



TM-1

TRIGGER MULTIPLEXER

User Guide

Version 1.3

CONTENTS

Introduction	3
Getting Started.....	3
The Front Panel.....	4
The Back Panel.....	5
How TM-1 works in detail.....	6
Note setting.....	6
Audition.....	6
Mute and Solo.....	6
Triggers vs Gates	6
Multiplexing	7
MIDI to gates	7
Bouncing a pattern to a Note Clip	7
Recording a pattern to a Note Clip live	8



INTRODUCTION

TM-1 Trigger Multiplexer takes individual gate triggers from rack sequencers and sends them to the standard Note CV and Gate pair used by almost all instruments in Reason. This opens up a lot more drum sounds to use with your rack sequencer, including any VST or hardware instrument that triggers via note numbers.

TM-1 can also work in the opposite direction: taking MIDI input and splitting it up to separate Gate outputs.

Besides high quality multiplexing, TM-1 offers creative possibilities with individual mute and solo for each channel, patches with mute and solo states saved, and automatable note number assignments.

GETTING STARTED

The first step is to route all gate outputs in your rack sequencer to TM-1. Since this can be quite tedious, TM-1 comes with pre-routed Combi patches for most popular sequencers. So start by checking if there is a Combinator patch for your sequencer already.

Next, create the drum instrument you want to use, and connect the Note and Gate CV outputs on TM-1 to the corresponding inputs on your instrument.

Different instrument devices map their sounds to different MIDI keys, so there's no universal key mapping that fits all of them. But the default mapping covers the majority (starting at the C1 key), and we've included plenty of alternative preset mappings in the patch folder.

You can of course change the notes on each channel manually, either by dragging the note value with the mouse or by holding the LRN button and playing the desired note on your MIDI keyboard.

Now you are ready to start drumming!





THE FRONT PANEL

These are the controls on the TM-1 front panel:

1. **Patch browser** - Here you can load and save patches. Apart from the channel names and note numbers, mute and solo states are also saved in the patch, which opens up some creative possibilities for live use.
2. **Clear Mute / Solo** - Clicking these turns all active mutes or solos off.
3. **Audition** - When this is active, changing the note for a channel (by dragging the note number) also triggers the note on the CV outputs. This makes it easier to find the correct note.
4. **Enable Outputs** - Turns the outputs ON and OFF. Can be used as a mute button for the entire device. This button can be automated.

For each channel 1-16:

5. **Name Label** - Here you can enter custom names for each channel, like "Hand Clap" etc, by double-clicking the display.
6. **Learn Note (LRN)** - Click and hold this button to enter MIDI learn mode. While the button is held, you can set the note value for the channel by playing notes on your MIDI keyboard.



Alternatively, you can Alt-click or double-click the button to latch Learn mode, then click on it again to save the value.

You can make sure that TM-1 is receiving MIDI from your keyboard by clicking on its Master Keyboard Input tab.

7. **Note Setting** - Click and drag on the note value to change it. You have access to the full MIDI range, C-2 to G8. If you hold down the Shift key while dragging, you will browse through the note values more slowly. The note setting can be automated.
8. **Mute (M)** - Click this button to toggle Mute for the channel. The Mute setting can be automated.
9. **Solo (S)** - Click this button to toggle the Solo setting for the channel, muting all other channels that are not currently being soloed. The Solo setting can be automated.



THE BACK PANEL

These are the controls on the TM-1 back panel:

1. **Gate and CV Outputs** - Connect your drum instrument here.
2. **Name Labels 1-16** - Text labels where you can give each channel a descriptive name if you want. Double-click to edit.
3. **Gate Inputs 1-16** - Connect your sequencer gate outputs here.
4. **Activity LEDs 1-16** - Lights up whenever the corresponding channel is triggered, either via the gate input or via the corresponding MIDI key.
5. **Gate Outputs 1-16** - Use these to chain sequencer gate outputs, or for MIDI to gate conversion.



HOW TM-1 WORKS IN DETAIL

In the following paragraphs we describe in more detail how the different features in TM-1 work.

NOTE SETTING

Each channel 1-16 has a note setting (ranging from C-2 to G8), which is encoded into the note CV output when triggered. This is how you decide which MIDI note to send your trigger to.

There are three ways of setting this:

1. By clicking and dragging in the note field on the front panel, using Shift to browse more accurately.
2. By clicking and holding the LRN (Learn) button in the channel display, and then pressing the desired note on your MIDI keyboard. You can also Alt-click or double-click on the LRN button to latch it, then click on it again to save the note value.
3. Via Remote control over "Channel N Note".

AUDITION

When Audition is set to ON, changing notes with the mouse also triggers the note. This makes it easier to find the right note. Triggers will not be sent when the note is changed using automation or via Remote. For Remote however, you can audition the notes if you press the assigned "Channel N Trigger" button while changing note.

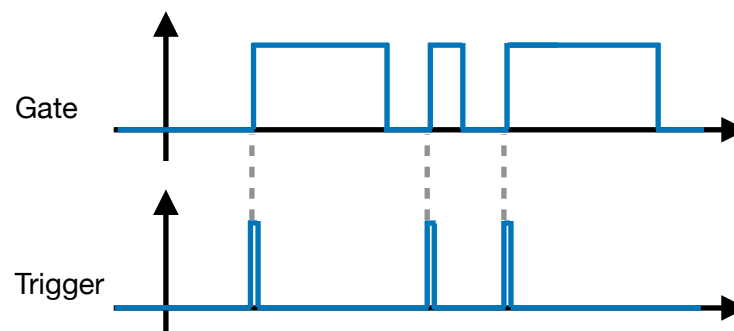
MUTE AND SOLO

Each channel has its own mute and solo buttons. These work exactly like in Reason's mixers and tracks. Their states are stored when you save a patch, which can be handy for live use. They can also be automated and Remote controlled.

There are also Clear buttons for both mutes and solos. Clicking these resets all mute and solos to OFF. For technical reasons, these can't be Remote-controlled. However, they can be automated, although the automation data will be spread out over the individual automation lanes of each affected channel.

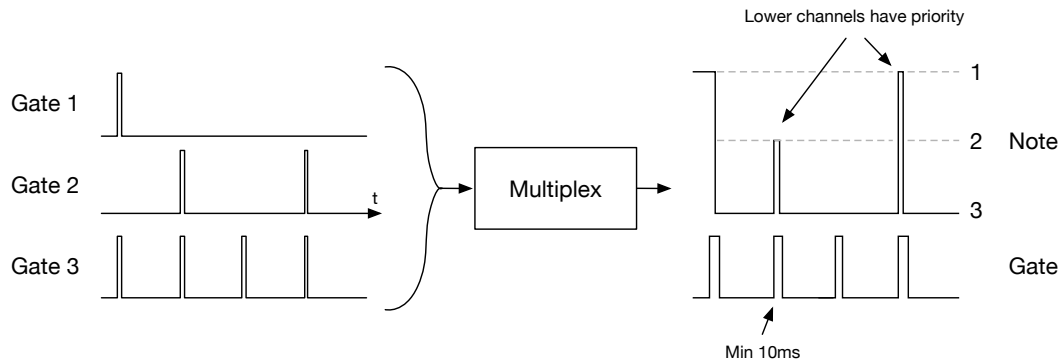
TRIGGERS VS GATES

TM-1 is a trigger multiplexer. So what is the difference between a trigger and a gate? Gates can vary in length, typically while a key is held, while a trigger is a very short peak. TM-1 analyses the signals on the CV inputs, and will generate a trigger everytime the signal goes from 0 or below to a positive value. That positive value determines the amplitude of the trigger. The triggers generated by TM-1 last about 10ms.



MULTIPLEXING

TM-1 combines the 16 trigger CV signals into a single gate and note CV pair using multiplexing. So what is multiplexing?



This is what Wikipedia says:

In telecommunications and computer networks, multiplexing (sometimes contracted to muxing) is a method by which multiple analog or digital signals are combined into one signal over a shared medium. The aim is to share a scarce resource.

In our case, the scarce resource is the single monophonic gate/note CV interface, where gate CV determines the velocity and note CV determines the pitch.

So how do we send more than one trigger at a time over a monophonic CV interface? Well, we can't. But we **can** trigger the notes so closely together that they **sound** like they are triggered at the same time. TM-1 triggers the notes 64 samples apart, or about 1.5ms at 44.1kHz sample rate.

Although we can add new overlapping triggers while others are playing, due to limitations in the gate/note interface, we have to release them all at the same time. TM-1 makes sure that all triggers have lasted at least 10ms before releasing the gate.

MIDI TO GATES

Each channel has a Gate output socket. This can be used in two ways:

1. For daisy-chaining the triggers from your sequencer
2. For taking MIDI input and converting it to CV triggers

BOUNCING A PATTERN TO A NOTE CLIP

Sometimes when you've created a cool rhythm pattern on your sequencer devices, you might want to render it to a note clip in Reason's main sequencer for further editing. You can do this pretty easily using TM-1!

1. Wrap your instrument in a Combinator, by right-clicking it and selecting Combine. If your instrument is a Combinator, then just leave it as it is.
2. Add a Player device (for example Note Echo) to the instrument inside the Combinator. Make sure the Player device is turned off.
3. Connect the Gate and Note CV outputs of TM-1 to the corresponding inputs on the Combinator.
4. Select the start and end of the note clip using the L and R locator in Reason's sequencer.

5. Click the "Send to track" button above the Player device.
A note clip will now be created on the note lane of the instrument (the one that you connected the player to). If your instrument was a Combinator from the beginning, you might want to drag the note clip to the note lane of the Combinator instead.
6. To avoid double notes being triggered when playing back, disconnect TM-1 from the Combinator, or turn it off by clicking on the Enable Outputs button.

You can repeat the process if you want to redo the take or render more patterns. Just remember to make sure that the "Bypass All" button above the Players is turned off. It will be enabled automatically each time you render.

RECORDING A PATTERN TO A NOTE CLIP LIVE

You can also use the Direct Record function on the Player to record the pattern in real time. This is handy if you want to tweak your rack sequencers live while recording to the note clip.

1. Make sure your instrument is wrapped in a Combinator
2. Add a Player device to the instrument inside the Combinator, and make sure the Player is turned off
3. Make sure TM-1 is connected to the Gate/Note CV inputs of the Combinator
4. Activate Direct Record on the Player
5. Arm the **instrument's** track for recording in the main sequencer
6. Click the Record button in Reason to start recording
7. Click the Stop button when you're done
8. To avoid double notes being triggered when playing back, disconnect TM-1 from the Combinator, or simply turn it off by clicking the Enable Outputs button.