**ELECTRONICS**

**Aphex Impulse Version 1.3.2**

For many drummers, the ultimate marriage of acoustic and electronic instruments comes under the guise of triggering. Attacks trigger (also called bags) to acoustic drums and you've got the best of both worlds: playing surfaces that feel like real drums because they vibrate, and access to all the sounds that MIDI has to offer, in order to transform your drumset into MIDI information. If you insist connect the trigger to a "trigger-to-MIDI-in" interface. Enter the Impulse from Aphex Systems. The Impulse is a 12-input trigger-to-MIDI device which accepts input from acoustic drum triggers, electronic drum pads, and various external audio sources (i.e., an isolated truck track from a multi-track tape deck). Its claim to fame is a reported conversion speed of 1.3 milliseconds. When the Impulse is first powered up, the LCD displays the software version number (1.3.2 on our test unit). To enter the sounds of the Impulse, you push the "Input" button. The display then reads "Assign - Mix - Save - Utility", showing you how to be inappropriate.

**Product: Sound Formula Concepts**

**Features:**
- Universal - latched symbol
- Choose from 300 sounds
- Sound formulas
- Yes, the Impulse actually is quite simple.
- It consists of 17 quarter-inch jacks: 12 inputs, four mono outputs, and a stereo output.
- The footswitch itself doesn't come with the unit. MIDI communication is handled by way of the standard MIDI-In and MIDI-Out jacks. The power switch also is located on the back panel. 
- Electronic power is brought to the Impulse by way of a transformer with a special Jack connector.

If you think the back panel of the Impulse is simple, wait until you see the front! It has a green light to instantly report the current patch in large red numerals, a 16-character by 2-line LCD for displaying program names, and five buttons. Yes, that's correct, only five buttons for some! long, and (now) on the entire front panel. How refreshing!

**Programming Interface**

Aphex Impulse must believe in the "less is more" philosophy. A few buttons combined with well-planned software implementation go a long way toward the goal of user-friendly operation.

**Price:** Bright, cutting, and consistent sound quality.

**Cons:** There may not be the most appropriate symbol for that particular drum, like a dark, warm sound.

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so it's easy to keep track of where you are. As you scroll from sound to sound, the MIDI channel and note number display updates to the current status of that particular sound.

At any time in, there are some additional features that make programming the Impulse child's play. First of all, you can select which input you want to use and program by hitting the drum pad or any pad assigned to that input. The Impulse will change the input number automatically to match the drum you've just hit. Second, if you connect a MIDI cable from your sound source to the Impulse and send the Impulse a MIDI message.

Product: Impulse Trigger-MID converter
Software Version Tested: 1.2.3
Price: $129.00
Features: Trigger-to-MIDI conversion in less than 1.3 milliseconds; 12 taps, 1 trigger output; and 1 footswitch input; easy-to-use software.

The unit will read the incoming MIDI channel and MIDI note number automatically from the sound source, and automatically assign it to the input. If you're using a drum machine or keyboard instrument as your sound source, nothing could be easier! Hit the drum you want to program, then hit the key or pad that you want that input to fire. Ringo, it's done.

The Impulse doesn't let you fire sound from your drums or pads while you are programming in the software screen, however. This is understandable: since the Impulse is listening to the sound source to determine the MIDI note and channel information, triggering that sound from a pad could create a MIDI loop. To overcome this problem, you can audition the current sound from the Impulse by pushing the enter button. When using this feature, you hear only the sound displayed on the screen. If you want to hear how all four sounds blend together, you're out of luck. To do this, you must exit from the edit page and then hit your drum or pad.

Tracking Speed: This page is where you tell the Impulse how to work with the four special features of stacking, rolling, crossfading, and fixed track playback. When stacking notes, you may not always want all four sounds to fire at the same time. It's possible to tell the Impulse that you want the additional sounds to be added to the mix as playing velocity increases. As a default, the first sound always fires. The next four sounds are programmed as a percentage of full velocity. Let's say that sound two in programmed at 25%, sound three at 40%, and sound four at 85%. As you play very softly, only the first sound is heard. When you reach 25% of full velocity, sound two kicks in. At 40%, three sounds are being fed, and at 85% of full velocity, all four sounds are heard.

If you tell the Impulse to use the crossfade (constraint) feature, it will fade one sound in while fading out another. Again, the sounds are programmed as a percentage of full velocity. This percentage level is where the next sound begins to fade in as the previous sound begins to fade out.

The effect called run simply sets a fixed percentage of full velocity for all four sounds. In other words, if a pad is working in the fixed mode, all four sounds will fire at the same time with a fixed velocity. You just tell the Impulse how loud you want each sound to be. Dynamics are lost in this mode, but since the Impulse doesn't have to read the level of the incoming signal, it will output MIDI data in less than one millisecond. This is the future to use if you're triggering electronic drum sounds from tapes, where timing is most critical.

The rolling effect (roll) has no percentage parameters. Instead, it alternates between the four selected sounds. This is a great feature if you want to fire four drum sounds from a single pad, as four consecutive strokes will fire the four sounds in turn. Of course, if you only have two or three sounds turned on, the Impulse will roll only among the selected sounds.

Trigger Setup: Triggering MIDI deviates from drums never has been an easy proposition. Drummers create a nightmare of fundamental and overtone vibrations that send many trigger-to-MIDI converters running under the covers. The Impulse seems to take a different approach in solving this problem by reading not just the trigger's spike, but the actual waveform of the trigger. In addition to adjusting the parameters manually, it can do this automatically as well.

Setup Screen: Before actually editing this page, it's a good idea to connect all your drums and pads to the Impulse. The reason for doing this is that the Impulse needs to know to measure the entire setup for effective crossfading suppression. Once everything is connected, you tell the Impulse about each input. You can select among an electronic drum pad, a small acoustic drum, or a large acoustic drum.

The next step is to enter the sure mode of the setup screen. In order to have Impulse automatically set all the parameters, you simply have to hit each drum five times, as hard as you expect it to hit while playing. After the fifth strike, move on to the second input and repeat the procedure. Impulse will set its own internal gain controls and crosstalk levels automatically. After using the automatic feature, you may still want to tweak the response of a specific pad. This can be accomplished by moving into the manual mode. Here you can adjust the input gain among 16 different levels, the self-injection level (a velocity level that a drum must reach in order to be retriggered over 200 milliseconds), the intensity level (a function to eliminate any ambient or external acoustic sources which can trigger a pad accidentally), and "other" (a level that a drum must reach for the Impulse to trigger it if it is carried within 15 milliseconds of another drum).

Let's take a look at a few problems, and see how adjusting these parameters might solve them. Playing in a club with a loud monitor system...
That's causing some of your pads or drums to false-trigger. Increase the rejection level. If you're trying to trigger a large open tom and find that the sustain of the head is causing the Impulse to send another MIDI message, you can increase the self rejection level. If playing one tom causes another tom to trigger from sympathetic vibrations, you can adjust the "sustain level." With all this control, you'd be hard pressed to find a problem that Impulse wouldn't solve, sit at the very least, improve dramatically.

Utility Screen. This screen performs several additional functions bundled under the names of ADSR, DYNAMICS, and MUTE. In patch mode you can assign the current settings to one of 20 different patches. There is one chain available with 12 different steps.

In dynamics mode, you can view MIDI velocities in real-time (a nice feature for taking some of the guesswork out of the stacking and crescendo parameters). But the really cool feature is the ability to map any playing velocity to any MIDI velocity. The true function of this feature is the ability to custom-design a velocity curve to your own playing style. You have the ability to offset all velocities by a certain amount (either plus or minus) or to change each and every velocity individually.

When you call up the MUTE mode, you can ask the Impulse to merge the MIDI data it generates with data from the MUTE as part. This is a handy feature if you want to merge the Impulse with a drumkit or sampled before sending the signal to a drum machine or sampler. You also can program note off messages to achieve durations between one-tenth of a second and five seconds. Inputs 9 through 12 will send note off messages. For inputs 1 through 8, you also can choose not to send note off messages.

Good Things. The Impulse is one of the best designed units of its type. Combine an elegant user interface with a well written manual (several good tutorials and suggestions for use) and you've got a machine that virtually anyone can operate. The Impulse is able to send all its data through MIDI as a bulk dump of system exclusive information. It also can change presets through MIDI when receiving a program change message on channel 16.

I tested the Impulse with Roland and Drum pads as well as with Fishman model ADG-100 transducers. I found that the Impulse gave me wide dynamic contrasts, accurate triggering at all dynamic levels, and a sense of confidence that everything was working properly. In addition, the triggering response is fast. Even though I'm not equipped with the proper test equipment to measure milliseconds, I detected no delay between the feet of my stick hitting the surface and the sound from my drum machine hitting my ears.

Suggestions. As far as bells and whistles go, the Impulse is missing the DYNAMIC NOTEBEND feature as found on Yamaha's PM-1, and the pitch bend capability of Roland's PM-16. It would be nice if the Impulse would let you audition all four sounds while in the display. It also would be cool if the sound feature could be made to select from four sounds in a random order instead of a set pattern. I don't know of any interface that currently does this, but I like the idea.

Here are two minor gripes that can be directed at several manufacturers. I would like any company to defend the decision of putting a power switch on the back of a rack-mount unit. Again, Aphex isn't the only company at fault here, but I'm getting tired of crawling behind my rack to turn a piece of gear on or off. Please put power switches on the front!

Another pet peeve of mine is power transformers. Is anyone else out there getting tired of carrying around all this additional hardware? Please put the power transformer in the unit! If you're at the gig and realize that you've left your Impulse's transformer at home, you can forget it. With a specialized five-pin plug, you're not going to be able to find one of these at your local hardware store.

The Verdict. The Impulse is the fastest, easiest, and most accurate trigger go-to-MIDI interface I've yet seen. What else can he say?

-Norman Wohlneck

ACOUSTIC DRUMS

Ludwig LB-553 Piccolo Snare

Ludwig has served up their latest recipe for "high-end pop": the LB-553 piccolo snare. This drum is built to the original 3 x 13" size pioneered by Ludwig at Buddy Rich's request in the early 1940s. The piccolo style has endured for five decades, and in the past few years we've witnessed a refreshing growth in its popularity.

Construction. This 3" x 13" drum is available with either a beaded or 6-ply maple shell. Our test model was a brass version. The shell is rolled over about 3/4" on both the batter and snare sides to form a uniform bearing edge. Only a very slight sloping snare bed is cut into the bronze shell, and the shell is polished to a mirror finish. The wooden plaiter, butt plate, and eight high-tension lugs are mounted directly to the exterior shell. There are no hakari or pads on any of the fittings, and no integral mufflers are employed.

The newly designed spring-loaded lugs are cast in zinc, polished, and hard-plated. They're smooth and precise, and lend a modern look to a classic.