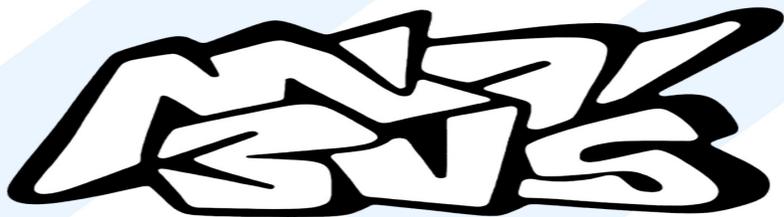
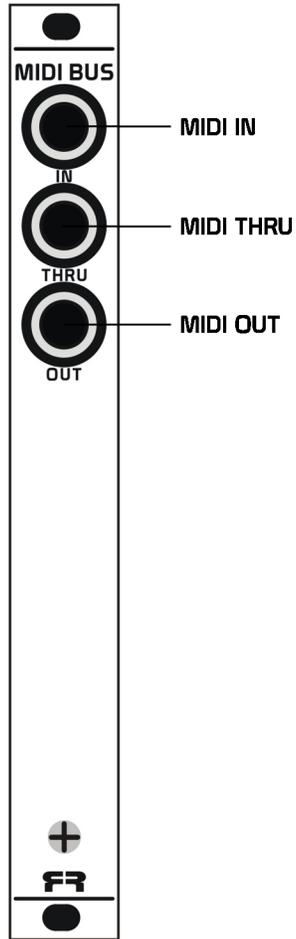


FUTURERETRO



OWNERS MANUAL



Written by Jered Flickinger
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Future Retro
www.future-retro.com

OVERVIEW

The MIDI BUS was designed to be a MIDI interface for the eurorack system, and more specifically to offer MIDI inputs and outputs for our TRAX performance sequencer.

This device provides opto-isolation of the MIDI input and buffers all MIDI signals.

The MIDI BUS provides MIDI IN/OUT/THRU inputs and outputs on 3.5mm TRS jacks. 3.5mm to 5-pin DIN MIDI cables are provided with each MIDI BUS product. These MIDI cables must conform to the TRS MIDI B Spec Class, currently supported by Arturia, Novation, and 1010 Music devices. Beware, other companies such as Korg and Make Noise have products that use similar looking 3.5mm to 5-pin DIN MIDI cables, however their cables are wired in a way that is not compatible for use on the MIDI BUS.

Use the correct cable for each manufacturer's device. You can still use good old fashioned 5-pin DIN MIDI cables (on each end) to connect these different devices together, and achieve proper MIDI communication.

The MIDI BUS uses the power bus cable to receive and transmit MIDI at the +3.3 volt standard. In order to do this, the MIDI BUS repurposes what the eurorack standard defines as the INT GATE line of the power bus for MIDI IN signals, and the INT CV line of the power bus for MIDI OUT signals.

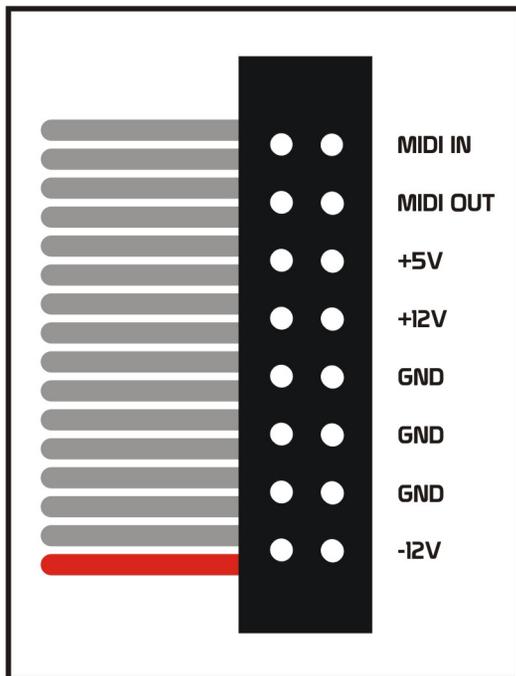
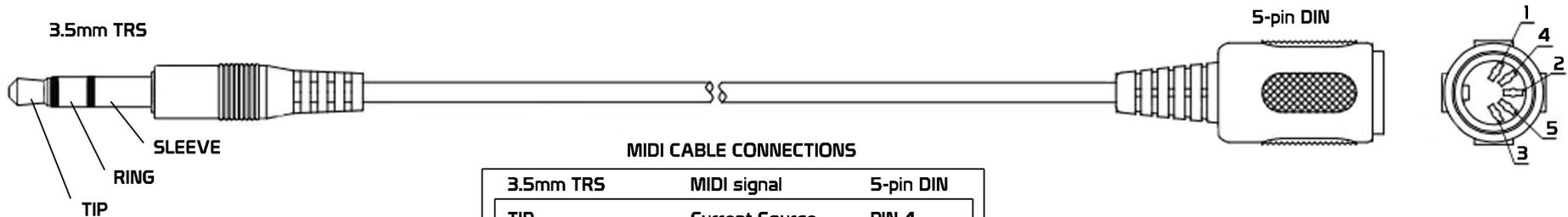
Since those two lines are common to all other modules powered in your system, users should take caution and be aware that using a standard 16-line power bus cable to power the MIDI BUS could cause conflicts if other modules in your system are using the INT GATE or INT CV lines for their intended purpose or for any other purpose.

To prevent conflicts with other signals that may be using these lines of the power bus, we recommend using the special MIDI BUS power cable provided with this unit, or the (optional) Flying Bus power cable (available for purchase through our website) when using the MIDI BUS with the TRAX product or any other products using this new MIDI standard.

The MIDI BUS power cable that is provided with your MIDI BUS will allow only a single device in your system to send and transmit MIDI.

The (optional) Flying Bus power cable allows multiple modules connected to this cable to share MIDI data with one another and also receive the proper power from the system, without connecting MIDI signals to other modules in your system.

The only time you should use a standard 16-line power bus cable would be if no other devices in your system are using the INT GATE and INT CV lines of the power bus cable. Using this type of standard cable would allow all modules to access the same MIDI data over the power bus. However, overtime you may forget these requirements of your system, and could end up connecting another module using those lines, which can and will most likely cause conflicts. For this reason, we do not recommend using standard cables unless you really know what you are doing with your system.



FLYING MIDI BUS SIGNALS

The MIDI BUS product conforms to the MIDI 1.0 standard, and provides +3.3 volt MIDI signals over the Power Bus Cable. Please note that standalone devices requiring power via MIDI using the older +5 volt standard will not be compatible. For instance our 1x4 MIDI THRU box is not compatible with the MIDI BUS product since it requires +5 volt power via MIDI. MIDI devices that simply send and receive MIDI data should be compatible with the MIDI BUS.

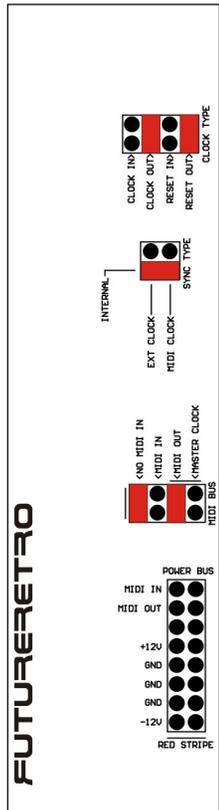
The MIDI BUS follows the TRS MIDI B Spec Class, currently supported by Arturia, Novation, and 1010 Music devices. This Spec Class requires the use of MIDI cables with internal wiring as shown in the table above.

The Flying Bus cable connector, shown to the left, illustrates the location of the MIDI IN and MIDI OUT signals for the Power Bus. We provide this information here for any other manufacturers who would like to adopt this method, and make products that are compatible with this new standard.

The diagrams on the following pages illustrate jumper settings required for different operations with the TRAX sequencer. It is very important to make sure jumper settings on your TRAX are identical to those shown, and the type of power cable shown be used for that type of operation.

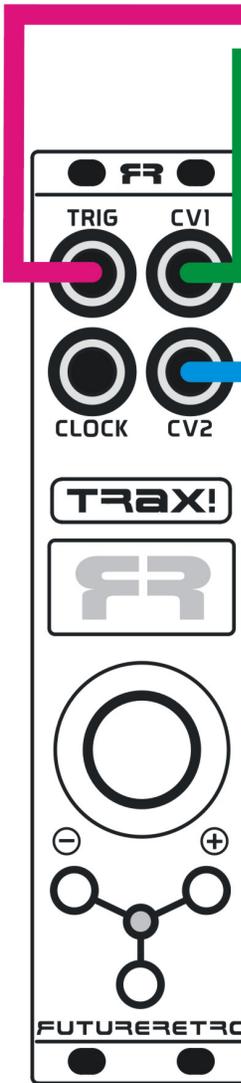
USE INTERNAL CLOCK AND SEND MIDI OUT

USE INTERNAL CLOCK
 GENERATES ANALOG CLOCK OUT
 PLAY A MIDI SOUND MODULE
 SEND MIDI CLOCK TO EXTERNAL MIDI SEQUENCERS

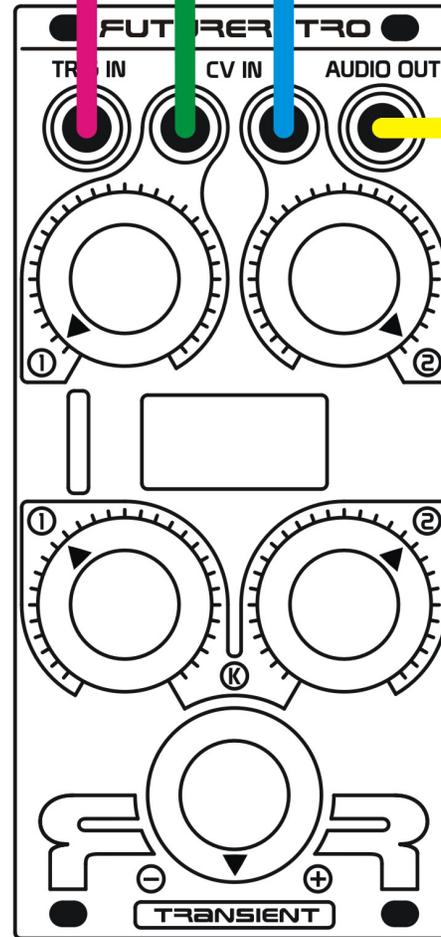


JUMPER SETTINGS

TO: MIDI IN
 OF SOUND MODULE
 OR SEQUENCER



TRAX POWER

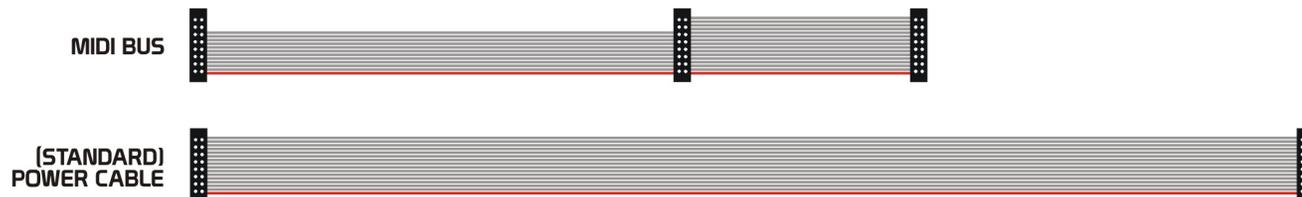


TRANSIENT POWER

TO: MIXER INPUT

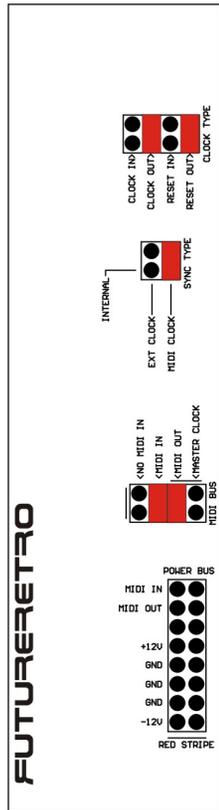
SYSTEM POWER

MIDI BUS POWER



SYNC TO MIDI, AND SEND MIDI OUT

SYNC TO EXTERNAL MIDI CLOCK
 GENERATES ANALOG CLOCK OUT
 PLAY A MIDI SOUND MODULE
 SEND MIDI CLOCK TO EXTERNAL MIDI SEQUENCERS

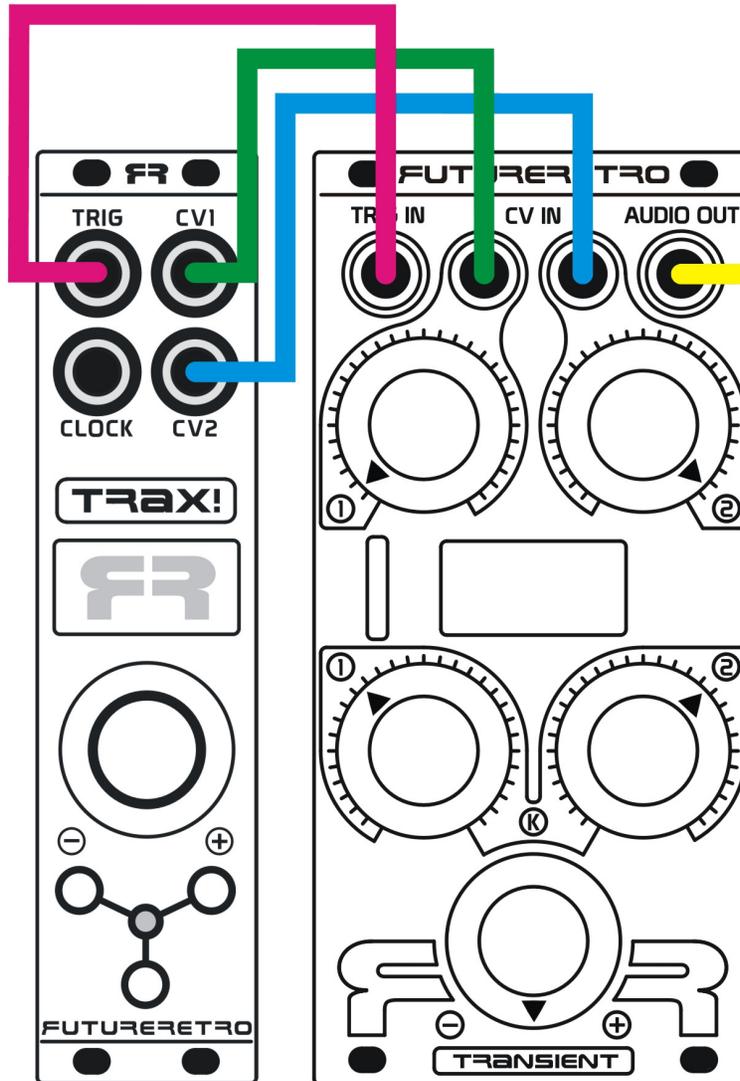


JUMPER SETTINGS

FROM: MIDI OUT OF MASTER CLOCK

TO: MIDI IN OF OTHER MIDI BUS FOR DAISY CHAIN

TO: MIDI IN OF SOUND MODULE OR SEQUENCER



TO: MIXER INPUT

SYSTEM POWER

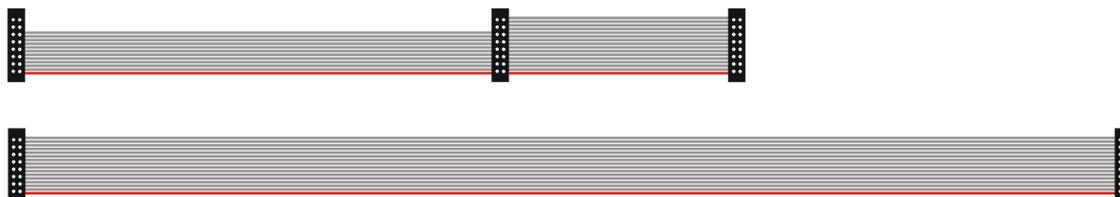
MIDI BUS POWER

TRAX POWER

TRANSIENT POWER

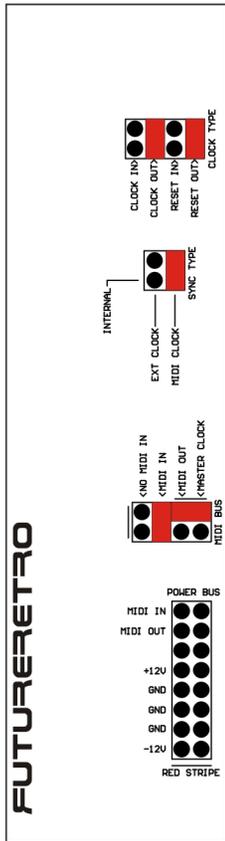
MIDI BUS

[STANDARD] POWER CABLE



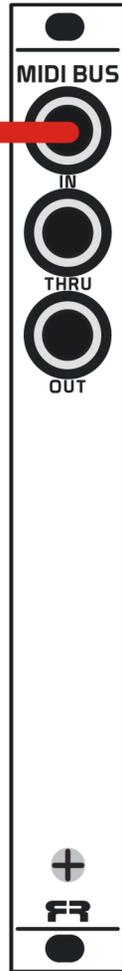
SYNCING 4 SLAVE UNITS TO AN EXTERNAL MASTER MIDI CLOCK

EACH UNIT SYNCs TO EXTERNAL MASTER MIDI CLOCK
 EACH UNIT GENERATES ANALOG CLOCK OUT
 NO MIDI OUT IS TRANSMITTED



JUMPER SETTINGS FOR SLAVE 1-4

FROM: MIDI OUT OF MASTER CLOCK



SLAVE 1



SLAVE 2



SLAVE 3



SLAVE 4



SYSTEM POWER

MIDI BUS POWER

TRAX POWER

TRAX POWER

TRAX POWER

TRAX POWER

FLYING BUS



TROUBLESHOOTING

Always use caution when handling the MIDI BUS. Make sure to discharge yourself of any static electricity before touching the unit. When installing and removing the module from your system, hold the unit at the edge of the front panel to avoid your fingers from coming in contact with the circuitry. Keep your original packaging in case you ever need to ship your product. This unit should always be placed in an anti-static bag during shipping.

Pay very close attention when installing this module into your system, so that the red-strip of the power ribbon cable is aligned with the -12v on the MIDI BUS, TRAX, and your system's power distribution connector.

When removing modules from your system, it is a good idea to inspect the connectors of the power bus cable to confirm the connector has not been abused to the point it is pulling apart.

Make sure you know how much current your system can provide for each voltage level, and how much current the modules in your system are drawing from the power supply. If your system is unable to provide enough current for each module in your system, obviously something is not going to work as expected or perhaps at all.

If you have other questions or you experience problems not addressed in this manual, please check the Support page of our web site: www.future-retro.com/support.html or try downloading the latest version of this manual.

WARRANTY

This product comes with a 1-year warranty covering all parts and labor.

Register your product at www.future-retro.com within 30 days of your purchase to validate your warranty. You will find the serial number for your product listed on both the outside of the original product box, as well as on the back side of the module.

SPECIFICATIONS

Eurorack Width: 3HP

Dimensions: [0.60" (W) x 5.07" (H) x 1.00" (D)] or [15.20mm (W) x 128.79mm (H) x 25.4mm (D)]

Boxed Weight: 0.5 lbs.

+12v Supply Current Draw: 17mA (typical)

-12v Supply Current Draw: 0mA

+5v Supply Current Draw: 0mA