier envelopes while notes are held. See “Seq Jack” on page 13 for more information about choosing the appropriate mode for these behaviors.

5. Footswitch-Sustain—Accepts a momentary, normally open or normally closed footswitch to control sustain. See “Sustain +/-” on page 14 for more information.

6. Expression Pedal-Volume—Accepts a standard expression pedal that has a variable resistor on a TRS (tip-ring-sleeve) ¼ inch phone plug. Once connected, you can use the pedal to control volume to add expressiveness and dynamics to live performance.



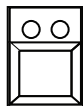
7. Expression Pedal-LP Filter—Accepts a standard expression pedal that has a variable resistor on a TRS (tip-ring-sleeve) ¼ inch phone plug. Once connected, you can use the pedal to control the cutoff frequency of the low-pass filter to add expressiveness to live performance.

8. Audio Outputs—Unbalanced, ¼ inch audio outputs. The Prophet-6 sounds great in stereo, but can be switched to mono if needed. See “Mono/Stereo” in *Global Settings* on page 13.

9. Headphones—A ¼ inch stereo headphone jack. Headphone volume is controlled by the MASTER VOL knob on the front panel.

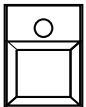
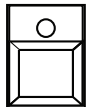
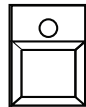
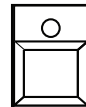
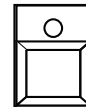
Global Settings

Global settings are parameters that affect all programs. These include settings such as Master Tune, MIDI Channel, MIDI Clock, and others. Global parameters are printed above the numeric program selector switches (0 - 9). Use the Globals switch to choose between the two sets. The red LED indicates that the upper row is active. The yellow LED indicates that the lower row is active

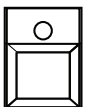
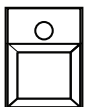
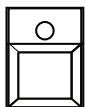
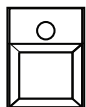
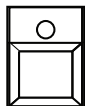


GLOBALS

The Globals button

| | | | | |
|---|---|---|---|---|
| <input type="checkbox"/> Transpose | Master Tune | MIDI Channel | MIDI Clock | Clock Port |
| <input type="checkbox"/> Local Ctrl | Seq Jack | Pot Mode | Sustain +/- | Alt Tuning |
|  |  |  |  |  |
| 0 | 1 | 2 | 3 | 4 |

Globals 0-4

| | | | | |
|---|---|---|---|---|
| Param Xmit | Param Rcv | MIDI Control | MIDI SysEx | MIDI Out |
| Vel Response | AT Response | Stereo/Mono | Pgm Dump | |
|  |  |  |  |  |
| 5 | 6 | 7 | 8 | 9 |

Globals 5-9

| | | |
|---|---|---|
| Decrement BANK | | Increment TENS |
|  |  |  |
| SELECT | BANK PROGRAM | SELECT |

Use the Bank and Tens buttons to scroll forward and backward, respectively, through parameter settings

To set a Global parameter:

1. Press the GLOBALS button. Pressing it once activates the upper set of parameters. Pressing it a second time enables the lower set of parameters.
2. Press the program selector button (0 - 9) that corresponds to the desired parameter. The parameters are printed above each switch.
3. Use the BANK and TENS buttons as decrement and increment buttons to step through available settings.
4. Once you've chosen the desired setting, press the GLOBALS button again to exit.

Globals - Top Row

0. Transpose: - 12... 12—Master Transpose control, 0 is centered. Steps in semitones up to one octave up (+12) or down (-12).

1. Master Tune: - 50...50—Master Fine Tune control; 0 centered. Steps in cents as much as a quarter-tone up (+50) or down (-50).

2. MIDI Channel: ALL, 1... 16—Selects which MIDI channel to send and receive data, 1 to 16. All receives on all 16 channels.

3. MIDI Clock: Sets the Prophet-6's ability to send and receive MIDI clock messages:

- OFF: MIDI Clock is neither sent nor received
- OUT: MIDI Clock is sent, but not received
- IN: MIDI Clock is received, but not sent
- Slave Thru (IN): MIDI Clock is received and passed to MIDI Out
- In, No Start/Stop (IN55): Receives MIDI Clock but does not respond to MIDI Start or Stop command.



When set to IN or SLAVE THRU, if no MIDI clock is present at the selected input, the arpeggiator and sequencer will not function.

4. Clock Port: $\bar{m}i d, USB$ —Sets the ports, MIDI or USB, by which MIDI clock signals are received.

5. Param Xmit: OFF, CC, nr —Changes to the values of front panel controls are transmitted via MIDI as Continuous Controllers (CC) or Non-registered Parameter Number (nr). Transmission of parameters can also be turned off. You could, for example, turn the filter $CUTOFF$ frequency knob on the Prophet-6 and have it affect the cutoff frequency of another synthesizer. For a list of Prophet-6 CCs and NRPNs, see Appendix D.



NRPNs are the preferred method of parameter transmission, since they cover the complete range of all parameters, while CCs are limited to a range of 128.

6. Param Rcv: OFF, CC, nr —Sets the method by which parameter changes are received via MIDI. As with transmission, NRPNs are the preferred method.

7. MIDI Control: OFF, On —When On, the synth will respond to MIDI controllers, including Pitch Wheel, Mod Wheel, Pedal, Volume.

8. MIDI Sysex: $\bar{m}i d, USB$ —When set to MIDI ($\bar{m}i d$) it will receive and transmit them using the MIDI ports/cables. When set to USB it will receive and transmit them using the USB port/cable. MIDI SysEx messages are used when sending and receiving a variety of data including, programs, alternative tunings, system updates, and more.

9. MIDI Out: $\bar{m}i d, USB$ —Sets the port by which MIDI data will be transmitted (MIDI or USB).

Globals - Bottom Row

0. Local Control: *OFF, ON*—When on (the default), the keyboard and front panel controls directly affect the Prophet-6. When off, the controls are transmitted via MIDI but do not directly affect the “local” synth (that is, the Prophet-6). This is primarily useful for avoiding MIDI data loops that can occur with some external sequencers.

1. Seq Jack: *Normal, Trig, Gate, T-G* (Normal, Trigger, Gate, T-G)—Selects the mode for signals received on the rear-panel Sequencer jack.

- With **NORMAL** selected, a footswitch will start sequencer playback.
- With **TRIG** selected, an audio signal connected to the **SEQUENCER** jack will step the sequencer when the sequencer’s **PLAY** button is on.
- With **GATE** selected, an audio signal connected to the **SEQUENCER** jack will trigger and gate the envelopes while you hold a note or chord. Additionally, turning on the sequencer or arpeggiator will add sequencer or arpeggiator playback—but controlled by the Prophet-6’s clock **BPM** and **VALUE** settings and not the audio trigger.
- With **T-G (TRIGGER+GATE)** selected, an audio signal connected to the **SEQUENCER** jack will trigger and gate the envelopes while you hold a note or chord. Additionally, pressing the sequencer’s **PLAY** button will also add synchronized sequencer playback.



For best results when triggering the sequencer with an audio signal, use a loud signal with a sharp attack/decay and little or no sustain.

2. Pot Mode: *REL, PAS, JUP* (Relative, Passthru, Jump)—The rotary controls on the front panel are a mixture of “endless” rotary encoders and potentiometers or “pots.” The pots are identifiable by their lined knobs and the fact that they have about 300° of travel. There are three pot modes to determine how the synth reacts when the programmable parameters are edited. (Master volume is not programmable, so these modes don’t apply.)

In *Relative* mode, changes are relative to the stored setting. In Relative mode, the full value range is not available until either the minimum or maximum value and the respective lower or upper limit of the pot’s travel is reached. For example, the **RESONANCE** parameter has an internal value range of 0 to 127. Let’s say the physical position of the **RESONANCE** pot is the equivalent to a

value of 100. If you switch to a program that has a stored Resonance setting of 63 and turn the pot all the way up, it will only go to 90. To get to the maximum value of 127, you first have to turn down until the value is at the other extreme and the pot is at the limit of its travel (in this case, 0 and fully counter-clockwise, respectively).

In *Passthru* mode, turning the pot has no effect until after the edited value equals the preset value (that is, until the edited value “passes through” the stored value).

Jump mode uses an absolute value based upon the position of the pot when edited: turn a pot and the value jumps immediately from the stored value to the edited value.

3. Sustain +/- : *nor, rEu, n-r, r-n* (Normally Open, Normally Closed, Sustain Normally Open/Sequencer Normally Closed, Sustain Normally Closed/Sequencer Normally Open)—The Sustain pedal polarity parameter affects both the sustain pedal and sequencer jack input ports. There are two types of momentary footswitches, normally open and normally closed. Either type can be used with the Prophet-6. Not sure which type you have? If the behavior of the footswitch is the opposite of what is expected — that is, down is off and up is on — changing this setting will correct that.

4. Alt Tuning: *nor, 1... 16* (Normal, 1...16)—Selects one of the Prophet-6’s built-in tunings. Set to *NORMAL*, the tuning is standard, chromatic tuning. Choosing 1 through 16 selects an alternative, non-chromatic, non-Western scale that can be used to emulate ethnic instruments or in other creative ways.

See “Appendix A: Alternative Tunings” on page 59 for a description of each tuning. Additional tunings can be imported into the Prophet-6 as a SysEx message. For more information, see Appendix A.

5. Vel Response: 0-3 (Curve 0, Curve 1, Curve 2, Curve 3)—Sets one of four velocity curves to adjust the keyboard’s velocity response to your playing style.

6. AT Response: 0-3 (Curve 0, Curve 1, Curve 2, Curve 3)—Sets one of four pressure curves to adjust the keyboard’s aftertouch response to your playing style.

7. Stereo/Mono: *StE, rION* (Stereo, Mono)—The Prophet-6 defaults to stereo operation. When set to Mono, this parameter defeats all pan settings and modulation, effectively making each of the outputs a mono output.

8. Pgm Dump: *Prg, tEn, bAn, USr, ALl* (Program, Tens, Bank, User Banks, All)—Transmits the current program, ten programs from the currently selected bank and tens location, the current bank, all user banks (0-4), or all banks (both user and factory) in SysEx format via the selected MIDI port. (See: “MIDI Sysex.”) Dumped programs will load back into the same bank and program location in memory when received by the Prophet-6 via MIDI.

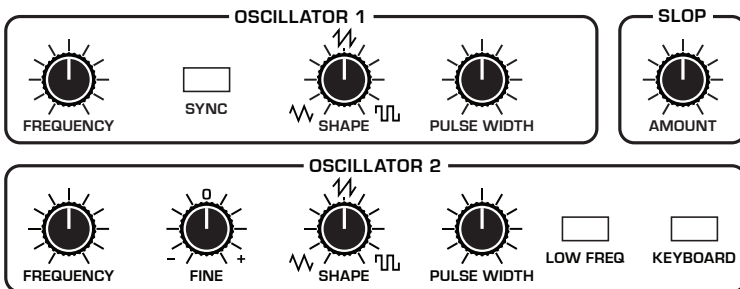
Oscillators

Oscillators provide the raw building blocks of the Prophet-6’s sound by producing *waveforms*, each of which has its own inherent sound character based on its harmonic content. The Prophet-6 has two oscillators, plus a sub oscillator and a noise generator per voice. Level controls for each of these are located in the Mixer section.

Each oscillator is capable of generating triangle, sawtooth, and variable-width pulse waves. These waveshapes are continuously variable and smoothly transition from one shape to the next as you turn the *SHAPE* knob. This provides a variety of “in-between” waveshapes.



The oscillators on the Prophet-6 are extremely stable. To emulate the random pitch drift and oscillator instability of vintage instruments, use the *SLOP* parameter to dial in as little or as much drift as you like.



Oscillators 1 and 2

Oscillator 1 can be hard-synced to Oscillator 2 for complex, harmonically-rich sounds when modulated.

Oscillator 2 features a FINE knob for detuning and thickening sounds, a LOW FREQ switch that allows it to function as an LFO for modulation purposes, and a KEYBOARD switch that disables keyboard control over its pitch (useful when used as an LFO, or for drones and other effects).

Oscillator Parameters

Frequency: Sets the base oscillator frequency over a 9-octave range from 16 Hz to 8KHz (when used with the Transpose buttons). Adjustment is in semitones.



The global Master Tune settings affect the pitch of all oscillators. See “Globals - Top Row” on page 11 for more information.

Fine: Fine tune control with a range of a quartertone up or down. The 12 o’clock position is centered. Steps are in cents (50 cents = 1/2 semitone).

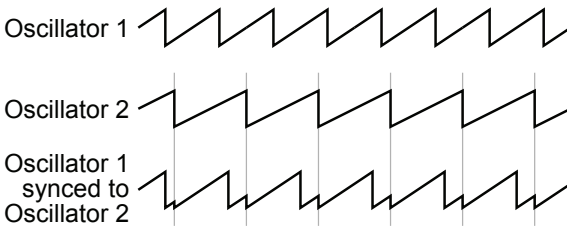
Shape: Triangle, Sawtooth, Pulse—Used to select the waveshape generated by the oscillator. Waveshapes are continuously variable and smoothly transition from one shape to the next as you turn the SHAPE knob. This provides a variety of “in-between” waveshapes.

Pulse Width: Changes the width of the pulse wave from a square wave when the PULSE WIDTH knob is at center position, to a very narrow pulse wave when the PULSE WIDTH knob is full left or right.



Applying pulse width modulation using POLY MOD or the LOW FREQUENCY OSCILLATOR is a great way to add movement and thickness to a sound, especially when creating pad or string-like sounds.

Sync: Off, On—Turns Oscillator 1 hard sync on. Sync forces Oscillator 1 (the slave) to restart its cycle every time Oscillator 2 (the master) starts a cycle. This provides a way to create more complex, harmonically rich shapes from simple waveforms—especially when the frequency of Oscillator 1 is set to a different interval than Oscillator 2.



Oscillator hard sync



Use Poly Mod to sweep the pitch of Oscillator 1 when it is synced to generate the classic, hard-edged sync sound.

Low Frequency: Off, On—Turns Oscillator 2 into a low-frequency oscillator, essentially providing another LFO source for modulation using Poly Mod. The FREQUENCY, FINE, SHAPE, and PULSE WIDTH controls still apply and will affect the character of any low-frequency modulation applied using Oscillator 2.

Keyboard: Off, On—When off, the Oscillator 2 ignores the keyboard and note data received via MIDI and plays at its base frequency setting. Oscillator 2 pitch can still be affected by modulation from other sources when in this mode.

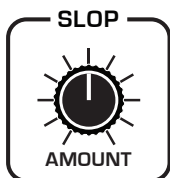
Slop

Slop adds randomized detuning to the oscillators to emulate the tuning instability of vintage analog oscillators. This tuning instability is a big part of what made vintage instruments sound characteristically warm and fat.

Because the Prophet-6 oscillators are extremely stable, small amounts of Slop can help impart a very vintage tone to what is otherwise a very stable, modern instrument. Slop amount is adjustable from subtle, barely perceptible amounts to wildly out of tune.



The global Master Tune settings affect the pitch of all oscillators. See “Globals - Top Row” on page 11 for more information.



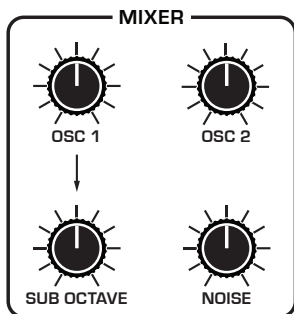
Oscillator Slop

Mixer

The Mixer section is where you set the levels of the various sound generators on the Prophet-6. These include Oscillator 1, Oscillator 2, Sub Octave (Oscillator 1 sub oscillator) and the white noise generator. You must turn up at least one of these in order to make sound with the Prophet-6. (Alternatively, you can use the filter to generate its own sine wave in self-oscillating mode.)



Rather than limit the Prophet-6's outputs to keep the instrument from clipping, we allow you to adjust levels at various points in its signal path. This gives you the option to "overload" things in interesting ways, if you wish to do so. If not, try reducing the levels of the oscillators in the MIXER section, the ENV AMOUNT parameter in the Amplifier Envelope, or the RESONANCE parameter in either the low-pass or high-pass filter.



The Mixer

Osc 1: Sets the output level of Oscillator 1.

Osc 2: Sets the output level of Oscillator 2.

Sub Octave: Controls the level of a triangle wave oscillator pitched one octave below Oscillator 1. Because a triangle wave has few harmonics and is mainly characterized by its fundamental frequency, adding a sub octave to sounds such as bass are a great way to increase their low-register presence.

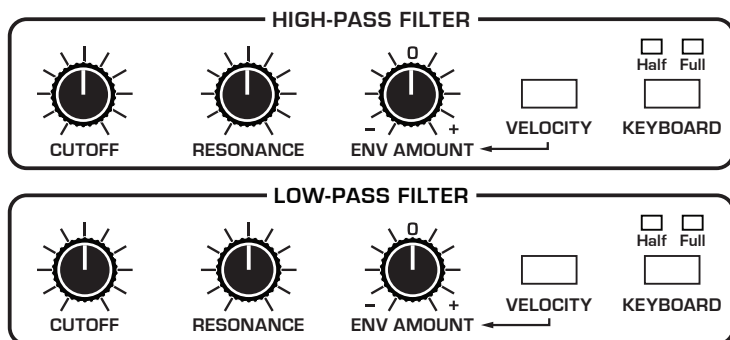
Noise: Sets the output level of the white noise generator.

Filters

Filters take the basic, raw sound of the oscillators and noise generator and subtract frequencies, changing the harmonic content and character of their sound. This change can be varied over time using the Filter Envelope to produce more dynamic, animated timbres.

The Prophet-6's two-filter architecture allows for a wide range of sonic possibilities. The Low-Pass Filter is a 4-pole, 24 dB per octave, resonant filter. The High-Pass Filter is a 2-pole, 12 dB per octave, resonant filter.

In simple terms, the Low-Pass Filter cuts high frequencies and the High-Pass Filter cuts low frequencies. If used at the same time, the two filters act as a band-pass filter, passing only the band of frequencies that fall between the high-pass and low-pass cutoff points.



The Low-Pass Filter and High-Pass Filter

Cutoff: Sets the filter's cutoff frequency. On the Low-Pass Filter, frequencies are reduced from the top down — cutting the high frequencies and passing the low, hence the name “low-pass.” On the High-Pass Filter, frequencies are reduced from the bottom up — cutting the low frequencies and passing the high, hence the name “high-pass.”

Resonance: Emphasizes a narrow band of frequencies around the cutoff frequency. On the Low-Pass Filter, high levels of resonance can cause the filter to self oscillate and generate its own pitch.



High levels of resonance can sometimes cause the Prophet-6 outputs to clip if its sound generators are also set to high output in the Mixer. Monitor your outputs carefully to ensure optimal, clean signal levels. If you experience signal clipping, try reducing the levels of the oscillators in the MIXER section, the ENV AMOUNT parameter in the Amplifier Envelope, or the RESONANCE parameter in either the low-pass or high-pass filter.

Env Amount: Sets the amount of modulation from the filter envelope to the filters. Higher amounts more dramatically affect the cutoff frequency. This control is bipolar. Positive settings produce standard behavior as described in “Filter Envelope” on page 22. Negative settings invert the envelope. Experiment with this control to create a variety of expressive filtering effects.

Velocity: on, off—When enabled, allows key velocity to influence filter frequency. If the ENV AMOUNT is set to a positive value on the low-pass filter, the harder you play, the more the filter will open and the brighter the sound will be. Conversely, if the ENV AMOUNT is set to a negative value, the harder you play, the more the filter will close and the less bright the sound will be. This control makes for more touch-sensitive sounds

Keyboard: off, half, full—Sets the amount of modulation from the keyboard to the filter’s cutoff frequency. Selecting HALF or FULL means that the higher the note played on the keyboard, the more the filter opens. This is useful for adding brightness to a sound as higher notes are played, which is typically how acoustic instruments behave. If both HALF and FULL are off, keyboard filter tracking is off, meaning that filter frequency is unaffected by playing higher or lower notes on the keyboard.



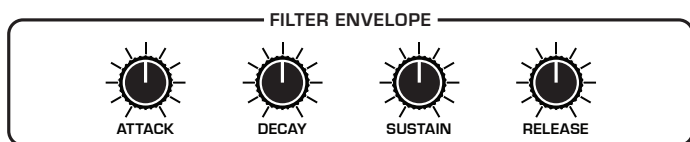
On the Low-Pass Filter, setting KEYBOARD to FULL when the filter is self oscillating will cause the filter-generated pitch to follow the keyboard in tune (i.e. in semitones). Setting the KEYBOARD to HALF will cause the filter-generated pitch to follow the keyboard pitch in quarter tones.

Filter Envelope

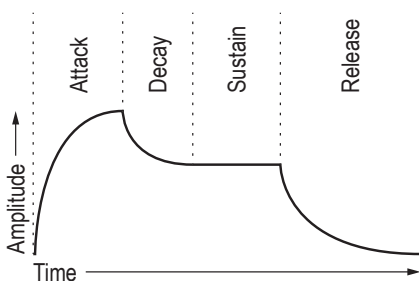
The Prophet-6's low-pass and high-pass filters share a dedicated, four-stage envelope generator. The Filter Envelope is used to shape the harmonic characteristics of a synthesized sound by giving you filtering control over its attack, decay, sustain, and release stages.

This is one of the most important factors in designing a sound. Without an envelope, the filters would be completely static. They would stay open or closed by a fixed amount that wouldn't change over the duration of a sound. That's not very interesting to listen to and it's not how instruments behave in the real world.

In general, sounds produced by an instrument are brighter at their beginning (the attack stage) and grow mellower as they die out (the decay and release stages). In other words, their harmonic content changes over time. This is exactly what the filter envelope is designed to emulate.



Filter envelope



A typical 4-stage envelope

Attack: Sets the attack time of the envelope. The higher the setting, the slower the attack time and the longer it takes for the filter(s) to open to the level set with the filter `CUTOFF` knob. Percussive sounds typically have sharp (short) attacks.

Decay: Sets the decay time of the envelope. After a sound reaches the filter frequency set at its attack stage, `DECAY` controls how quickly the filter then transitions to the cutoff frequency set with the `SUSTAIN` knob. The higher the setting, the longer the decay. Percussive sounds, such as synth bass, typically have shorter decays (and a generous amount of low-pass filter resonance).

Sustain: Sets the filter cutoff frequency for the sustained portion of the sound. The sound will stay at this filter frequency for as long as a note is held on the keyboard.

Release: Sets the release time of the envelope. This controls how quickly the filter closes after a note is released.



The description of envelope behavior above is true when the `ENVELOPE AMOUNT` parameter is set to a positive value. But since this control is actually bi-polar, it is possible to set a negative amount of modulation. In this case, the envelopes are inverted and their behavior changes. The best way to get a feel for the difference is to experiment with both positive and negative settings of the `ENVELOPE AMOUNT` parameter.



The cutoff frequency setting may limit the effect of the envelope on the filter. For example, on the low-pass filter, if `CUTOFF` is at its highest setting, a positive envelope amount will have no effect on the filter since the filter is already completely open.

Changing the Filter Envelope's Response Curve

By default, the envelopes of all synthesizers are designed to have certain type of response curve that is largely dependent on the preference of the designer. In most cases, this can't be changed. The current preference is that the faster or snappier the envelopes, the better.

However, in the case of the Prophet-6, there is a hidden feature in the Poly Mod section that allows you to modify the responsiveness of the Filter Envelope's ADSR controls. This opens up a new level of fine adjustment of these controls that is subtle but powerful. Try it and see.

To adjust the responsiveness of the filter envelope:

1. Select a program — such as a synth brass sound — that has a slightly soft but bright attack.
2. Repeatedly play a series of notes or chords on the keyboard, so you can hear the effect of the adjustments as you follow the steps below.
3. In the Poly Mod section, enable the LP FILTER as the only destination (disable all other Poly Mod destinations such as FREQ 1, FREQ 2 etc.).
4. In the Poly Mod section, turn the FILTER ENV control slightly counter-clockwise. Try a setting of about 11 o'clock.
5. Continue to play a series of chords and turn the ENV AMOUNT knob clockwise in the LOW-PASS FILTER section. Try moving it back and forth between 1 o'clock and 3 o'clock.
6. As you do this, compare different settings of the Poly Mod FILTER ENV control, the Low-Pass Filter ENV AMOUNT, and different Attack, Decay, Sustain, and Release settings on the Filter Envelope.

The interaction of these controls is worth exploring for greater flexibility and control of the Filter Envelope.

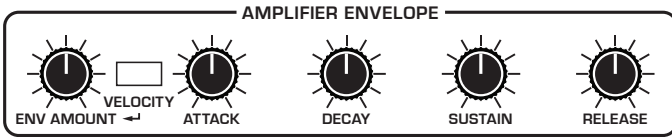
Amplifier Envelope

After passing through the filters, a synthesized sound goes into an analog voltage controlled amplifier or VCA, which controls its overall loudness. The VCA has a dedicated, four-stage envelope generator.

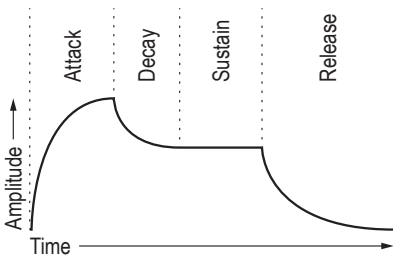
The Amplifier Envelope is used to shape the volume characteristics of a sound over time by giving you control over its attack, decay, sustain, and release stages. Along with the filter envelope, this is one of the most important factors in designing a sound.

Without a volume envelope, the loudness of a sound wouldn't change over the duration of a note. It would begin immediately, remain at its full volume for the duration of the note, then end immediately when the note was released. Again, that's not very interesting sonically and it's not typically how instruments behave in the real world.

To give you a real-world example, the main difference between the sound of the wind and the sound of a snare drum is that they have very different volume envelopes. Otherwise, they are essentially both white noise. Wind has a relatively slow attack, a long sustain, and a long decay and release. A snare drum has a sharp attack, no sustain, and virtually no decay or release. But again, they are both fundamentally white noise.



Amplifier envelope



A typical four-stage, ADSR envelope shape

Attack: Sets the attack time of the envelope. The higher the setting, the slower the attack time and the longer it takes for a sound to reach its full volume. Pads typically have softer (longer) attacks. Percussive sounds have sharper (shorter) attacks.

Decay: Sets the decay time of the envelope. After a sound reaches its full volume at its attack stage, DECAY controls how quickly the sound transitions to the level set with the SUSTAIN control. The higher the setting, the longer the decay. Percussive sounds, such as synth bass, typically have shorter decays.

Sustain: Sets the sustain level of the envelope. The higher the setting, the louder the sustained portion of the sound will be. The sound will stay at this level for as long as a note is held on the keyboard.

Release: Sets the release time of the envelope. This controls how quickly a sound dies out after a note is released.

Env Amount: Sets the amount of modulation from the Amplifier Envelope to the VCA. In most cases you will probably want to set this fully clockwise for maximum VCA volume. If you experience signal clipping, try reducing the ENV AMOUNT or the levels of the oscillators in the MIXER section.



To recreate the “gated VCA” effect used on certain classic rock anthems, choose an organ sound, then set the VCA ENV amount to zero, route the LFO square wave to AMP with an INITIAL AMT setting of 100% and hold a few chords.

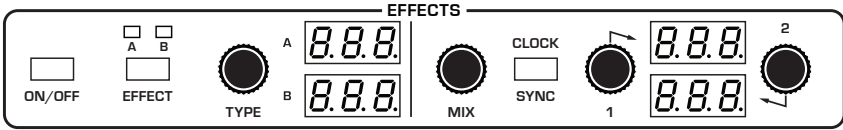
Velocity: This button enables keyboard velocity to modulate the VCA Envelope Amount. The harder you play, the more the VCA envelope is affected. This makes for more touch-sensitive sounds.

Effects

The Prophet-6 EFFECTS section allows you to add up to two, 24-bit, 48 kHz digital effects to any sound. Though the Prophet-6 sounds great on its own, adding a touch of reverb or delay can enhance many sounds with a subtle (or not so subtle) sense of ambience and depth. Other effects such as the chorus and phaser are useful for adding more conspicuous tonal enhancement as well as emulating classic instruments such as string ensembles and so on.

While the effects themselves are digital, the main signal path of the Prophet-6 is analog, with the effects generated in a separate audio chain, converted to analog, then added to the main signal path using the MIX knob. The ON/OFF switch enables and disables both Effect A and Effect B, using a true bypass, ensuring a pure analog signal path.

Effects settings are saved individually with each program. Time-based effects such as the Delays can be synchronized to the arpeggiator, sequencer, or MIDI clock to produce repeats that occur on the beat.



The Effects section

Effects are divided into sets A and B. You can choose a single effect from each set. Effect A and B are applied one after another, in series. For this reason, reverb effects are only available as Effect B, since it's the last stage in the serial effects chain — where reverb is traditionally applied. Either effect can also be set to “off.”

Effect A:

- Delay 1 (“*bbd*”) - vintage bucket-brigade emulation
- Delay 2 (“*ddl*”) - classic digital delay
- Chorus (“*[HQ]*”) - vintage chorus
- Phase Shifter 1 (“*PH I*”) vintage 6-stage phaser, high resonance
- Phase Shifter 2 (“*PH 2*”) vintage 6-stage phaser, lower resonance

Effect B:

- Delay 1 (“*bbd*”) - vintage bucket-brigade emulation
- Delay 2 (“*ddl*”) - classic standard digital delay
- Chorus (“*[HQ]*”) - vintage chorus
- Phase Shifter 1 (“*PH I*”) vintage 6-stage phaser, high resonance
- Phase Shifter 2 (“*PH 2*”) vintage 6-stage phaser, lower resonance
- Reverb 1 (“*HRL*”) - classic hall emulation
- Reverb 2 (“*r []*”) - classic room emulation
- Reverb 3 (“*PL R*”) - classic plate emulation
- Reverb 4 (“*SP r*”) - vintage guitar-amp-style spring emulation

To use Effects:

1. Press the ON/OFF switch to turn on Effects.
2. Press EFFECT and choose A or B, depending on which you want to apply and configure.
3. Turn the TYPE knob to select an effect. Names are abbreviated. For instance “bbd” is the bucket-brigade delay. Refer to the list above.
4. Turn the MIX knob to the right to blend in a good amount of the processed signal. You’ll want to be able to clearly hear the effect when you tweak its settings. You can dial it down afterward.
5. Use the parameter 1 and parameter 2 knobs to adjust the effect’s parameters to your taste. See “Effects Parameters” on page 29 for details on the adjustable parameters on each effect type.
6. Finally, adjust the MIX knob to optimize the amount of the effect. Full left is completely dry. Full right is completely wet (a 100% processed signal).
7. Repeat as needed to add a second effect.

Main Parameters

On/Off: Turns both effects, A and B, on and off. The ON/OFF switch uses a true bypass, ensuring a pure analog signal path.

Effect: A, B—Selects either effect A or B for editing. Once selected, all adjustments apply to that effect.

Type: OFF, bbd, ddl, CHD, PH 1, PH2, HAL, rDD, PLA, SPt—Selects the effect type.

Mix: 0... 127—Sets the balance between the processed (wet) signal and unprocessed (dry) signal. Full left is completely dry. Full right is completely wet.

Clock Sync: 0n, OFF—When a delay effect is chosen, this enables syncing of the timed delay repeats (feedback) to the Arpeggiator, Sequencer, or MIDI clock. When Sync is on, delay time provides the following values:

| Value | Delay Time |
|-------|---------------|
| 1 | 4 beats |
| 2d | 3 beats |
| 2 | 2 beats |
| 4t | 1 beat |
| 4d | 1 1/2 beat |
| 4 | 1 beat |
| 8d | 3/4 of 1 beat |
| 8 | 1/2 of 1 beat |
| 8t | 1/2 of 1 beat |
| 16d | 3/8 of 1 beat |
| 16 | 1/4 of 1 beat |



Maximum delay time is 1 second. The combination of longer synced delay times with slower tempos can result in delay times that would be greater than 1 second. When that happens, the delay time is divided by 2 until it no longer exceeds the 1 second limit. For example, if the BPM is set to 60 and Delay Time is set to Half, the expected delay time would be 2 seconds. The actual delay time will be 1 second (i.e. 2 seconds divided by 2).

Parameter 1: Variable, depending on the effect—This knob adjusts parameter 1 for the chosen effect. Each effect has two adjustable parameters, which differ depending on the effect. See “Effects Parameters” on page 29 for details about the adjustable parameters on each effect type.

Parameter 2: Variable, depending on the effect—This knob adjusts parameter 2 for the chosen effect. Each effect has two adjustable parameters, which differ depending on the effect. See “Effects Parameters” on page 29 for details about the adjustable parameters on each effect type.

| Display | Effect Type | Parameter 1 | Parameter 2 |
|------------|----------------------|-------------|-------------------|
| <i>bbd</i> | bucket-brigade delay | delay time | feedback amount |
| <i>ddl</i> | digital delay | delay time | feedback amount |
| <i>cho</i> | chorus | rate | depth |
| <i>PH1</i> | phaser 1 | rate | depth |
| <i>PH2</i> | phaser 2 | rate | depth |
| <i>HAL</i> | hall reverb | time | early reflections |
| <i>r00</i> | room reverb | time | early reflections |
| <i>PLA</i> | plate reverb | time | early reflections |
| <i>SPr</i> | spring reverb | decay | tone |

bbd: This is a vintage bucket-brigade delay emulation. Bucket-brigade delays were originally a type of analog delay characterized by relatively short delay times and a warmer character than digital delays due to their loss of treble and clarity in the delayed analog signal. Adjustable parameters are delay time and feedback amount.



To recreate a classic bucket-brigade time-shifting effect, try adjusting the **TIME** parameter in real time.

ddl: This is a classic digital delay, Adjustable parameters are delay time and feedback amount.

CHO: This is a vintage chorus emulation. Use it to thicken and add animation to any sound. Adjustable parameters are rate and depth.

PH1: This is a vintage phaser emulation with high resonance. Use it to add a deep, sweeping, swirling resonant effect to a sound. Adjustable parameters are rate and depth.

PH2: This is a vintage phaser emulation with lower resonance. Use it to add a swirling resonant effect to a sound. Adjustable parameters are rate and depth.

HAL: This is a Hall reverb. It's the largest of the available reverbs. Adjustable parameters are reverb time and early reflection amount.

rOO: This is a Room reverb. It's the second largest of the available reverbs. Adjustable parameters are reverb time and early reflection amount.

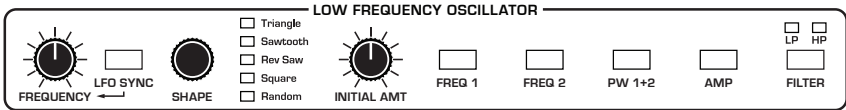
PLA: This is a Plate reverb. It emulates a classic reverb plate. Adjustable parameters are reverb time and early reflection amount.

SPr: This is a Spring reverb. It emulates a vintage, guitar-amp-style reverb. Adjustable parameters are decay and tone.

Low Frequency Oscillators

The LFO is a special-purpose oscillator that produces a frequency below the range of human hearing. The LFO is typically used for periodic modulation such as vibrato (periodic pitch modulation) and tremolo (periodic amplitude modulation).

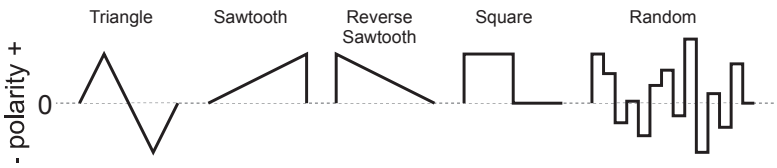
The LFO on the Prophet-6 produces a variety of waveshapes, including triangle, sawtooth, reverse sawtooth, square, and random. Though most often used for low-frequency modulation, the Prophet-6 LFO can actually function at speeds that extend into the audible range for extreme effects.



The Low-Frequency Oscillator

Triangle and Random waves are bipolar. That is, their waveshape is positive for half of their cycle and negative for the other half. In the case of the triangle wave, this makes it possible to generate a natural-sounding vibrato that goes alternately sharp and flat in equal amounts on either side of a center frequency. Random, also known as “sample and hold,” generates a series of random values, each held for the duration of one cycle

The square wave, sawtooth, and reverse sawtooth generate only positive values. In the case of the square wave this makes it possible to generate natural-sounding trills.



LFO waveshapes



The Prophet-6 has a sixth “hidden” LFO waveshape that you can use as a modulation source — noise. To access this, choose `RANDOM` then turn `FREQUENCY` all the way clockwise. This generates a white noise waveform.

The LFO can be free-running or synced to the arpeggiator, sequencer, or MIDI clock for tempo-synced effects such as filter sweeps, tremolo, and so on.

Frequency: Sets the frequency of the LFO waveshape routed to the destination. See also “LFO Sync” below.

LFO Sync: When on, the LFO synchronizes with the arpeggiator, sequencer, or MIDI clock. By default, the LFO wave cycle is reset when you press a key (but is not reset if you press a key while other notes are held).

Shape: Triangle, Sawtooth, Reverse Sawtooth, Square, Random—The wave shape of the LFO. A sixth waveshape, noise, can be generated by selecting `RANDOM` and turning the `FREQUENCY` knob all the way to the right.

Initial Amount: Sets the amount of LFO modulation routed to the selected destinations. Setting an amount here applies the selected modulation continuously. If you set this parameter to zero but still select a modulation destination, modulation is only applied when you use the Mod Wheel.

Freq 1: Selects the frequency of Oscillator 1 as a modulation destination. Use a triangle wave as a source to create vibrato. Use a square wave to create trills.

Freq 2: Selects the frequency of Oscillator 2 as a modulation destination. Use a triangle wave as a source to create vibrato. Use a square wave to create trills.

PW 1+2: When Oscillator 1 and/or 2 is set to square wave, this modulates the pulse width of the wave. Use a triangle wave LFO to create a chorus-like effect often used to emulate strings.

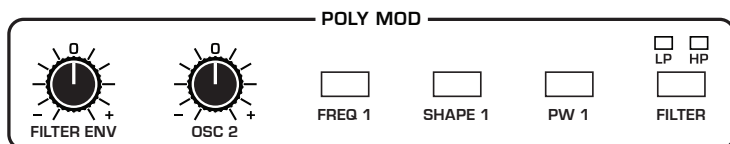
Amp: Selects the amplitude level as a modulation destination. Use a triangle wave LFO to create a tremolo effect.

LP Filter: Selects the Low-Pass Filter frequency as a modulation destination. Use a triangle wave LFO to create an auto-wah effect. Modulating the Low-Pass Filter at high frequencies can create interesting timbres.

HP Filter: Selects the High-Pass Filter frequency as a modulation destination. Modulating the High-Pass Filter at high frequencies can create interesting timbres.

Poly Mod

Although the overall sonic character of the Prophet-6 is determined by its analog oscillators and filters, much of its power to make truly unique and unusual sounds comes from the Poly Mod section.



The Poly Mod section

Poly Mod modulation sources:

- Filter envelope
- Oscillator 2 frequency

Poly Mod modulation destinations:

- Oscillator 1 frequency
- Oscillator 1 waveshape
- Oscillator 1 pulse width
- low-pass filter frequency
- high-pass filter frequency

You can control how much the source affects the destination by dialing in a specific modulation amount with the `FILTER ENV` or `OSC 2` knobs. Modulation amount can either be positive or negative.

Use Poly Mod to create complex harmonic effects ranging from FM (frequency modulation) to audio-rate filter modulation and beyond. Many classic sounds on the original Prophet-5 were created through clever use of Poly Mod.

Poly Mod Parameters

Filter Env: Selects the amount of modulation from the Filter Envelope that is applied to a selected destination. Modulation amount can be either positive or negative.

Osc 2: Selects the amount of modulation from Oscillator 2 that is applied to a selected destination. Modulation amount can be either positive or negative.



When using `osc 2` as a modulation source, the modulation character is affected by the waveshape currently chosen for Oscillator 2 (triangle, sawtooth, or square/pulse). Try setting Oscillator 2 to low frequency (using the `LOW FREQ` switch) to further increase modulation possibilities.

Freq 1: Selects Oscillator 1 frequency as a modulation destination. Choose `osc 2` as a modulation source to produce FM effects with their characteristic complex harmonics and metallic timbre.

Shape 1: Selects the Oscillator 1 waveshape as a modulation destination. This can animate the timbre of Oscillator 1 in interesting ways.

PW 1: When Oscillator 1 is set to pulse wave, choosing this as a destination modulates its pulse width. This will animate the timbre of Oscillator 1 in interesting ways.

LP Filter: Selects the Low-Pass Filter cutoff frequency as a modulation destination.

HP Filter: Selects the High-Pass Filter cutoff frequency as a modulation destination.

Arpeggiator

The Prophet-6 has a full-featured Arpeggiator. Turn it on, hold a chord and the Prophet-6 will play a pattern based on the individual notes held. Choose a mode (up, down, random, etc.), an octave range (1, 2, or 3), and a tempo, then pair it with an appropriately percussive sound, and you'll be surprised at the number of creative things you can do.

When HOLD is active, the Arpeggiator is in “relatch” mode, where playing a new chord latches to the new chord rather than adding notes to the existing chord.

If you enable HOLD, you can release the notes on the keyboard and the Arpeggiator will continue to play. In addition, the Arpeggiator features auto-latching: With HOLD on, played notes are held on and arpeggiated, and any additional notes you play are added to the arpeggio—as long as at least one key is continuously held.

You can sync the Arpeggiator to external MIDI clock, or even an external audio signal. When the Arpeggiator is playing, the Sequencer is disabled.



The Arpeggiator section

To use the Arpeggiator:

1. Press the Arpeggiator ON/OFF switch to turn it on.
2. Hold down one or more notes on the keyboard. The Arpeggiator plays them according to the settings you've chosen.
3. To latch arpeggiation on (so that you don't have to continuously hold down notes) press the HOLD button.
4. Adjust settings such as MODE, OCTAVE, REPEATS, BPM and VALUE.
5. To synchronize a delay effect to the Arpeggiator, turn on CLOCK SYNC in the Effects section, choose a delay, and adjust its delay time setting as desired.



An audio signal connected to the rear-panel FOOTSWITCH - SEQUENCE jack can be used to control arpeggiator (and sequencer) playback. This makes it possible to tempo sync the arpeggiator to a recorded drum track or other audio source. See “Seq Jack” on page 13 for more information about choosing the appropriate mode for these behaviors.

Arpeggiator Parameters

Tap Tempo—Tapping the **TAP TEMPO** button sets the tempo from 30 to 250 BPM. The LED flashes at the BPM rate you set. Tap the button at least 4 times to set the tempo.

BPM: 30...250—Sets the tempo for the arpeggiator in BPM (beats per minute). The **TAP TEMPO** LED flashes at the BPM rate. When **LFO SYNC** is enabled on the low-frequency oscillator, or **CLOCK SYNC** is enabled in the Effects section, the BPM rate affects the LFO frequency and/or delay effect. When syncing to an external MIDI clock source, the BPM setting has no effect.

Value—Selects a basic note value relative to the BPM. See the table below:

| Name | Tempo | Timing Division |
|--------|---------|-----------------------------------|
| Half | BPM/2 | Half note |
| Qtr | BPM | Quarter note |
| 8th | BPM x 2 | Eighth note |
| 8th D | BPM x 2 | Eighth note, dot |
| 8th S | BPM x 2 | Eighth note, swing timing |
| 8th T | BPM x 3 | Eighth note triplets |
| 16th | BPM x 4 | Sixteenth note |
| 16th S | BPM x 4 | Sixteenth note, full swing timing |
| 16th T | BPM x 6 | Sixteenth note triplets |
| 32nd | BPM x 8 | Thirty-second note |

On/Off—Turns the Arpeggiator on and off.

Octave: 1 Octave, 2 Octaves, 3 Octaves—Set to 1 Octave, only the keyed notes are arpeggiated. Set to 2 Octaves, the keyed notes and the notes one octave above them arpeggiate. Set to 3 Octaves, the keyed notes and the notes one and two octaves above them arpeggiate.

Mode: Sets the order in which notes play when Arpeggiator is on. See the table.

| Arp Mode | Behavior |
|-----------|---|
| Up | Plays from lowest to highest note |
| Down | Plays from highest to lowest note |
| Up + Down | Plays from lowest to highest and back to lowest |
| Random | Plays notes in random order |
| Assign | Plays notes in the order the keys were pressed |

Sequencer

The Prophet-6's sequencer is similar to a classic step sequencer. It allows you to create a single sequence of up to 64 steps, including rests and ties, with up to 6 notes per step. In addition, you can play along with a sequence (provided there is available polyphony), making it a powerful live performance tool. When the Sequencer is playing, the Arpeggiator is disabled.



The Sequencer/Arpeggiator



An audio signal connected to the rear-panel **FOOTSWITCH - SEQUENCE** jack can be used to control sequencer playback. This makes it possible to tempo sync the sequencer (or arpeggiator) to a recorded drum track or other audio source. See "Seq Jack" on page 13 for more information about choosing the appropriate mode for these behaviors.

Programming the Sequencer

Though programming the sequencer is simple, you can create sequences that are rhythmically and melodically complex by combining a repeating phrase or bass line with chords, ties, and rests. You can play up to 64 steps with up to 6 notes held simultaneously per step. For most sequences you'll probably want to use sounds with a relatively sharp attack and short release.



Most factory programs have a sequence associated with them. Recall a program and press the Sequencer's **PLAY** button to hear its associated sequence.

To program a note sequence:

1. Press the **RECORD** button.
2. Perform the sequence on the keyboard. The display indicates the current step as you play.



When recording a chord as a step, as long as you continue to hold at least one note down, you can keep adding notes to the chord/step, and even use the **TRANSPOSE** buttons to extend the keyboard range while doing it.

3. To add a rest as you play, press the **TENS/INCREMENT** button for that step, then continue playing.
4. To add a “tie” that extends the length of a note, continue to hold down the note(s) and press the **TENS/INCREMENT** button repeatedly to extend the note the number of steps you want.
5. When you're done, press **PLAY** to listen to your sequence.
6. To save the sequence, save the program and they are saved together. (See “Saving a Program” on page 5.)



If you want to play live along with the sequencer, be sure to leave voices available. In other words, don't play 6-note chords for every step in the sequence!

To play a sequence:

1. Press **PLAY**. The sequence plays back at the current BPM setting.
2. To stop playback, press **PLAY** again.



Alternatively, you can start and stop sequencer playback using a footswitch connected to the rear-panel **SEQ** jack or using MIDI start/stop messages sent from a DAW or other MIDI device. See “Seq Jack” on page 13 for more information.



Use the **BPM**, **VALUE**, or **TAP TEMPO** controls to adjust sequencer playback speed.

To transpose a sequence:

1. Press **PLAY**. The sequence begins playback.
2. Press and hold **RECORD** and press a key on the keyboard. “Middle C” is the reference point. Playing a note above middle C transposes the sequence higher by that interval. Playing a note below middle C transposes the sequence lower by that interval.

Sequencer Parameters

Here are the controls and parameters used when interacting with the sequencer.

Record: On, Off—This switch turns sequencer recording on and off.

Play: On, Off—This switch turns sequencer playback on and off.

BPM: 30...250—Sets the tempo for the Sequencer and Arpeggiator in BPM (beats per minute). The **TAP TEMPO** LED flashes at the BPM rate. When **LFO SYNC** is turned on, the BPM rate affects the LFO frequency. When syncing to an external MIDI clock source, the BPM setting has no effect.

Tap Tempo: 30...250—Tap this button at least 4 times to quickly set the tempo for the Sequencer and Arpeggiator. The LED flashes at the BPM rate you set.

Value: Sets the note value for each sequencer/arpeggiator step relative to the BPM. **VALUE** works with both internal and external clock sources. The following table lists the values:

| Name | Tempo | Timing Division |
|--------|---------|-----------------------------------|
| Half | BPM/2 | Half note |
| Qtr | BPM | Quarter note |
| 8th | BPM x 2 | Eighth note |
| 8th D | BPM x 2 | Eighth note, dot |
| 8th S | BPM x 2 | Eighth note, swing timing |
| 8th T | BPM x 3 | Eighth note triplets |
| 16th | BPM x 4 | Sixteenth note |
| 16th S | BPM x 4 | Sixteenth note, full swing timing |
| 16th T | BPM x 6 | Sixteenth note triplets |
| 32nd | BPM x 8 | Thirty-second note |

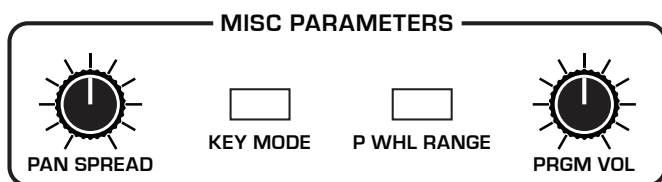
Master Volume/Program Volume

The master output level of the Prophet-6 is controlled by the front-panel MASTER VOL knob. In addition, the volume of an individual program can be set with the PRGM VOL knob in the MISC PARAMETERS section. This is useful for ensuring that your sounds have roughly the same volume from program to program. Unison sounds in particular can be very loud compared to other programs.



MASTER VOL

The Master Volume knob



The program volume knob (PRGM VOL) in the MISC PARAMETERS section

To set the volume of an individual program:

1. Choose a program.
2. In the MISC PARAMETERS section, turn the PRGM VOL knob to set its volume.
3. Save the program. (See “Saving a Program” on page 4.)



MIDI volume can also influence the overall volume of the Prophet-6 if you are controlling it from an external MIDI source.

Distortion

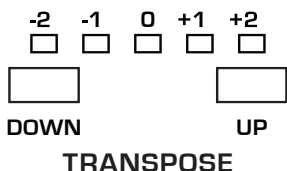
The Prophet-6 provides stereo analog distortion. This can be used to add warmth, harmonic complexity, and an aggressive edge to sounds. The character of the distortion is affected by the harmonic content of a program. Sounds with more high-end will sound different than sounds with fewer harmonics. To add distortion, use the `DISTORTION` knob.



The Distortion knob

Transpose

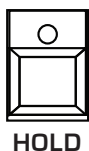
The `UP` and `DOWN` buttons in the `TRANPOSE` section transpose the keyboard up or down in octaves. The LED indicates the current keyboard transposition state. Transposing the keyboard also changes the MIDI note numbers of the keys so that MIDI notes sent are also transposed. Transpose settings are global and are not saved with individual programs.



The Transpose controls

Hold

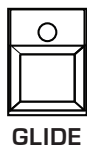
When HOLD is on, any notes played will continue to play until HOLD is turned off. When used in conjunction with the Arpeggiator, notes are latched on and replaced by any new note(s) struck. If HOLD is on and at least one key continuously held down, any new notes played are added to the arpeggio.



The Hold button

Glide

Glide or *portamento* causes the pitch of a note to glide up or down from the pitch of the previously played note. Glide is turned on and off using the GLIDE switch, but the GLIDE AMOUNT must also be set. If the GLIDE button is on, but GLIDE AMOUNT is set to 0, GLIDE has no effect.



The Glide controls

There are four modes that determine how GLIDE behaves.

Fixed Rate (F_r): The time to transition between notes varies with the interval between the notes; the greater the interval, the longer the transition time. The glide rate is fixed. This is the default glide mode.

Fixed Rate A (F_rA): The same as Fixed Rate, but glide is only applied when playing legato. That is, glide only occurs when a note is held until the next note is played. This effectively allows glide to be turned on and off from the keyboard.

Fixed Time (F_T): Glide is set to a fixed time, regardless of the interval between notes.

Fixed Time A (F_{TA}): The same as Fixed Time, but glide only occurs when playing legato.

To select a glide mode:

1. Press and hold the GLIDE switch. The numeric display shows the currently selected Glide mode.
2. To select a different mode, continue to hold down the GLIDE switch then press the BANK/DECREMENT and TENS/INCREMENT switches to step through the other choices.
3. When finished, release the GLIDE switch.

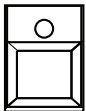
Unison

When UNISON is on, the Prophet-6 functions like a monophonic synthesizer in that only 1 note can be played at a time. However, that one note can be powered by as many as six voices, depending on how many you choose to use. With up to 12 oscillators powering a single note (2 oscillators per voice x 6 voices), you can create some very dense, speaker-rattling sounds.



If you want to create an ultra heavy synth bass, try using Unison!

Unison gives you control over not only how many voices to stack, but also the amount of detuning between the oscillators, and what note gets priority if you happen to play more than one note on the keyboard. (This is called the key assign mode or *note priority*. See “Key Assign Modes” on page 45 for details.)



UNISON

The Unison button

To use Unison:

1. Press and hold the UNISON switch.
2. With the Unison switch held down, use the BANK/DECREMENT and TENS/INCREMENT switches to choose the number of voices to stack, then release the Unison switch.
3. To detune the oscillators, use the SLOP knob.

Using Chord Memory

Unison has another useful feature: chord memory. Instead of assigning voices to a single note, hold down a chord on the keyboard and press the Unison switch. The Prophet-6 memorizes the notes of the chord. Single notes played on the keyboard will then trigger all notes of the stored chord, transposing them as you play up or down the keyboard. Try using this feature to create powerful chord stabs and hits.

If you save a program that uses chord memory, the chord is saved with the program. “[HD]” will then appear as a choice if you step through voice stacking options using the BANKS/DECREMENT and TENS/INCREMENT buttons while holding down UNISON.



If low-note priority is chosen in Global settings, the note that you play corresponds to the lowest note of the chord voicing. Changing the Key Assign Mode to high-note priority will make the note that you play correspond to the highest note in the chord voicing.

To use chord memory:

1. Hold down a chord on the keyboard (6 notes maximum).
2. Press the UNISON switch. The chord voicing is memorized. Play a few notes to listen to the result.
3. If you save the program, the unison chord memory is saved with it.

To clear chord memory:

1. Turn off Unison.
2. Hold down a single note.
3. Press the UNISON button.
4. Save the program again.

Key Assign Modes

Key Assign (sometimes called note priority) determines what note has priority when more than one note is played on the keyboard or via MIDI:

- Low-note priority ($L\bar{D}$) is most common in vintage synths and is often used for playing trills by holding a note and repeatedly tapping a lower note.
- Low retrigger ($L\bar{D}r$) causes the envelopes to be retriggered with each keystroke.
- High note ($H\bar{r}$) and high retrigger ($H\bar{r}r$) are similar to the low note settings, except that the highest note is given priority.
- Last note ($L\bar{R}S$) and last retrigger ($L\bar{R}r$) give priority to the last note played.

To choose the Key Assign mode:

1. Press and hold **KEY MODE** in the **MISC PARAMETERS** section. The numeric display shows the currently selected mode.
2. To select a different mode, continue to hold down the **KEY MODE** switch then press the **BANK/DECREMENT** and **TENS/INCREMENT** switches to step through the other choices.
3. Release the **KEY MODE** switch when you're finished.

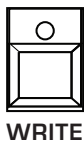


Key Assign settings are only relevant to Unison mode. They do not affect polyphonic playback.

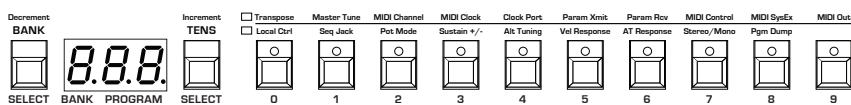
Write

The WRITE button saves the currently active program. Saving a program overwrites a previously saved program.

The Prophet-6 contains a total of 1000 programs. 500 are permanent and 500 can be overwritten. Banks 0-4 are User Banks that can be overwritten. Banks 5-9 are Factory Banks that are permanent. You can edit the programs of either bank, but you can only save them to Banks 0-4. As shipped from the factory, presets 000-499 are identical to 500-999.



The Write button



Program bank, tens, and number selectors

To save a program to the same preset location:

1. Press the WRITE button. Its LED begins blinking.
2. Press a PROGRAM SELECTOR button (0-9) to specify the “ones” digit of the program.
3. The WRITE button LED stops blinking and the program is saved.

To save a program to a different bank location:

1. Press the WRITE button. Its LED begins blinking.
2. Hold down the BANK button then press a PROGRAM SELECTOR button (0-9) to specify the “hundreds” bank of the program. You can only save to Banks 0-4.
3. Hold down the TENS button then press a PROGRAM SELECTOR button (0-9) to specify the “tens” digit of the program.

4. Press a PROGRAM SELECTOR button (0-9) to specify the “ones” digit of the program.
5. The WRITE button LED stops blinking and the program is saved.

Canceling Save

Sometimes you may want to cancel saving a program before you commit.

To cancel the Save process before you commit:

- If the WRITE button LED is flashing, press it again. The LED stops flashing and saving is canceled. You can return to editing if you want.

Comparing Before You Save

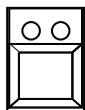
Before writing a program to a new location, it’s a good idea to listen to the program in the target location to make sure you really want to overwrite it.

To evaluate a program before you overwrite it:

1. Get ready to save by pressing the WRITE button. It starts flashing.
2. Press the GLOBAL button. Both LEDs on the button light up, indicating COMPARE mode.
3. Use the program buttons to navigate to the sound you want to compare and play the keyboard to hear the sound.
4. To disable the compare function and go back to the edited sound, turn off the GLOBAL button. Programs can’t be written while in compare mode.
5. If you want to save the edited sound, the WRITE button is still flashing and ready to save, so enter a location with the program buttons. The sound is saved.
6. Alternatively, if you want to cancel saving and continue editing, press the WRITE button. It stops flashing and saving is canceled.

Globals

Global settings are parameters that affect all programs. These include settings such as Master Tune, MIDI Channel, MIDI Clock, and others. Global parameters are printed in two rows the program number switches (0 - 9). Press the Globals switch once to access the top row. Press it twice to access the bottom row. For details on the various Global parameters, see “Global Settings” on page 10.



GLOBALS

The Globals button

To change a Global setting:

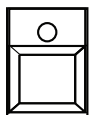
1. Press the GLOBALS button. Pressing it once accesses the top row of Global parameters. Pressing it twice accesses the bottom row of Global parameters. The LED indicates which row is active.
2. Press the PROGRAM SELECTOR button that corresponds to the Global parameter you want to change.
3. Use the BANK/DECREMENT and TENS/INCREMENT buttons to step through the available settings until you reach the one you want.
4. When finished, press GLOBALS again to exit.



Pressing the GLOBALS button three times in a row saves the current program as the default program that appears when you turn on the Prophet-6.

Preset

The PRESET switch toggles “live panel” mode on and off. In live panel mode the Prophet-6 ignores the currently active preset and reverts to the current front-panel settings of its knobs and switches. In other words, what you see on the front panel is what you hear. This is a great mode for learning, experimentation, and instant gratification.



PRESET

The Preset button

To enter live panel mode:

- Press the PRESET button to toggle it off. The Prophet-6 is now in live panel mode. What you see on the front panel is what you hear. Note that you can't change programs or banks with Preset off.

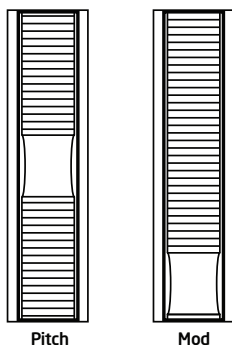
To return to preset mode:

- Press the PRESET button again to toggle it on. The LED is lit. The current program is what you hear.

Pitch and Mod Wheels

The Prophet-6 has a spring loaded Pitch wheel and a Mod wheel. You can use these controls to enhance live performance by bending notes and adding modulation in real time as you play.

In the same way that guitar players use note bends and vibrato to give their playing expressiveness and character, these two controls can really help you define your sound as a performer and take you beyond just playing notes on the keyboard.



The Pitch and Modulation wheels

Pitch Wheel

You can set a range in semitones for the Pitch wheel, depending on your playing preference. The range is up to 12 semitones (1 octave). Many musicians use a range of 2 semitones (a whole step) since this is the bend range of many acoustic instruments. For guitar whammy bar effects, you may wish to set a wider range.

To set the pitch bend range:

1. In the MISC PARAMETERS section, press and hold the P WHL RANGE button.
2. With the button still held down, use the BANK/DECREMENT and TENS/INCREMENT switches to choose the number of semitones (up to 12) for the pitch bend range, then release the P WHL RANGE button.

Modulation Wheel

The Mod wheel controls the amount of modulation applied to any destinations chosen in the LOW-FREQUENCY OSCILLATOR section. This allows you to “perform” LFO modulation in real time by moving the Mod wheel. This is a great way to add expressiveness to a sound or performance.

To choose a modulation destination for the Mod wheel:

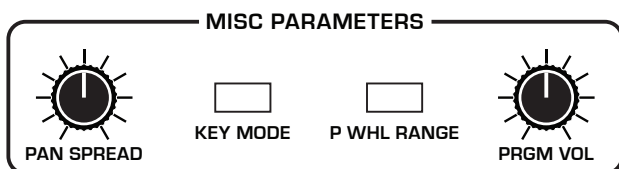
1. In the LOW-FREQUENCY OSCILLATOR section, choose a modulation destination as well as a SHAPE and FREQUENCY for the LFO. (See “Low Frequency Oscillators” on page 31 for more details.)
2. To apply modulation only when using the Mod wheel, set the INITIAL AMT knob to zero. (Turning this knob up will apply LFO modulation continuously — not just when the Mod wheel is used.)



Many programs use the Mod wheel to add vibrato. In this case, Freq 1 and Freq 2 are enabled as modulation destinations in the LOW-FREQUENCY OSCILLATOR section. This adds vibrato when you push the mod wheel forward. Set the INITIAL AMT knob to zero to apply vibrato only when using the Mod wheel.

Misc Parameters

The MISC PARAMETERS section allows you to access controls for a number of essential functions described below. To set the KEY MODE and P WHL RANGE, hold down the associated button in the MISC PARAMETERS section, then use the BANK/DECREMENT and TEN/INCREMENT buttons to step through available settings.



The Misc Parameters controls

Pan Spread: Pans the audio in the stereo field individually per voice. Set to 0, all voices are panned to the center. As Pan Spread is turned up, the audio in each voice is gradually moved away from the center by greater amounts. Every other voice goes in a different direction, left or right. This creates a broader stereo field while playing.

Key Mode: Low Note (*L₀*), High Note (*H₁*), Last Note (*L_{R5}*), Low Note Retrigger (*L_{0r}*), High Note Retrigger (*H_{1r}*), Last Note Retrigger (*L_{Rr}*)—Selects the key priority when more than one key is played simultaneously in when in Unison mode. LOW NOTE, HIGH NOTE and LAST NOTE are monophonic playback modes that give priority to the lowest, highest, or last note played, as their names imply.

P Wheel Range: 0...12 Semitones— Selects the range in semitones when moving the Pitch Wheel forward or backward. Twelve semitones equals 1 octave.

Program Volume: Sets the volume of an individual program. This is useful for matching volume between programs.



There is enough gain in the Prophet-6 that if you set some programs to a high PROGRAM VOLUME, clipping distortion may occur. If this happens, try lowering the PROGRAM VOLUME, the levels of the oscillators in the MIXER, the VCA ENVELOPE AMOUNT, or the RESONANCE parameter of the low-pass or high-pass filter.

Aftertouch

Aftertouch is a performance feature that allows you to add modulation to a sound by applying additional pressure to a key after the key is already down. The greater the pressure applied, the more modulation is applied. The Prophet-6 provides *monophonic* (or “channel”) aftertouch, which means that applying pressure to any key within a chord will apply modulation to *all* notes currently held.

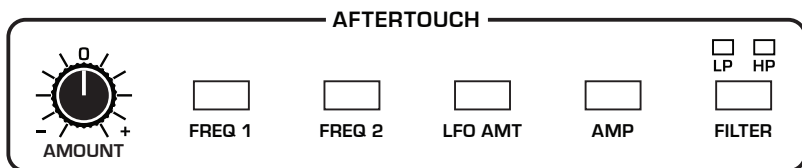
The Aftertouch section lets you choose the amount of modulation applied using aftertouch and which parameters are modulated (oscillator frequency, filter cutoff, etc.). You can set either a positive or negative amount.

For example, if you select the Low-Pass Filter as destination (FILTER LP), set a *positive* amount of aftertouch, then press the keys harder, the filter cutoff frequency will increase, making the filter open wider and the sound become brighter.

Conversely, if you select the Low-Pass Filter as destination (FILTER LP), set a *negative* amount of aftertouch, then press the keys harder, the filter cutoff frequency will be lowered, making the filter close more and the sound become more muted.



The Prophet-6 provides four different aftertouch response settings for your convenience. The default setting provides a linear response. To choose a different response curve, use the AT RESPONSE button in the GLOBALS section. See page 14 for more details.



The Aftertouch controls

Amount: Selects the amount of aftertouch applied to a selected destination. Positive `AMOUNT` settings apply positive amounts of modulation. Negative `AMOUNT` settings apply negative amounts of modulation.

Freq 1: Selects Oscillator 1 frequency as an aftertouch modulation destination. With a positive `AMOUNT` setting, pressing the keys harder will shift the Oscillator 1 pitch upward. With a negative `AMOUNT` setting, pressing the keys harder will shift the Oscillator 1 pitch downward.

Freq 2: Selects Oscillator 2 frequency as an aftertouch modulation destination. With a positive `AMOUNT` setting, pressing the keys harder will shift the Oscillator 2 pitch upward. With a negative `AMOUNT` setting, pressing the keys harder will shift the Oscillator 2 pitch downward.

LFO Amount: Selects the `LFO AMOUNT` parameter as an aftertouch modulation destination. With a positive `AMOUNT` setting, pressing the keys harder will increase the amount of LFO modulation to any destination selected in the `LOW-FREQUENCY OSCILLATOR` section. With a negative `AMOUNT` setting, pressing the keys harder will increase the amount of LFO modulation — with the LFO waveform inverted.

Amp: Selects Amplitude as an aftertouch modulation destination. With a positive `AMOUNT` setting, pressing the keys harder will increase the volume of a sound. With a negative `AMOUNT` setting, pressing the keys harder will decrease the volume of a sound.



If the Amplifier Envelope's `ENV AMOUNT` is set to full, positive amounts of `AMP` aftertouch will have no effect since the VCA is already at its maximum output level.

LP Filter: Selects the Low-Pass Filter cutoff frequency as a modulation destination. With a positive `AMOUNT` setting, pressing the keys harder will open the filter wider and make a sound become brighter. With a negative `AMOUNT` setting, pressing the keys harder will close the filter more and make a sound more muted.

HP Filter: Selects the High-Pass Filter cutoff frequency as a modulation destination. With a positive `AMOUNT` setting, pressing the keys harder will increase the high-pass cutoff frequency, reducing the low-end of a sound. With a negative `AMOUNT` setting, pressing the keys harder will decrease the high-pass cutoff frequency allowing more low frequencies to pass.



Controlling the low-pass or high-pass filter frequency with Aftertouch may or may not have an audible effect, depending on the cutoff frequency of the filter.

Exporting Programs and Banks

You can use the `PGM DUMP` command in the `GLOBALS` section to transmit the current program, bank, or all banks in SysEx format via the selected MIDI port. This allows you to save your programs so that you can share them or archive them.

To export a program or bank as a SysEx file over MIDI:

1. Press the `GLOBALS` button once (this enables the upper set of parameters) then press program selector 8 to select the `MIDI SYSEX` command.
2. Use the `BANK/DECREMENT` and `TENS/INCREMENT` buttons to select the appropriate MIDI port — MIDI (`i7i d`) or USB (`U5b`).
3. Press `GLOBALS` a second time (this enables the lower set of parameters) then press program selector 8 to select the `PGM DUMP` command. The `WRITE` button begins flashing.
4. Use the `BANK/DECREMENT` and `TENS/INCREMENT` buttons to select the desired option — program (`P-r`), tens (`tEr`), bank (`bAn`), user banks (`U5r`), all (`ALL`).
5. Press `WRITE`. The program or bank is exported.



Dumped programs will load back into the same bank and program location in memory when received by the Prophet-6 via MIDI.

Calibrating the Prophet-6

The Prophet-6 is calibrated at the factory. Controls such as the pitch and mod wheels shouldn't require re-calibration. However, because its oscillators and filters are voltage controlled and can be affected by extremes of temperature, you may need to use the built-in calibration function to tune them occasionally.

How and When to Calibrate the Oscillators and Filters

The first time you use the Prophet-6, please run its built-in oscillator and filter calibration procedure. Let it warm up for several minutes and come to its normal operating temperature before doing so.

Repeat the calibration procedure as needed over the next few days of use. The Prophet-6 learns the range of temperatures at your location and will keep itself in tune over this range.

Later, if you use the Prophet-6 in a different environment that is measurably warmer or cooler (on stage, in an air-conditioned studio, and so on) run the calibration procedure again.

To calibrate the oscillators and filters:

1. Hold down the PRESET button and press 0.
2. The front panel LEDs and display begin flashing as the Prophet-6 performs its auto-calibration procedure. Don't turn off the power while it's doing this.
3. When finished, the front panel controls will return to normal and you can play the Prophet-6 again.

Calibrating the Pitch and Mod Wheels

In general, the Pitch and Mod wheels shouldn't require re-calibration. However, if you experience what seems like a persistent problem with either of them, the Prophet-6 has built-in auto-calibration procedure that you can use to remedy the problem.

To calibrate the Pitch and Mod wheel's low position:

1. Rotate and hold both wheels in their low position.
2. Hold down the PRESET button and press 7.

To calibrate the Pitch wheel's center position:

- With the Pitch wheel centered, hold down the PRESET button and press 8.

To calibrate the Pitch and Mod wheel's high position:

1. Rotate and hold both wheels in their high position.
2. Hold down the PRESET button and press 9.

Resetting the Global Parameters

If you're trying to track down a problem, it's sometimes a good idea to reset the Global parameters to their defaults. This is a quick way to make sure that the Prophet-6 returns to its factory settings.

To reset all Global parameters to their default settings:

- Hold down the GLOBAL button and press WRITE.

Using USB

The Prophet-6's USB 2.0 port enables bidirectional MIDI communication with a computer. A MIDI interface and MIDI cables are not necessary, just a USB cable. The Prophet-6 is a Class Compliant USB device. That means it does not require any additional drivers to be installed to communicate with a Mac or Windows computer. The Prophet-6 transmits and receives MIDI data via USB, but does not transmit audio.



MIDI In and USB should not be used at the same time, as overlapping messages from different sources may cause the Prophet-6 to respond unpredictably. MIDI Out and USB can be used at the same time and transmit the same data.

USB Notes

Under Mac OS X, “Prophet-6 Keyboard” will appear as a MIDI port when connected via USB and can be configured using the Mac’s Audio MIDI Setup utility (typically found in Applications/Utilities).

Under Windows, the first time the Prophet-6 is connected via USB, the “Found new hardware” alert appears and it is automatically installed as “Prophet-6 Keyboard.”

In Windows, if you unplug the USB cable and plug it back in while a program has the Prophet-6 port open, you may have to resync. That usually means going to the Prophet-6 Keyboard Properties — in the Windows Device Manager under “Sound, video, and game controllers” — and clicking OK. If *Prophet-6 Keyboard* is no longer listed in the Device Manager, power the Prophet-6 down and back up again while it is connected via USB. It should be detected on power up.

Appendix A: Alternative Tunings

By default, the Prophet-6 is set to standard, chromatic western tuning. Additionally it supports up to 16 additional alternative tunings, which you can access using the **ALT TUNING** button in the **GLOBALS** section.

From the factory, the Prophet-6 ships with 16 preset alternative tunings ranging from Equal temperament to Indonesian Gamelan tunings. If you want, you can replace these with other tunings that you can find on the Internet. These must be in SysEx format. You can download them into the Prophet-6 using SysEx Librarian for Mac or MIDI-OX for Windows.

Here are descriptions of the default alternative tunings:

nor (Normal) 12 Tone Equal Temperament (non-erasable)

The default Western tuning, based on the twelfth root of two.

1. Harmonic Series

MIDI notes 36-95 reflect harmonics 2 through 60 based on the fundamental of A = 27.5 Hz. The low C on a standard 5 octave keyboard acts as the root note (55Hz), and the harmonics play upwards from there. The remaining keys above and below the 5 octave range are filled with the same intervals as Carlos' Harmonic 12 Tone that follows.

2. Carlos Harmonic Twelve Tone

Wendy Carlos' twelve note scale based on octave-repeating harmonics. A = 1/1 (440 Hz). 1/1 17/16 9/8 19/16 5/4 21/16 11/8 3/2 13/8 27/16 7/4 15/8

3. Meantone Temperament

An early tempered tuning, with better thirds than 12ET. Sounds best in the key of C. Use this to add an authentic touch to performances of early Baroque music. C=1/1 (260 Hz)

4. 1/4 Tone Equal Temperament

24 notes per octave, equally spaced $24\sqrt[24]{2}$ intervals. Mexican composer Julian Carillo used this for custom-built pianos in the early 20th century.

5. 19 Tone Equal Temperament

19 notes per octave ($19\sqrt{2}$) offering better thirds than 12 ET, a better overall compromise if you can figure out the keyboard patterns.

6. 31 Tone Equal Temperament

Many people consider $31\sqrt{2}$ to offer the best compromise towards just intonation in an equal temperament, but it can get very tricky to keep track of the intervals.

7. Pythagorean C

One of the earliest tuning systems known from history, the Pythagorean scale is constructed from an upward series of pure fifths ($3/2$) transposed down into a single octave. The tuning works well for monophonic melodies against fifth drones, but has a very narrow palate of good chords to choose from. C=1/1 (261.625 Hz)

1/1 256/243 9/8 32/27 81/64 4/3 729/512 3/2 128/81 27/16 16/9 243/128

8. Just Intonation in A with 7-limit Tritone at D#

A rather vanilla 5-limit small interval JI, except for a single $7/5$ tritone at D#, which offers some nice possibilities for rotating around bluesy sevenths. A=1/1 (440 Hz) 1/1 16/15 9/8 6/5 5/4 7/5 3/2 8/5 5/3 9/5 15/8

9. 3-5 Lattice in A

A pure 3 and 5-limit tuning which resolves to very symmetrical derived relationships between notes. A=1/1 (440 Hz)

1/1 16/15 10/9 6/5 5/4 4/3 64/45 3/2 8/5 5/3 16/9 15/8

10. 3-7 Lattice in A

A pure 3 and 7-limit tuning which resolves to very symmetrical derived relationships between notes. Some of the intervals are very close together, offering several choices for the same nominal chords. A=1/1 (440 Hz)

1/1 9/8 8/7 7/6 9/7 21/16 4/3 3/2 32/21 12/7 7/4 63/32

11. Other Music 7-Limit Black Keys in C

Created by the group Other Music for their homemade gamelan, this offers a wide range of interesting chords and modes. C=1/1 (261.625 Hz)

1/1 15/14 9/8 7/6 5/4 4/3 7/5 3/2 14/9 5/3 7/4 15/8

12. Dan Schmidt Pelog/Slendro

Created for the Berkeley Gamelan group, this tuning fits an Indonesian-style heptatonic Pelog on the white keys and pentatonic Slendro on the black keys, with B and Bb acting as 1/1 for their respective modes. Note that some of the notes will have the same frequency. By tuning the 1/1 to 60 Hz, Dan found a creative way to incorporate the inevitable line hum into his scale. Bb, B = 1/1 (60 Hz)

1/1 1/1 9/8 7/6 5/4 4/3 11/8 3/2 3/2 7/4 7/4 15/8

13. Yamaha Just Major C

When Yamaha decided to put preset microtunings into their FM synth product line, they selected this and the following tuning as representative just intonations. As such, they became the de-facto introduction to JI for many people. Just Major gives preferential treatment to major thirds on the sharps, and a good fourth relative to the second. C= 1/1 (261.625)

1/1 16/15 9/8 6/5 5/4 4/3 45/32 3/2 8/5 5/3 16/9 15/8

14. Yamaha Just Minor C

Similar to Yamaha's preset Just Major, the Just Minor gives preferential treatment to minor thirds on the sharps, and has a good fifth relative to the second. C= 1/1 (261.625) 1/1 25/24 10/9 6/5 5/4 4/3 45/32 3/2 8/5 5/3 16/9 15/8

15. Harry Partch 11-limit 43 Note Just Intonation

One of the pioneers of modern microtonal composition, Partch built a unique orchestra with this tuning during the first half of the 20th century, to perform his own compositions. The large number of intervals in this very dense scale offers a full vocabulary of expressive chords and complex key changes. The narrow spacing also allows fixed-pitched instruments like marimbas and organs to perform glissando-like passages. G = 1/1 (392 Hz, MIDI note 67)

1/1 81/80 33/32 21/20 16/15 12/11 11/10 10/9 9/8 8/7 7/6 32/27 6/5 11/9
5/4 14/11 9/7 21/16 4/3 27/20 11/8 7/5 10/7 16/11 40/27 3/2 32/21 14/9
11/7 8/5 18/11 5/3 27/16 12/7 7/4 16/9 9/5 20/11 11/6 15/8 40/21 64/33
160/81

16. Arabic 12-Tone

A 12-tone approximation of an Arabic scale, which appears in some electronic keyboards designed for use with Arabic music. Not a JI scale, nor equal tempered. These are the intervals in Cents relative to C:

60 = Cents 0.

61 = Cents +151.

62 = Cents +204.

63 = Cents +294.

64 = Cents +355.

65 = Cents +498.

66 = Cents +649.

67 = Cents +702.

68 = Cents +853.

69 = Cents +906.

70 = Cents +996.

71 = Cents +1057.

72 = Cents +1200

Appendix B: Troubleshooting and Support

Troubleshooting

If you're experiencing problems or unexpected behavior from your Prophet-6, here are a few typical scenarios and their solutions:

The sequencer or arpeggiator has stopped running.

Check the MIDI Clock setting in the Globals to ensure the Prophet-6 is set to **OUT** or, if set to **IN** or **SLAVE THRU**, make sure the Prophet-6 is receiving MIDI clock.

Some of the programs sound different than usual.

Check the Mod Wheel position. The Mod Wheel can do more than just add vibrato. Also, check the Clock settings in the Global menu to ensure the Prophet-6 is set to **OUT** or, if set to **IN** or **SLAVE THRU**, make sure the Prophet-6 is receiving MIDI clock.

There is a ground hum in the audio output.

USB can cause ground loops, so try to resolve any grounding issues between the computer and the Prophet-6. Or use MIDI, which is opto-isolated.

The Prophet-6 is behaving erratically.

This is almost always caused by a MIDI data loop. Make sure that any MIDI Thru functionality is turned off on the MIDI interface/hardware or in the MIDI software application. Disconnect all the Prophet-6's MIDI connections—MIDI and USB cables—and see if the problem persists. You can also monitor the MIDI traffic with MIDI Monitor (Mac OS) or MIDI-OX (Windows) to see if the Prophet-6 is being overrun with duplicate messages.

The Prophet-6 doesn't seem to respond to its controls.

Make sure Local Control is on in the Global settings.

MIDI System Exclusive data is not transmitted/received.

Make sure that the MIDI SysEx setting in the Global settings is set to **USB** or **MIDI** depending on which you are using to transmit or receive MIDI messages.

The Prophet-6 plays out of tune.

Check Transpose and Master Tune parameters in the Global settings. If they seem correct, you may need to retune the oscillators. See “Calibrating the Prophet-6” on page 56. If this doesn’t help, recalibrate the pitch and mod wheels. “Calibrating the Pitch and Mod Wheels” on page 57.

The pitch or mod wheel doesn’t go full range.

Recalibrate the pitch and mod wheels. See “Calibrating the Pitch and Mod Wheels” on page 57.

A filter sounds strange or out of tune.

You may need to retune the filters. See “Calibrating the Prophet-6” on page 56.



It is not necessary to run any of the calibration routines on a regular basis. You should only run it if you are experiencing problems.

If you are still experiencing a problem with the Prophet-6, try resetting the Global parameters. See “Resetting the Global Parameters” on page 57.

Contacting Technical Support

If you are still having a problem with the Prophet-6, contact Technical Support at support@davesmithinstruments.com. Please include your Prophet-6 serial number, the version of the operating system (shown during startup in the main display), and the purchase date.



If you have not already reset the Global parameters and run the calibration routines (see Troubleshooting, above), you should do it before contacting Technical Support. It’s probably the first thing they’ll ask you to do.

Appendix C: MIDI Implementation

The Prophet-6 receives MIDI data according to the settings you have chosen in the GLOBAL settings. In addition, there is interaction between some of the Program parameters that determine the overall response of Prophet-6 to MIDI data. Following are the Global parameters that affect response to MIDI:

MIDI Channel: *ALL*, *1... 16*—Selects which MIDI channel to send and receive data, 1 to 16. All receives on all 16 channels.

MIDI Clock: Sets the Prophet-6's ability to send and receive MIDI clock messages:

- *OFF*: MIDI Clock is neither sent nor received
- *OUT*: MIDI Clock is sent, but not received
- *IN*: MIDI Clock is received, but not sent
- Slave Thru (*IN-OUT*): MIDI Clock is received and passed to MIDI Out
- In, No Start/Stop (*IN55*): Receives MIDI Clock but does not respond to MIDI Start or Stop command.



When set to IN or SLAVE THRU, if no MIDI clock is present at the selected input, the arpeggiator and sequencer will not function.

Clock Port: *MIDI*, *USB*—Sets the port(s), MIDI or USB, by which MIDI clock signals are received.

Param Xmit: *OFF*, *CC*, *NPN*—Changes to the values of front panel controls are transmitted via MIDI as Continuous Controllers (*CC*) or Non-registered Parameter Number (*NPN*). Transmission of parameters can also be turned off.



NRPNS are the preferred method of parameter transmission, since they cover the complete range of all parameters, while CCs are limited to a range of 128.

Param Rcv: *OFF*, *CC*, *NPN*—Sets the method by which parameter changes are received via MIDI. As with transmission, NRPNS are the preferred method.

MIDI Control: *OFF, On*—When On, the synth will respond to MIDI controllers, including Pitch Wheel, Mod Wheel, Pedal, Volume.

MIDI Sysex: *MIDI, USB*— When set to MIDI (*MIDI*) it will receive and transmit them using the MIDI ports/cables When set to USB it will receive and transmit them using the USB port/cable. MIDI SysEx messages are used when sending and receiving a variety of data including, programs, alternative tunings, system updates, and more.

MIDI Out: *MIDI, USB*—Sets the port by which MIDI data will be transmitted (MIDI or USB)..

MIDI Messages

System Real-Time Messages

| Status | Description |
|-----------|-------------------|
| 1111 1000 | MIDI Timing Clock |

Received Channel Messages

| Status | Second | Third | Description |
|-----------|----------|----------|---|
| 1000 nnnn | 0kkkkkkk | 0vvvvvvv | Note Off. Velocity is ignored |
| 1001 nnnn | 0kkkkkkk | 0vvvvvvv | Note On. Note off if vvvvvvv = 0 |
| 1010 nnnn | 0kkkkkkk | 0vvvvvvv | Polyphonic Key Pressure |
| 1011 nnnn | 0vvvvvvv | 0vvvvvvv | Control Change; see "Received Controller Messages" |
| 1100 nnnn | 0ppppppp | | Program change, 0-99 for Programs 1-100 within current Bank |
| 1101 nnnn | 0vvvvvvv | | Channel Pressure |
| 1110 nnnn | 0vvvvvvv | 0vvvvvvv | Pitch Bend LS Byte then MS Byte |

Notes: 0kkkkkkk Note number 0 — 127
 nnnn Channel number 0 to 15 (MIDI channel 1-16).
 Ignored if MIDI channel set to ALL
 0vvvvvvv Value

Received Controller Messages

| Status | Second | Third | Description |
|-----------|--------|---------|--|
| 1011 nnnn | 1 | 0vvvvvv | Mod Wheel: directly assignable controller |
| 1011 nnnn | 4 | 0vvvvvv | Foot Controller: directly assignable controller |
| 1011 nnnn | 7 | 0vvvvvv | Volume: Combined with Master Volume and Voice Volume |
| 1011 nnnn | 74 | 0vvvvvv | Brightness: Added to low-pass filter cutoff frequency |
| 1011 nnnn | 32 | 0vvvvvv | Bank Select: 0 - 4 select user banks 0 - 4; 5 - 9 select factory banks 0 - 4; others ignored |
| 1011 nnnn | 64 | 0vvvvvv | Damper pedal: Holds envelopes in Sustain if 0100 0000 or higher |
| 1011 nnnn | 123 | 0vvvvvv | All Notes Off: Clear all MIDI notes |
| 1011 nnnn | 121 | 0vvvvvv | Reset All Controllers: Clears all MIDI controllers to 0, MIDI volume to maximum |

See sections below for additional Continuous Controller (CC) and Non-registered Parameter Number (NRPN) messages received.

Transmitted Channel Messages

| Status | Second | Third | Description |
|-----------|----------|---------|---|
| 1000 nnnn | 0kkkkkkk | 0000000 | Note Off. |
| 1001 nnnn | 0kkkkkkk | 0vvvvvv | Note On. |
| 1011 nnnn | 0vvvvvv | 0vvvvvv | Control Change; see "Transmitted Controller Messages" |
| 1100 nnnn | 0ppppppp | | Program change, 0-99 for Programs 00-99 within current Bank |
| 1101 nnnn | 0vvvvvv | | Channel Pressure |
| 1110 nnnn | 0vvvvvv | 0vvvvvv | Pitch Bend LS Byte then MS Byte |

Notes: 0kkkkkkk Note number 0 — 127
 nnnn Channel number 0 to 15 (MIDI channel 1-16).
 Ignored if MIDI channel set to ALL
 0vvvvvvv Value

Transmitted Controller Messages

| Status | Second | Third | Description |
|---------------|---------------|--------------|--|
| 1011 nnnn | 0000 0001 | 0vvvvvv | Mod Wheel |
| 1011 nnnn | 0000 0100 | 0vvvvvv | Foot Controller: When assigned to Pedal 1 or Pedal 2 |
| 1011 nnnn | 0000 0111 | 0vvvvvv | Volume: When assigned to Pedal 1 or Pedal 2 |
| 1011 nnnn | 0100 1010 | 0vvvvvv | Brightness: When assigned to Pedal 1 or Pedal 2 |
| 1011 nnnn | 0010 0000 | 0vvvvvv | Bank Select: 0 - 9 |
| 1011 nnnn | 0100 0000 | 0vvvvvv | Damper pedal: Sends 0 if off, 0111 1111 when on |
| 1011 nnnn | 0000 0111 | 0vvvvvv | Volume knob |

See sections that follow for additional Continuous Controller (CC) and Non-registered Parameter Number (NRPN) messages transmitted.

Additional Continuous Controllers Transmitted/Received

The following table details how MIDI Continuous Controllers (CCs) are mapped to Prophet-6 controls. They are transmitted when Param Xmit is set to CC, and recognized/received when MIDI Rcv Receive is set to CC.

| CC# | Param |
|------------|--------------------|
| 0 | Bank Select MSB |
| 1 | Mod Wheel |
| 3 | BPM |
| 4 | Foot Controller |
| 5 | Glide Mode |
| 6 | Data Entry MSB |
| 7 | MIDI Volume |
| 8 | Sub Osc Level |
| 9 | Distortion Amount |
| 38 | Data Entry LSB |
| 39 | Volume LSB |
| 40 | VCA Env Amt |
| 41 | VCA Env Vel Amt |
| 43 | VCA Env Attack |
| 44 | VCA Env Decay |
| 45 | VCA Env Sustain |
| 46 | VCA Env Release |
| 47 | Low-pass Env Amt |
| 50 | Filter Env Attack |
| 51 | Filter Env Decay |
| 52 | Filter Env Sustain |
| 53 | Filter Env Release |
| 54 | High-pass Env Amt |
| 58 | Arp On/Off |
| 59 | Arp Mode |
| 60 | Arp Range |
| 62 | Arp Time Signature |
| 64 | Damper Pedal |
| 65 | Glide On/Off |
| 67 | Osc 1 Freq |
| 69 | Osc 1 Level |
| 70 | Osc 1 Shape |

| CC# | Param |
|------------|----------------------|
| 71 | Osc 1 Pulse Width |
| 74 | Brightness |
| 75 | Osc 2 Freq |
| 76 | Osc 2 Freq Fine |
| 77 | Osc 2 Level |
| 78 | Osc 2 Shape |
| 79 | Osc 2 Pulse Width |
| 96 | Data Increment |
| 97 | Data Decrement |
| 98 | NRPN Param LSB |
| 99 | NRPN Param MSB |
| 100 | RPN Param LSB |
| 101 | RPN Param MSB |
| 102 | Low-pass Freq |
| 103 | Low-pass Resonance |
| 104 | Low-pass Key Amt |
| 105 | Low-pass Vel On/Off |
| 106 | High-pass Freq |
| 107 | High-pass Resonance |
| 108 | High-pass Key Amt |
| 109 | High-pass Vel On/Off |
| 120 | All Sound Off |
| 120 | Reset Controllers |
| 121 | Reset Controllers |
| 122 | Local Control On/Off |
| 123 | All Notes Off |
| 124 | Omni Mode Off |
| 125 | Omni Mode On |
| 126 | Mono Mode On |
| 127 | Poly Mode On |

NRPN Messages

The Non-Registered Parameter Number (NRPN) MIDI messages are used to transmit and receive both global and program parameters. They are transmitted when MIDI Parameter Send is set to NRPN in Global, and received when MIDI Parameter Receive is set to NRPN in Global.

The messages are handled in standard MIDI format using the NRPN CC commands in running status byte format. Below is the format used for transmitting a NRPN parameter.

Transmitted NRPN Messages

| Status | Description |
|-----------|------------------------------|
| 1011 nnnn | Control Change |
| 0110 0011 | NRPN parameter number MSB CC |
| 0vvv vvvv | Parameter Number MSB |
| 0110 0010 | NRPN parameter number LSB CC |
| 0vvv vvvv | Parameter Number LSB |
| 0000 0110 | NRPN parameter value MSB CC |
| 0vvv vvvv | Parameter value MSB |
| 0010 0110 | NRPN parameter value LSB CC |
| 0vvv vvvv | Parameter value LSB |

The parameter number can be found in the two tables below, one for Global parameters, and the other for Program parameters. The parameter numbers and the parameter values are broken into two 7-bit bytes for MIDI transmission; the LSB has the seven least-significant bits, and the MSB has the seven most-significant bits, though in most cases the MSB will be zero or one, and never more than two.

When receiving an NRPN, all messages do not necessarily need to be transmitted, since the synth will track the most recent NRPN number, though it is usually good practice to send the entire message above.

Once an NRPN is selected, the synth will also respond to NRPN Data Increment and Decrement commands, which some controllers utilize. Finally, it responds to one RPN (Registered Parameter Number) command, the RPN/NRPN Reset command, which can be handy for resetting the currently selected parameter to a known state.

Received NRPN Messages

| Status | Second | Third | Description |
|-----------|-----------|----------|--|
| 1011 nnnn | 0110 0011 | 0vvvvvvv | NRPN parameter number MSB CC |
| 1011 nnnn | 0110 0010 | 0vvvvvvv | NRPN parameter number LSB CC |
| 1011 nnnn | 0000 0110 | 0vvvvvvv | NRPN parameter value MSB CC |
| 1011 nnnn | 0010 0110 | 0vvvvvvv | NRPN parameter value LSB CC |
| 1011 nnnn | 0110 0000 | 0xxxxxxx | NRPN parameter value Increment |
| 1011 nnnn | 0110 0001 | 0xxxxxxx | NRPN parameter value Decrement |
| 1011 nnnn | 0010 0101 | 01111111 | RPN parameter number MSB CC - Reset NRPN parameter number (when both MSB and LSB received) |
| 1011 nnnn | 0010 0100 | 01111111 | RPN parameter number LSB CC - Reset NRPN parameter number (when both MSB and LSB received) |

Global Parameter Data

The table shows the Global data sent and received on global parameter dumps, and corresponding NRPN number when sent/received individually.

| NRPN | Range | Description |
|------|-------|---|
| 1024 | 0-100 | Master Fine Tune |
| 1025 | 0-24 | Master Coarse Tune |
| 1026 | 0-16 | MIDI Channel 0 = All |
| 1027 | 0-3 | MIDI Clock Mode 0 = Off 1 = Master 2 = Slave 3 = Slave Thru |
| 1028 | 0-1 | MIDI Clock Port 0 = MIDI Port 1 = USB |
| 1029 | 0-2 | MIDI Param Send* 0 = NRPN 1 = CC 2 = Off |
| 1030 | 0-2 | MIDI Param Receive† 0 = NRPN 1 = CC 2 = Off |
| 1031 | 0-1 | MIDI Control Enable 0 = Off 1 = On |
| 1032 | 0-1 | MIDI SysEx Enable 0 = Off 1 = On |

| NRPN | Range | Description |
|------|-------|--|
| 1033 | 0-3 | MIDI Out Select 0 = Off 1 = MIDI 2 = USB 3 = MIDI+USB |
| 1035 | 0-1 | Local Control* 0 = Off 1 = On |
| 1037 | 0-2 | Pot Mode 0 = Relative 1 = PassThru 2 = Jump |
| 1039 | 0-3 | Seq Jack 0 = normal 1 = trigger 2 = gate 3 = trigger+gate |
| 1040 | 0-3 | Sustain Polarity 0 = normally open 1 = normally closed 2 = Sustain Normally Open/ Sequencer Normally Closed 3 = Sustain Normally Closed/ Sequencer Normally Open |
| 1041 | 0-3 | Velocity Response |
| 1042 | 0-3 | Aftertouch Response |
| 1043 | 0-1 | Mono/Stereo 0 = Stereo 1 = Mono |
| 1044 | 0-16 | Alt Tuning |

*Controller received, but not transmitted.

†Controller transmitted, but ignored when received.

Program Parameter Data

The following table lists Prophet-6's program parameters.

| NRPN | Value | Description |
|------|-------|-------------------|
| 0 | 0-60 | Osc 1 Freq |
| 1 | 0-1 | Osc 1 Sync |
| 2 | 0-127 | Osc 1 Level |
| 3 | 0-254 | Osc 1 Shape |
| 4 | 0-255 | Osc 1 Pulse Width |
| 5 | 0-60 | Osc 2 Freq |
| 6 | 0-254 | Osc 2 Freq Fine |
| 7 | 0-127 | Osc 2 Level |
| 8 | 0-254 | Osc 2 Shape |
| 9 | 0-255 | Osc 2 Pulse Width |
| 10 | 0-1 | Osc 2 Low Freq |
| 11 | 0-1 | Osc 2 Key On/Off |
| 27 | 0-127 | Osc 1 Sub Level |
| 28 | 0-3 | Glide Mode |
| 29 | 0-1 | Glide On/Off |
| 30 | 0-127 | Glide Rate |
| 31 | 0-24 | Pbend Range |
| 32 | 0-127 | Noise Level |
| 33 | 0-127 | Slop |
| 45 | 0-164 | Low-pass Freq |
| 46 | 0-255 | Low-pass Res |
| 47 | 0-2 | Low-pass Key Amt |
| 48 | 0-1 | Low-pass Vel On |
| 49 | 0-164 | High-pass Freq |
| 50 | 0-255 | High-pass Res |
| 51 | 0-2 | High-pass Key Amt |
| 52 | 0-1 | High-pass Vel On |
| 62 | 0-127 | Voice Volume |
| 63 | 0-127 | Pan Spread |
| 64 | 0-127 | Distortion Amt |
| 66 | 0-127 | VCA Env Amt |
| 67 | 0-127 | VCA Env Attack |

| NRPN | Value | Description |
|------|-------|-----------------------------------|
| 68 | 0-127 | VCA Env Decay |
| 69 | 0-127 | VCA Env Sustain |
| 70 | 0-127 | VCA Env Release |
| 71 | 0-1 | VCA Env Vel On/Off |
| 77 | 0-254 | Low-pass Env Amt |
| 78 | 0-127 | Filter Env Attack |
| 79 | 0-127 | Filter Env Decay |
| 80 | 0-127 | Filter Env Sustain |
| 81 | 0-127 | Filter Env Release |
| 82 | 0-254 | High-pass Env Amt |
| 88 | 0-254 | LFO Freq |
| 89 | 0-255 | LFO Initial Amt |
| 90 | 0-4 | LFO Shape |
| 91 | 0-1 | LFO Sync |
| 93 | 0-1 | LFO Freq 1 Dest On/Off |
| 94 | 0-1 | LFO Freq 2 Dest On/Off |
| 95 | 0-1 | LFO PW 1, 2 Dest On/Off |
| 96 | 0-1 | LFO Amp Dest On/Off, |
| 97 | 0-1 | LFO Low-pass Dest On/Off |
| 98 | 0-1 | LFO High-pass Dest On/Off |
| 109 | 0-254 | Pressure Amt |
| 110 | 0-1 | Pressure Freq 1 Dest On/Off |
| 111 | 0-1 | Pressure Freq 2 Dest On/Off |
| 112 | 0-1 | Pressure Low-pass Dest On/Off |
| 113 | 0-1 | Pressure High-pass Dest On/Off |
| 114 | 0-1 | Pressure VCA Dest On/Off |

| NRPN | Value | Description |
|------|--------|-----------------------------------|
| 115 | 0-1 | Pressure LFO Amt Dest On/Off |
| 119 | 0-5 | FX 1 Select |
| 120 | 0-127 | FX 1 Mix |
| 121 | 0-255 | FX 1 Param 1 |
| 122 | 0-127 | FX 1 Param 2 |
| 123 | 0-1 | FX 1 Sync |
| 127 | 0-9 | FX 1 Select |
| 128 | 0-127 | FX 2 Mix |
| 129 | 0-255 | FX 2 Param 1 |
| 130 | 0-127 | FX 2 Param 2 |
| 131 | 0-1 | FX 2 Sync |
| 135 | 0-1 | FX On/Off |
| 143 | 0-254 | PolyMod Filter Env Amt |
| 144 | 0-254 | PolyMod Osc 2 Amt |
| 145 | 0-1 | PolyMod Freq 1 Dest On/Off |
| 146 | 0-1 | PolyMod Shape 1 Dest On/Off |
| 147 | 0-1 | PolyMod PW 1 Dest On/Off |
| 148 | 0-1 | PolyMod Low-Pass Dest On/Off |
| 149 | 0-1 | PolyMod High-Pass Dest On/Off, |
| 156 | 0-1 | Unison On/Off |
| 157 | 0-6 | Unison Mode |
| 158 | 0-5 | Key Mode |
| 160 | 0-1 | Arp On/Off |
| 161 | 0-4 | Arp mode |
| 162 | 0-2 | Arp Range |
| 163 | 0-9 | Arp Tim Sig |
| 167 | 30-250 | BPM |
| 168 | 0-1 | Seq On/Off |
| 169 | 0-63 | Seq Length |
| 170 | 0-1 | Seq Mode |
| 171 | 0-1 | Seq Play Mode |

| NRPN | Value | Description |
|----------|----------|-------------------------|
| 236-255 | 32 - 125 | Name 0-19 |
| 256-319 | 12-108 | Seq Step 1-64 Note 1 |
| 320-383 | 0-127 | Seq Step 1-64 Vel 1 |
| 384-447 | 12-108 | Seq Step 1-64 Note 2 |
| 448-511 | 0-127 | Seq Step 1-64 Vel 2 |
| 512-575 | 12-108 | Seq Step 1-64 Note 3 |
| 576-639 | 0-127 | Seq Step 1-64 Vel 3 |
| 640-703 | 12-108 | Seq Step 1-64 Note 4 |
| 704-767 | 0-127 | Seq Step 1-64 Vel 4 |
| 768-831 | 12-108 | Seq Step 1-64 Note 5 |
| 832-895 | 0-127 | Seq Step 1-64 Vel 5 |
| 896-959 | 12-108 | Seq Step 1-64 Note 6 |
| 960-1023 | 0-127 | Seq Step 1-64 Vel 6 |
| 1024 | 0-100 | Tuning Fine |
| 1025 | 0-24 | Tuning Coarse |
| 1026 | 0-16 | MIDI Channel |
| 1027 | 0-4 | MIDI Clock |
| 1028 | 0-1 | MIDI Clock Port |
| 1029 | 0-2 | MIDI Param Send |
| 1030 | 0-2 | MIDI Param Receive |
| 1031 | 0-1 | MIDI MIDI Control |
| 1032 | 0-1 | MIDI SysEx Control |
| 1033 | 0-1 | MIDI Out |
| 1035 | 0-1 | Local Control |
| 1037 | 0-2 | Pot Mode |
| 1039 | 0-3 | Seq Jack |
| 1040 | 0-3 | Sustain Polarity |
| 1041 | 0-3 | Velocity Response |
| 1042 | 0-3 | At Response |
| 1043 | 0-1 | Stereo Mono |
| 1044 | 0-16 | Alt Tuning |

Control NRPN Data

The following table lists the Prophet-6's control NRPN data. It is received and transmitted but not saved as part of a program.

| NRPN | Value | Description |
|------|-------|-----------------|
| 1088 | 0-1 | Seq Play/Stop * |
| 1 | 0-1 | Osc 1 Sync |
| 2 | 0-127 | Osc 1 Level |
| 3 | 0-254 | Osc 1 Shape |

*Only available in NORMAL Seq jack mode.

Sysex Messages

Universal System Exclusive Message (Device Inquiry)

| Status | Description |
|-----------|---|
| 1111 0000 | System Exclusive (SysEx) |
| 0111 1110 | Non-realtime message |
| 0vvv vvv | If MIDI channel is set to 1 - 16, 0vvvvvvv must match (unless MIDI Channel = ALL); always responds if 0vvvvvvv = 0111 1111. |
| 0000 0110 | Inquiry Message |
| 0000 0001 | Inquiry Request |
| 1111 0111 | End of Exclusive (EOX) |

The Prophet-6 responds with:

| Status | Description |
|-----------|--|
| 1111 0000 | System Exclusive (SysEx) |
| 0111 1110 | Non-realtime message |
| 0vvv vvv | If MIDI Channel = ALL, 0vvvvvvv = 0111 1111. Otherwise 0vvvvvvv = Channel Number 0 - 15. |
| 0000 0110 | Inquiry Message |
| 0000 0010 | Inquiry Reply |
| 0000 0001 | DSI ID |
| 0010 1101 | Prophet-6 ID (Family LS) |
| 0000 0001 | Family MS |
| 0000 0000 | Family Member LS |
| 0000 0000 | Family Member MS |
| 0jjj nnnn | Main Software version: jjj - Minor rev; nnnn - Major rev |
| 1111 0111 | End of Exclusive (EOX) |

Request Program Dump

| Status | Description |
|-----------|--------------------------|
| 1111 0000 | System Exclusive (SysEx) |
| 0000 0001 | DSI ID |
| 0010 1101 | Prophet-6 ID |
| 0000 0101 | Request Program Transmit |
| 0000 00vv | Bank Number, 0 - 9 |
| 0vvv vvvv | Program Number, 0 - 99 |
| 1111 0111 | End of Exclusive (EOX) |

The Prophet-6 will respond by sending out the Program Data in the format described below in *Program Data Dump*.

Request Program Edit Buffer Dump

| Status | Description |
|-----------|--------------------------------------|
| 1111 0000 | System Exclusive (SysEx) |
| 0000 0001 | DSI ID |
| 0010 1101 | Prophet-6 ID |
| 0000 0110 | Request Program Edit Buffer Transmit |
| 1111 0111 | End of Exclusive (EOX) |

The Prophet-6 will respond by sending out the current Program edit buffer in the format described below in *Program Edit Buffer Data Dump*.

Request Global Parameter Dump

| Status | Description |
|-----------|-----------------------------------|
| 1111 0000 | System Exclusive (SysEx) |
| 0000 0001 | DSI ID |
| 0010 1101 | Prophet-6 ID |
| 0000 1110 | Request Global Parameter Transmit |
| 1111 0111 | End of Exclusive (EOX) |

The Prophet-6 will respond by sending out the current values of Global Parameters in the format described in *Global Parameters Data Dump*.

Program Data Dump

| Status | Description |
|-----------|--|
| 1111 0000 | System Exclusive (SysEx) |
| 0000 0001 | DSI ID |
| 0010 1101 | Prophet-6 ID |
| 0000 0010 | Program Data |
| 0000 00vv | Bank Number: 0 - 9 |
| 0vvv vvvv | Program Number: 0 - 99 |
| 0vvv vvvv | 1024 bytes expanded to 1171 MIDI bytes in "packed MS bit" format |
| 1111 0111 | End of Exclusive (EOX) |

Program Edit Buffer Data Dump

| Status | Description |
|-----------|--|
| 1111 0000 | System Exclusive (SysEx) |
| 0000 0001 | DSI ID |
| 0010 1101 | Prophet-6 ID |
| 0000 0011 | Edit Buffer Data |
| 0vvv vvvv | 1024 bytes expanded to 1171 MIDI bytes in "packed MS bit" format |
| 1111 0111 | End of Exclusive (EOX) |

Global Parameters Data Dump

| Value | Description |
|-----------|--|
| 1111 0000 | System Exclusive (SysEx) |
| 0000 0001 | DSI ID |
| 0010 1101 | Prophet-6 ID |
| 0000 1111 | Main Parameter Data |
| 0vvv vvvv | 50 nibbles (LS then MS) for 25 Global parameters |
| 1111 0111 | End of Exclusive (EOX) |



The Global Parameters Data Dump is not recognized when received; it is only transmitted when requested. NRPN messages are used to change Globals.

Packed Data Format

Data is packed in 8 byte “packets”, with the MS bit stripped from 7 parameter bytes, and packed into an eighth byte, which is sent at the start of the 8 byte packet.

Example:

Input Data

```
1 A7 A6 A5 A4 A3 A2 A1 A0
2 B7 B6 B5 B4 B3 B2 B1 B0
3 C7 C6 C5 C4 C3 C2 C1 C0
4 D7 D6 D5 D4 D3 D2 D1 D0
5 E7 E6 E5 E4 E3 E2 E1 E0
6 F7 F6 F5 F4 F3 F2 F1 F0
7 G7 G6 G5 G4 G3 G2 G1 G0
```

Packed MIDI data

```
1 00 G7 F7 E7 D7 C7 B7 A7
2 00 A6 A5 A4 A3 A2 A1 A0
3 00 B6 B5 B4 B3 B2 B1 B0
4 00 C6 C5 C4 C3 C2 C1 C0
5 00 D6 D5 D4 D3 D2 D1 D0
6 00 E6 E5 E4 E3 E2 E1 E0
7 00 F6 F5 F4 F3 F2 F1 F0
8 00 G6 G5 G4 G3 G2 G1 G0
```

This explains why it takes 1171 MIDI bytes to transmit 1024 Program data bytes.

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