

# ***FILTER PRO***

***Programmable Filter & Monophonic Synths with MIDI Sync***

## **Pilot's Handbook**

An in-depth exploration of the revolutionary technologies  
and the pulsing tonal pleasures that power your Filter Pro.

The serial number can be found on the back panel of your Filter Pro. Please note it here for future reference:

**SERIAL NO:** \_\_\_\_\_

**WARNING:** To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

**CAUTION:** This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of 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.

**CAUTION:** To reduce the risk of fire or electric shock, do not remove screws. No user-serviceable parts inside. Refer servicing to qualified service personnel.



The lightning symbol within a triangle means “electrical caution!” It indicates the presence of information about operating voltage and potential risks of electrical shock.



The exclamation point within a triangle means “caution!” Please read the information next to all caution signs.

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## **YOU SHOULD READ THESE IMPORTANT SAFETY INSTRUCTIONS**

**Before using your Filter Pro, be sure to carefully read the applicable items of these operating instructions and the safety suggestions.**



1. Obey all warnings on the Filter Pro and in this Pilot's Handbook.
2. Do not place near heat sources, such as radiators, heat registers, or appliances which produce heat.
3. Guard against objects or liquids entering the enclosure.
4. Connect only to AC power outlets rated 100-120V or 230V 47-63Hz (depending on the voltage range of the unit; refer to the back panel). Current ratings should be 400mA for the 120V range and 200mA for the 230V range.
5. Do not step on power cords. Do not place items on top of power cords so that they are pinched or leaned on. Pay particular attention to the cord at the plug end and the point where it connects to the amp.
6. Unplug your Filter Pro when not in use for extended periods of time.
7. Do not perform service operations beyond those described in the Filter Pro Pilot's Handbook. In the following circumstances, repairs should be performed only by qualified service personnel:
  - liquid is spilled into the unit
  - an object falls into the unit
  - the unit does not operate normally or changes in performance in a significant way
  - the fuse is blown (replace with 400mA timed fuse for 120V, and 200mA timed fuse for 230V)
  - the unit is dropped or the enclosure is damaged
8. Prolonged listening at high volume levels may cause irreparable hearing loss and/or damage. Always be sure to practice “safe listening.”



**Please Note:**

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# INTRODUCTION

## Thanks and what the heck did you just buy, anyway?

Thanks for your purchase, and congratulations on being the proud new owner of a Filter Pro, part of Line 6's Studio Modeler line of products. We hope that your new toy will make your musical and creative life more fun, exciting, fulfilling, and will stop the awful drip under the bathroom sink (although we suspect you're gonna have to break down and call a plumber for that one).

If you're familiar with Line 6's award-winning series of Stompbox Modelers—the DL4 Delay Modeler, MM4 Modulation Modeler, and FM4 Filter Modeler—you've already got a pretty good idea of some of what your new Filter Pro can do. We've added a lot of new features and capabilities to the Studio Modelers, so you'll want to give this manual at least a quick once-over, if not a thorough reading before diving in. Don't worry, we'll try and make it as painless as possible. If you're not yet familiar with Line 6 products, let's start with a brief introduction. But first, you've filled out that attractive registration card and put it in the outgoing mail, right? No? Well then, have you logged onto **www.line6.com** and filled out the online registration? If you haven't yet, that's okay, we'll wait here...

## Who is Line 6?

Hi! We're Line 6. As you may know, Line 6 first came on the scene with a new kind of guitar amplifier – the first to put digital software modeling technology to work in a combo amp for guitarists. In order to pioneer this technology, we focused our efforts on the vacuum tube, the little glass wonder that sat at the heart of most every great guitar amp in history – plus quite a few stomp boxes, effect processors, and other pieces of great audio gear. The Line 6 crew assembled a dream collection of amplifiers recognized by guitarists the world over as true “tone classics”, and, with a guitar in one hand and modern computer measuring gear in the other, put these amps through their paces and got them to give up their secrets—a guitar pickup output, after all, is an electronic signal, and tubes and the rest of the guitar amplifier electronics are really just a complex form of signal processing. These electronic explorers thus distilled the noble history of guitar tone heritage into a revolutionary, patented DSP (digital signal processing) software-based modeling technology which gave Line 6 the power to create super silicon-based life forms like our history-making amplifiers and POD.

## Introduction: Who is Line 6?

1 • 2

Well, it's been some years since the first Line 6 amp brought modeling to the combo amp world, followed by the Line 6 POD that revolutionized the world of guitar recording. During that time, our thoughts have often turned from our amps to our feet. We started thinking about all those great stompboxes that have been as much a part of the electric guitar experience as the amplifier. So, turning from our massive collection of vintage amps we had assembled for our first products, we began the task of assembling the most in-demand and hippest stompboxes ever made in order to put them through the same rigorous modeling procedures. Many a night we had to stay up late comparing different delay pedals, and on the weekends we had to haul vintage effects home for more testing in our personal studios. (Yes, it's a rough job, but someone has to do it.) When all was said and done, though, we had created a series of Stompbox Modelers, each one containing a dream collection of lovingly crafted digital software models of a whole carpet-full of the great effects of guitar history.

Once we'd accomplished that, our attention turned to guitarists who love rack gear, as well as keyboard players, recording engineers, home recordists, and other non-guitarist types. After all, they needed these sounds, too! One night, a vindaloo inspired dream came to us, in which a voice called out, "Rackmount! With serious MIDI functions, too!" Never ones to ignore visions brought on by amazingly hot, yet tasty food, we started work on what you now hold in your hands.

## Quick Start Guide

Hate long-winded manuals? Want to use your Filter Pro *RIGHT NOW* without having to worry about any details? Here's the important stuff to know:

**1. Hook It Up** – Plug the output of something into Filter Pro's rear panel **R/Mono** Input (for mono sources) or both **R/Mono** and **Left** inputs (for stereo). Connect the Filter Pro outputs to the input of whatever you're feeding the Filter Pro to – guitar amp, mixing board, etc. Chapter 3 has more details.

**2. Power It Up** – Turn the **Input** and **Output** knobs on your Filter Pro all the way down, press the **Power** button. Light show! Make sure the volume is turned up on whatever is receiving Filter Pro's output signal, so you'll hear what you're doing.

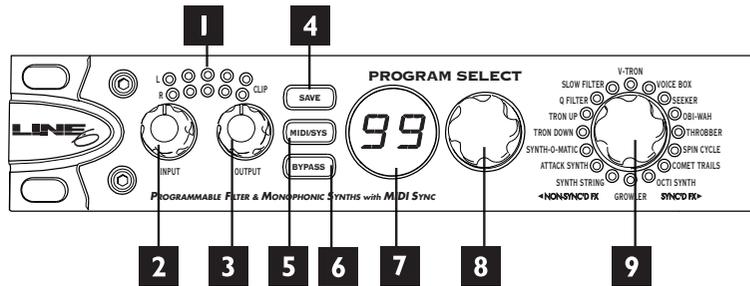
**3A. Crank It Up: Guitar Source** – If you're connecting a guitar directly to Filter Pro and running straight into the front of a guitar amp, turn the Filter Pro **Input** knob way up (probably to max if you're using standard passive pickups). Don't expect to hit the yellow or red lights on the Filter Pro input meter; you'll most likely only get to the green. Don't set the Filter Pro **Output** level too high, since the Filter Pro can put out a much hotter signal than your guitar can and will overload the front end of your amp if you do.

**3B. Crank It Up: Line Level Sources** – If you're feeding Filter Pro a signal from a line level source (keyboard, mixing board, etc.) do this: while sending a healthy signal to your Filter Pro, turn up the Filter Pro **Input** knob until the input meter is flashing red occasionally, then back it down just a hair so you're living in the yellow zone. *Avoid hitting the red in normal use.* Next, press the **Bypass** button on the Filter Pro and turn up the output volume until the meter on your mixer (or whatever) reads about the same as the input meter. (Hint: With most line level signals, both the input and output knobs should be pointing at about 3 o'clock. It's not a hard and fast rule, but a good starting point.) Now, press the Bypass button again to let the Filter Pro's signal through. If you made all your connections correctly, and remembered to turn up the Aux send and return and other levels on your board (D'oh! Been there, done that!) you should be hearing Filter effects.

**4. Dial It Up** – The **Program Select** knob is 'velocity sensitive' – when you turn it slowly, the programs change one by one, but if you flip it fast, you'll jump ahead (or back) a number of programs at a time. See the included **Preset Chart** for details.

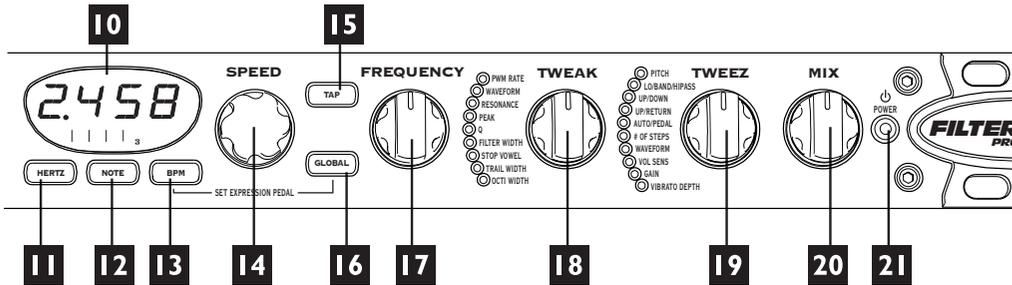
# GUIDED TOUR

*There are several types of tourists. First, there are the ones who sign up with the tour group, read the itinerary in advance, hang on every word of the tour guide, and come home with a solid overall understanding of the new place they've visited, although they may have missed that neat little cafe that was just up the side street they rushed past on the way to another museum. Then, there are the adventurous types who just strike out on their own, wander around, find that little cafe – but who might wander into the wrong part of town and get into trouble. Finally there are the (in our opinion) wiser tourists who read the guide book before travelling, ask questions, use small tours to figure out where they want to come back and visit in more depth, and still leave themselves a chance for some adventure. In an attempt to join this last group, let's take this opportunity to look at all the controls and connections that your Filter Pro has, and give you a little bit of explanation of what they do, shall we? You've got a lot of control at your fingertips here, and you don't want to miss out on any of it.*

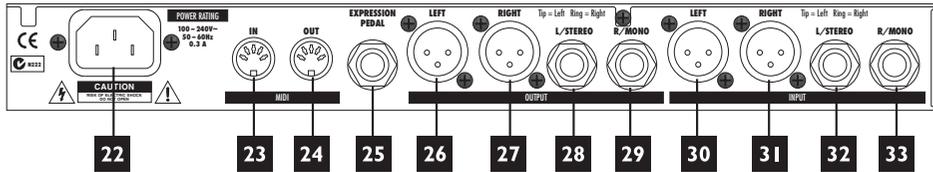


## Front Panel Controls

1. **Input Level Meters** – Shows you input levels and whether you're clipping the input of your Filter Pro (in which case you'll see red and should turn down).
2. **Input Level** – Set the input level here. While feeding a signal, turn up the input level until the input meter is flashing red occasionally, then back it down a hair.
3. **Output Level** – Set the output level here.
4. **Save button** – Press to save an edited program.
5. **MIDI/Sys button** – Press to access MIDI functions and other System editing functions like Bypass Mode, Mix Mode, or to recall factory programs. Flickers when there's incoming MIDI on the MIDI Channel Filter Pro is set to listen to.
6. **Bypass button** – Press to bypass effect processing.
7. **Program Display** – Shows which program you've selected. See later sections for detail on its use for Save, Compare and MIDI/Sys functions.
8. **Program Select knob** – Selects one of Filter Pro's programs. See later sections for detail on its use for MIDI/Sys functions.
9. **Model Select knob** – Selects model. (Kinda figures, doesn't it?)
10. **Tempo Display** – Shows Tempo in *Hertz* or *BPM*, depending on whether the Hertz or BPM buttons are lit. The Note Value is also always shown. See later sections for detail on the display's use for Saving and MIDI/Sys mode.



11. **Hertz button** – Press to display current Tempo in Hertz
12. **Note button** – Sets Note Value to determine Tempo division
13. **BPM button** – Press to display current Tempo in BPM (beats per minute).
14. **Speed knob** – Sets Tempo in Hertz or BPM, whichever you've chosen.
15. **Tap button** – Tap twice to set Tempo. A unique feature of Filter Pro is that a single tap will reset the LFO to the beginning of the sweep.
16. **Global button** – Press to enable Global Speed/Tempo Mode. Global overrides the tempo stored within each program with the current tempo.
17. **Frequency knob** – Controls the Frequency of the effect, but may set other parameters, as well, like the Start Vowel on the Voice Box or V-Tron effects.
18. **Tweak knob** – Controls various functions depending on the model chosen. The lights to its immediate left show just what you're adjusting for each model.
19. **Tweez knob** – Controls various functions depending on the model chosen. The lights to its immediate left show just what you're adjusting for each model.
20. **Mix knob** – Sets Effect Mix from 0% to 100% Wet (or is that 100% to 0% dry?).
21. **Power switch** – Makes all the pretty lights go on and off.



## Rear Panel Connections

- 22. Power** – Where the end of the power cord that doesn't plug into the wall goes.
- 23. MIDI In** – Connect the MIDI Out from your sequencer, synthesizer, or other MIDI Device to the MIDI In here.
- 24. MIDI Out/Thru** – Connect the MIDI Out on the Filter Pro to the MIDI In of your sequencer, synthesizer, or other MIDI Device. You can switch this to function as a MIDI Out or a MIDI Thru via a MIDI/Sys setting.
- 25. Expression Pedal Input** – Plug the optional EX-1 expression pedal in here.
- 26. +4dBu Balanced XLR Out Left** – This audio connection keeps ground separate from the signal by running 3 lines; two conductors (+ and –) and a ground/shield. This type of connection significantly reduces noise with longer cable runs, and enables hotter levels to be transmitted (which is a good thing). There's a certain amount of controversy about which pin should be “positive” or “hot”, so it's always a good idea to check. (Some manufacturers have staked their claim to pin 2, others to pin 3. We come down firmly on the pin 2 side.)
- 27. +4dBu Balanced XLR Out Right**
- 28. –10dBV Unbalanced 1/4" Out Left/Stereo** – When you connect a 1/4" unbalanced cable (like a guitar cable) this functions as the left output. To connect to the FX Return of a POD Pro, Flextone II, or other Line 6 product that uses 1/4" TRS connections for its loop, use a 1/4" TRS cable and connect to the loop's return jack. “TRS” means Tip, Ring, Sleeve and you'll see that this type of connector has an extra ring carved out on it that a standard mono 1/4" cable (like the ones normally used for guitar) lacks. See the pretty pictures in Chapter 3.

**Very Important Note:** if you want to run balanced signals, please use the XLR jacks to connect the Studio Modeler to the rest of your system. The 1/4" connectors

are set up to run strictly unbalanced. And what, pray tell, happens when you plug a mono balanced 1/4" TRS mono cable into the "stereo" out of the Studio Modeler? Well, the middle of the stereo field may disappear, or if you're less lucky, the right channel may go AWOL altogether – pretty scary! So for balanced hookups, be sure to use the XLRs.

- 29. –10dBV Unbalanced 1/4" Out Right/Mono** – Mono Out unless something's plugged into the Left/Stereo Out, in which case it's the Right Channel.
- 30. +4dBu Balanced XLR In Left**
- 31. +4dBu Balanced XLR In Right**
- 32. –10dBV Unbalanced 1/4" In Left/Stereo** – With a 1/4" unbalanced cable this is the left input. To connect the Stereo Effects Send of a POD Pro or Flexitone II to the Filter Pro, use a 1/4" TRS cable to connect to this input.
- 33. –10dBV Unbalanced 1/4" In Right/Mono** – Mono In unless something's plugged into the Left/Stereo In, in which case it's the Right Channel.

# BASIC OPERATION

## Audio Hookup Options

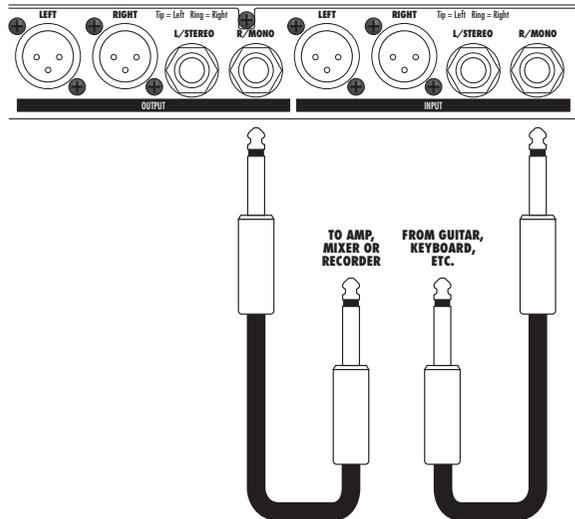
Note that you'll want to get the best cables you can afford. Although we'd avoid claims about cables that are packed with Australian air or any such audiophile voodoo, good cables can make a difference. Really. And if you've got one of those setups with five different adapters plugged into each other to make the gazinta-gazoutas\* match up (and we've been there, believe me!), we'd strongly suggest actually going out and buying or building the correct cables. But it's just a suggestion....

As you may have noticed in the Guided Tour chapter, Filter Pro's back panel has an extensive (and possibly confusing) array of jacks you can plug stuff into (aka I/O). To attempt to help you along, here are diagrams of some typical hookups:

### I Mono In & Out

**Connect the output of a guitar, keyboard, etc. to the R/MONO input of the Studio Modeler.**

**Connect the R/MONO output of the Studio Modeler to the input of your amp, mixer or recorder.**

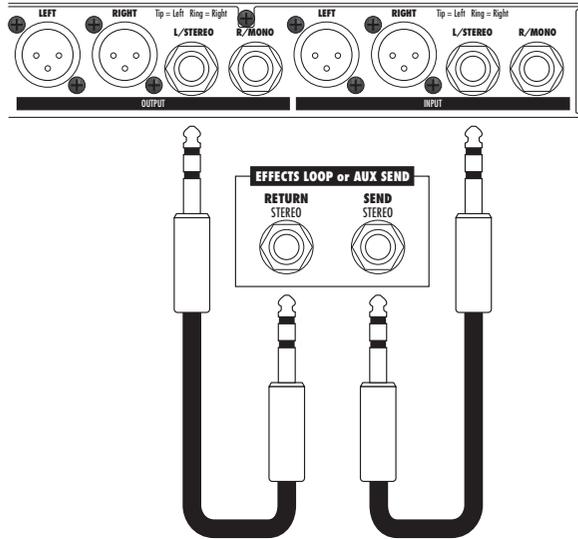


\* Or, as translated from audio technician speak: goes in to's and goes out of's

## 2 Using with a Line 6 Flextone II or POD Pro

Connect the Stereo Effects Loop Send to the Stereo input of the Studio Modeler using a 1/4" TRS cable.

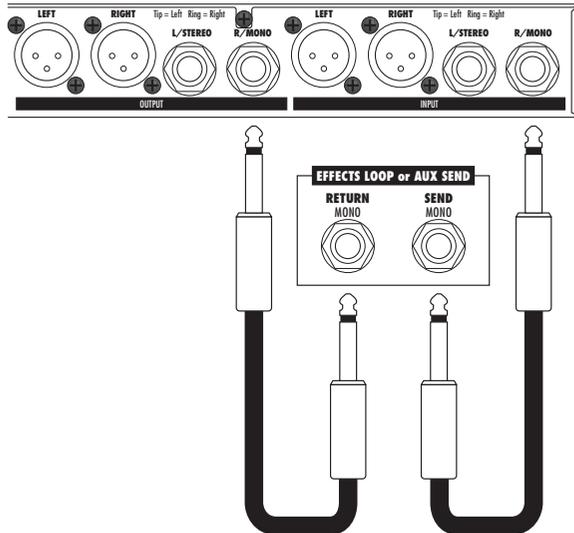
Connect the Stereo output of the Studio Modeler to the Stereo Effects Loop Return on your Flextone II or POD Pro using a 1/4" TRS cable.



## 3 Connecting to an Amp with a Mono Effects Loop

Connect the Effects Loop Send on your amp to the R/MONO input on the Studio Modeler.

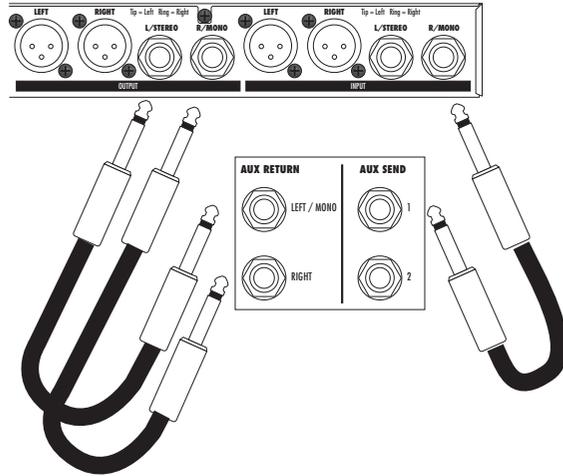
Connect the mono output of the Studio Modeler to the Effects Loop Return on your Amp. If your amp has an Effects Loop Mix control, set it to 100% wet.



#### 4 Connecting to a Mixer - Mono Send, Stereo Return

Connect an Aux Send from your mixer to the R/MONO input of the Studio Modeler.

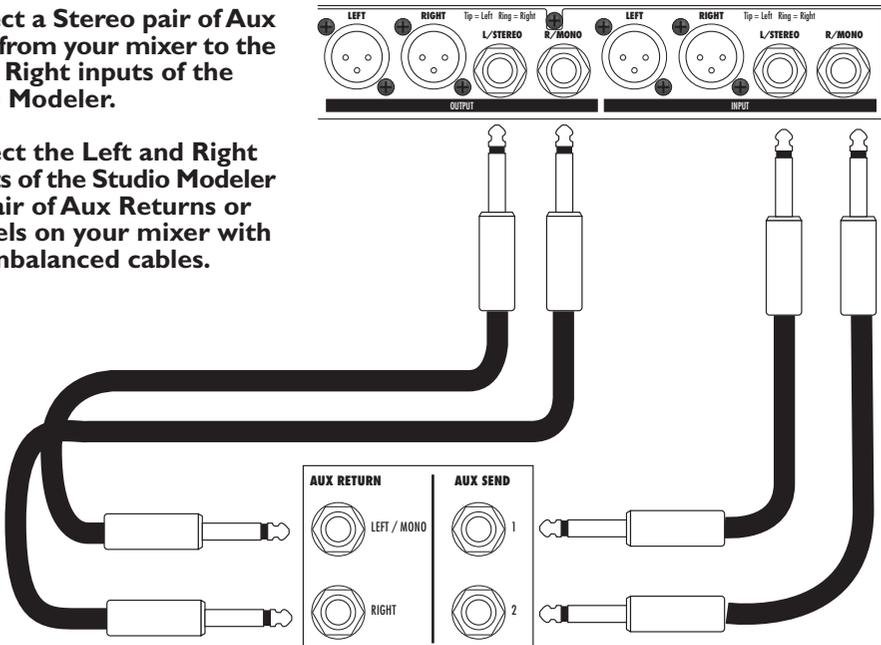
Connect the Left and Right outputs of the Studio Modeler to a pair of Aux Returns or channels on your mixer with 1/4" unbalanced cables.



#### 5 Connecting to a Mixer - Stereo Send, Stereo Return

Connect a Stereo pair of Aux Sends from your mixer to the Left & Right inputs of the Studio Modeler.

Connect the Left and Right outputs of the Studio Modeler to a pair of Aux Returns or channels on your mixer with 1/4" unbalanced cables.



## Selecting a Program

There are two methods of selecting a program:

First, you can dial it up from the Program Select knob. Remember that the Program Select knob is ‘velocity sensitive’. The faster you spin it, the further it jumps, so if you need to get from program 1 to program 99 in a hurry, just twirl it quickly. A slow spin moves you one program at a time.

If you’re using MIDI with the Filter Pro, send a MIDI Program change message from any MIDI controller to change the program. And because we were thinking ahead, you can actually call up the basic models as Programs, giving you a total of 115 available programs. See the MIDI Program Change Chart in the Appendix.

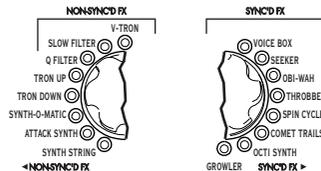
## Editing a Program

Just call up a program or select a model with the Model Select knob and start twisting and tweaking. You can tell that you’ve edited a program by the hypnotic, slow flashing of the Save button (just don’t stare at it for too long, or you may start clucking like a chicken).

## Tap Tempo and Speed/Tempo Calculation

### A Few Notes About Speed/Tempo And When It’s Not

While many (well, half) of the effects in your Filter Pro have some sort of time based component (usually a sweeping oscillator of some sort), some don’t. You’ll notice that they’re clustered around the model select knob, split as “Non-Sync’d FX” and “Sync’d FX”.



To avoid confusion, and as a valuable visual cue, when you select one of the non-sync’d effects, or choose a preset that uses one of them, all the Tempo LEDs stop their manic flashing.

**Setting Speed/Tempo**

When digital effects first hit the market back in the late 70's, long before Tap Tempo hit the scene, calculators and stop watches were standard issue in most studios.

Engineers would calculate the correct speed value in hertz for the tempo of a song by dividing the tempo by 60. This would give them the 1/4 note value, and from there they could calculate all of the wonderful possible rhythmic divisions like a dotted 8th or a 1/2 note triplet by using a division table like the one here:

**1/4 Note Time Division Table**

Note Value	Divisor	Note Value	Divisor
Whole Note	4	Dotted 1/8	.75
Dotted 1/2	3	1/8 Note	.5
1/2 Note	2	Triplet 1/8	.333
Triplet 1/2	1.333	Dotted 1/16	.375
Dotted 1/4	1.5	1/16 Note	.250
1/4 Note	1	Triplet 1/16	.167
Triplet 1/4	.667		

Fortunately, for the math-impaired, Filter Pro lets you bypass the math and just press buttons.

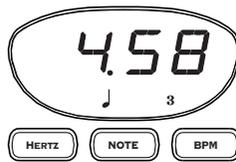
**Setting Tempo in BPM**

1. Press BPM to see the tempo expressed as beats per minute.
2. Tap a tempo with the TAP button. (Tap on the 1/4 notes along with the music that you're adding a filter effect to.) Or, use the Speed knob to adjust the current tempo. Press once to reset to the downbeat of the music.
3. Press the NOTE button as needed to select the note division you'd like for your Filter effect.

## Setting Tempo in Hertz

Hertz (abbreviated Hz, so we don't have to type quite so much) is a unit used to describe how often an event (say a Throbber filter sweep) happens. 1Hz is equivalent to one cycle (or sweep) per second, just in case you cared.

1. Press the Hertz button to see the speed expressed in Hertz.
2. Use the Speed knob to set the Speed in Hz. The Speed knob is also velocity sensitive. Twist it quickly for coarse adjustments, and slowly for finer adjustments. You can use the Tap Tempo button for quick changes.



Now let's talk a little bit about the Tempo display and its related buttons, since that's where you'll get a lot of your information about what's going on. This display shows you the tempo in either Hertz or in Beats Per Minute (BPM). The buttons underneath it let you determine which of those two options you get, as well as select what rhythmic value you want the filter effect to have. Bare in mind, though, that we're not trying to force you into anything – if you don't want to have a specific note value for a tempo, just press the Hertz button and use the Speed knob to dial up a value and ignore the whole BPM/note thing.

But, just in case you do want to do something cool with note values, here's an example: Let's say you're writing a new Drum n' Bass Goth hit, with the leisurely tempo of 183 BPM. Let's also say that you want the sample of your cat sneezing that you're using as a snare to have a synced filter sweep of a quarter note triplet. There's no need to get out the calculator (or boot up that special piece of software you have) to figure out what the Hertz value would need to be. You simply press the button labeled "BPM", turn the Speed knob until the display reads "183" and press the Note button until "♪ 3" is lit, and you're there. If your curiosity gets the better of you (or you're working on the project with a friend and he needs to know 'cause he hasn't bought his own Filter Pro

yet) and you decide you really *need* to know what the Hertz value is for that, just hit the Hertz button. Ta-da! The display switches back to Hertz, and you haven't even had to *think* about that math stuff.

### **Sweep Reset**

Another of Filter Pro's uniquely cool features is the ability to reset the start of a filter sweep by just tapping the Tap Tempo button once (tapping it twice, of course, recalculates your tempo). This means that you can control where the downbeat of a particular effect occurs.

## **Global (Tempo)**

Global Tempo determines whether models and programs will load with their stored tempo or ignore that and use a Global Hertz or BPM value. Just press the Global button to toggle it on and off.

**Hint:** *It's on when the button is lit.*

## **Set Expression Pedal**

Pedal Assign mode lets you create two different versions (kind of like 2 snapshots of the front panel controls) of a program and morph between them with an expression pedal (like the Line 6 EX-1) connected to the 1/4" jack on the rear of the Filter Pro. This is great for controlling single parameters on the fly like the wet/dry mix, or exploring more radical soundscapes like adjusting filter frequency and width in tandem on the Synth-O-Matic model. The expression pedal is a key performance tool for both live and studio work. You can also do the same thing via MIDI using MIDI continuous controller # 4.

If you're one of those types who's used to the way an Expression Pedal works with the Line 6 FM4 Filter Modeler stompbox, you'll want to listen carefully. The Filter Pro works a little differently, but the concept remains the same. You may also want to check out page 15 in this chapter which describes the intricacies of the Pedal Update Mode options. But for now, here's the basics:

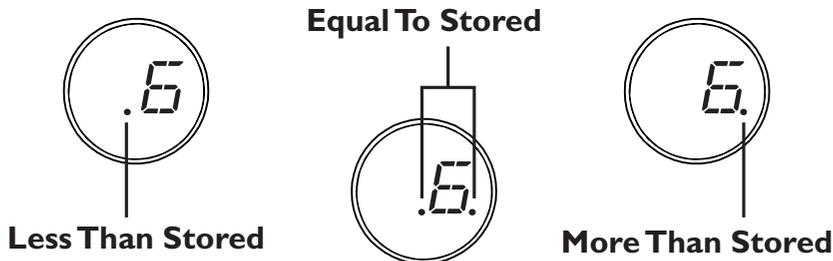
1. Make sure that your EX-1 is plugged into the correct jack on the back of your Filter Pro. From Program Select Mode, press and hold the Global button and then press the BPM button at the same time.

## Basic Operation: Compare

2. With the EX-1 in the heel down position, set up your basic program (Model, Speed, Frequency, Tweak, Tweez, etc.).
3. Move the EX-1 to the toe down position and set up a variation on the same program (note: you can change any knob but Model).
4. Move the EX-1 from heel to toe and back while feeding a signal through your Filter Pro so you can make sure that the program is working the way you want.
5. Store the program (if you like what you've done and want to keep it), or press BPM and Global at the same time. Either one will exit Pedal Assign mode. If you decide that you've made a bad decision (like the time you had one beer too many at the Mousetrap Dancing Festival), just press MIDI/Sys, and it will cancel everything you've done in Pedal Assign.

## Compare

Wonder exactly what edits you've made? Do you want to get back to the original program settings? Did you increase or decrease the Vibrato Depth and now wonder what it was when you started out? It's easy to tell! Whenever you're editing a Program, you've also got some handy Compare information available. Just look at the Program display while you turn a knob. You'll see that when you turn any knob to edit the program, one or more dots in the Program display will turn on, depending on whether you've turned the knob up or down versus the saved settings for the Program. As illustrated by the images below, there are three possibilities: If the left dot is lit, the current value is less than the stored version. If the dot to the right is lit, it's greater than the stored version. If both dots are lit, the value matches the stored program. Pretty simple, huh?



## Saving a Program

Okay, so you've edited a program and come up with your ultimate Comet Trails setting. Now what do you do? You save it so you can always amaze your friends with a quick psychedelic trip into oblivion, of course! There are a couple of different ways to save a program, so here goes with the explanation type stuff:

### Regular Save

If you want to save your edits as a regular program, overwriting the program you started from, simply press the Save button twice. That's it, no muss, no fuss, you're done. If, on the other hand, you like the original program and want to keep it, but also like your edited version, you'll need to save it to a new location. To do this, press Save once. The Save Button will start flashing quickly. (If you have never saved your own program to this location before, the display will show "FACT" to let you know that you're saving over a factory setting. If you have saved to that location before, it will show "USER".) Now, use the Program Select knob to choose the location where you want to save your new sound and press Save a second time.

**Hint:** *It's probably a good idea to go through all the presets and figure out which ones you like, which ones you could live without, and make a list of both. The best time to figure that one out isn't when you're trying to save a fabulous new program. And what if you blow it and overwrite one that you loved? Not to worry, just skip ahead a couple of pages to the section on Restoring Factory Settings.*

### Custom Save

Here we come to one of the very cool features of Filter Pro. If you love your new edited program so much that you just want it to pop up every time you select that model with the Model Select knob, you can do that, too. Just press Save once, so the button begins to flash. Then turn the Program Select knob all the way down. This will take you to an extra setting below 1 that shows up on the display as "FX". When you see "FX" in the program display, press Save a second time, and your edited program will overwrite the default sound on the Model Select knob. Now, whenever you twirl that Model Select knob to "Comet Trails" it's your very own, custom, amazing sound that pops up. It may not be quite as cool as a major label recording contract, but it's getting there.

## MIDI/Sys Functions

MIDI/Sys Mode is where you set different system defaults, and determine how your Filter Pro should respond to MIDI program change and controller information, handle information from expression pedals, initiate bulk dumps of MIDI system exclusive information, and various other housekeeping tasks. You get there by, surprisingly enough, pressing the MIDI/Sys button. Once you're in MIDI/Sys mode, you use the Program Select knob to choose which stuff you want to change, and then the Speed knob to change it. It's pretty simple, and here's a list of what you can do. Don't worry if you can't remember it all, because anytime you select a new one, the whole name will scroll across the display as a handy reminder.

## Mix Mode



Mix Mode lets you decide whether you want to use the mix (wet/dry) ratio that's stored with the individual programs (PROG), “globally” override the mix ratio for each program in your Filter Pro (GLOB), or eliminate any dry signal altogether for using Filter Pro in a parallel effects loop as is typical with a mixing board (LOOP). To set your desired Mix type:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob down until the Program display shows “MX” if it's not showing already.
3. Turn the Speed knob to select which Mix type you want. Bang, you're done!

“PROG” Mix Mode stores the mix (wet/dry) ratio with each individual program.

“GLOB” Mix Mode sets the front panel mix knob (or the corresponding MIDI Continuous Controller) to “globally” override the mix ratio for every program in your Filter Pro as determined by the front panel Mix control. This Global Mix Mode doesn't rewrite your programs; it only applies the Global mix value temporarily.

“LOOP” Mix Mode eliminates the dry signal altogether (100% Wet) for using Filter Pro in a parallel effects loop, as with a typical mixing board hookup.

## Bypass Mode



There are several different types of bypass available in your Filter Pro. Which one you'll want to use is going to depend on your application and personal taste. To select or change Bypass Mode:

1. Press the MIDI/Sys button to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows “BY”.
3. Turn the Speed knob to select the bypass mode you want. The options are:

### **Bypass Mode: Dry**

When bypassed, this mode routes the dry signal only from the inputs, through the DSP, directly to the outputs, regardless of current Mix settings. It's equivalent to setting the Mix knob to 0% Wet.

### **Bypass Mode: All Mute (MUTE)**

When bypassed, this cuts off both input and output, so no audio at all is passed through.

### **Bypass Mode: Analog Bypass (ANLG)**

This mode gives you a straight, buffered analog path (with no analog-to-digital conversion) between the inputs and outputs of the Filter Pro when you are in bypass.

## **MIDI Channel**



Here's where you select which MIDI channel you want your Filter Pro to communicate on. The choices are 1-16 and Omni (which, in MIDI-speak means, "I don't care, I'll listen to every channel"). The default is MIDI channel 1, but if you want to change it:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows "CH".
3. Turn the Speed knob to select the MIDI channel of your dreams.

## **Program Format**



For those of you who own other Line 6 gear like POD, POD Pro, Flextone II, etc., and have gotten used to seeing your program numbers displayed in the Bank/Channel format, we provide the Program Format mode selection. You can choose to have your programs numbered 1-99 (1-99) or 1A-9D (BANK). Since POD and Flextone have only 36 channel locations, programs 37-99 will be displayed normally, regardless of which program format you choose. To choose which you'd prefer, simply:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows "PF".
3. Turn the Speed knob to select which Program display type you want.

## MIDI Clock Mode



This one tells the product whether to listen to MIDI Clock Sync or not. For more information about using MIDI Clock, see the chapter on MIDI control. In the meantime:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows “CL”.
3. Turn the Speed knob to select “ON” or “OFF”.

Note: When MIDI Clock is enabled, tapping the Tap Tempo button or adjusting the Speed knob will have no effect on the tempo. If you wish to regain manual control of these parameters, de-activate MIDI Clock.

## MIDI Map Mode



This one turns MIDI Mapping on and off. For more information about using MIDI Mapping, see the chapter on MIDI control. In the meantime:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows “MM”.
3. Turn the Speed knob to select “ON” or “OFF”.

Note: if any change is made to the MIDI Map, this parameter is automatically set to ‘ON’.

## MIDI Out/Thru



The MIDI Out/Thru jack on the rear panel of your Filter Pro is software-configurable to be either a MIDI Out or a MIDI Thru. When set as MIDI Out, Filter Pro will send internally generated MIDI controllers and Program Changes (e.g. You select Program 58 and Filter Pro sends out a MIDI Program Change message telling other MIDI devices on the same channel to change to Program 58), but will not send any MIDI information that it receives. In MIDI Thru mode, it will simply pass along any MIDI messages it receives, but won't send any internally generated MIDI messages out. In either case, Filter Pro will still react appropriately to MIDI messages that are received at its MIDI In. The factory default is MIDI Out. To change it:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows “MO”.
3. Turn the Speed knob to select “OUT” or “THRU”.

## MIDI Dump



Here's where you can send out either the current state of the running program (including any edits that you might have made, but not saved) or the entire contents of your Filter Pro as a MIDI System Exclusive Bulk Dump. If you need to know more about just what information is being sent (in other words, if you're some kind of MIDI freak who knows his F0 from his F7), all that's in the appendix on MIDI Implementation. To send data wildly scurrying from your Filter Pro:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows “DU”. You'll notice that when you do this, the Save button also starts blinking.
3. Turn the Speed knob to select either “CURR” or “ALL”.
4. Make whatever preparations you need to with the sequencer, librarian, or MIDI utility that's going to be receiving the information (we're not gonna go into all that here), and press the Save button. When Filter Pro is finished Dumping the data the display will read “DONE”.

## Pedal Update Mode



This one toggles between Immediate and Delayed mode for the expression pedal or MIDI controller information. In the Immediate mode, when a new program is selected, the current position of the expression pedal, or the last received MIDI Continuous Controller #4 message will immediately affect the program by morphing its values as set in “SET EXPRESSION PEDAL” mode. (The MIDI controller messages will be ignored if an Expression Pedal is connected to the rear panel 1/4" jack.) In the Delayed mode, when a new program is selected, its settings will be loaded, and will not be affected by the Expression pedal or MIDI CC#4 until they are adjusted by you. Here’s how to set the Pedal Update mode:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows “PU”.
3. Turn the Speed knob to select either Immediate “IMMD” or Delayed “DLYD”. The factory default is Immediate.

Why would you want to delay the expression pedal’s effect on your sound anyway? How about this: Let’s say your Program 1 utilizes the expression pedal to adjust the Frequency of a model, while Program 2 uses the Expression Pedal to adjust the tempo. And now let’s say you want to be able to call up Program 1, pedal the Frequency like crazy, and then switch to the Program 2 without having to worry what position you just left your Expression pedal in. DELAYED mode would insure that you could switch to Program 2, and have the Filter Pro wait for you to move the Expression Pedal again before morphing Program 2. Sound like a good idea? Well then congratulations, DELAYED mode is for you!

## MIDI Controller Assignments



You'll find an extensive discussion of MIDI Controller Assignments in the MIDI Control chapter under "Parameter Control". You'll also find a complete list of just what's controllable in the appendix on MIDI Implementation. Here are the basics to setting it up:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display starts blink between "CC" and a number of other cryptic TLAs (Two Letter Abbreviations). Keep turning the Program Select knob until you come to the controller you want to change (for a complete list of what you can change, including those TLAs, see the chapter on MIDI Control).
3. Either send your Filter Pro a controller message from the controller you want to use, or turn the Speed knob to select the controller number you want to use.

Your Filter Pro shipped from our factory pre-configured with the following default MIDI Controller Assignments:

CC# 4	Expression Pedal	EX	CC# 68	Tweak Knob	TK
CC# 64	Tap Button	TP	CC# 69	Tweez Knob	TZ
CC# 65	Note Value	NT	CC# 76	Mix Knob	MX
CC# 66	Speed Knob	SP	CC# 77	Bypass Button	BY
CC# 67	Frequency Knob	FR	CC# 78	Effect Model Select	FX

## Restoring Factory Settings



Made a mistake? Overwrote a factory preset you really loved? Never fear, we've given you a way to restore the factory settings, either all at once, or one at a time.

Press the MIDI/Sys button and use the Program Select knob to select "FR" (for Factory Recall, in case you were wondering).

Note that the Save button will be flashing quickly and the question mark in the Tempo Display will be flashing slowly.

### Individual Restore

At this point, you can restore any single program to its factory default by using the Speed knob to select the program number you want to restore (since the display shows Program #1, we'll use that as an example), then pressing Save. At this point, the Tempo Display will prompt you to see if you're absolutely positive this is what you want to do. If you're sure and there's no changing your mind, just press Save a second time. The Filter Pro will restore the program to its factory setting, flash "Done" on the Tempo Display for a couple of seconds, then return to the display shown above. If you're finished, simply press MIDI/Sys to go back to Program mode. If you've got other programs you want to restore, you may (as they say in the shampoo biz) repeat as necessary.

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows "FR". You'll notice that the ol' Save button starts blinking, just awaiting your command.
3. Turn the Speed knob to select Program 1-99. You'll notice a blinking question mark in the Tempo Display, next to the program number.
4. Press Save. The Tempo Display will prompt you with "SURE" so you have ample opportunity to question your motives and reason for existence, as well as determining that this is, in fact, the program number you want to restore.
5. If you're sure, press Save a second time, and you'll be rewarded with the word "DONE" in the Tempo Display, and then...

## Basic Operation: Restoring Factory Settings

6. Press MIDI/Sys to exit MIDI/Sys mode.

### Global Restore

Let's say you decide that you want to wipe out all 99 Programs and start with a clean slate. You can set them all back to the factory defaults very easily. Simply follow the procedure we outlined above, but instead of selecting a program number, turn the Speed knob all the way up. Keep going when you hit Program 99 and the Tempo Display will show "All". Press Save, and once again you'll be prompted to make sure this is what you want. If you've got your heart set on it, take a deep breath and press Save a second time, then press MIDI/Sys to return to Program Select mode. Presto, your Filter Pro now sounds as if it's been freshly removed from the box.

# MODEL DESCRIPTIONS

## Synth String – based on Roland GR700 Guitar Synth



4 • |

The GR700 is one of the largest guitar foot pedals ever made. It also happens to have some of the coolest analog synth sounds designed for guitar. Guitar synth pioneers like Adrian Belew considered the GR700 an essential tool for their trailblazing sonic explorations. Your Filter Pro's Synth String model is based on one of the sounds of the GR700.

**Speed** controls the attack time from 0 to 2.07 seconds.

**Frequency** controls a low pass filter tone control with a range of 0.08kHz to 18.0kHz.

**Tweak** sets the speed of the vibrato-y pulse width modulation from 0-6.11 Hz.

**Tweez** controls the Pitch of the effect over a 2 octave range (-24 to 0)

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**Model Descriptions:** Attack Synth – based on the Korg X911 Guitar Synth.

## Attack Synth – based on the Korg X911 Guitar Synth.



4 • 2

This model gives you two effects in one. The Auto Volume part of the equation is a Line 6 original. We borrowed the unit that inspired this model – a Korg X911 Guitar Synth – from the delightful and delicious Eric Dover (of Jellyfish and Imperial Drag). Your Filter Pro's Attack Synth uses a waveform modeled after one of those in the X911, along with some of the wave shaping functions that are found on the original X911.

**Speed** controls the Attack (sets the time it takes to get to the stop frequency) from 0 to 2.07 seconds.

**Frequency** controls the stop frequency of the filter (labeled VCF on the X911) from 0.10kHz to 3.31kHz.

**Tweak** selects between Square, Pulse Width Modulation, and Ramp for the synth waveform.

**Tweez** controls Pitch over a 2 octave range, displayed as -24 to 0 as befits semitones.

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## Synth-O-Matic – inspired by vintage analog synths.



4 • 3

This model features waveforms captured from a mouth watering collection of vintage synths: a Moog Modular (which is the unit pictured above), Oberheim Synthesizer Expander Module, Sequential Circuits Prophet 600, Arp Explorer-I Model 2900, and Studio Electronics SE-1 – groovy analog circuitry giving its all to make mind-warping waveforms.

**Speed** selects one of the eight synth waveforms.

**Frequency** sets the frequency of the filter, which determines how bright your sound will be. The knob range is 0.02kHz to 3.01kHz.

**Tweak** sets filter width to add more or less additional emphasis on the selected frequency, ranging from 0.50 to 12.70

**Tweez** controls the Pitch of the synth sound over a 2 octave range (displayed as -24 to 0, which would make it semi-tones, wouldn't it?).

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**Model Descriptions:** Tron Up/Tron Down – Inspired by the Mu-Tron III.

## Tron Up/Tron Down – Inspired by the Mu-Tron III.



4 • 4

What self-respecting filter-junkie would be without a Mu-Tron III envelope follower? Part auto-wah, part triggered filter, it's all about wacky, and your Filter Pro's model based on the Mu-Tron III gives it to you both coming and going. Go ahead – unbutton that shirt, put on the flares, and get down with your bad self!

You've got your choice of Tron Down and Tron Up, to get you both flavors of this effect a la the original Mu-Tron's Drive switch.

**Speed** like the Mu-Tron III Range switch, selects High or Low frequencies for the focus of the filter effect.

**Frequency** like the Mu-Tron III Gain knob, determines how far apart the high and low points of the filter sweep will be. The knob range is 1-64

**Tweak** sets the width of the filter. On the original unit this was called Peak. Knob range is 1.08 to 12.7 for Tron down and 1.48 to 10.58 for Tron Up.

**Tweez** as on the original Mu-Tron III, selects the type of filter effect (Low Pass, Band Pass, or High Pass).

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## **Q-Filter – your very own parked wah!**



4 • 5

You've heard it before on UFO records and from Brian May of Queen – it's a wah "parked" in one position that creates a unique, notched kind of sound. With the Filter Pro, this effect is programmable and repeatable! You can even use this model as a wah pedal if you connect an EX-1 Expression Pedal, and set it to sweep Frequency from low to high.

**Speed** sets the gain (how much boost the effect gives to your guitar) from 0dB to 18dB.

**Frequency** controls the frequency of the filter (that's like the position of the wah pedal). Knob range from 0.19kHz to 2.65kHz.

**Tweak** controls the width of the filter. The knob range is 0.89 to 63.5.

**Tweez** selects the type of filter effect (Low Pass, Band Pass, or High Pass).

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## Slow Filter – It's Swell!



4 • 6

This triggered filter rolls off the high end of your tone, with adjustable speed. You get a choice of having your tone sweep from dark to bright (the UP mode), or bright to dark (the DOWN mode). Tweak lets you further shape your tone by creating a sharp boost at the point of the high end roll off. Just plug in your guitar or other noise maker and you'll see soon enough what we're talking about. The Oberheim Synthesizer Expander Module pictured above could be used to create an effect like this.

**Speed** sets the attack of the filter sweep from 0 to 2.07 seconds.

**Frequency** sets the frequency where the filter begins its tone shaping roll-off. Knob range is 0.21kHz to 3.31kHz.

**Tweak** controls the width, or Resonance, of the filter from 1.3 to 63.5.

**Tweez** selects between two modes: UP or DOWN.

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## **V-Tron – Voice Box meets Mu-Tron III**

Imagine a head-on collision between a Mu-Tron III envelope filter (page 4•4) and the Voice Box effect (see next page)... the resulting effect would be a V-Tron! In this model's sonic playland, your guitar again "speaks" with an almost human voice, but now it does so in response to your playing. Each time you strike a new note or chord, the vowel sequence will be "spoken." You can choose whether the speaking will go from the start vowel to the stop vowel and call it a day (UP Mode), or turn around and come right back again (UP &RETURN).

**Speed** sets how long it takes to "speak" from one vowel to the other. The attack time is adjustable from 0 to 2.07 seconds.

**Frequency** controls the sound of the starting vowel (a, e, i, o, u), which is shown on the left side of the display.

**Tweak** controls the sound of the stop vowel (a, e, i, o, u), shown on the right side of the display.

**Tweez** chooses between the two modes: UP, or UP & RETURN. When in UP mode, an arrow indicates the direction of sweep. UP & RETURN loses the arrow to indicate that it goes both ways.

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## **Voice Box – Inspired by Vocoder & Talk Boxes**

4 • 8



This model, the first of the tempo based effects in your Filter Pro, gives your guitar a sound that's typical of a classic "talk box." The Frequency knob picks a start vowel, and the Tweak knob picks a stop vowel. Tweez lets you choose one of four settings for shifting back and forth between vowel one and two automatically at the speed set by the SPEED control. Or, select Pedal mode for expression pedal control of the start to stop shift. This effect, like other talking pedal effects, sounds particularly great with a distortion pedal in front of it. Peter Frampton used a "talk box" with a Foxx Tone Machine (which is similar to the Octave Fuzz model on the DM4) on his famous tune Show Me The Way.

**Speed** sets how long it takes to "speak" from one vowel to the other in Automatic mode.

**Frequency** controls the sound of the starting vowel (a, e, i, o, u), which is shown on the left side of the display.

**Tweak** controls the sound of the stop vowel (a, e, i, o, u), shown on the right side of the display.

**Tweez** chooses between the 4 available Automatic modes (Sine, Asymmetrical, Pulse, and Random) and Pedal mode.

## Seeker – inspired by the Z-Vex Seek Wah.



The Seek Wah is a box that contains 8 “parked wah” filters that can be set at varying positions and then sequenced through, creating a pulsating hypnotic vibe (with no detectable side effects!). In our ode to this unique creation, we give you the Seeker. Here’s how it works:

**Speed** as on the original, controls the rate (time) that it takes to cycle through the filters. The speed in Hz or note value that you choose is the time per step, so a 1/16 note, for example, with the pattern set to 4 would cycle completely every quarter note.

**Frequency** lets you select from a range of different patterns of sequenced wah filter positions. Turn slowly to find the preset that works best for your tune. There are 64 different patterns to choose from, and the knob range (surprise) is 1-64.

**Tweak** sets the width, or Q, of the filters. Knob range is 1.72 to 63.5.

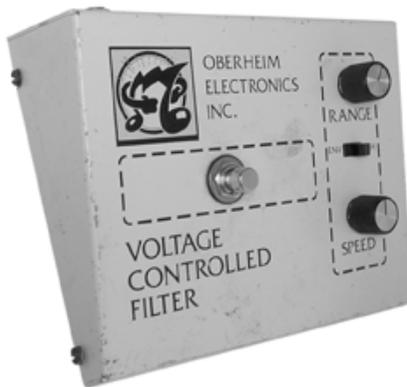
**Tweez** sets the number of filter steps in the sequence. The Seek Wah lets you choose 4, 6, or 8. The Seeker allows any choice from 2 to 9 steps – Hello, odd time signatures!

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## **Obi-Wah – Based on Oberheim Voltage Controlled filter**



4 • 10

Sample and Hold filters like the one in the classic Oberheim Voltage Controlled Filter create changes in tone by randomly emphasizing certain frequencies. With the Obi-Wah model, the Tweez knob gives you the option to effect the high, low, or middle frequencies of your tone. If this seems daunting to understand at first, just close your eyes, Luke, and use The Force...

**Speed** sets the rate of the random filter changes.

**Frequency** sets the area of frequency where the filter will change your tone. The range is adjustable from 0.18kHz to 4.11kHz.

**Tweak** controls the width, or Q, of the filter. The knob range is from 1.02 to 31.75.

**Tweez** selects the type of filter effect: Low Pass (reduces high frequencies), Band Pass (emphasizes mid frequencies), or High Pass (reduces bass).

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## **Throbber – Inspired by the Electrix Filter Factory**



The Electrix Filter Factory, while originally marketed to DJ's, was largely embraced by pop and rock producers for its extreme funkified range of tonal possibilities. Throbber captures the pure sonic energy of the Filter Factory as its LFO rhythmically throws the filters all over the map giving you effects reminiscent of vintage keyboards or U2's "Elevation" track. FREQ centers the range of the filter, while Q sets the amount of resonance from purring to howling. Start in Square mode and dial in the Speed control to match the tempo of your tune.

**Speed** sets the rate of the LFO.

**Frequency** targets a specific frequency range for the filter. The knob range is 0.12kHz to 6.4kHz.

**Tweak** controls the Q, or Resonance, of the filter. The range is 0.73 to 31.75.

**Tweez** selects between four different wave shapes (Ramp Up, Ramp Down, Triangle or Square).

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## Spin Cycle – inspired by Craig Anderton’s Wah/Anti-Wah



4 • 12

This effect takes particular advantage of the Filter Pro’s stereo capabilities. Imagine two wah pedals panned left and right that work in the opposite direction, 180° from each other. One goes up while the other goes down. Now add the fact that these wah pedals are sweeping from minimum to maximum automatically. This is what headphone mixes are made for! Fear not – when operating in mono, the wah and anti-wah will be united on the single monophonic output. At the minimum setting of the Tweez knob, the speed of the effect will remain unchanged whether you play quietly or loudly.

**Speed** sets the speed at which the wah effects sweep.

**Frequency** controls the range of the filter emphasis in the wah tone, ranging from 0.12kHz to 7.46kHz.

**Tweak** controls the width of the filter. Range is from 0.68 to 63.5

**Tweez** controls the amount of Volume Sensitivity for the speed of the effect. The Speed display, by the way, will always reflect the tempo/note relationship, even though the peak follower can drive you to dizzying speeds.

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## Comet Trails – The Result of too much Mountain Dew



After several days spent crafting the code that makes up our digital secret sauce, we found ourselves one afternoon surrounded by 10 empty cans of Dew, and sounds from another world. We rushed from the office, shouting to anyone who would listen, “Yo! Check this out!” Now that same caffeine and sugar-fueled rush is available to you at the twirl of a Filter Pro Speed knob. Somewhere inside your Filter Pro are seven filters, all chasing each other around and looping back and forth across the great expanse of sonic space. The heavens fill with their joyous song. We call it Comet Trails...

**Speed** sets the rate of the filter movement.

**Frequency** controls the range of the filters from 1.3kHz to 6.13kHz.

**Tweak** controls the width of the filters. The knob range is 3.53 to 63.5.

**Tweez** controls the Gain of the whole shebang from 3dB to 28dB.

**Model Descriptions:** Octisynth – Inspired by the 8 Armed Denizens of The Deep

## Octisynth – Inspired by the 8 Armed Denizens of The Deep



4 • 14

Everyone knows that all you need is a bottleneck and a reverb tank to get great whale sounds, but how about our often-ignored deep sea friend the Octopus? To emulate the call of the famous invertebrate, we've provided you with a subtle, velocity sensitive combination of Ring Modulator, Synthesizer VCO and Vibrato pedal. As an added bonus, your guitar's volume knob gets in on the action by controlling the frequency of the oscillator. Set it low to mimic the large Octopus dofleini of the North Pacific, or turn it all the way up to communicate with the inch long Octopus micropyrsus.

**Speed** sets the rate of the Vibrato.

**Frequency** controls filter content, adding second order harmonics. Knob range is 1-64.

**Tweak** controls the width of the filters, from mild to wild. Knob range is 1-64.

**Tweez** controls the Depth of the Vibrato. Knob range is 1-64.

## **Growler – GR700 meets Mu-Tron III**

If you've been paying attention, you've noticed that our model based on the Mu-Tron III has been making a number of appearances in the Filter Pro's hit parade. This time it's stepping out in the distinguished company of another GR700-inspired tone. Check out the dynamic duo in action:

**Speed** dials in the speed of the vibrato-y pulse width modulation.

**Frequency** controls the frequency of the filter (surprise). Knob range is 1-64

**Tweak** sets the width, or Resonance, of the filter from 0.5 to 15.88.

**Tweez** controls the Pitch of the synth over a 2 octave range. (-24 to 0)

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# MIDI CONTROL

By this point, you should have a pretty good idea of how all this stuff works when you're just spinning knobs on the front panel of the unit. But there's a whole other world available here. Just look at the rear panel and you'll notice those two funny looking 5 pin jacks labeled MIDI In and MIDI Out. This is where the fun starts! Controlling your Filter Pro via MIDI is the best way to really make it start jumping through hoops. If you're already familiar with MIDI, you can skip to the next section of this manual, but if you're a MIDI neophyte, let's take a moment for a brief history lesson.

## What Is MIDI, Anyway?

5 • 1

MIDI (pronounced Mih-dee) stands for Musical Instrument Digital Interface. When you come right down to it, it's simply a way for one device to communicate with another. (And it's not restricted to musical instruments, either. Practically anything can be controlled from MIDI with the proper accessories. A number of amusement parks even use MIDI to do motion control on various rides and attractions. Crazy, huh?) So, how did this MIDI come to be? That's the next part of our story.

In the mid-1970s, when synthesizers were first starting to make an impact on the sound of mainstream music, there was no convenient way for one synthesizer to 'talk' to another. Say you had 5 different synths, and you wanted to play the same note on all of them, but using different sounds, by pressing only one key. Couldn't happen! Different manufacturers used different control voltages to represent different notes, so even if you could hook one keyboard up to control all 5 units, there was no guarantee that they'd all sound the same note when you pressed that key. In 1981, some manufacturers started talking about the bright idea of creating a communications standard so that you could connect a synth from Company A into a synth made by Company B, press a key, and get the same note out, with the same dynamics, sustain, modulation, etc. In early 1983, the initial MIDI standard debuted and NAMM show attendees marveled at seeing one keyboard control another. That was the original idea of MIDI, but it soon began to get more complicated.

It didn't take long for engineers to realize that digital information passing from one keyboard to another could also be stored and played back at a later time, just like a tape deck, by something called a sequencer (because it records a sequence of MIDI events). Early sequencers were stand alone hardware devices that had a limited resolution.

## MIDI Control: Why Should I Care?

(Some only could deal with 24 divisions of a single beat and would force a note to the nearest one of those divisions making things like playing a little behind or in front of the beat, not to mention playing triplets smaller than eighth notes, a bit of a problem.) These early sequencers didn't have a lot of memory either, so there were also restrictions on the length of a song. Once someone figured that you could build a small hardware interface and write a software program that could do the same thing with a desktop computer, things really started to roll. A big plus was that once you got the information in the computer, you could play with the data. You could fluff a note and fix it afterwards without having to retake the whole song or punch in and out and hope that you didn't inadvertently erase something that you wanted to keep. You could even add information (called continuous controllers) about the expression of the note after the fact. MIDI also has channels, 16 of 'em, so that you can even direct certain notes to a specific MIDI device by simply telling it to listen to only one channel, and ignore others. This means that you can, in theory, have 16 different devices connected to a single MIDI connector (or port, as they're frequently called), each playing different parts.

Another big plus for MIDI is that certain types of information are left fairly unstructured, so manufacturers can support device specific features easily. This type of data is called System Exclusive (or Sysex). Sysex is not just channel specific, it's *device* specific. Even with more than one device assigned to a specific MIDI channel, sysex data will only affect the specific device for which it's intended. With the Filter Pros, controller and Sysex information can both be put to work controlling your sound.

## Why Should I Care?

Well, even if you're only going to be using your Filter Pro in a stage rack, and not with a whole MIDI studio setup, its MIDI capabilities can make your life much simpler and more fulfilling (and isn't that what we're all after, anyway?). Even just something as simple as being able to have a program change on another device (like the amazing Line 6 Flextone II or POD), call up any program on your Filter Pro (or even have several program changes call up the same program), can make your performance or recording life far easier.

## General Usage

There are three general things that you'll probably be using MIDI for with your Filter Pro: Program Changes, Parameter Control, and Tempo/Speed Control. (Sorry, we just couldn't think of a third "P" word that would work.)

### Program Change

Much of the time, when you're using MIDI with your Filter Pro, you'll be sending "Program Change" messages. These are the commands that tell a MIDI device to switch from one program to another. While there are 128 different MIDI program numbers and the Filter Pros only have 99, we haven't let those other 29 program numbers go to waste, as you will see.

Sending a program change is just like using the "Program Select" knob on the Filter Pro front panel. If you've got the Filter Pro MIDI'd up to a sequencer, you can use the sequencer's program change (usually a drop down menu or the like) to select which program you'd like to bring up. If a Filter Pro's slaved to a MIDI keyboard, MIDI Floor Controller, or guitar amp/preamp with MIDI, when you select a program on the first device, your Filter Pro can switch to the same program number you've chosen on the master unit. Much of the time this will be all you need, but what happens if you want to use the same Filter Pro program (let's just say a specific V-Tron program) with more than one of your synth programs? Does this mean that you have to have the same settings stored in more than one program location? Well, you could do it that way, but enough of that type of situation and you'd start to run out of program locations, even though you've got 99 of 'em to work with. Fortunately, there's....

## MIDI Mapping



MIDI Mapping is the ability to assign (or map) a received MIDI Program Change message to a specific program in your Filter Pro, regardless of what the internal program number happens to be. This means that you can easily set things up so that programs 12, 48, and 127 on your synth all call up program 33 on your Filter Pro. In fact, you're not restricted to mapping program change messages to program numbers. You can also map a program change to call up specific Effect Models on the Filter Pro!

So how do we do this? Well, let's look at how we would go about mapping MIDI Program Change message 26 to the Filter Pro's program 14.

## **MIDI Control: MIDI Mapping**

1. Press and hold the MIDI/Sys button for two seconds to enter MIDI Map mode (you'll know you're there when the display flashes MIDI... Map).
2. Use the Speed knob to select MIDI Program Change 26. (You can also send MIDI Program Change 26 from your master unit to set this.)
3. Use the Program Select knob to choose Program 14 on your Filter Pro.
4. Press "Save" to save the changes.
5. To test, select various Programs on your MIDI Controller. The program numbers on the Filter Pro should mirror the program number on your controller until you select Program 26. At this point, the Filter Pro should change to Program 14.

Okay, pretty simple, no? Now, if you wanted other program change messages to point at the same Filter Pro Program, you would simply perform steps 1-4 above, then, instead of hitting MIDI/Sys to go back to Program Select mode, you would just twirl the Speed knob to the other Program Change numbers you wanted to map to program 14 (or send those program change messages directly from your MIDI Master Controller), pressing "Save" after selecting each one, until you were done, then you'd proceed to step 5. You can even have all 127 Program Change messages select the same program on the Filter Pro, but that would be more than a little silly. Not that there's anything wrong with that.

With the Filter Pro's Custom Save feature, you've actually got an extra 16 user definable programs available on your Filter Pro, cleverly concealed beneath the Model Select knob. Thanks to MIDI Mapping, and a little forethought from those clever engineers at Line 6, you can assign MIDI Program Changes to those and treat them just like other programs. (See, we told you we weren't gonna let those extra 29 Program Change Messages go to waste.) In order to map these, here's what you do:

1. Press and hold the MIDI/Sys button for 2 seconds to enter MIDI Map Mode.
2. Use the Speed knob to select the MIDI Program Change number of your choice. (Once again, you can also send a MIDI Program Change from your master unit to set this.)

3. Turn the Program Select knob to 99, but don't stop there, keep on turning. You'll notice that the Program Display now reads "FX" and the LEDs around the Model Select knob start to light up in order as you spin the knob. Enjoy the light show for a moment or two, then decide which model you want to map a program change to. (Let's assume you choose Spin Cycle.)
4. Press "Save" to save the changes.
5. Press "MIDI/Sys" to return to Program Select mode and test the same way we tested above.

Note: If MIDI Mapping is turned off in the MIDI/SYS menu, (See MIDI/SYS functions) it will automatically turn back on when you edit the MIDI map.

## Parameter Control



Another feature of using MIDI with your Filter Pro is the ability to control virtually every parameter of each effect in real-time using MIDI Continuous Controllers (henceforth referred to as MIDI CC#). There are actually 127 of these little devils to go around, which is more than enough to control everything your Filter Pro can do (and then some!).

This means that, for instance, you could create a sequencer track that controlled the number of steps on a Seeker, the tempo, and/or the Tweak parameter of a particular model and have these change from one section of a song to another. There are a number of different ways to do this, and it will vary from one keyboard or sequencer to the next.

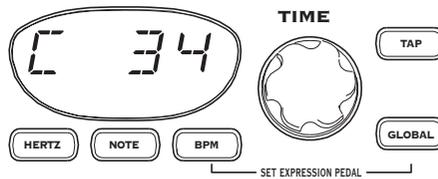
For example, your keyboard may allow you to assign different controller numbers to the mod wheel or a slider or knob on the keyboard, or your sequencer may have some sort of virtual control surface that you can configure to send different controllers. Say you wanted to control the Mix parameter remotely. You'd simply assign MIDI CC#76 (which is the default assignment for the Mix control) to whichever control type you have available and control away. Obviously, there's enough variation in how this is done that we're going to have to refer you to the owner's manual for your keyboard, sequencer, or control surface.

There's a complete listing of MIDI Controller assignments in the Appendix at the end of this manual, but one of the great things about the Filter Pro is that all those MIDI CC#s, like Program Changes, can be reassigned. You can even use the same MIDI CC# to control multiple parameters simultaneously (although you'll want to think that through carefully before you start ganging them up. While some controllers will work together nicely, there will be some combinations that may be somewhat less than desirable. Remember, just because you *can*, doesn't mean you *have to*).

Let's assume for a moment that you're one of those *serious* MIDI geeks who's got an old breath controller and you want to assign MIDI CC#34 (which is reserved for the breath controller) to the Tweez knob on your Filter Pro. This would give you the ability to control the Bandpass of the Obi-Wah model by blowing into the breath controller and the prospect makes you so excited that you can barely sleep (hey, it could happen). All you would have to do is:

1. Press MIDI/SYS to enter MIDI/SYS mode.

- Turn the Program Select knob until the Program display is blinking back and forth between "CC" and "TZ".
- At this point, you can either simply use the breath controller (assuming you've got it hooked up via MIDI to your Filter Pro) and the Filter Pro will automatically learn the controller number, or spin the Speed knob until the desired controller number (34) shows up in the display. In either case, your display should now look like this:



- Press MIDI/SYS to return to Program mode. Your changes are automatically saved.

These parameters are available for Parameter Control via MIDI:



**Speed Knob**



**Frequency Knob**



**Note Value**



**Bypass**



**Tweak Knob**



**Tweez Knob**



**Expression Pedal**



**Effect Model Select**



**Mix Knob**



**Tap Button**

## **Immediate vs. Delayed Controller response**

When you're using your Filter Pro with either the optional EX-1 Expression Pedal or sending MIDI Controllers to dynamically change a program, you've got a couple of decisions to make regarding how it should respond when a program loads. One choice is to have a new program load using the current controller value for the Expression Pedal (or the last known controller value if no pedal is connected or controller information is not currently being received). The other is to have programs always load as if there were no expression pedal connected and not update until they receive a controller message or see the expression pedal move. Why? Well, if you were to set up two different programs, with the Expression Pedal set to control the note value of the tempo, and wanted to switch between the two and still have the effects set to the same note value, regardless of what was stored in the programs, you'd want to use the Immediate mode for maximum flexibility. On the other hand, if you want programs to always load with exactly the programmed sound, regardless of where the Expression Pedal or external controller is happens to be set positioned right now, you would want to use Delayed mode. It's easy to change:

1. Press MIDI/Sys to enter MIDI/Sys mode.
2. Turn the Program Select knob until the Program display shows "PU".
3. Turn the Speed knob to select either Immediate "IMMD" or Delayed "DLYD". The factory default is Delayed.

## MIDI Clock and Tempo Control



One of the coolest things you can do with Filter effects is sync them up to your music (something we like to call the “Follow The Bouncing Ball Effect”). The note value parameter of the Filter Pro makes this very easy to do, once you’ve tapped in the tempo. But there’s an even easier way. If you’re in the studio, and you’re using a MIDI sequencer, all you have to do is set that sequencer to transmit MIDI Clock to the Filter Pro, and tell the Filter Pro to pay attention to MIDI Clock. Once Filter Pro receives that MIDI Clock from the sequencer (or other device, like a drum machine), it will lock right up to it. How can *you* do this, you ask?

1. Press the MIDI/SYS button to get into MIDI/SYS mode.
2. Turn the Program Select Knob until the display shows: “CL”.
3. Turn the Time knob until you see: “ON”.
4. Press MIDI/SYS to go back to Program mode.

When MIDI Clock is on, the Global Button will light, and will blink once a second to indicate that your Filter Pro is not yet locked to MIDI Clock pulses if that is the case. (Since most sequencers only send clock pulses while the sequence is actually running, it is normal for this to be the case when the sequencer is stopped.) Once your Filter Pro sees valid incoming MIDI clock, the Global button will light solid, and the Tap Tempo button will start to flash at the current tempo of the sequencer. When you stop the sequence, or if the Filter Pro loses the clock for more than two seconds, the Global button will once again start to blink, but the Tap Tempo will stay at its last received value.

## **MIDI Out/Thru (and what it means to you)**

As we touched on briefly in the section on MIDI/Sys modes (see “MIDI/Sys Functions” on page 3•10), your Filter Pro’s MIDI Out jack can be set to function as either MIDI Out or MIDI Thru. If you’re new to MIDI, this might seem a tad strange, since going through something would tend to imply that it’s going in and then coming out, right? In the world of MIDI, this isn’t always the case.

When a device is set up to function as MIDI Thru, it will look at the MIDI data stream to see if there’s a message that means anything to it, but otherwise simply pass the data along to its ‘Out’ port, without changing it, so that another MIDI device connected to this ‘Thru’ port will see exactly the same thing as the ‘Thru-ing’ device. This can be a good thing if you’re running a sequencer or MIDI controller device that you want to have several devices listening to at once. And, yes, we did make up the word Thru-ing just then, but sometimes that’s what it takes to get the job done.

When a device is set up for MIDI Out, by contrast, it’s still looking at the MIDI data stream, but it becomes selfish and doesn’t pass along any information. It will only send out messages that it has generated itself (kinda like living in a Dilbert comic strip, working for a pointy haired boss), keeping any devices after it in the dark about what data it’s received. This is the mode that you would use if you wanted your Filter Pro to be a Master unit, with other devices in a MIDI chain slaved to it (and thus the workplace metaphor is getting really dark at this point).

So, which mode you’re going to use will be completely dependent on what you’re trying to accomplish (and it’s important to set goals, isn’t it?), what else might be in your MIDI setup, and what you want taking orders from what. For example, to do MIDI Dumps, you’ll need to set your Filter Pro for ‘Out’ We just make the tools; it’s up to you to put ‘em to work.

# SOME REAL LIFE EXAMPLES

## Syncing to MIDI Clock

If you're using your Filter Pro with MIDI equipment, whether live or in the studio, you're in for a lot of fun. Filter Pro's ability to assign note values to tempos and then sync to MIDI Clock will enable you to quickly achieve great time synchronized effects that otherwise would be a royal pain to manually calculate.

### In The Studio

If you're in the Studio, using your Filter Pro with MIDI tracks that you've sequenced, or audio that you've tracked in sync with the click generated by your software, it doesn't get much simpler. Just make sure that your sequencer/audio application is sending MIDI Clock, set Filter Pro to listen to MIDI Clock (see Chapter 3) and let 'er rip.

**NOTE:** Most devices only send MIDI Clock when they're actually playing back the music. When you stop the device, it stops sending clock and Filter Pro will remain at the last tempo, flashing its Global Button to indicate the absence of MIDI Clock.

The tricky part comes when you've got a track you've recorded that wasn't sequenced or played to a click, but instead was played in 'free time' (especially if your drummer doesn't have the world's steadiest tempo!). Luckily, modern technology offers a strategy to deal with just that.

If you've tracked your tune to a computer-based or stand-alone hard disk recorder without playing to a click or sequence, set up a tempo map so that the software can generate the correct MIDI Clock to jive along with the track. Most hardware hard disk recorders and software sequencing programs do this; check your product's manual for details, since every system does this slightly differently. Most often, it involves selecting the whole song, telling the program/device "This is (x number) of bars", and letting it do the math to figure out the tempo. Then, since your drummer's not perfect, you find where the bars don't match up anymore, select smaller sections, recalculate the tempo, find where the bars don't match up, select an even smaller section, etc. Well, we told you there'd be some work involved, didn't we? When you're done, you'll have a sequence where the bar numbers match up to the audio track.

## Some Real Life Examples: Syncing to MIDI Clock

If you want to keep your tracks on tape or a hard disk recorder that doesn't support tempo maps and MIDI Clock, but you want the advantages of MIDI Clock syncing of Filter Pro, the process is a bit more involved. Once again, we'll give you the quick basics here. Start by surrounding yourself with your machine that has your recorded tracks and a computer running a recording/sequencer program. You will also need a MIDI interface that can deal with SMPTE or MTC (see below), or a separate MIDI/SMPTE synchronizer plus MIDI interface. Once you've got the gear, follow these steps:

- I A.** If you're using a Modular Digital Multitrack (MDM) or hard disk recorder unit that generates MTC (which stands for MIDI Time Code, and which is different from MIDI Time Clock, just to keep things challenging), set it to transmit MTC to the MIDI interface connected to your computer system, and put your sequencing program into External sync mode, with the sequencer set to start at 1:00:00:00. Hit play on your tape/disk machine, and it and the computer should now be locked together in time.
- I B.** If you aren't able make the system you recorded on generate MTC (heck, maybe you're recording on an analog 24 track), you'll need to establish sync the old-fashioned way: record a track of SMPTE Time Code on your source audio system, from a bit before the beginning of the tune that you're working on through to its end, following the directions that came with your SMPTE reader/generator. We advise following the standard of starting the time code at 1:00:00:00. Play your tape/disk machine so it's playing out this SMPTE track, feed the SMPTE signal into the SMPTE synchronizer/MIDI interface you've got hooked to your computer, put your sequencing software into External sync mode, set the sequencer to start at 1:00:00:00, and your source audio system and computer should now be marching in lock step.
- 2.** Now that you've got your computer running in sync with your audio source, dump a rough mix (or even just a couple of tracks that you can use for reference) of your recording over to the computer's sequencing program.
- 3.** Using your sequencing program, create a 'tempo map' for the song. Unfortunately, as we explained above, we can't give you a whole lot more detailed instruction than that, since every program does this slightly differently. Like we said, most often it involves selecting the whole song, telling the program "Hey, this is (x number) of bars", and letting it do the math to figure out the tempo. Then, since your drummer's not perfect, you find where the bars don't match up anymore, and drop in some beat markers.

4. At this point, you can play the track on tape, with the sequencer locking to the SMPTE Time Code and sending MIDI clock to the Filter Pro. You now should be able to get perfectly timed quarter note triplet filtrations at any point in the song, no matter how much the band was making the tempo 'breathe'.

### Syncing Live

Lots of performers are using sequencers live these days, especially in the dance and electronica world. Sometimes it's just to automate program changes for the band, so that they can avoid comments about their avant-garde choreography going into the bridge, when they're all really just changing patches, channels, and such. Sometimes it's to add orchestration without having to hire a full orchestra to play a club gig. Sometimes, it's to sync up multimedia. For whatever purpose, we don't have a problem with it. If you're doing the MIDI shuffle live, though, there are a couple of considerations.

1. If you're using a computer sequencer live, you'll want to invest in a multi-port MIDI interface, so you can send MIDI data to multiple devices without having to chain them all together (more than 3 or 4 MIDI devices chained together can start to develop latency delays. Line 6 products have a minimal amount of latency on their MIDI ports, but some stuff out there isn't as quick). It also makes it easier to hook up cabling if you don't have to run In and Out of everything.
2. By the same token, if you're using a hardware based sequencer, you'll want to invest in a multi-port MIDI Thru box. If you're going this way, pay particular attention to the MIDI channel assignments of everything you're hooking up, since a program change intended for the keyboard player that ends up selecting an Octisynth program in the Filter Pro could really spoil the mood of a sensitive ballad.

If you do start using MIDI sequencing live, Filter Pro will be glad to sync up to MIDI clock for you as well as automatically change programs. In addition, the MIDI Mapping feature of the Filter Pro can come in very handy, since several songs might all use the same filter program, even though other instruments are using different patches. No problem, just go in and set up your MIDI Map (you can also play cruel jokes with this feature, like mapping Mute to that incredibly dated, tired old electronic piano sound that your keyboard player uses way too much. But you didn't hear that from us).

## **Other Live Performance Hints**

If you should decide to run your Filter Pro in front of an amplifier, as if it were a stompbox (and why not? If you're using two amps, not only can you get great stereo effects, but Filter Pro acts as a real high quality buffered Line splitter), you'll want to be sure to check your settings of Filter Pro's Input and Output levels both with and without whatever stompboxes you might be using in line and turned on. Because Filter Pro can put out a signal that can seriously overload a guitar amp or instrument level device like a stompbox, you may have to do some tweaking before you find the level settings that work best in all situations.

You'll also want to pay attention to what your Bypass Mode settings are if you're running in front of an amplifier. Modes like All Mute, that are great for parallel effects loops and standalone usage, can really freak you out live when your guitar disappears completely when all you wanted to do was just stop the filtering.

## Using Multiple Studio Modelers

Want to develop the ultimate guitar rack to impress your friends and colleagues? Consider chaining together a rack full of Studio Modelers for total effects mayhem. MIDI will give you the power to remotely select Programs with a MIDI footswitch or, if you're already using a Flextone II or POD, match Programs to the channels you already have set up on your amp.

If that doesn't float your boat you could employ the first unit in the chain to control the others. As a matter of fact, we kinda designed them to work that way. While there are so many possibilities that we can't even begin to go into all of them here, we'll give you a couple of basic examples to help you kick off your particular voyage of self-discovery.

### Basic Chain Hookup

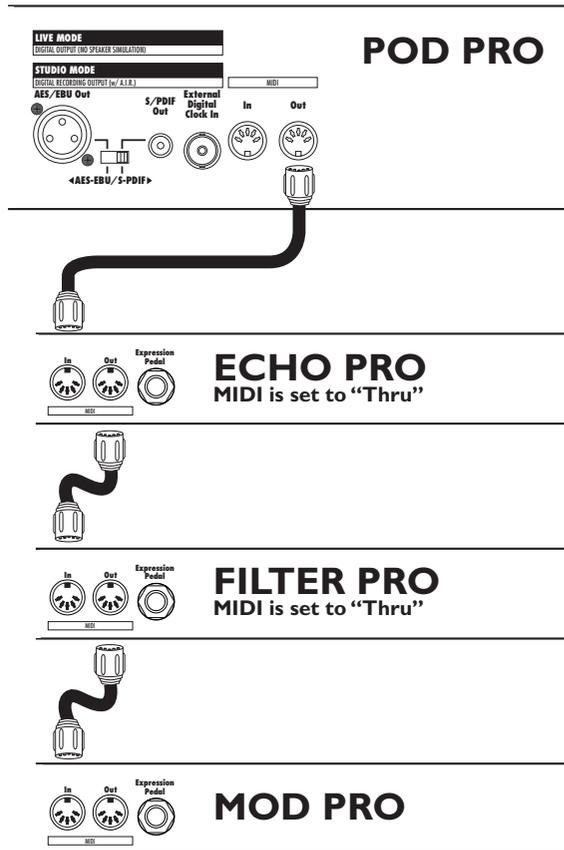
If you're chaining multiple units and want to have them slaved together via MIDI, there are two things you may want to keep in mind:

First, if we can wax philosophical for a moment, MIDI is like a river of data flowing through a series of villages. It flows Out of the first village and In to the second village. Passing Out of that village, it meanders past a lovely pastoral scene on the bank, flows In to a third village, and so on. So remember to hook up your MIDI cables from "Out" to "In" (not Out to Out or In to In) as you hook devices together, or the datafish have no place to swim, and the villagers starve, revolt, and rampage through the countryside laying waste to all that's in their path, and we wouldn't want that, would we?

Secondly, it makes a difference whether your Studio Modeler is set to MIDI Out mode or MIDI Thru mode (see MIDI Out/Thru section in Chapter 3). There are reasons for both, but having this set incorrectly for your particular application can lead to a frustrating journey through "MIDI Hell", as it's become fondly known.

**For the purposes of the following examples, note that it's essential to properly set the status of the MIDI Out/Thru to determine just how everything's going to behave.** Let's assume that you're running 3 Studio Modelers together with some other equipment. To keep from getting hopelessly confused (and we're talking about us, not you), let's deal with them one at a time, starting with:

## Some Real Life Examples: Using Multiple Studio Modelers



6 • 6

### Using another MIDI Device as Master Controller

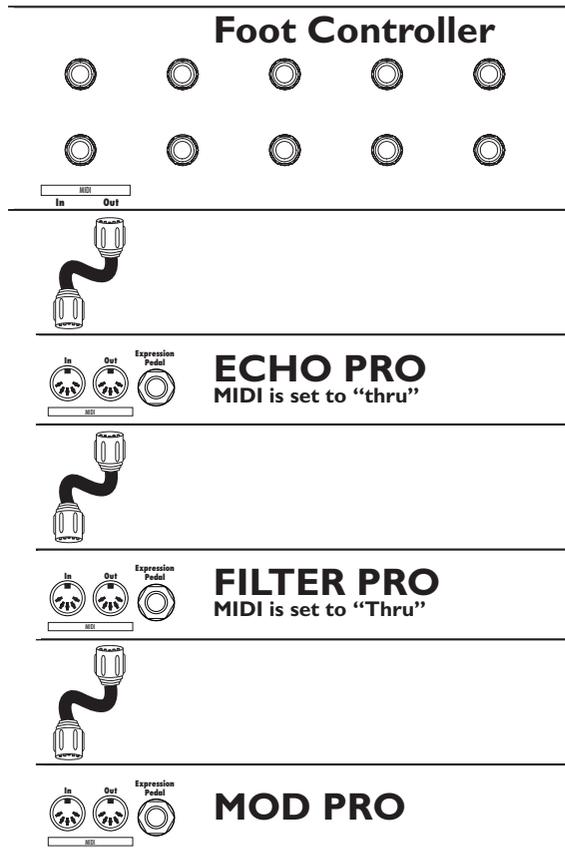
This one's the simplest. Just set the MIDI Out/Thru of each Studio Modeler to Thru (See Chapter 3), and they'll all take their cue from whatever you do on your Master Controller (in the case of this particular diagram, a POD Pro). When you select a channel from your Floor Board hooked to the POD Pro, or select a channel on the POD Pro itself, a corresponding program change message will be sent via the POD Pro's MIDI Out, and will flow Thru to all the Studio Modelers. By the same token, any other MIDI messages, like Tap Tempo or continuous controllers, will pass down the chain and be interpreted by each device as applicable (this is where the MIDI mapping and controller reassignment features come in real handy. You can set your Studio Modelers

## Some Real Life Examples: Using Multiple Studio Modelers

up so that the same controller message could change Repeats on an Echo Pro, Speed on a Mod Pro, and Depth on a Filter Pro, all at the same time!).

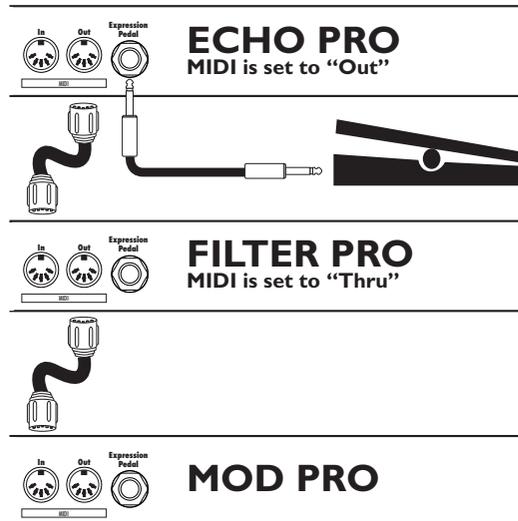
### Using a Foot Controller

This is great for those of you who are adding a Studio Modeler, or a number of them, to an existing rack system. Just like the previous example, set the MIDI Out/Thru of each Studio Modeler to Thru (See Chapter 3), and they'll all take their cue from whatever you do on your Foot Controller. Use the MIDI Map function to map the correct Program to the appropriate MIDI Program Change message.



## Controlling From A Studio Modeler

For this setup, you'll want to set the MIDI Out/Thru of the first Studio Modeler to Out and set the others to Thru. Program changes and Tap Tempo events will act like they did before, but only the first Studio Modeler will respond to other MIDI messages. However, if you change knob settings on the first Studio Modeler, it will send the appropriate controller message to the others. If you have an Expression Pedal connected to the first Studio Modeler, it will send out MIDI CC#4 messages for the other Studio Modelers to act on as well. The only exception is if you also have an Expression Pedal plugged into one of the other Studio Modelers, in which case that unit will only respond to its own pedal and ignore the pedal messages that come from the first unit (although it will continue to respond to all other MIDI messages.) Once again, the MIDI mapping and controller reassignment features of your Studio Modelers will come in very handy here, as will the Pedal Assign mode (for which, see Chapter 3: Basic Operations).



## Stupid Effects Tricks

There's a whole bunch of stuff you can do with Filter Pro that will either earn you a reputation as an eccentric genius, or as a complete loon. Here's a few quick suggestions, leaving those pesky value judgements out of it.

Filter Pro is a drum track's best friend. It can even be extremely chummy with a drummer in a live performance situation. Try some of the following:

1. Radically EQ the drum mix (or just one or two of the tracks. Hi-hat works really well for this.), rolling off all the low end and exaggerating the high end. Set the Tap Tempo to match the song (using either MIDI clock sync, or tapping it in manually). Using Seeker, choose a rhythmic division of at least a quarter note and a step number that's not evenly divisible into the time signature of the song (eg. the song's in 4/4, select 7 as the number of steps). Mix the results back in against the existing track. Instant poly-rhythmic accents! You can also use one of the triplet rhythmic divisions and an evenly divisible step setting for a different type of strangeness. By varying the pattern and Q of the effect, you can vary this from fairly subtle to completely outrageous.
2. Use one of the triggered, non-time based filters (like V-Tron) on a sub-mix of the drums. Mix it back in lightly, or use the mute button on the return channel of your mixing board that Filter Pro is feeding to bring it in and out of the mix at suitable places.
3. Don't be afraid to try the synth settings on a drum track. Growler on a kick drum, for example, can turn 'four-on-the-floor' from disco into disturbed.
4. Use it for live drums. You can set up a drum sub-mix, or even an independent mixer to feed your Filter Pro. There are even a bunch of small MIDI boxes out there that can be set up to send Tap Tempo (MIDI CC#64) messages to Filter Pro so you can adjust it on the fly. Use Pedal Assign mode to set up an expression pedal to vary the mix of an effect, or have your front-of-house sound mixer play with it. If you're in a band that uses a DJ, hand him the controls and see what happens.

### Philosophy Break

Don't be afraid of stuff that sounds really strange or seems unusable until you've tried it in a mix. Even the oddest sounds can find a home. Don't be afraid to try something different, even if the conventional wisdom says, "Hey! You can't do *that*." Some great

## Some Real Life Examples: Stupid Effects Tricks

engineers and producers started learning about this stuff because they were tired of being told that they couldn't make a sound like that. It's all about getting the sounds inside your head out into the world and, we hope, inspiring you to hear some new sounds inside your head, as well.

Okay, enough with the philosophy, back to the strangeness.

5. This Filter Pro expression pedal preset, using the Throbber, was found scrawled on the wall of an Eastern Europe Techno Club where the hallucinogenic pulse of trance music is used by supermodels as a meal substitute. If you need a reminder about how to setup the Expression Pedal, see "Set Expression Pedal" on page 3•7

Position	Speed	Note	Frequency	Resonance	Waveform	Mix
Toe	327 BPM	Quarter	1.56 kHz	1.98	Down	100%
Heel	327 BPM	Quarter	.29 kHz	.79	Down	100%
Default	327 BPM	Quarter	.29 kHz	.79	Down	100%

6. Use this Synth String Setting to go from a Classic Juno String Patch to a snarling PWM from Hell. The default and heel positions of this preset emulate a classic string patch that you may find on the Roland GR-700 or Juno-106. The toe setting of this patch is the heel position's angry counterpart, a dark exploitation of Pulse Width Modulation at its finest.

Position	Speed	Frequency	PWM Rate	Pitch	Mix
Toe	0 Seconds	18 kHz	.66	-24	100 %
Heel	327 BPM	.29 kHz	.79	Down	100%
Default	327 BPM	.29 kHz	.79	Down	100%

### Synergistic Mumbo-Jumbo

Filter Pro is certainly capable of some wonderfully twisted sounds on its own, but when you start pre-processing with other effects devices and then feeding it already warped sounds, the potential to wreak sonic havoc increases exponentially. We'd like to give you a couple of examples that use other Line 6 products (aka: a sneaky plug) to make the madness more complete.

- On their own, the Voice Box and V-Tron provide swirling organic filtrations, but sticking a distortion box in front really brings them alive. The reason this works so well goes right back to inspiration for this effect, the human vocal tract. Human vocal chords put out a much raspier sound than you'd expect, kind of like a living distortion box. So, putting a distortion box in front of the Filter Pro's Voice Box and V-Tron makes for a much more realistic effect. We have found that the wide frequency range of the DM4's Sub Octave Fuzz is a perfect match for the Filter Pro's Formant Filters.

Speed	Note	Frequency	Stop Vowel	Auto / Pedal	Mix
115	Quarter	A	l	Sine	100%

- You already know that the Synth-O-Matic's Pipe waveform can provide an endless supply monophonic amusement, but as you'll soon find out, sticking this effect in front of the MM4 or Mod Pro's Rotary Drum pushes you into a seedy world of grungy tone wheels and spinning speakers.

Speed	Note	Frequency	Resonance	Pitch	Mix
Pipe	Quarter	1.24 kHz	.5	-24	100%

Well, those should keep you busy for a while, and we're hopeful that they'll start you on the path to finding your own inspired weirdness.

# APPENDICES

## Model Chart

Model	Knob 1 = Speed	Knob 2 = Frequency	Knob 3 = Tweak	Knob 4 = Tweez
Synth String	Attack Time	Frequency	PWM Rate	Pitch
Attack Synth	Attack Time	Frequency	Waveform	Pitch
Synth-O-Matic	Waveform	Frequency	Resonance	Pitch
Tron Down	Range	Frequency	Peak	Lo/Band/HiPass
Tron Up	Range	Frequency	Peak	Lo/Band/HiPass
Q Filter	Gain	Frequency	Filter Width	Lo/Band/HiPass
Slow Filter	Attack Time	Frequency	Resonance	Up/Down
V-Tron	Attack Time	Start Vowel	Stop Vowel	Up/Return
Voice Box	Speed	Start Vowel	Stop Vowel	Auto/Pedal
Seeker	Speed	Patterns	Q	# of Steps
Obi-Wah	Speed	Frequency	Q	Lo/Band/HiPass
Throbber	Speed	Frequency	Resonance	Waveform
Spin Cycle	Speed	Frequency	Filter Width	Vol. Sensitivity
Comet Trails	Speed	Frequency	Trail Width	Gain
Octi Synth	Speed	Frequency	Octiwidth	Vibrato Depth
Growler	Speed	Frequency	Resonance	Pitch

## MIDI Implementation - Program Change

Program Change	Program Change Assignment
000	Enable Bypass
001	Program 1
...	...
099	Program 99
100-110	Ignored
111	Synth String
112	Attack Synth
113	Synth-O-Matic
114	Tron Down
115	Tron Up
116	Q Filter
117	Slow Filter
118	V-Tron
119	Voice Box
120	Seeker
121	Obi-Wah
122	Throbber
123	Spin Cycle
124	Comet Trails
125	Octi Synth
126	Growler
127	Tap

## MIDI Implementation - Continuous Controller & Note Functions

Cont. Controller	MIDI Note Number	Echo Pro Control	Received Value Range	Transmitted Value Range
CC# 04	N/A	Expression Pedal	0 - 127	0 to 127
CC# 64	N/A	Tap Button	Tap = 127	Tap = 127
CC# 65	N/A	Note Value	0 - 127	0 to 127
CC# 66	N/A	Time Knob	0 - 127	0 to 127
CC# 67	N/A	Repeats Knob	0 - 127	0 to 127
CC# 68	N/A	Tweak Knob	0 - 127	0 to 127
CC# 69	N/A	Tweez Knob	0 - 127	0 to 127
CC# 76	N/A	Mix Knob	0 - 127	0 to 127
CC# 77	N/A	Bypass Button	0 - 63	0 to 63
CC# 78	N/A	Effect Model Select	0-15	0-15

## MIDI Continuous Controller Map for Note Values

Note Value	CC Value
Whole	120 to 127
Dotted Half	110 to 119
Half	100 to 109
Half Triplet	90 to 99
Dotted Quarter	80 to 89
Quarter (default)	70 to 79
Quarter Triplet	60 to 69
Dotted Eighth	50 to 59
Eighth	40 to 49
Eighth Triplet	30 to 39
Dotted Sixteenth	20 to 29
Sixteenth	10 to 19
Sixteenth Triplet	00 to 09

# Audio Specifications

Audio Performance Specifications	
Conversion	24 bit
Sample Rate	46.875 kHz
DSP	24 bit
S/N Ratio	105dB, A-weighted w/shorted inputs, XLR & TRS, Digital bypass enabled 112dB, A-weighted w/shorted inputs, XLR & TRS, Analog bypass enabled
Frequency response	+/-0.5dB, 20Hz to 20kHz, XLR connectors / Digital Bypass enabled +/- 0.03dB, 20Hz to 20kHz, XLR connectors / Analog Bypass enabled
Input Impedance	1 Meg Ohm

## Signal Flow Chart

