![ddrum logo]

REFERENCE MANUAL

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INTRODUCTION

Congratulations on your purchase of the ddrum DDTi USB/MIDI Percussion Interface. With the ddrum DDTi, you can connect your favorite acoustic drum triggers or electronic percussion pads and control sounds on external drum machines, modules or software devices. Here at ddrum, we take pride in building electronic instruments and controllers for the modern musician. The DDTi allows you to explore new avenues of sonic possibilities with an intuitive percussion interface. You no longer have to worry about feeling disembodied from your music experience. The DDTi offers an ideal approach to controlling and sequencing rhythm content. We hope that you enjoy this great product!

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FRONT PANEL OVERVIEW

1. **FUNCTION UP/DOWN** – These buttons are used to select through different functions on the DDTi
2. **VALUE UP/DOWN** – These buttons are used to cycle through kits and parameters for the different functions.
3. **FUNCTION LEDs** – Each function on the DDTi is paired with a corresponding LED on the panel. These LED will reflect which function is currently being selected.
4. **LED SCREEN** – The LED screen displays information about the state of the DDTi. The screen also features a small "Activity" LED which will light up each time a trigger generates a Note On message, as well as a "Trig B" LED which will light up when the secondary zone (ring) of a dual-zone trigger generates a Note On message.
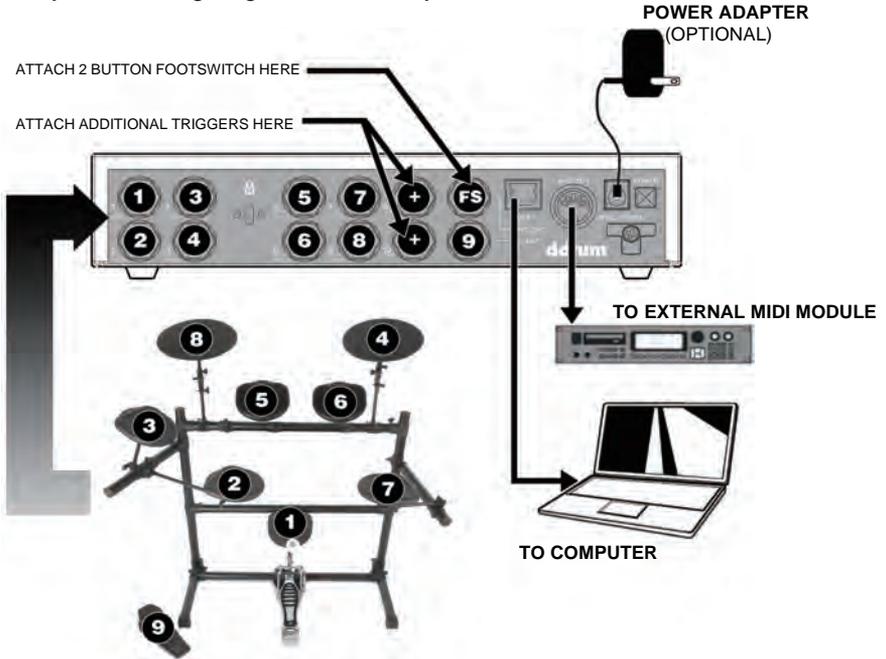
REAR PANEL OVERVIEW

1. **Power Button** – This button functions as an DC/USB power switch. If the button is in the IN position (DC), the unit will draw power from the connected DC power adapter. If the button is in the OUT position (USB), the unit will draw power from the USB connection to your computer.
2. *USB Port* – The USB port is used to transmit MIDI data between the DDTi and a computer. This port may also be used to power the unit if the power button is in the OUT position (USB). However, if your computer's USB port does not provide sufficient power to the DDTi, please use the included DC adapter to power the unit.
3. **Power Adapter Input** – If you do not wish to power the unit through the USB port, please use the included DC power adapter to connect the DDTi to a power source and press the power button so it is in the IN position (DC) – the unit will draw power from the power adapter.
4. **Power Adapter Restraint** – You can secure the power adapter cord to this restraint to prevent accidental unplugging.
5. **MIDI OUT** – Use a five-pin MIDI cable to connect this output to the MIDI IN of an external device, such as a drum machine, synthesizer or sound module.
6. **10 TRS Trigger Inputs** – Please connect your trigger sources to these ten ¼" TRS inputs. You will notice that some of the inputs are marked. If you would like to take advantage of certain pre-programmed presets, such as the GM or BFD Lite drum mappings, please follow these markings to connect your triggers.
7. **HI-HAT Input** – Please connect your hi-hat pedal to this input.
8. **INC/DEC pedal input** – Please connect a dual footswitch button to this input. Using this footswitch input allows you to remotely increment and decrement values from your dual footswitch.
9. **KENSINGTON LOCK** – You may use this Kensington lock slot to secure the unit to a table or surface.

HOOKUP DIAGRAM

Please study the following diagram to connect your DDTi.

POWER ADAPTER
(OPTIONAL)

ATTACH 2 BUTTON FOOTSWITCH HERE

ATTACH ADDITIONAL TRIGGERS HERE

TO EXTERNAL MIDI MODULE

TO COMPUTER

1. Before turning on the DDTi, connect all triggers, pads, footswitches, MIDI devices and external modules as shown above. If you would like to use the DDTi with a computer, connect a USB cord from the DDTi to your computer's USB port.
2. Connect a power source to the DDTi. You have two options for powering the DDTi:
    a. Connect the DDTi to a computer's USB port – the computer's USB bus will provide power.
    b. Connect an optional 9V DC power adapter to the DDTi.
3. Use the power switch on the rear panel of the DDTi to turn it on.

Important: Please use the appropriate cables to connect your triggers to the DDTi. For single zone triggers, please use TS cables to connect them to the DDTi. If using dual-zone triggers, please make sure that you are using TRS cables. Using TS cables to connect dual-zone triggers to the DDTi will only allow you to use the primary zone (tip) of the drum.

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COMPUTER INSTALLATION

The DDTi is a Plug-and-Play device so there is no driver or special software installation required. When the DDTi is connected to a computer, it will automatically be recognized as an available USB device.

How to connect and use the DDTi with a software application:

1. Connect a USB cord from the USB port of the DDTi to the USB port of your computer.

   When the DDTi is connected to a computer using a USB cord, the computer's USB bus will provide power to the unit. If you would like to use an alternate power source, plug in a 9v DC power adapter.

2. Press the power switch on the back panel of the DDTi. The display will turn on to let you know that the DDTi is on.

   > **Tip**
   > It is a good idea to connect and turn on the DDTi before starting any software applications with which you intend to use the DDTi. Otherwise, the software program will not recognize the DDTi as being connected.

3. Open your software application.

4. Next, select the DDTi as a MIDI input device. Usually, this is done in the Preferences menu of the software application.

   If you are using Windows XP, you will notice that the DDTi may appear as 'USB Audio Device' or 'USB Audio Device (Emulated)'. Please make sure that this MIDI input is enabled and active.

   (Cubase LE example shown on left. You may access the MIDI inputs by going to Devices | Device Setup and clicking on All MIDI Inputs.)

5. Now the DDTi should be ready to use with the software application.

A Note About Audio Latency

Latency describes the time that it takes for your soundcard to respond to a command. In other words, this is the time that it takes for your computer to process incoming data (for example, MIDI Note events) and output a sound. The lower your latency is, the faster your computer will respond to commands and output sound.

Please make sure that your soundcard's latency (or buffer) is set to a low number so when you hit the pads on the DDTi, your computer will output the sound promptly. Latency and buffering is usually adjusted in your software's Preferences menu. In general, if latency is higher than about 15-20ms, you will start to notice a significant delay between the time that you hit the pads and the time that the sound comes out of your computer.

If you still experience too much latency or "lag" with your internal soundcard audio drivers, you might want to download one of the free and widely available ASIO (Audio Stream Input/Output) drivers from the Internet. In general, ASIO drivers perform better and with lower latency since they create a more efficient communication between audio devices and software. You may download and install the free ASIO4ALL driver (PC) by visiting www.asio4all.com. (Only compatible with USB audio interfaces)

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GETTING STARTED – USING KITS
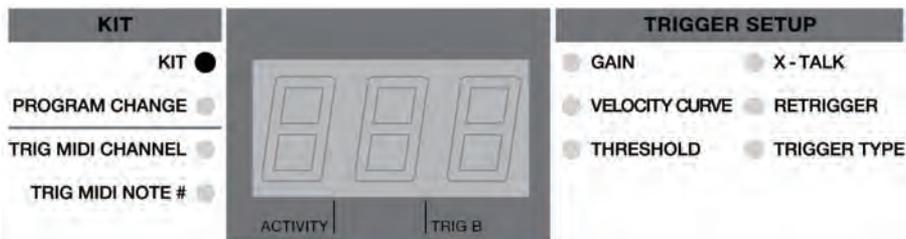
What is a Kit?

A Kit, also known as a Preset, is a collection of parameters which describe different configurations of the DDTi. These parameters include the MIDI Note Numbers assigned to triggers, MIDI Channels on which the triggers are sending information, as well as associated Program Change messages. Using kits allows you to store and access different trigger setups and allows you to address different hardware and software module configurations.

The DDTi automatically goes into Kit selection function when it is turned on. Notice that the LED next to Kit is lit. If you are in a different function, you can always get to the Kit selection function by using the **function up/down** buttons.

When in Kit selection function, you can use the value up/down buttons to select different kits. The DDTi will automatically load the kits as you step through the values. There are 21 available kits that you can load, modify and store.

SAVING KITS

If you have made changes to the selected kit (i.e., changed MIDI note numbers, channels), you will notice that the LED next to Kit will begin blinking. This means that there are changes which have not yet been saved. To save these changes, please use the **function up/down** buttons to return to the Kit Function. This will save the changes you have made to the current kit.

Alternatively, if you have made changes to the current kit but do not wish to save them, press **function down** and **value down** buttons simultaneously. This will cancel any changes made after the kit was loaded.

PROGRAM CHANGE MESSAGES
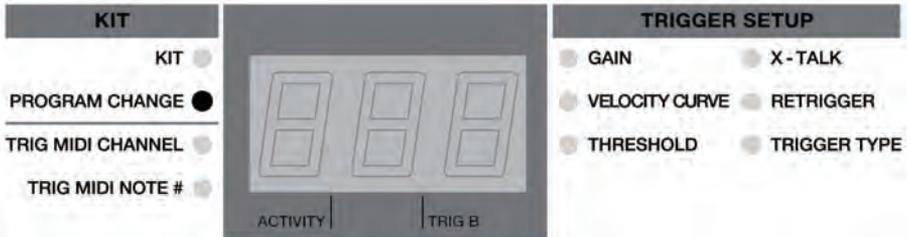
A *Program Change*, often referred to as a *Patch Change*, is a MIDI message used for sending data to devices to cause them to change to a new program. This allows you to tell a hardware or software device which sound to play. For example, if your DDTi is controlling a rock drum kit in your DAW or on an external hardware device, using a *Program Change* command allows you to easily switch to an electronic kit. Program Change messages also give you the freedom to re-orchestrate MIDI content without having to redo any MIDI note information.

Each kit on the DDTi can have an associated Program Change message (0-127). This means that, effectively, you can have each kit on the DDTi address a different set of sounds in your DAW or external MIDI device. By default, each kit on the DDTi is set to "---". A Program Change message of "---"means that no Program Change message will be sent when the kit is loaded.

How to set a Program Change Message:

1. Use the **function up/down** buttons to select Program Change.
2. Select the desired Program Change message (0-127) using the value up/down buttons to dial in the value. The Program message will be sent automatically and will affect only that kit.
3. Subsequently, every time you load the kit the selected Program Change message will be sent to your DAW or external MIDI device.

**REMEMBER TO SAVE YOUR CHANGES BY GOING BACK TO KIT!**

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EDITING KITS

Editing kits is a powerful tool for customizing your DDTi. When you are editing a kit, the information displayed on the screen will always reflect the parameters of the last trigger in the current kit that was hit. To modify the parameters of a certain trigger, just strike it – this is often referred to as "chase mode". The parameters that you can modify for each trigger are Pad MIDI Channel, Pad Note Number.

Please note that editing Program Change, MIDI Channel and MIDI Note # will only affect the specific trigger in the current kit.

Other settings, such as Trigger Type, Gain, Velocity Curve, Crosstalk and Retrigger time are also editable per trigger but will affect the specific trigger in every kit on the DDTi. For information on setting these parameters, please consult "Setting Global Parameters" section of this manual.

TRIGGER MIDI CHANNEL
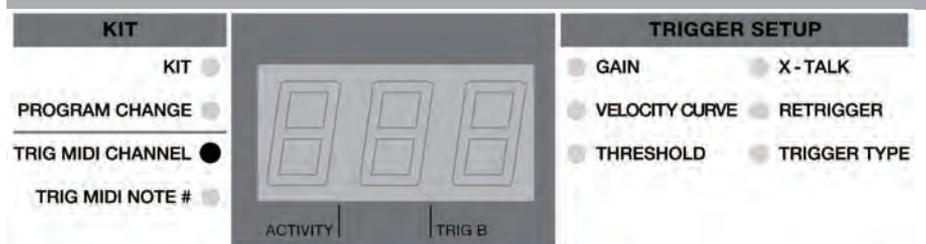
This is the MIDI Channel on which the trigger is sending information. Each trigger can be set to transmit on a separate channel.

For example, this could be very useful if you are trying to control different devices or modules with different triggers and want to make sure that certain MIDI information is received only by a specific device. In this case, you can set different MIDI Channels which your external synths or sample playback engines will be "listening" to. Then assigning those different MIDI Channels to different pads will ensure that the triggers only communicate with the specific device that you want them to.

How to set Trigger MIDI Channel:

1. Use the **function up/down** buttons to select Trig MIDI Channel.
2. To choose the trigger you wish to modify, just strike the trigger/pad. The current MIDI Channel will be displayed.
3. Select the desired channel, using the **value up/down** buttons to dial in the value. As you move through the choices, the value will be loaded automatically.

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TRIGGER MIDI NOTE
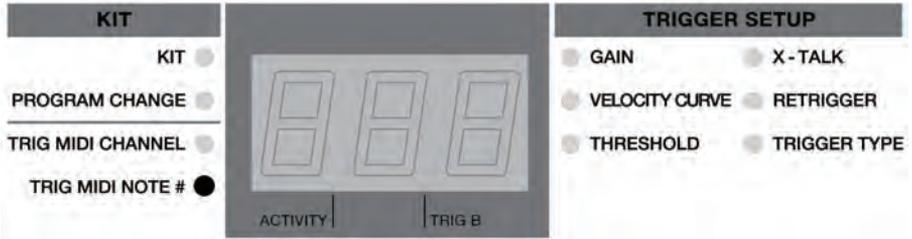
This is the MIDI Note Number that the particular pad or trigger is sending.

For example, if you are controlling an external drum machine, there are unique MIDI Note Numbers associated with the kick drum, snare drum or hi-hat. If the initial configuration does not trigger the sounds you want, change the MIDI Note Numbers to trigger the desired sounds.

Please note: When using a hi-hat pedal with the DDTi, Input 3 (labeled Hi-Hat) can transmit two different MIDI Note Numbers, depending on the position of the pedal. When you press the pedal down and engage the hi-hat input, the DDTi will output a closed hi-hat note. With the pedal released, engaging the hi-hat input will output an open hi-hat note.

How to change Trigger MIDI Note #:

1. Use the **function up/down** buttons to select Trig MIDI Note #.
2. To choose the trigger you wish to modify, just strike the trigger/pad. The display will alternate between showing the trigger's current MIDI Note # and MIDI Note Name.
3. Select the desired MIDI Note #, using the **value up/down** buttons to dial in the value. As you move through the choices, the value will be loaded automatically.

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SETTING GLOBAL PARAMETERS

Global parameters change how your connected triggers function in a general way. The following parameters will affect each trigger input on a global level, regardless of the specific kit that you are working with. So even if you change kits, the settings for each trigger input will remain in place as long as

TRIGGER SETUP

- GAIN
- X - TALK
- VELOCITY CURVE
- RETRIGGER
- THRESHOLD
- TRIGGER TYPE

they are saved. The global parameters include Gain, Velocity Curve, Threshold, Crosstalk, Retrigger and Trigger Type. Please take some time to optimize the DDTi for use with your preferred trigger devices.

Once you begin tweaking the trigger parameters, you will notice that the LED next to Kit will begin blinking, alerting you that changes have been made to the existing configuration. Similarly, to editing kit parameters, such as MIDI Channel and MIDI #, global parameters can be saved by using the **function up/down** buttons to return to Kit. Once you return to Kit, the changes will be saved.

GAIN
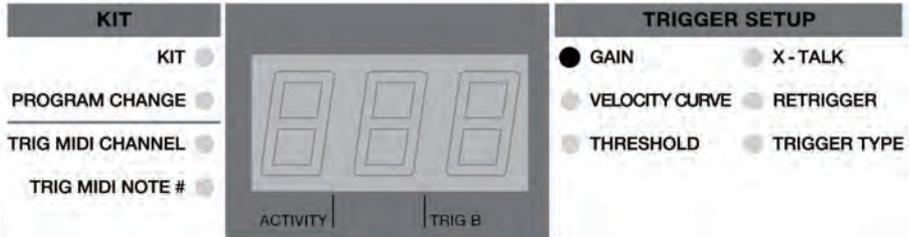
The Gain parameter describes how a trigger will react when it is engaged. With a high gain setting, you don't have to engage the trigger very hard to achieve a maximum velocity output. On the other hand, with a low gain setting it is harder to achieve a maximum velocity output when engaging the trigger hard.   If you find it very easy to achieve maximum velocity (127) when you engage a specific trigger, you might want to set its Gain to a lower value. This will allow for more dynamics in your playing style.

Adjusting a trigger's Gain may also prevent any "crosstalk" with adjacent trigger. Crosstalk occurs when vibrations from engaging a trigger are transferred to another trigger and cause it to trigger as well.   If one trigger is naturally more sensitive than others, it may trigger in response to slight vibrations from another trigger. Reducing its Gain could prevent crosstalk. On the other hand, if a trigger is naturally insensitive and does not respond unless it is hit very hard, striking it very hard may cause other triggers to trigger as well. Increasing its Gain and striking more softly could prevent crosstalk.

How to change trigger Gain:

1. Select the trigger you would like to edit by striking the trigger/pad.
2. Use the **function up/down** buttons to select Gain. The current Gain level for the trigger will be displayed.
3. Use the **value up/down** buttons to dial in a new Gain value. The value will be loaded automatically.

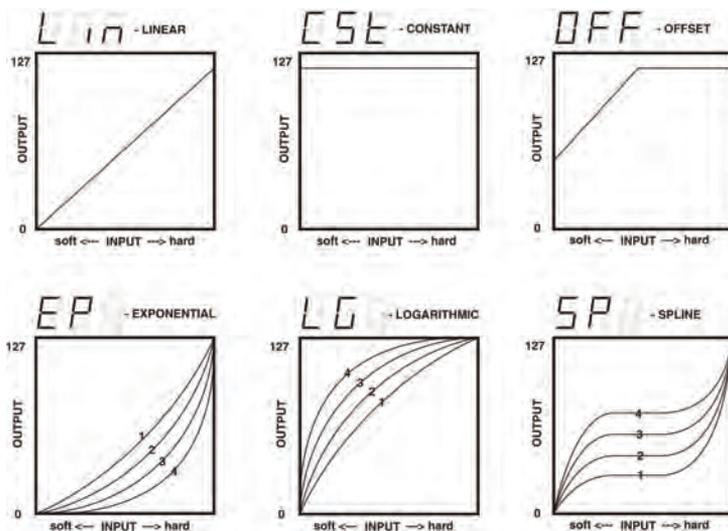**REMEMBER TO SAVE YOUR CHANGES BY GOING BACK TO KIT!**

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VELOCITY CURVE

KIT		TRIGGER SETUP	
KIT ○		○ GAIN	○ X - TALK
PROGRAM CHANGE ○		● VELOCITY CURVE	○ RETRIGGER
TRIG MIDI CHANNEL ○		○ THRESHOLD	○ TRIGGER TYPE
TRIG MIDI NOTE # ○			

A Velocity Curve describes how a trigger's velocity varies with the force applied. This is a useful feature when trying to customize how a trigger responds to your playing style. Different Velocity Curves will have different input/output ratios associated with them and will cause a different response, so take some time to get familiar with how the Velocity Curve setting corresponds to the way you like to play.

Velocity is most often used to control a sound's volume or brightness. So when you play "hard", the triggered sound is typically louder/brighter.

How to change Velocity Curve:

1. Select the trigger you would like to edit by striking the trigger/pad.
2. Use the **function up/down** buttons to select Velocity Curve. The current Velocity Curve will be displayed.
3. Use the **value up/down** buttons to select a Velocity Curve. The value will be loaded automatically.

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THRESHOLD

False triggering occurs when a trigger is engaged accidentally, often due to stage vibrations. The Threshold setting can help prevent false triggering. High Threshold values will require you to hit the pad harder to register a note. Threshold should be set based on your playing style so please try different Threshold settings until you find one that works best for you.
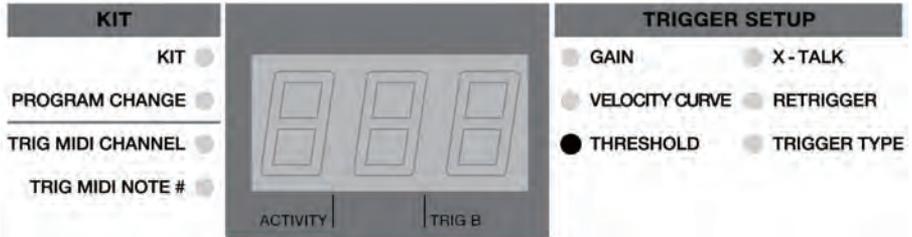
How to change trigger Threshold:

1. Select the trigger you would like to edit by striking the trigger/pad.
2. Use the **function up/down** buttons to select Threshold.
3. Use the **value up/down** buttons to dial in the desired Threshold value. The value will be loaded automatically.

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X-TALK (CROSSTALK)
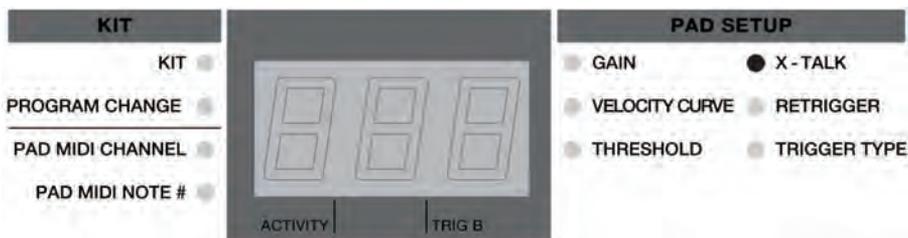
Crosstalk occurs when triggers in close proximity are falsely triggered. For example, when using acoustic drum triggers mounted on a drum kit, hitting a certain drum may cause the drums to vibrate and other triggers to trigger as well. There is no definitive way to deal with crosstalk. Setting a combination of Gain and Threshold for each trigger can help alleviate crosstalk. You may also wish to use the X-Talk function as well.

The X-Talk feature describes the degree to which the DDTi will attempt to reject crosstalk. Positive X-Talk values attempt to intelligently suppress crosstalk. If a very loud and a very soft trigger arrive almost simultaneously, the X-Talk function will assume that the soft trigger is crosstalk and will suppress it from sounding. The higher the X-Talk value, the higher the velocities that will be suppressed. This means that when using high X-Talk values, you can't play hard and soft notes simultaneously. At a setting of 7, it may even be difficult to play a drum roll.

Please spend some time to fine tune your triggers by experimenting with different Gain, Threshold and X-Talk settings to prevent crosstalk. As we mentioned, there is no definitive solution to crosstalk problems, but we have included enough control parameters for you to make the most out of any trigger setup, provided you spend the time to optimize it.

How to change X-Talk:

1. Select the trigger you would like to edit by striking the trigger/pad.
2. Use the **function up/down** buttons to select X-Talk.
3. Use the **value up/down** buttons to dial in the desired X-Talk rejection value (min = 0, max = 7). The value will be loaded automatically.

REMEMBER TO SAVE YOUR CHANGES BY GOING BACK TO KIT!

RETRIGGER
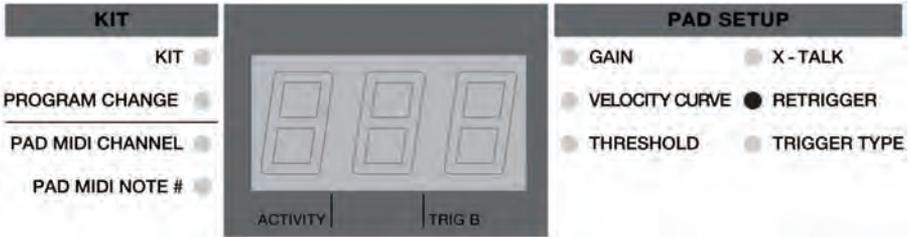
The Retrigger setting describes how the DDTi interprets and outputs successive triggers from the same input. The Retrigger setting is the minimum amount of time between successive triggers needed to generate a second sound.

For example, if a trigger is engaged twice within a 50 ms time period and the Retrigger setting is 100ms, the DDTi will ignore the second sound and only output the first. On the other hand, if the Retrigger setting is set to 25ms, the DDTi will output both sounds, since the second sound occurs beyond the Retrigger boundary.

The Retrigger setting should be set depending on your playing style. If you like to play with fast drum rolls, you may want to decrease the Retrigger time setting in order to capture all the nuances of your playing style.

How to change Retrigger setting:

1. Select the trigger you would like to edit by striking the trigger/pad.
2. Use the function up/down buttons to select Retrigger.
3. Use the value up/down buttons to dial in the desired Retrigger setting (0-127 ms).

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TRIGGER TYPE

KIT		PAD SETUP	
KIT		GAIN	X - TALK
PROGRAM CHANGE		VELOCITY CURVE	RETRIGGER
PAD MIDI CHANNEL		THRESHOLD	● TRIGGER TYPE
PAD MIDI NOTE #			

ACTIVITY | TRIG B

You can select the type of trigger you are using in the Trigger Type function. There are many different types of triggers available on the market today – too many to cover individually in this manual – but most triggers can be grouped into the categories outlined below. Please consult you trigger devices' documentation to find out which of the following categories best fits the device.

If you have a single zone drum trigger, then ignore the "ring" column in the table below. Select PP if you have a piezo trigger or SS if you have a switch trigger.

If you have a dual zone drum, then use a TRS cable and select the appropriate type from the table below. If you have a dual zone drum but only a TS cable, then you can still use the primary zone (tip) but not the secondary zone (ring).

Please make sure that your trigger's Trigger Type is configured correctly before editing or using it. If the Trigger Type is configured incorrectly, your trigger may not function properly or at all. You will need to select a Trigger Type which matches your specific trigger, as shown in the table below. Once you have finished configuring the Trigger Type, exit Trigger Type mode to resume playing. Please note, Trigger Type PP has 5 variations. Please be sure to check all variations if your pad or trigger falls under this trigger type and is not functioning properly. This also applies to the hi-hat pedal which has 7 variations to choose from. These variations are compatible with most of the hi hat pedals in today's market.

TRIGGER TYPE	TIP	RING
PP1- PP5	PIEZO	PIEZO
SS	SWITCH	SWITCH
PS	PIEZO	SWITCH
SP	SWITCH	PIEZO
SUS	SWITCH AS SUSTAIN PEDAL*	
HH1-HH7	HI-HAT PEDAL**	

*To be used with footswitches. When the footswitch is pressed down, it generates a sustain message (MIDI CC 64). When it is depressed, it cancels the sustain.

**Hi-hat foot pedals will automatically be detected so, there is no need to set a Trigger Type.

How to set Trigger Type:

1. Use the **function up/down** buttons to select Trigger Type.
2. Select the trigger you would like to edit by striking the trigger/pad.
3. Use the **value up/down** buttons to dial in the desired Trigger Type.

REMEMBER TO SAVE YOUR CHANGES BY GOING BACK TO KIT!

USING HI-HAT PEDAL

When using a hi-hat pedal connected to the Hi-hat pedal input on the DDTi, the Hi-hat input (Input 3) can send two different MIDI Notes, depending on the position of the Hi-hat pedal. In effect, this allows you to assign two different notes for the hi-hat input (Input 3) and with the pedal toggle between which note the hi-hat trigger sending. In addition, you can also assign another MIDI Note Number to the pedal down position of the pedal.

- To assign open hi-hat sound to Hi-hat input (Input 3), engage the hi-hat trigger with the hi-hat pedal in the UP position. Then use the **function up/down** buttons to select MIDI Note # and use the **value up/down** buttons to dial in the desired note number.

- To assign a closed hi-hat sound to Hi-hat input (Input 3), engage the hi-hat trigger with the hi-hat pedal in the DOWN position. Then use the **function up/down** buttons to select MIDI Note # and use the **value up/down** buttons to dial in the desired note number.

- To assign a pedal-hat sound to the Hi-hat pedal input (HI-hat), press down on the hi-hat pedal. Then use the **function up/down** buttons to select MIDI Note # and use the **value up/down** buttons to dial in the desired note number.

EDITING HI-HAT PEDAL PARAMETERS

When editing hi-hat pedal parameters, some of the edit functions are used in a slightly different manner. Please see below for detailed description of hi-hat pedal parameters.

Gain – This setting is used in much the same way as it is used for other triggers. Please refer to "Gain" section of this manual for information.

Velocity Curve – This setting is used in much the same way as it is used for other triggers. Please refer to "Velocity Curve" section of this manual for information.

Threshold – When editing a hi-hat pedal, the Threshold function has a slightly different meaning. For a hi-hat pedal, the Threshold value describes the minimum distance between pedal positions, when changing directions, necessary for the DDTi to output a CC value. If you like to use the hi-hat pedal for subtle nuances, you may wish to set the hi-hat pedal Threshold to a low value.

X-Talk – For a hi-hat pedal, the X-Talk function is used as a Calibration function. This allows you to calibrate the pedal for optimum performance. If a hi-hat pedal is selected, you will see "CAL" displayed on the screen. You can adjust the calibration manually or you can let the DDTi adjust it automatically by leaving the pedal in the up position and pressing **up value** and **down value** buttons simultaneously. This will automatically calibrate the pedal.

Retrigger – This setting is used in much the same way as it is used for other triggers. Please refer to "Retrigger" section of this manual for information. Please note that the Retrigger parameter only refers to hi-hat control messages and not the pedal-hat Note message.

Trigger Type – The DDTi automatically detects hi-hat pedals for quick setup and provides seven adjustable hi-hat trigger settings to suit different hi-hat controllers. A built-in calibration feature ensures precise performance. For details on calibration adjustments, refer to the X-Talk section above.

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SENDING MESSAGES

In addition to global parameters, there are four special functions available on the DDTi: the *All Notes Off* message, the *Return to Default Value* message, and the *Factory Reset* message, as well as MIDI SysEx messages. You might rarely have to use these, but it is good to keep in mind that they are available in case you run into trouble.

ALL NOTES OFF

This function sends an *All Notes Off* message on all MIDI channels. An *All Notes Off* message will terminate any MIDI note that is still playing. This message can be used to recover from erroneous stuck notes.

- To send an *All Notes Off* message, press **function up** and **function down** buttons simultaneously.

RETURN TO DEFAULT VALUE

This message will set the parameter being edited back to its original value.

- To send a *Return to Default Value* message, press the **function down** and **value down** buttons simultaneously.

FACTORY RESET

This operation resets all functions back to the factory setup condition. Sometimes you might have gone a little too far changing the configuration of the DDTi. In this case, you might want to use the *Factory Reset* message to restore everything, including presets, back to the way it originally was.

- To send a *Factory Reset* message, hold down the **value up** and **value down** buttons simultaneously while powering on the DDTi. You will see "rES" displayed on the screen to let you know that the DDTi has been reset.

MIDI SYSEX TRANSFERS

MIDI System Exclusive (SysEx) messages allow you to transfer parameter and program data to and from the DDTi over the USB or MIDI connection. Using SysEx software editors, many of which are available free over the Internet (SendSX, MIDI-OX, SysEx Librarian), you can quickly dump and transfer preset information to and from the DDTi.

- To request a Data Dump from the DDTi, please make sure that the DDTi is connected via MIDI or USB to your SysEx application. Then press **function up** and **value up** simultaneously. This will transfer all the presets from the DDTi to your SysEx application.

- To transfer data to the DDTi, please make sure that the DDTi is connected via USB to your SysEx application. Then, simply play the SysEx data you would like to transfer to the DDTi.

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DEFAULT SETTINGS FOR THE DDTi

The configuration of the kit is labeled on the back of the DDTi and is as shown below. Please ensure that your triggers are connected in the way described below.

1. KICK NOTE # 35	3. HI-HAT NOTE # 44/42*	5. TOM1 NOTE # 47	7. TOM3 NOTE # 43
2. SNARE NOTE #38	4. RIDE NOTE #55	6. TOM2 NOTE # 45	8. CRASH NOTE # 49

*When using a hi-hat foot pedal connected to the Hi-hat footswitch input on the DDTi, the Hi-hat input will alternate between sending MIDI Note # 44 and MIDI Note # 42, depending on the position of the Hi-hat footswitch. With the hi-hat pedal pressed down, the Hi-hat input will send MIDI Note # 42 (closed hi-hat). With the hi-hat pedal released, the Hi-hat input will send MIDI Note # 44 (open hi-hat).

You will notice that in this configuration each trigger has a different MIDI Note Number associated with it. It is these Note Numbers that trigger the specific sound. Please refer to Trigger MIDI Note section of this manual for more information on how MIDI Notes are used.

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OTHER APPLICATIONS OF THE DDTi

The DDTi can be used for a variety of applications which use MIDI as their control protocol. For example, the DDTi can be used to trigger melodic sounds on sound modules or VST instruments. This means that you can play pitched instruments, such as vibraphones, marimbas, xylophone, even a piano or a violin, straight from the DDTi.

As you have already seen throughout this manual, the DDTi uses MIDI Note information to trigger events, such as drum hits. However, MIDI Notes also represent actual musical notes and pitches (much like keys on a piano). This allows pitched content to be played from MIDI devices (such as the DDTi).

For this reason, we include a handy chart which shows you how MIDI Note Numbers correspond to musical pitches (as shown on a piano keyboard). The musical pitches are followed by their corresponding MIDI Note Numbers in ( ).

You can use this chart to help you quickly setup the DDTi for working with pitched content.

Black keys	White keys
	C8 (96)
94	B7 (95)
92	A7 (93)
90	G7 (91)
	F7 (89)
87	E7 (88)
85	D7 (86)
	C7 (84)
82	B6 (83)
80	A6 (81)
	G6 (79)
78	F6 (77)
75	E6 (76)
73	D6 (74)
	C6 (72)
70	B5 (71)
68	A5 (69)
	G5 (67)
66	F5 (65)
63	E5 (64)
	D5 (62)
61	C5 (60)
58	B4 (59)
56	A4 (57)
	G4 (55)
54	F4 (53)
51	E4 (52)
	D4 (50)
49	C4 (48)
46	B3 (47)
44	A3 (45)
	G3 (43)
42	F3 (41)
39	E3 (40)
	D3 (38)
37	C3 (36)
34	B2 (35)
32	A2 (33)
	G2 (31)
30	F2 (29)
27	E2 (28)
	D2 (26)
25	C2 (24)
22	B1 (23)
20	A1 (21)
	G1 (19)
18	F1 (17)
15	E1 (16)
	D1 (14)
13	C1 (12)
10	B0 (11)
	A0 (9)

DDTi KIT PRESETS

KIT#0 – BFD LITE

			INPUT									
			1	2	3	4	5	6	7	8	9	10
ZONE	TIP	CHANNEL	10	10	10	10	10	10	10	10	10	10
		MIDI NOTE #	35	38	46	55	47	45	43	49	55	53
	RING	CHANNEL	10	10	10	10	10	10	10	10	10	10
		MIDI NOTE #	35	40	48	54	35	35	35	58	35	35

HI HAT FOOT SWITCH – CHANNEL 10, MIDI NOTE # 44
(INPUT3) CLOSED HI HAT NOTE # 42

KIT#1 – GM DRUMS

			INPUT									
			1	2	3	4	5	6	7	8	9	10
ZONE	TIP	CHANNEL	10	10	10	10	10	10	10	10	10	10
		MIDI NOTE #	35	38	46	51	50	48	45	49	55	52
	RING	CHANNEL	10	10	10	10	10	10	10	10	10	10
		MIDI NOTE #	35	37	35	53	35	35	35	35	35	35

HI HAT FOOT SWITCH – CHANNEL 10, MIDI NOTE # 44
(INPUT3) CLOSED HI HAT NOTE # 42

KIT#2 – GM PERC

			INPUT									
			1	2	3	4	5	6	7	8	9	10
ZONE	TIP	CHANNEL	10	10	10	10	10	10	10	10	10	10
		MIDI NOTE #	35	60	70	67	62	63	64	58	75	81
	RING	CHANNEL	10	10	10	10	10	10	10	10	10	10
		MIDI NOTE #	35	61	35	68	35	35	35	35	35	35

HI HAT FOOT SWITCH – CHANNEL 10, MIDI NOTE # 35
(INPUT3) CLOSED HI HAT NOTE # 42

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KIT#3 – CHROMATIC 1

			INPUT									
			1	2	3	4	5	6	7	8	9	10
ZONE	**TIP**	**CHANNEL**	1	1	1	1	1	1	1	1	1	1
		MIDI NOTE #	60	62	64	66	68	70	72	74	76	78
	RING	**CHANNEL**	1	1	1	1	1	1	1	1	1	1
		MIDI NOTE #	61	63	65	67	69	71	73	75	77	79

**HI HAT FOOT SWITCH – CHANNEL 1, MIDI NOTE # 35
(INPUT3) CLOSED HI HAT NOTE # 42**

KIT#4 – CHROMATIC 2

			INPUT									
			1	2	3	4	5	6	7	8	9	10
ZONE	**TIP**	**CHANNEL**	1	1	1	1	1	1	1	1	1	1
		MIDI NOTE #	48	50	52	54	56	58	60	62	64	66
	RING	**CHANNEL**	1	1	1	1	1	1	1	1	1	1
		MIDI NOTE #	49	51	53	55	57	59	61	63	65	67

**HI HAT FOOT SWITCH – CHANNEL 1, MIDI NOTE # 35
(INPUT3) CLOSED HI HAT NOTE # 42**

DDTi DEFAULT GLOBAL PARAMETERS

The following are the factory default global parameters for the DDTi:

	INPUTS 1-10	HI HAT INPUT
GAIN	20	20
VEL CURVE	Lin	Lin
THRESHOLD	4	15
X-TALK	1	10
RETRIGGER	10	40
TRIGGER TYPE	PP	HH

TROUBLESHOOTING

SYMPTOM	CAUSE	SOLUTION
The display does not light up.	No power.	If you are using USB power, check that the power switch on the back of the DDTi is in the OUT (USB) position. If you are using an AC adapter, check that the adapter is plugged into a live power outlet and that the power switch is in the IN (AC) position.
MIDI: No sound from target device.	DDTi USB not properly connected.	Check your computer's USB connections to confirm that the DDTi is recognized and installed. Turn your computer off and then on again if necessary. (Choose "shut down" rather than "restart" to ensure that the USB devices are properly reset.)
	Problems caused by use of a USB hub.	Try unplugging the DDTi from any USB hubs and connecting directly to the computer.
	Software application not set up to receive MIDI data from DDTi controller.	Ensure that the DDTi or "USB" MIDI device is listed as an active MIDI source in your application.
	Software application not receiving MIDI data.	Many software applications have MIDI IN and OUT indicators. Play the triggers and look for the MIDI IN light to indicate activity.
	DDTi's MIDI channel not the same as target device's incoming MIDI channel.	Be sure that the DDTi is sending on the channel that the target device expects.
	DDTi 5-pin MIDI OUT not connected to target device's MIDI IN.	Ensure that any 5-pin cables are connected to the proper inputs and outputs.
My footswitch behaves in an opposite manner.	Footswitch was plugged in after power was turned on.	If using a footswitch with the INC/DEC input, turn the unit's power off, wait a moment, and then turn it on again. Please always make sure that footswitches and triggers are connected to the DDTi prior to powering on the unit.
		For other footswitches, go to Trigger Type and reselect the type with the footswitch in the UP position.
My pad is triggering even when no pads are hit.	The pad's Gain setting is set too high, or the Threshold is too low.	Lower the pad's Gain setting or raise the Threshold setting.

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SYMPTOM	CAUSE	SOLUTION
Notes sustain continuously.	Stuck notes due to incomplete MIDI data.	Send an *All Notes Off* message by pressing **function up** and **function down** buttons simultaneously.
Pad triggers when another pad is hit.	Gain, X-Talk and Threshold not set correctly.	Please refer to "Setting Global Parameters" section to fine tune the DDTi.
There is too much delay or latency between the time that the pad is hit and the time that the sound triggers on the computer.	There is another device on your computer's USB bus.	Try unplugging USB devices (especially high-bandwidth devices like disc drives) from your computer.
	Your software's latency settings are not correct.	Try adjusting the software settings on your computer. Please note that not all software has these settings. Please refer to the "Computer Installation" section of this manual for more information on latency.
When using MIDI-OX for SysEx transfers, the DDTi's presets become messed up.	MIDI-OX output buffer is not set correctly.	Please ensure that the MIDI-OX output buffer is set to at least 256 bytes or higher.
My trigger isn't sending any Note On messages, even though I'm hitting it.	The Trigger Type is set incorrectly.	Try selecting a different Trigger Type.
	The Threshold level is too high.	Try lowering the trigger's Threshold level.
I am using a dual zone trigger and I can't adjust my secondary zone setting.	The primary zone of the trigger is triggering at the same time and, therefore, being selected for editing.	Reduce the gain and/or increase the threshold for the primary zone while editing the secondary zone, then return the primary zone back to its proper setting.
Some sounds are louder than others.	Gain not set correctly.	Use each trigger's Gain setting to balance out the level of the sounds.
When I try to change kits remotely with my footswitch pedal, I get the wrong kit, or nothing happens	Software or hardware application not receiving Program Change message.	Make sure the software application can receive MIDI Program Change messages. Some programs do not accept Program Changes messages. If you are using a hardware module, make sure the drum kit you are selecting matches the program change number that you set for that kit on the DDTi.

SYMPTOM	CAUSE	SOLUTION
Improper open and closed hi-hat sounds	Variable-position pedal not calibrated properly.	If your hardware or software program does not completely open or close your hi-hat sounds as it should as your foot moves through the range of your variable-position hi-hat pedal, the DDTi probably needs to be calibrated to match the output of your particular pedal. Perform the calibration procedure described in the "X-Talk" discussion on page 17 of this manual. Begin with the DDTi's automatic calibration feature (as described on that page). This procedure typically results in an excellent match between your pedal and the DDTi. To really dial in your pedal's performance, experiment to see if other calibration values (selected by using the **up** and **down** buttons within the "X-Talk" parameter) result in even better performance for your particular pedal type and playing style
My hi-hat pedal is sending information even when I am not using it.	Pedal's threshold is set too low.	Increase the pedal's threshold setting.

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MIDI IMPLEMENTATION

Function		Transmitted	Recognized	Remarks
Basic	Default	1-16	X	Memorized
Channel	Changed	1-16	X	Adjustable by user per pad
Note Number:		0-127	X	
Velocity	Note On	1-127	X	
	Note Off	0	X	
After Touch		X	X	
Pitch Bend		X	X	
Control	Ctrl # 4	0-127	X	Foot Pedal CC message
Change	Ctrl # 64	0-127	X	Sustain Pedal CC message
Program Change		0-127 *	0-20	
System Exclusive		O	O	
System Common	Song Pos	X	X	
	Song Sel	X	X	
	Tune	X	X	
System Realtime	Clock	X	X	
	Commands	X	X	
Aux Messages	Local On/Off	X	X	
	All Notes Off	O	X	
	Active Sense	X	X	
	Reset	X	X	
	GM On	X	X	
Notes:				
* 1 Set Per Kit				

O:YES
X:NO

FIRMWARE UPDATE INSTRUCTIONS

Firmware updates for the DDTi are available at www.ddrum.com. These updates include functionality enhancements, performance improvements, and resolutions for reported issues.

STEP 1: Connect the power supply to the DDTi and turn it on.

STEP 2: Using the USB cable included, connect the DDTi your computer. Your computer will recognize the DDTi and no drivers are needed.

STEP 3: Press the up function and down value buttons at the same time until the screen displays "U.P." The DDTi is now in firmware update mode. Please refer to the pictures below.

STEP 4: Please download the corresponding updated software at www.ddrum.com according to your computer's operating system. (Hxx=software version)

■ DDTI_v1.0_Hxx(ARM Mac).zip
■ DDTI_v1.0_Hxx(Intel Mac).zip
■ DDTI_v1.0_Hxx(Windows).zip
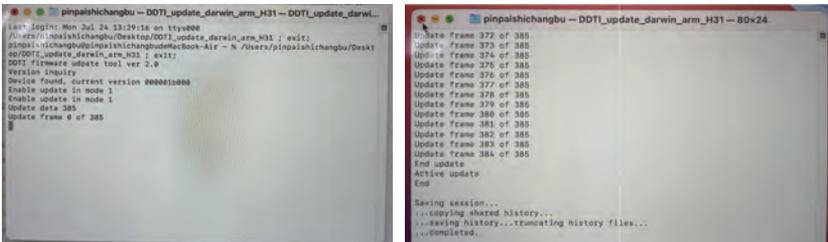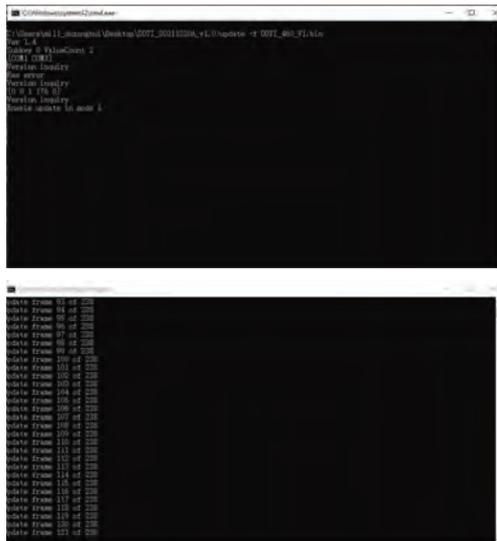
STEP 5:

1. If your computer's operating system is Intel Mac, please follow the steps below.

    A) Run the update and the DDTi will automatically start the process.

    B) When the firmware update begins, the computer will show the following:
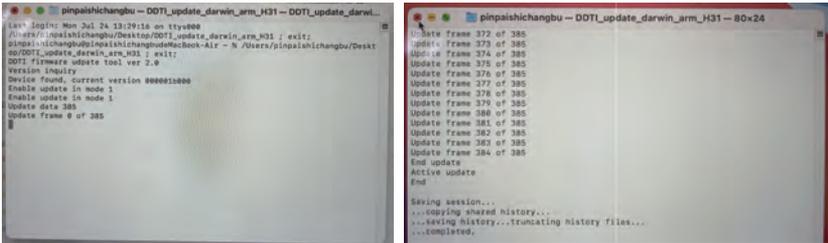
2. If your computer's operating system is ARM Mac, please follow the steps below.

    A) Run the update and the DDTi will automatically start the process.

    B) When the firmware update begins, the computer will show the following:

3. If your computer's operating system is Windows, please follow the steps below.

    A) Run the update and the DDTi will automatically start the process.

FIRMWARE UPDATE INSTRUCTIONS

B) When the firmware update begins, the computer will show the following:

STEP 6: Once the DDTi has completed the firmware update, the display will show the following:

www.ddrum.com