REAL WORLD INTERFACES

TR-808 MIDI In

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This is a preliminary version of the manual for the 2018 version of this TR-808 MIDI In system. I will revise it once I have made and installed the first of these, which should be late July 2018.

For details of the TR-808 MIDI options, please see: http://www.firstpr.com.au/rwi/tr-808/#midi **.**

1 - Features

This is a revised version of an interface I developed in the mid-1990s. If you require MIDI Out as well as In, then your best choice is a Kenton MIDI Retrofit Kit: http://www.kentonuk.com/products/items/sockets/roland/tr808.shtml

This MIDI In system has the following features.

- MIDI In is via the Sync socket.

- Velocity sensitive reception of notes to drive all drum circuits. (The Hand Clap is not really sensitive to velocity, but can be made to emit just the soft "reverb" sound if the velocity is very low.)

- Reception of MIDI Sync to drive the TR-808 and to drive external devices via the Sync Socket and the optional Sync Cable, which has a MIDI In connector and three DIN/Roland Sync Out connectors on a daisy chain cable: http://www.firstpr.com.au/rwi/dfish/sync-lead/ This means the TR-808 can receive MIDI Sync and drive up to three other devices, such as TB-303s, TR-606s and TR-808s.

- Fast response: 0.3 to 0.6 millisecond delay from the end of each MIDI Note On message (2 or 3 bytes) to the start of the drum channel's sound.

- Fine reception of velocity so that all drum circuits (except, as just noted, the Hand Clap) can be driven very gently, triggered fully or anything in between.

  A normal un-accented trigger pulse generated internally by the TR-808's Internal Sequencer is +5 volts, but the threshold at which each drum channel begins to make a sound is less than this. This lower threshold voltage is different for each drum channel, and the MIDI In system is configured to match these so the lowest velocity MIDI note just triggers the drum channel.

- An Auxiliary Trigger Output is driven by a particular note number (84 = C5) and produces a 0 to 10 volt pulse on a 3.5mm output socket. This can drive other devices.

There are no user-controllable settings. The receive channel (10) and the note numbers (see below) are permanently set. However, I can customise these to your needs. Furthermore, if you or your technician are handy with an EPROM programmer, you can alter specific bytes in the firmware to change the channels and note assignments. The details of this are at the end of this manual.

2 - Drum Channel triggering from MIDI notes

Note On messages for one or more MIDI note numbers trigger each drum circuit. Each Tom and Conga sound (Low, Mid and High) is produced by a single drum circuit. Each of these responds to three MIDI note numbers. For instance, the Low Tom / Low Conga channel responds to the General MIDI note numbers 43 (Low Tom 1), 41 (Low Tom 2) and 64 (Low Conga). Likewise the Rimshot/Claves circuit is one circuit and responds to two MIDI note numbers – those which are usually used for Rimshot and Claves.

However the Hand Clap and Maracas circuits are independent. They share a common volume circuit and output, and are triggered by the same channel in the TR-808's internal sequencer. For the purposes of triggering from MIDI, they are separate drum circuits.

The Hand Clap circuit has been modified to give just a soft "reverb" noise pulse at very low trigger levels. (The TR-808 Sound Mods includes a toggle switch which can disable this, so for this mode of triggering to work, that switch must be set to enable the "reverb" sound.) This does not affect its sound at higher levels, or when being driven from the TR-808's internal sequencer.

When a MIDI note with very low velocity is received, the interface is configured to trigger each drum circuit at the threshold voltage at which it starts to sound. This gives the greatest range of expression, but it does mean that the exact velocity required to get a recognisable sound may vary slightly between drums, and might change a little with extremes of temperature.

The MIDI Interface receives notes on **Channel 10**. If you require, I can configure the interface's firmware for another channel and for different note numbers.

The table which spans the next two pages lists the note numbers and their MT32 drum voice names, rather than their actual General MIDI names, which can be found at: https://en.wikipedia.org/wiki/General_MIDI#Percussion .

Note	Note Number	MT-32 sound	**Drum sound** Mirror of Drum Sound for GMIDI compatibility	Comment
B 0	35	Acou BD		
C 1	36	Acou BD	**BD – Kick**	
C#1	37	Rim Shot	**RS – Rimshot/Claves**	
D 1	38	Acou SD	**SD – Snare**	
D#1	39	Hand Clap	**HCP - HandClap**	
E 1	40	Elec SD	SD – Snare	
F 1	41	Acou Low Tom	LT – Low Tom	
F#1	42	Clsd HiHat	**CH – Closed HiHat**	
G 1	43	Acou Low Tom	**LT – Low Tom**	
G#1	44	Open HiHat 2		
A 1	45	Acou Mid Tom	**MT – Mid Tom**	
A#1	46	Open HiHat 1	**OH - Open HiHat**	
B 1	47	Acou Mid Tom	MT – Mid Tom	
C 2	48	Acou Hi Tom	**HT – Hi Tom**	
C#2	49	Crash Cymbal	**CY –Cymbal**	
D 2	50	Acou Hi Tom	HT – Hi Tom	
D#2	51	Ride Cymbal	CY – Cymbal	
E 2	52		CY – Cymbal	Chinese Cymbal
F 2	53			
F#2	54	Tambourine		
G 2	55			
G#2	56	Cowbell	**CB – Cowbell**	
A 2	57			
A#2	58			
B 2	59			

Note	Note Number	MT-32 sound	**Drum sound** Mirror of Drum Sound for GMIDI compatibility	Comment
C 3 Mid C	60	High Bongo		
C#3	61	Low Bongo		
D 3	62	Mt High Conga	HT – High Tom	Mt = Muted
D#3	63	High Conga	MT – Mid Tom	
E 3	64	Low Conga	LT – Low Tom	
F 3	65	High Timbale		
F#3	66	Low Timbale		
G 3	67	High Agogo		
G#3	68	Low Agogo		
A 3	69	Cabasa		
A#3	70	Maracas	**MA – Maracas**	
B 3	71	Smba Whis S		
C 4	72	Smba Whis L		
C#4	73	Qijada		
D 4	74			
D#4	75	Claves	**RS - Rimshot/Claves**	
E 4	76			
F 4	77			
F#4	78			
G 4	79			
G#4	80			
A 4	81			
A#4	82			
B 4	83			
C 5	84		**AUX – Auxiliary Trigger Out**	A 0 to 10V positive pulse from a separate 3.5mm socket. This is an arbitrary choice of drum number – to get it out of the way of other General MIDI assignments.

If your MIDI master device is outputting note events on Channel 10 which match those listed on the table above, then the interface will trigger these drum channels with trigger pulses whose voltages cause the full range of volume to be produced from each channel, according to the note's velocity 1 to 127.

If the MIDI master device is also outputting MIDI Sync, and the Start or Continue code has been most recently received, then (assuming the switch next to the Sync socket is set to OUTPUT) the interface will drive Run/Stop = High and Clock pulses to the TR-808's Sync Socket pins and to its Internal Sequencer.

In this circumstance – the interface being driven both by note events for drum channels and by MIDI Sync – and assuming the TR-808 is in Pattern or Track Play mode, then the TR-808's Internal Sequencer will be playing patterns in accordance with this received MIDI Sync. Therefore, if the patterns you have the Internal Sequencer play contain drum notes, then the TR-808 will be playing both the notes received from MIDI In and those programmed into the pattern.

In this circumstance, if you do not want the Internal Sequencer to play any notes – so you will hear only those notes received from MIDI In – then please ensure that the currently selected pattern is clear (has no drum notes).

3 - Auxiliary Trigger Out

A 3.5mm mono socket is the output for this signal. If the machine has the Sound Mods, then this will be mounted on the right panel.

The output signal is a narrow (0.6 msec) pulse with a sharp positive going leading edge and a decaying tail. The voltage of this pulse varies between 0 and +10 volts depending on the velocity. This is suitable for triggering synths – if the velocity is high enough to make the voltage 5 volts or so, or whatever the threshold voltage of that synth's input is.

It may be used for other applications, such as making click tracks. The output is via a 10K resistor, so it cannot drive anything hard enough to upset any input. You can plug it straight into an amplifier or effects unit, but it is a large signal and you should start with the input volume turned down very low.

4 - TR-808 Trigger Outs

The TR-808 has three +15 Volt trigger outs, driven by the Accent, Hand Clap and Cowbell Internal Sequencer channels. These are not activated by the MIDI retrofit.

They are ideal for clocking appeggiators in keyboards – by programming beats on the trigger's drum channel. If you want to use the Hand Clap trigger out, whilst you are triggering the Hand Clap and Maracas via MIDI, you can put the Hand Clap / Maracas switch in mid position, so the HCP/MA notes you program in the Internal Sequencer do not drive either of these drum circuits.

5 - DIN/Roland Sync

Although DIN/Roland Sync uses the same 5 pin DIN (Deutsches Institut für Normung) connector as MIDI, the signals and pin assignments are totally different.

The middle pin is ground, and the two outside pins carry the two signals – Run/Stop and Clock.

The intermediate pins are used for special purposes between the TR-808, TR-606 and TB-303. (Also perhaps the MC-202 and MC-4.) On the TR-808 these intermediate pins are inputs only – Pin 4 is "Reset to start" and Pin 5 is "Fill in". When this MIDI Interface is installed, these two intermediate pins are used for MIDI In, and no longer perform these functions.

For normal sync purposes, the only signals that matter are Pin 1 "Run/Stop" and Pin 3 "Clock". These signals are either 0 or +5 volts – although it does not hurt them to drive up to +15 volts into them. Run/Stop rises at the start of the song and stays high until the end.

Clock goes high and then low – a square wave – 24 times for each quarter note (Pulses Per Quarter Note = PPQN), which in 4/4 is 96 per bar. This is the same rate as the MIDI Clock messages.

There is no formal specification for DIN/Roland Sync. One potential difficulty is if a device, such as a MIDI to DIN/Roland Sync converter, raises the Run/Stop signal and then, with little or no time delay, raises the Clock signal as part of the first clock pulse. Not every device is looking for the start of a clock pulse immediately after the rising edge of the Run/Stop signal. Unless special care is taken, a MIDI to DIN/Roland Sync converter might raise the Run/Stop signal, and then 1/3 millisecond later (MIDI involves 1/3ms between bytes) raises the Clock signal, then the slave device may not recognise this as the first clock pulse. Consequently, the slave device will run one clock pulse behind the rest of the system. The TR-808, TB-303 and TR-606 all require longer than this 1/3ms to start looking for the clock pulses. This interface (and likewise the MIDI system in the Devil Fish) is programmed to delay the first clock pulse for 2 milliseconds in order that the microcontrollers in these slave devices always has time after the rising edge of the Run/Stop signal to start looking for Clock pulses.

The TR-808 is typically a source of Roland Sync, but if you move the rear panel switch to "In" then it will depend on externally supplied DIN/Roland Sync. In this mode, its front panel Start/Stop switch and Tempo oscillator are not connected to anything.

Normally you will have the switch set to OUTPUT and the TR-808's internal tempo oscillator and Run/Stop system will drive Run/Stop and Clock onto the socket on the rear panel. Devices which receive DIN/Roland Sync have high impedance inputs (very light loads – think "limp-wristed") and anything – including the TR-808 – which drives Roland Sync is a low impedance source (solid drive – think "builders' labourer's handshake"). This means that one source can drive dozens of slave devices. All you need is to wire them up. The connections are all the same - pin 1 (outside), 2 (middle)and 3 (outside) of each plug goes to the same pins of all the other plugs. You do not need the intermediate pins 4 and 5. So you can solder up a long sync lead with as many 5 pin DIN plugs as you like, with no need for shielding and length restrictions, and drive a few dozen slaves.

6 - MIDI Reception to drive DIN/Roland Sync

When the rear panel switch next to the Sync socket is set to "In", neither the internal tempo system (controlled by the Tempo knob and the Start/Stop button), nor the MIDI Interface will drive the Sync socket or the TR-808's Internal Sequencer. The Internal Sequencer (which is implemented by the TR-808's microcontroller) senses its Run/Stop and Clock inputs from the pins of the Sync socket.

Therefore, when the switch is set to Input, which disconnects the internal drive of the Sync Socket's Run/Stop and Clock pins, what the Internal Sequencer sees in terms of Run/Stop and Clock depends entirely on what signals go to those pins via a cable you plug into this socket.

This section assumes that the switch is set to OUTPUT and that nothing external is driving these pins. In this section it is assumed that the aim is to run the TR-808 (and any slave devices via a special daisy-chain Sync Lead) either from its internal tempo system (controlled by the Tempo knob and the Start/Stop button) or from received MIDI Sync.

The MIDI Interface can always drive the Run/Stop and Clock signal inputs to the switch. Its outputs are logically ORed with the outputs of the internal tempo system. When either the internal tempo system's Run/Stop flip flop is On (The Start/Stop button toggles it between On and Off) OR the MIDI interface has its Run/Stop active, then, if the switch is closed the TR-808's internal sequencer and any slave devices will see that active Run/Stop.

Likewise the MIDI Interface's Clock signal is logically ORed with that of the internal tempo system, so clock pulses from either of these can go through the switch (assuming it is set to Output) and reach the Sync Socket, from where the TR-808's Internal Sequencer and any slave devices can see it.

It would be confusing and probably musically of no interest to have both the internal tempo system and the MIDI Interface generating Clock pulses at the same time.

So whenever the MIDI In system receives MIDI Clock bytes (or the similarly single byte messages for Start, Continue or Stop) it activates a signal which **halts the TR-808's internal tempo system's tempo oscillator**. Without this inhibition, the internal tempo oscillator runs at all times, though there is a special system to halt it briefly and then restart it (after a suitable ~2ms delay) when the Start/Stop button causes the Run/Stop flip-flop to go to the On state. This halting continues for about a second after the last such MIDI Sync message is received.

Assuming that the TR-808's internal tempo system has its Run/Stop flip-flop set to Off, if your MIDI master device, when not in Play mode, outputs MIDI clock bytes at its current tempo, (and assuming the switch next to the Sync socket is set to OUTPUT, and nothing else is driving the outer pins of the Sync socket) then you will see the TR-808's Internal Sequence responding to the clock pulses generated by the MIDI Interface (one pulse for each such MIDI Clock message byte), by the flashing of one the 16 LEDs (assuming you have the machine in Pattern Play mode). In this configuration, if you press the Start/Stop button, the internal tempo system's flip-flop will be set to On. This will drive the Run/Stop pin of the Sync socket, and so tell the Internal Sequencer and any slave devices to start playing.

Assuming you don't press the Start/Stop button, then the Run/Stop signal will only go high (and so cause the Internal Sequencer and any slave devices to play) if your MIDI master device emits a Start or a Continue byte. (The interface treats them both as Start messages.)

There is no way of disabling the MIDI Interface's Run/Stop, Clock and tempo oscillator disable functions. If for some reason you want to drive the TR-808 from some other source of sync, while the MIDI interface is receiving MIDI Clock messages, then you will need to set the rear panel Sync switch to INPUT and drive the TR-808 from an external source of Roland Sync. You won't be able to do that while simply plugging a conventional MIDI lead into the Sync socket. However, with a special lead (the Devil Fish Sync Lead) or with some arrangement you can make yourself, if you ensure that the intermediate pins get the MIDI signals and the outside pins get the Run/Stop and Clock signals with which you want to drive your TR-808's Internal Sequencer, then you will be able to achieve this.

7 - Normal use of MIDI Sync

This section assumes that the rear panel Sync switch is set to OUTPUT, that your MIDI lead is plugged into the Sync socket and that your MIDI master device is sending MIDI Sync, and perhaps notes which the interface will receive to drive drum channels.

If you want to drive the drum channels the TR-808 from a MIDI sequencer's note on messages, and do not want the TR-808 playing its own sequences, then before you start the MIDI sequencer, select a pattern on the TR-808 which has no notes programmed into it. Probably the most convenient arrangement is to keep pattern 1 empty, since in Pattern Play mode, this is the pattern which will be selected when the machine is turned on.

If the MIDI Interface is not receiving MIDI clock messages (or any other MIDI Sync messages: Start, Continue or Stop), due to there being either no MIDI lead plugged into it or due to that MIDI lead not carrying any MIDI Sync messages, then you use the TR-808 as you normally would: starting it, stopping it and controlling its speed from its front panel's Star/Stop button and Tempo knob.

If the MIDI Interface is receiving clocks, but has not received a Start or Continue code, then it will disable the TR-808's tempo oscillator and provide the TR-808 (via the Sync switch being set to OUTPUT, which causes it to drive the Sync Socket's Run/Stop and Clock outer pins) with Clock pulses, - one for each MIDI clock message. If the TR-808 is in pattern mode, then its LED will be flashing in time with the source of the MIDI clocks. If you press the Start/Stop button, the TR-808 and slave devices will start running according to the MIDI clock.

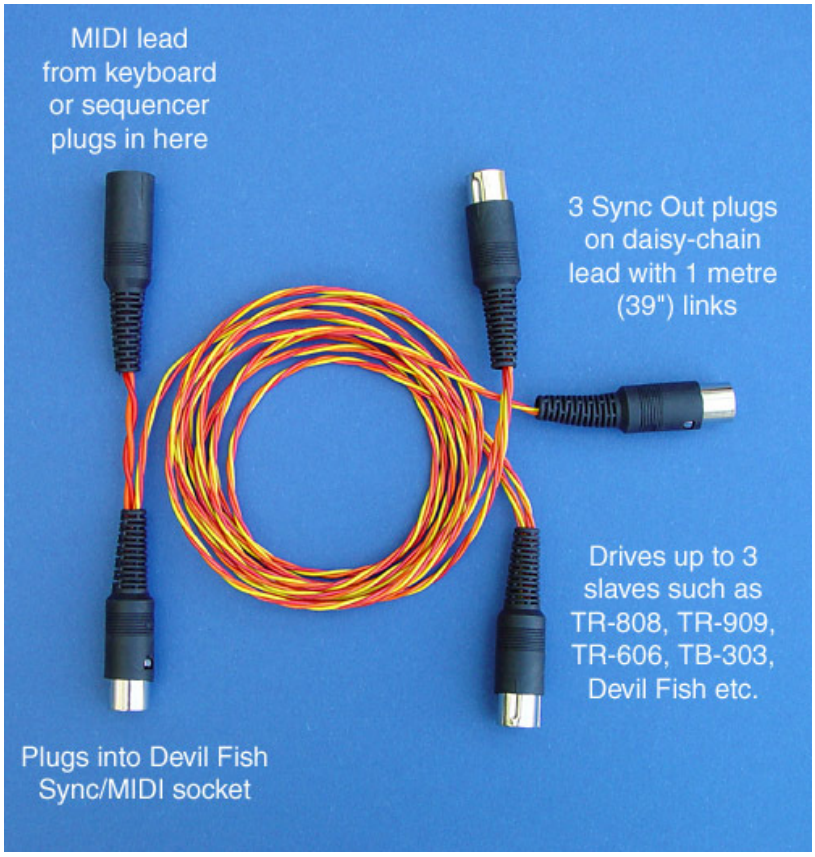
Normally, you would not use the Start/Stop button – you would want the TR-808 to start when the MIDI master tells it to. This will happen automatically. Either of the MIDI messages "Start" and "Continue" will raise the Run/Stop signal and set the TR-808 and slave devices running. When the interface receives the "Stop" command, it will drop the Run/Stop signal and so put the TR-808 and slave devices back into their "waiting", non-playing, mode.

8 - Use of MIDI Sync with the special Sync Cable – and a note about the ground pin of the Sync socket regarding MIDI In

The web page for this Sync Lead is:

http://www.firstpr.com.au/rwi/dfish/sync-lead/

This section assumes that the rear panel sync switch is set to OUTPUT and that your MIDI lead is plugged into the 5 pin DIN socket which is part of the Sync Lead. This is the top-left connector in the following image:



The bottom left plug is inserted into the Sync socket.

The other three 5 pin DIN plugs are used to send DIN/Roland Sync signals (Run/Stop and Clock, on the outer pins) to one, two or three slave devices.

MIDI receive devices do not use the centre pin, which is ground. MIDI Out sockets use it, and the shield of the MIDI cable is connected to this. The MIDI signal (an on/off signal carrying 31,250 bits per second) goes via two wires to the LED of an opto-coupler in the MIDI receive device. The light from this LED activates a photo transistor, so the on/off signal is conveyed optically, and with no actual electrical connection between the two devices. This is to avoid ground noise problems which would frequently occur if the grounds of the two devices were electrically connected.

In the TR-808, the Sync socket's centre pin is connected to ground via a 22 ohm resistor. In the scheme of things, 22 ohms is a low resistance, so quite a lot of current passes for a given voltage across it. This resistor and some associated circuitry seems to be for an

undocumented ability of the TR-808 to have its factory patterns loaded into the machine via the Sync socket at the factory.

With the MIDI interface, this resistor is retained. Strictly speaking, this is a violation of the MIDI specification, which requires a non-connect at this pin for any MIDI In socket. We need to retain this resistor so that the socket's DIN/Roland sync functions will still work if the driving device or one or more slave devices does not have any other ground connection in common with the TR-808.

Theoretically this could give rise to a ground noise problem between your MIDI master device and your TR-808. However, the 22 ohm resistor is high enough that any such noise will be very much attenuated, given that the TR-808's ground voltage is connected to other parts of the system by a much lower resistance.

As you can see from the above photo, there are only two wires from the top left socket to the bottom left plug. These are for the MIDI signal pins only – the intermediate pins on these connectors between the centre ground pin and the two outside pins.

When you are using the Sync Cable, there can be no ground noise problems between your MIDI master device and the TR-808, since there is no wire connecting the centre pin.

Once you have the Sync Cable connected, and assuming the Sync switch is set to OUTPUT, the Internal Sequencers of the TR-808 and all your slave devices will respond to the Start, Clock and Stop commands sent by your MIDI master device.

You can also use the Sync Cable as an ordinary DIN/Roland cable, without any MIDI, for any master device and up to three slave devices. It does not matter which of the four plugs are used for the master. All four plugs have their ground (centre pin), Run/Stop and Clock (outside pins) connected in parallel.

There's nothing magic about the choice of 3 slaves. The cable is designed to suit most people's needs. You can easily extend it to greater lengths or add more DIN/Roland plugs, just by connecting their centre and outside pins via three wires to those of the plug on the end.

9 - Firmware locations which can be configured

This section is intended primarily for electronic technicians.

The interface uses an Intel 80C198 microcontroller. This has a 16 bit CPU and an 8 bit external data bus. This is part of the 80C196 series which predate the PICs etc. which have internal RAM, ROM etc. They require an external RAM chip and an external EPROM for the firmware.

An advantage of this is that you can unplug the EPROM (a 27C256), read it with an EPROM programmer into a file on your computer, alter some values and program the altered file back into another EPROM (or the same one, if you erase it with suitably short wavelength UV light). Here are the locations of some bytes you can change in order to alter the receive channel and the assignment of MIDI note numbers to drum channels.

Address	Data	
2529	Ø9	Receive channel = 1Ø: ØØ to ØF means 1 to 16.
259Ø	ØØ	Low end of voltage range for Aux Trigger. This is in 55mv steps, and the output goes via a diode, so you could make it about 11 decimal before the lower end of the range is increased.
25AØ	C3 195	1Ø.7 volts, to give about 1Ø volts after the diode as the upper end of the range of voltages for the Aux Trigger output, when velocity = 127.
25BØ	1E 3Ø	Increase this up to FF for a longer Aux Trigger pulse.

The drum channels are numbered:

Hex	Decimal	Drum channel
ØØ	Ø	BD - Kick
Ø1	1	SD - Snare
Ø2	2	LT - Low Tom
Ø3	3	MT - Mid Tom
Ø4	4	HT - Hi Tom
Ø5	5	RS - Rim Shot / Claves
Ø6	6	HC - Hand Clap
Ø7	7	MA - Maracas
Ø8	8	CY - Cymbal
Ø9	9	OH - Open HiHat
ØA	1Ø	CH - Closed HiHat
ØB	11	AUX - Auxiliary Trigger Out

From the assembly listing, here are the current assignments of note numbers to drum channels. You can alter these as you like, using the drum channel numbers listed above.

Address	Data	Note number	Note and octave		
26AA	FF	24	C	0	3 below Middle C
26AB	FF	25	C#	0	
26AC	FF	26	D	0	
26AD	FF	27	D#	0	
26AE	FF	28	E	0	
26AF	FF	29	F	0	
26B0	FF	30	F#	0	
26B1	FF	31	G	0	
26B2	FF	32	G#	0	
26B3	FF	33	A	0	
26B4	FF	34	A#	0	
26B5	FF	35	B	0	
26B6	00	36	C	1	2 below Middle C
26B7	05	37	C#	1	
26B8	01	38	D	1	
26B9	06	39	D#	1	
26BA	01	40	E	1	
26BB	02	41	F	1	
26BC	0B	42	F#	1	
26BD	02	43	G	1	
26BE	FF	44	G#	1	
26BF	03	45	A	1	
26C0	0A	46	A#	1	
26C1	03	47	B	1	
26C2	04	48	C	2	1 below Middle C
26C3	09	49	C#	2	
26C4	04	50	D	2	
26C5	09	51	D#	2	
26C6	09	52	E	2	
26C7	FF	53	F	2	
26C8	FF	54	F#	2	
26C9	FF	55	G	2	
26CA	08	56	G#	2	
26CB	FF	57	A	2	
26CC	FF	58	A#	2	
26CD	FF	59	B	2	
26CE	FF	60	C	3	MIDDLE C
26CF	FF	61	C#	3	
26D0	04	62	D	3	
26D1	03	63	D#	3	
26D2	02	64	E	3	
26D3	FF	65	F	3	
26D4	FF	66	F#	3	
26D5	FF	67	G	3	
26D6	FF	68	G#	3	
26D7	FF	69	A	3	
26D8	07	70	A#	3	
26D9	FF	71	B	3	
26DA	FF	72	C	4	1 above Middle C
26DB	FF	73	C#	4	
26DC	FF	74	D	4	
26DD	05	75	D#	4	
26DE	FF	76	E	4	
26DF	FF	77	F	4	
26E0	FF	78	F#	4	

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26E1  FF   79    G       4

26E2  FF   8Ø    G#      4
26E3  FF   81    A       4
26E4  FF   82    A#      4
26E5  FF   83    B       4

26E6  ØC   84    C       5  2 above Middle C
26E7  FF   85    C#      5
26E8  FF   86    D       5
26E9  FF   87    D#      5

26EA  FF   88    E       5
26EB  FF   89    F       5
26EC  FF   9Ø    F#      5
26ED  FF   91    G       5

26EE  FF   92    G#      5
26EF  FF   93    A       5
26FØ  FF   94    A#      5
26F1  FF   95    B       5

26F2  FF   96    C       6  3 above Middle C
26F3  FF   97    C#      6
26F4  FF   98    D       6
26F5  FF   99    D#      6

26F6  FF   1ØØ   E       6
26F7  FF   1Ø1   F       6
26F8  FF   1Ø2   F#      6
26F9  FF   1Ø3   G       6

26FA  FF   1Ø4   G#      6
26FB  FF   1Ø5   A       6
26FC  FF   1Ø6   A#      6
26FD  FF   1Ø7   B       6

26FE  FF   1Ø8   C       7  4 above Middle C
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Document history

- 2018-06-17 Preliminary document, before I have made up any of the 2018 versions of this MIDI Interface. This is based on the 1996 documentation from when I installed several of the original interfaces into TR-808s.