

# D4

HIGH SAMPLE RATE 16 BIT DRUM MODULE / STEREO SAMPLES

## External Trigger Quick Set-Up Guide



# **EXTERNAL TRIGGER QUICK SET-UP GUIDE**

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The D4 has twelve trigger inputs designed to accommodate the most widely used drum pads and other triggering sources. It's triggering mechanism is an advanced signal to midi converter which incorporates five user controllable parameters. Trigger parameters are independent for each of the twelve inputs, and the set up is global for all drumsets.

The five types of user controlled parameters are:

1. **VCURVE.** There are eight separate curve tables, 0 through 7 which represent the velocity curve, or sensitivity of the trigger input. Curves 1-3 have the least amount of sensitivity; curve 4 has the median, or "average type of play" sensitivity; and curves 5-7 are the most sensitive. Curve 0 is "Unassigned". This is a special situation parameter which is fully explained in section 5.2 of the D4 Reference Manual.
2. **XTALK.** The crosstalk parameter is the trigger suppression level adjustment. It is used to control interaction problems between pads or drums. Crosstalk problems can occur when two or more pads are mounted on a single stand or rack.
3. **DCAY.** This represents the signal decay time and threshold of the D4's trigger inputs. In other words, DCAY controls the amount of time between once a pad has been struck and triggers, to when it will trigger again from another hit. When properly adjusted, this parameter defeats "double triggering " by allowing the D4 to determine which signals are actual hits, and which are secondary decay signals.
4. **NOISE.** The NOISE parameter allows you to control the noise floor, or the signal level threshold that an exterior vibration or sound must exceed before it will trigger a drum sound. This is used mostly in situations where the stage volume and vibrations are strong enough to "rattle" the drum hardware to such a point that the D4 "thinks" these vibrations are actual hits.
5. **GAIN.** This is the signal strength that the transducer is sending to the triggers in the D4. It's adjustment is very similar to that of a tape recorder's VU meter. With the gain threshold set too low, soft hits may never be recognized.

With the gain set too high, you may experience false, or double triggering. A properly adjusted gain setting will allow the highest dynamic range for the pad being used.

*Note:* For more detailed information and examples, regarding the functions of these individual parameters, please refer to Chapter 5 of the D4 Reference Manual.

## When triggering from pads always follow these 6 basic steps:

### 1. Plug in all of the triggers you will be using.

- Plug all of the triggers you will be using into the rear panel jacks. Since the triggers are interactive, the D4 needs to "see" all of the signals simultaneously.
- Use the following guide for your trigger inputs. The trigger default note numbers correspond to these drum sounds.

1. Hat	7. Ride Cymbal
2. Bass drum	8. Crash Cymbal 1
3. Snare	9. Crash Cymbal 2
4. Tom 1	10. Conga
5. Tom 2	11. Hi Timbale
6. Tom 3	12. Hi Agogo

*Note:* Drum sets 17 & 18 use a different set of default note numbers. The trigger default note numbers for all pre set drum sets can be found in the D4 Factory Drumset Reference Chart.

### 2. Turn the note chase feature off.

- Do this by pressing the note chase button on the front panel so that the LED is off. Note chase is a feature that automatically displays the data of the most recently struck pad, enabling you to easily "move" around the kit for editing purposes. However, the active trigger should always be selected manually since other unadjusted inputs could "fire" simultaneously during editing resulting in confusion on the display.

*Note:* The note chase LED also functions as a signal indicator and will flash when a trigger is generated.

### 3. Next, manually select a trigger to edit.

- Press the Ext Trig button once to enter the page showing the editable parameters for the TRIG number, VCURVE selection, and MIDI note assignment. The cursor will appear under the trigger number field.
- Use the Data wheel to select the trigger you wish to edit.

### 4. Select the velocity curve.

- Move the cursor under the VCURVE field.
- Choose the sensitivity value which best suits the style of play, or the pads being used. For average play, (hits ranging from very soft to very hard) the default setting of 4 will give you the full range of sensitivity which corresponds to MIDI velocities 1 through 127.

*Note:* VCURVE 0, Unassigned, is fully explained in the D4 Owners Manual.

### 5. Choose the MIDI note number.

*Note:* The default trigger note numbers in the D4 correspond to General MIDI, so in many cases it may not be necessary to change the assignments. These default settings can be found in the Factory Drumset Reference Guide included with your D4 literature.

**If you choose to make changes:**

- Move the cursor under the NOTE field and select the desired MIDI note number.

### 6. Adjust the GAIN for the selected trigger.

- Press the Ext Trig button twice to get to the page showing the trigger number and GAIN editing parameters.
- Move the cursor under the gain field and strike the pad. Now the lower LCD line will turn into a bar-graph meter that shows the peak strength of the trigger.
- Adjust the gain by gradually turning the Data wheel until a powerful strike results in the meter reaching the right-most

side of the display. Be aware that the gain values are extremely sensitive even in small increments. A period will appear to the right of the gain number signaling that the trigger level is reaching it's full dynamic range. If a trigger's gain is adjusted properly, the period will appear only on the strongest hits.

*Now repeat steps 3 through 6 for the remaining triggers you will be using.*

After completing these steps, you should be able to play on all of the pads plugged in to the D4 and hear the sounds being triggered.

Before going on to steps 7 -9, you should be aware that the amount of adjustment needed for the remaining parameters will depend on several variables. Since all drum pads do not utilize the same design and materials, they vary somewhat in sensitivity and how they respond to "outside" surroundings. The factors that most effect the performance of triggers will be your hardware configuration, the different types of pads or drums being used, and the environment in which you will be using the D4. First we should define the parameters which enable you to control these various "factors."

## 7. CROSSTALK

*Note:* In our crosstalk scenario we will use two pads, a snare pad and the tom 1 pad, both mounted on a single stand.

If you are using a set up which consists of several pads mounted on one rack or stand, you may be hearing some crosstalk as you play around the kit. Crosstalk is when you hit the snare pad and the tom pad also triggers. This is usually the result of stand vibrations causing the pad (the tom 1 in this case) to trigger. If so, the XTALK for this pad needs to be re-calibrated.

The important thing to determine is which pad needs the XTALK adjustment. Remember, the trigger that needs adjustment is the pad that is false triggering, not the pad being struck.

So, if you are hitting the snare pad and the tom 1 pad triggers, adjust the tom pad, not the snare pad. Now, to correct the problem...

### Set the XTALK value.

1. Press the Ext Trig button twice to enter the page showing the parameters for XTALK, DCA Y, and NOISE.
2. After selecting the desired trigger (tom 1), place the cursor under the XTALK parameter value.
3. Now, gradually increase the XTALK level of the tom 1 trigger until it stops triggering when you hit the snare pad (00 is minimum, 99 maximum).

A properly adjusted crosstalk level will stop the pad's interaction, and still allow you to play quick hits without losing any notes.

## 8. DECAY

*Note:* In this scenario we will use only the snare pad.

Depending on the type of pads being used and your mounting configuration, you may be experiencing some "double triggering". If shortly after the initial strike to the snare pad it re-triggers or sounds a second time, the pad is "double triggering". This can be controlled by altering the DCA Y parameter value.

### Set the DCA Y value.

1. First select the snare trigger.
2. Now place the cursor under the DCA Y parameter value.
3. Gradually increase the value until the snare stops double triggering on hard hits.

A properly adjusted DCA Y parameter will end double triggering, and still allow you to play fast, repetitive hits on the snare pad.

## NOISE

*Note:* In this scenario we will be using the tom 1 and the tom 2 pads in a live performance situation. The two tom pads are mounted together on a single floor stand, and the crosstalk and

other parameters have already been correctly adjusted. When you play the pads while no other instruments are being sounded, all of the hits are triggering and tracking properly.

Now as the band begins and the stage volume is very loud, the stage starts trembling which causes the drum hardware to vibrate. At times the tom 1 and the tom 2 pad are triggering when not being played. This is because the D4 is interpreting the signals from the stand vibrations as hits. By adjusting the NOISE parameter the D4 can determine which signals are vibrations caused by the surrounding noise level, and which signals are actual hits.

### Set the NOISE value.

1. First select the desired trigger to edit, tom 1 in this case.
2. Next place the cursor under the NOISE parameter value.
3. Increase the value to a level that will stop the pad from false triggering when the strong vibrations occur. If the triggering is frequent and strong, try starting with an increase of 20 or more. If the triggering is not as often and is softer in volume, first try adding 10 to the value, then gradually add more if necessary.
4. Repeat steps 1 through 3 to correct the problem with the tom 2 pad.
5. Finally, return to the Drumset mode by pressing the Drum Set button. This will protect from the possibility of accidentally editing your settings.

**Note:** Whenever possible, keep some distance between your drum kit and the nearest speaker cabinets (especially bass cabinets), and make sure they are not facing directly at your set up. Remember that the closer and louder in volume the cabinets are, the greater the chances are that they will cause false triggering problems.

# **TIPS ON EXTERNAL TRIGGERING FROM ACOUSTIC DRUMS**

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When triggering from an acoustic drum, that is using a contact pick up (transducer) mounted to the head or shell, the same general set-up procedures and parameter principles of triggering from pads apply. However, due to extreme head vibrations and resonance of acoustic drums, keeping the "factors" under control is considerably more difficult. These tips should help you in eliminating potential problems.

There are several things to consider when purchasing transducers (triggers), and when mounting them to your drums.

## **Output Sensitivity**

The difference in output levels between transducers is considerable. While a really "hot" trigger might work great on the snare, it may not work as well on a bass drum. For example, a high sensitivity trigger will detect the softer "grace" notes on a snare drum and provide the best tracking in a tight pressed roll. On a bass drum however, because that same trigger is so sensitive, it may be over-driven due to the sheer velocity of each impact from the beater on the head. Over-driving the trigger can allow it to detect every slight vibration as you hit the bass drum. This results in double triggering and contributes to cross talk problems. It can also reduce the life of the trigger itself.

When considering trigger output sensitivity towards applications, generally these tips will apply.

1. Use "hotter" triggers for shell mounting. Sensitive triggers can detect signals through the shell more accurately than others.
2. For direct head mounting use less sensitive triggers. When possible use a trigger that contains a built-in sensitivity adjustment. There are several types available.

## **Mounting**

One of the most important aspects of triggering is mounting. For any trigger to work properly it must be correctly mounted to the drum. Always use some type of a foam tape, and make certain the trigger is firmly mounted with little or no movement. In addition to forming a solid foundation for the trigger, the foam tape also acts as a shock absorber which helps to deter double



triggering. Most of the trigger manufacturers supply several pieces of mounting tape with their trigger products. It is also very important to be certain that no part of the trigger wire, which connects the trigger to the audio jack, is touching or resting on any part of the drum or rim. This wire is sensitive enough to trigger signals from the drum vibrations which would then cause double triggering.

### **Trigger Placement**

Placement is another very important part of triggering performance, but unfortunately there is no right or wrong set of rules. It simply takes a lot of experimentation to arrive at the correct combination for the type and size of drum, and the drum kit configuration you are using. These tips will help you get started with a step in the right direction.

### **BASS DRUM**

1. Mount the trigger directly on the impact head.
2. Place the trigger approximately 2-4 inches in from the rim, and level with the beater.
3. Slightly reduce the sensitivity of the trigger if it has an adjustment.

### **SNARE DRUM**

**If you play with a fairly tight batter head, try this:**

1. Mount the trigger on the batter head.
2. Place the trigger approximately one inch from the rim, on the opposite side of the drum from the player.
3. Slightly reduce the sensitivity of the trigger if it has an adjustment.

**If you play with a looser head, try this:**

1. Firmly mount the trigger to the shell approximately one-half inch from the batter rim.
2. Placement of the trigger should be on the players side of the drum, within a lug or two of where the stick would hit if you played a rimshot.

3. Use a high sensitivity setting if the trigger has an adjustment.

### **SMALL TOMS 8"-13"**

With smaller toms it is possible to get proper tracking using either head or shell mounting. You will need to experiment with both to determine which will work best in your situation.

#### **For head mounting:**

1. Mount the trigger so that it is within one and one-half inch from the batter rim.
2. Placement of the trigger should be on the players side of the drum, within a lug or two of where the stick would hit if you played a rimshot. (In some cases the opposite side of the drum, directly across from the player may work well).
3. Slightly reduce the sensitivity of the trigger if it has an adjustment.

#### **For shell mounting:**

1. Firmly mount the trigger to the shell so that it is approximately one inch from the batter rim.
2. Placement of the trigger should be on the players side of the drum, within a lug or two of where the stick would hit if you played a rimshot.
3. Use a mid to high sensitivity setting if the trigger has an adjustment.

### **LARGE TOMS 14"-18"**

In most cases shell mounting will work the best. However, you might experiment with head mounting and find great results.

1. Firmly mount the trigger to the shell so that it is approximately one inch from the batter rim.
2. Placement of the trigger should be near the side you sit, within a lug or two of where your stick would hit if you played a rimshot.

3. Use a mid to high sensitivity setting if the trigger has an adjustment.

*Note:* In most cases when shell mounting triggers, internal permanent mounting will provide the best results. This permanent form of mounting allows the trigger to be more firmly attached to the shell, which tends to improve the performance. However, when using this technique it is usually necessary to install an audio jack into the drum shell to connect the audio cable to the trigger.

### **Muffling**

Another important part of triggering from acoustic drums is the degree of muffling you apply to your drums. The amount a head vibrates when it is struck is what causes most of the problems related to triggering from an acoustic drum. I know most drummers don't want to put a lot of tape or muffling on their heads, but the degree of improvement it makes may be well worth at least a little sacrifice. A slight amount of muffling can make a huge improvement in any triggering units ability to properly track your playing.

### **Mounting Hardware and Configuration**

The quality and sturdiness of your hardware will make a big difference in eliminating potential problems. When you use unsteady hardware, it is an open invitation to crosstalk problems. Toms that are mounted on the bass drum, and drums which share a stand with other instruments such as cymbals, are areas where you should be sure your hardware and mountings are solid and sturdy. Always check to be certain that none of your stands or drums are leaning up against, or touching any other drums or piece of hardware. To sum it up, the more heavy-duty your hardware is, the better.

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