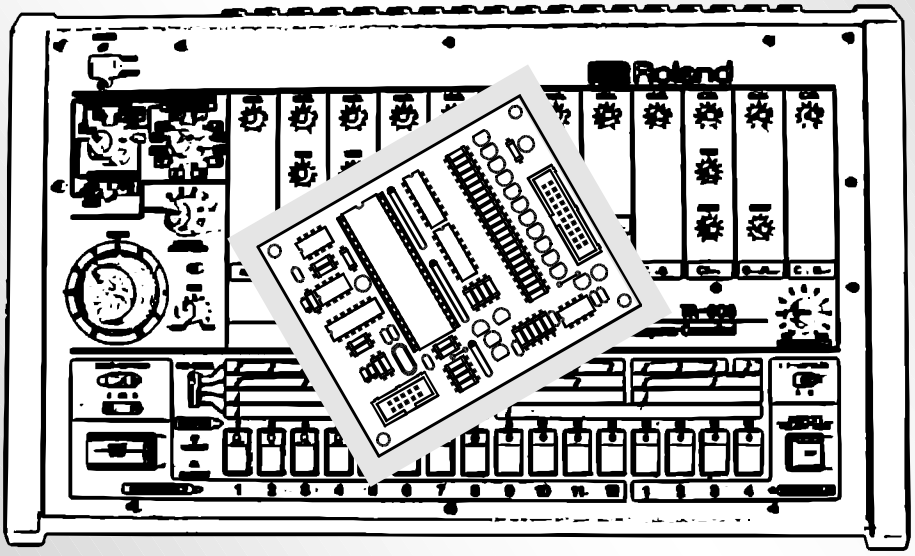
ROLAND TR-808 MIDI INTERFACE



Model 8-448 ver. 2.01

USER MANUAL

Contents

Appendices

Manufacturer :
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1. MIDI interface description

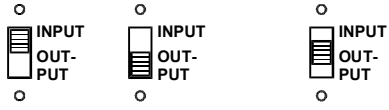
The TR-808 MIDI retrofit enables your Roland TR-808 to be synchronized with other MIDI devices and work like polyphonic velocity sensitive MIDI drum expander. More over all original features of the TR-808 are not changed.

2. Selection of TR-808 operation modes

The operation modes are selected by three-position "SYNC" switch on the rear panel:

a) The upper position "INPUT" and lower "OUTPUT" sets the TR-808 to receive or transmit the CV DIN-SYNC. The MIDI interface is switched off in both Upper and lower positions. All TR-808 functions remain the same as on original, not retrofitted instrument. TR-808 acts like DIN-SYNC master unit fully controlled with panel buttons or DIN-SYNC slave unit controlled by other DIN-SYNC machine respectively.

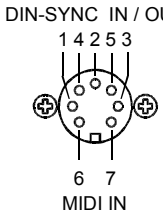
b) The middle position sets the TR-808 in MIDI mode. In this mode, The TR-808 is controlled via MIDI bus or controllers on TR-808 panel. LED embedded in "START/STOP" button lits in MIDI mode.



a) CV DIN-SYNC b) MIDI INPUT

2.1. Connection of TR-808 to MIDI system

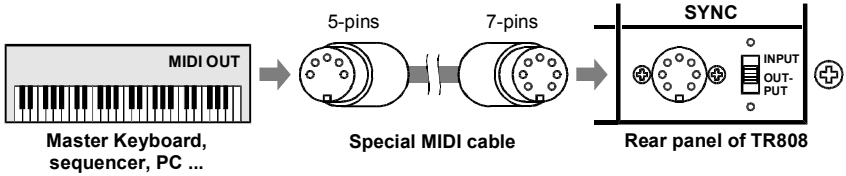
Device is connected to DIN-SYNC bus or to MIDI bus via 7-pin connector ("SYNC") on rear panel of TR-808. Pins 1 to 5 are used for DIN-SYNC signals, pins 6 and 7 are used for MIDI input. For the DIN-SYNC control ("SYNC" switch in "INPUT" or "OUTPUT" position) use standard 5-pin cable, same as with the original not retrofitted TR808. For the MIDI control ("SYNC" switch in central position), use special 7-pin to 5-pin reduction cable (part of interface delivery). For the TR808 use the 7-pin connector side, for MIDI output of sequencer (or master keyboard etc.) use the standard 5-pin connector side.



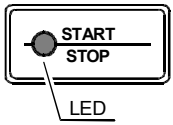
Front view :

1 - DIN-SYNC Start / Stop
2 - DIN-SYNC Ground
3 - DIN-SYNC Clock
4 - DIN-SYNC Fill In
5 - DIN-SYNC Reset / Start
6 - MIDI In (+)
7 - MIDI In (-)

Fig. 1 – Connection of TR-808 to MIDI system



2.2. Operation modes indication



In all working modes (DIN-SYNC and MIDI), the functionality of all original LEDs on TR-808 panel remains the same as on the non-retrofitted instrument.

The LED can indicate received MIDI commands too - this can be done by user with help of SysEx message. In this case, the LED always shortly blinks if acceptable MIDI command is received. But in the case of dense data flow, short blinks are just one constant extinction of the LED. The indication of received MIDI commands is disabled during factory setting.

3. MIDI implementation

TR-8080 retrofit uses standard MIDI channel data, common system data and System Exclusive Messages - see MIDI Implementation Chart in appendices.

3.1. Channel MIDI messages

MIDI channel 10 is used as a factory default. The channel number can be changed by MIDI System Exclusive Message if it is necessary. Acceptable are "Note On" and "Program Change" commands. All others channel commands are ignored.

3.1.1. Note-On commands

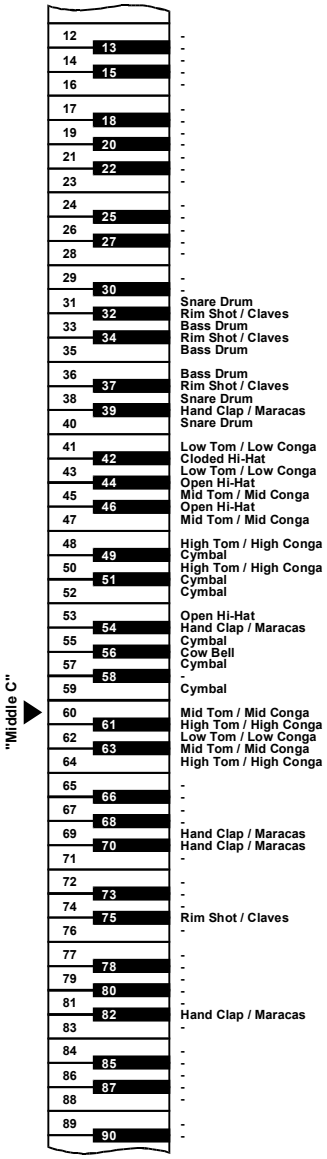
The interface receives MIDI notes from 12 (0Ch) to 90 (5Ah). Any of TR-808 tone generators (or none) can be assigned to every of these MIDI notes. Assigning of tone generators can be changed by System Exclusive Messages. Default factory setting is described in table 1 (see picture too), it corresponds to C/M, GM, GS, XG standards. Drum maps of these standards are described in table 5 for comparison.

Values of "Velocity" of Note-on commands (second data byte) are converted to level of assigned tone generators. It is possible to set the slope and the shift of conversion curve (dynamic range) of assigned tone generator. It can be done by MIDI System Exclusive Messages. Default factory setting is maximal dynamic range for all acceptable MIDI notes.

Table 1 –MIDI notes definition – default status after „Factory Reset"

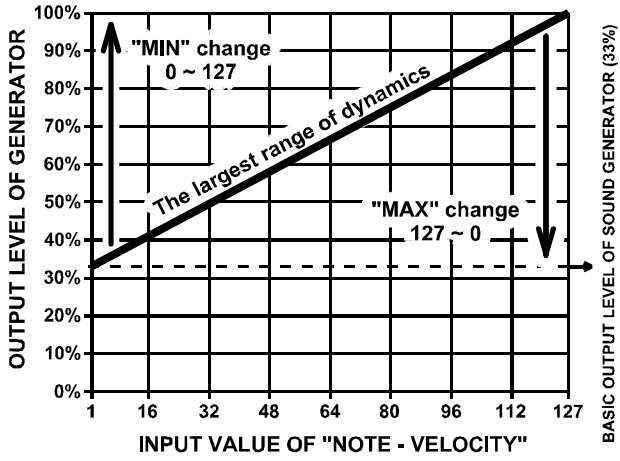
Note No.		Assigned tone generator				Note No.		Assigned tone generator			
dec	hex	No.	Instrument name	Level Slope		dec	hex	No.	Instrument name	Level Slope	
				Min	Max					Min	Max
12	0C	0	None	0	127	52	34	0	None	64	127
13	0D	0	None	0	127	53	35	10	Open Hi-Hat	0	32
14	0E	0	None	0	127	54	36	7	Hand Clap / Maracas	0	127
15	0F	0	None	0	127	55	37	9	Cymbal	32	96
16	10	0	None	0	127	56	38	8	Cow Bell	0	127
17	11	0	None	0	127	57	39	9	Cymbal	32	127
18	12	0	None	0	127	58	3A	0	None	0	127
19	13	0	None	0	127	59	3B	9	Cymbal	0	96
20	14	0	None	0	127	60	3C	3	Lo Tom / Lo Conga	0	127
21	15	0	None	0	127	61	3D	4	Mid Tom / Mid Conga	0	127
22	16	0	None	0	127	62	3E	5	Hi Tom / Hi Conga	0	127
23	17	0	None	0	127	63	3F	4	Mid Tom / Mid Conga	0	127
24	18	0	None	0	127	64	40	5	Hi Tom / Hi Conga	0	127
25	19	0	None	0	127	65	41	0	None	0	127
26	1A	0	None	0	127	66	42	0	None	0	127
27	1B	0	None	0	127	67	43	0	None	0	127
28	1C	0	None	0	127	68	44	0	None	0	127
29	1D	0	None	0	127	69	45	7	Hand Clap / Maracas	0	96
30	1E	0	None	0	127	70	46	7	Hand Clap / Maracas	0	127
31	1F	2	Snare Drum	0	64	71	47	0	None	0	127
32	20	6	Rim Shot / Claves	0	64	72	48	0	None	0	127
33	21	1	Bass Drum	0	64	73	49	0	None	0	127
34	22	6	Rim Shot / Claves	0	127	74	4A	0	None	0	127
35	23	1	Bass Drum	0	127	75	4B	6	Rim Shot / Claves	0	127
36	24	1	Bass Drum	0	127	76	4C	0	None	0	127
37	25	6	Rim Shot / Claves	0	127	77	4D	0	None	0	127
38	26	2	Snare Drum	0	127	78	4E	0	None	0	127
39	27	7	Hand Clap / Maracas	0	127	79	4F	0	None	0	127
40	28	2	Snare Drum	0	127	80	50	0	None	0	127
41	29	3	Lo Tom / Lo Conga	0	127	81	51	0	None	0	127
42	2A	11	Closed Hi-Hat	0	127	82	52	7	Hand Clap / Maracas	0	64
43	2B	3	Lo Tom / Lo Conga	0	127	83	53	0	None	0	127
44	2C	10	Open Hi-Hat	0	127	84	54	0	None	0	127
45	2D	4	Mid Tom / Mid Conga	0	127	85	55	0	None	0	127
46	2E	10	Open Hi-Hat	0	127	86	56	0	None	0	127
47	2F	4	Mid Tom / Mid Conga	0	127	87	57	0	None	0	127
48	30	5	Hi Tom / Hi Conga	0	127	88	58	0	None	0	127
49	31	9	Cymbal	32	127	89	59	0	None	0	127
50	32	5	Hi Tom / Hi Conga	0	127	90	5A	0	None	0	127
51	33	9	Cymbal	0	96						

Fig. 2 – Drum set



Requested dynamic range of selected MIDI note can be set by "Level Slope Min" and "Level Slope Max" parameters. "Level Slope Min" set output level of generator signal if "Velocity" is 1 and "Level Slope Max" set output level of generator signal if "Velocity" is 127. For all others values of "Velocity", output level of generator is linearly interpolated between "Level Slope Min" and "Level Slope Max" levels.

Fig. 3 – Setting of tone generators dynamics



Note: TR-808 tone generators reaction to the MIDI velocity is different for each particular drum sound. It corresponds to the original "Accent" setting range. Some of the sounds have large accent sensitivity range, some of the generators provide only minor changes with the higher accent level. This is done by the TR-808 construction and it is not possible to change it without major TR-808 circuitry modification.

3.1.2. Program (Patch) Change commands

MIDI Program Change command is used to select TR-808 MIDI control/synchronization via MIDI bus or controllers on TR-808 panel. Interface uses program numbers 1 (00h) to 13 (0Ch), all others numbers are ignored. Program No. 1 is default on every TR-808 start-up.

In dependence on selected program number, the combination of control/synchronization modes is used - see table 2. Note that tone generators of TR-808 can be triggered by MIDI notes and by internal sequencer of TR-808 simultaneously and

internal sequencer of TR-808 can be started and stopped by MIDI commands and by START/STOP button simultaneously too.

Table 2 – Valid program numbers

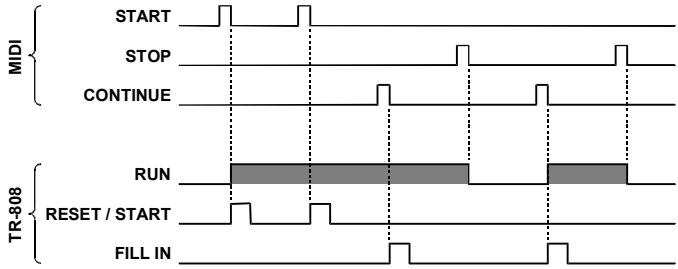
Program No.	Control mode			Notes
	Sound generators activity	Synchronization Source	Start / Stop commands	
1	Internal sequencer or MIDI Note	Internal only	Internal or MIDI	[1]
2	Internal sequencer or MIDI Note	MIDI clock	Internal or MIDI	[1]
3	Internal sequencer or MIDI Note	Internal only	Internal only	[1]
4	Internal sequencer or MIDI Note	MIDI clock	internal only	[1]
5	Internal sequencer or MIDI Note	Internal only	MIDI only	[1]
6	Internal sequencer or MIDI Note	MIDI clock	MIDI only	
7	Internal sequencer	Internal only	Internal or MIDI	[1]
8	Internal sequencer	MIDI clock	Internal or MIDI	[1]
9	Internal sequencer	Internal only	Internal only	[1] [2]
10	Internal sequencer	MIDI clock	Internal only	[1]
11	Internal sequencer	Internal only	MIDI only	[1]
12	Internal sequencer	MIDI clock	MIDI only	
13	MIDI notes only	None	None	[3]

[1]) Internal mode means that device can be controlled by buttons and knobs on panel of device.
[2]) MIDI interface turned off - TR-808 works with internal sequencer only.
[3]) TR-808 works as a MIDI expander.
[4]) Program numbers higher than 13 are ignored.

3.2. Common System Messages

TR-808 retrofit use "MIDI Clock", "Start", "Stop" a "Continue" MIDI common system messages. They are used to control the internal sequencer tempo, start and stop commands in dependence on selected program number. The following picture is showing the TR-808 reaction to "Start", "Stop" and "Continue" commands.

Fig. 4 – Reaction of TR-808 to system MIDI commands



For the proper synchronization, the "MIDI Clock" tempo must be between 40 and 260 BPM.

3.3. System Exclusive Messages

3.3.1. Structure of System Exclusive Messages

If necessary, TR-808 MIDI interface can be reprogrammed by user with help of SysEx messages. Transmitting of "Bulk Dump Load" SysEx message from host system to internal memory of the interface can change system parameters (channel for MIDI communication setting and mode of LED indicator setting) or it can change the table of tone generators assigning and their dynamic range setting for requested MIDI note (drum map definition).

"Bulk Dump Load" message format is always:

F0h	Start SysEx
00h 20h 21h	Mfr ID
7Fh	Device ID
61h	Model ID
20h	Command (Bulk Dump Load)
aa	Address
dd dd dd	Datablock
xx	Checksum
F7h	End SysEx

Address **aa** selects group of parameters for changes. Valid range is 0 to 79 (00h to 4Fh). Datablock **dd dd dd** always includes three databytes. Their values determine values of parameters given by address **aa**. Checksum **xx** is created in standard way - seven-bit sum of bytes from "Model ID" up to "Checksum" included has to equal to zero.

If address **aa** is 0 to 78 (00h to 4Eh), parameters for assignig of tone generator and its dynamic range to some of MIDI notes are selected. Address 0 (00h) selects note No. 12, address No. 1 (01h) selects note No. 13 etc. up to addres 78 (4Eh) which selects note No. 90.

- First databyte in block is then number of assigned tone generator. Valid range is 0 to 11 (00h to 0Bh). If zero is selected, none generator is assigned to selected MIDI note. Values 1 to 11 defines tone generator as described in table 3.
- Second databyte in block sets minimal output level of tone generator (for "Velocity" = 1). Its value can be in range from 0 to 127, but the value must not be greater than value of third databyte.
- Third databyte in block sets maximal output level of tone generator (for "Velocity" = 127). Its value can be in range from 0 to 127, but the value must not be lower than value of second databyte.

Group of system parameters is selected for address **aa** equal to 79 (4Fh).

- First databyte in block then sets the number of MIDI channel selected for data receiving. Valid range is from 0 to 15 (from 00h to 0Fh) for MIDI channel from 1 to 16 selection.
- Second databyte in block disables (value equal to 0) or enables (value equal to 1) the indicaton of received MIDI commands by LED embedded in START / STOP button.
- Third databyte is not used, it must be always equal to 0 (00h).

Table 3 – Numbers of tone generators			
Number		**Tone generator**	
dec	**hex**	**Name**	**Symbol**
0	00	None – Note On command is ignored	-
1	01	BASS DRUM	BD
2	02	SNARE DRUM	SD
3	03	LOW TOM / LOW CONGA	LT / LC
4	04	MID TOM / MID CONGA	MT / MC
5	05	HIGH TOM / HIGH CONGA	HT / HC
6	06	RIM SHOT / CLAVES	RS / CL
7	07	HAND CLAP / MARACAS	CP / MA
8	08	COW BELL	CB
9	09	CYMBAL	CY
10	0A	OPEN HI-HAT	OH
11	0B	CLOSED HI-HAT	CH

Example 1 : MIDI channel changed to 2 and indication of received MIDI commands enabled

Start SysEx	= **F0h**	
Mfr ID	= **00h 20h 21h**	
Device ID	**= 7Fh**	
Model ID	**= 61h**	
Command	**= 20h**	
Address	= **4Fh**	→ system parameters
Data 1	= **01h**	→ MIDI channel No. 1
Data 2	= **01h**	→ indication turned on
Data 3	= **00h**	→ not used byte
Checksum	= **2Eh**	→ 61h + 20h + 4Fh + 01h + 01h + 00h + 2Eh = 00h
End SysEx	= **F7h**	

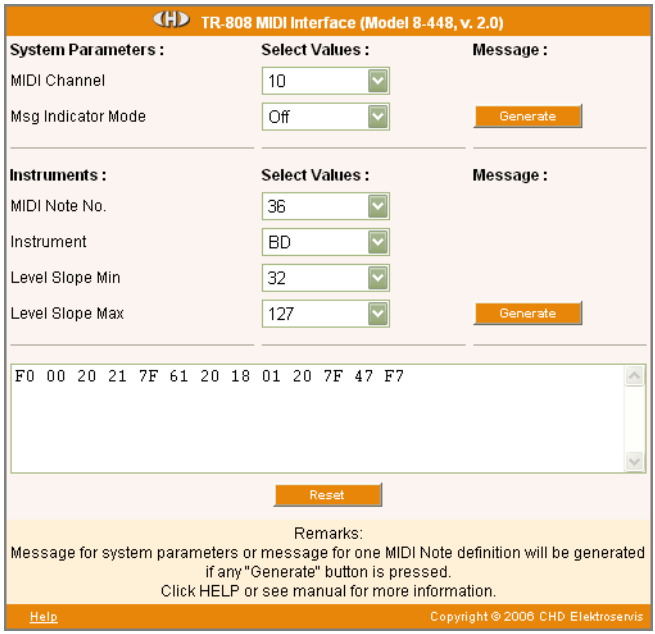
Example 2 : Tone generator COW BELL assigned to MIDI note No. 13, dynamics turned off, middle output level of generator selected

Start SysEx	= **F0h**	
Mfr ID	= **00h 20h 21h**	
Device ID	**= 7Fh**	
Model ID	**= 61h**	
Command	**= 20h**	
Address	= **01h**	→ definition of MIDI note No.13
Data 1	= **08h**	→ tone generator COW BELL assigned
Data 2	= **40h**	→ dynamics off, middle level selected (Level Slope Min)
Data 3	= **40h**	→ dynamics off, middle level selected (Level Slope Max)
Checksum	= **76h**	→ 61h + 20h + 01h + 08h + 40h + 40h + 76h = 00h
End SysEx	= **F7h**	

Example 3 : Tone generator CYMBAL assigned to MIDI note No. 89, upper border of dynamic range limited to 50%

Start SysEx	= **F0h**	
Mfr ID	= **00h 20h 21h**	
Device ID	**= 7Fh**	
Model ID	**= 61h**	
Command	**= 20h**	
Address	= **4Dh**	→ definition of MIDI note No. 89
Data 1	= **09h**	→ tone generator CYMBAL assigned
Data 2	= **00h**	→ lower border of dynamic range without limitation (Level Slope Min)
Data 3	= **40h**	→ upper border of dynamic range is 50% (Level Slope Max)
Checksum	= **69h**	→ 61h + 20h + 4Dh + 09h + 00h + 40h + 69h = 00h
End SysEx	= **F7h**	

3.3.2. Creating of System Exclusive Messages



We have prepared software generator for simple creating of SysEx messages for programming of TR-808 interface. Any programming message can be created with help of this generator without difficult calculating with hexadecimal numbers. Generator is based on Java scripts so it is possible to use it with any operational system of PC, but any of browsers (MS-Explorer, Netscape, etc.) must be installed in the computer.

Program is available on supplemental CD ROM. Window of generator opens after "TR-808.html" file opening. In this window, values of all parameters can be set by select-boxes in middle column of table. After setting of requested values of parameters, generator is started by clicking on correspond „Generate“ button. MIDI System Exclusive Messages are generated in hexadecimal form as a text. Now it is necessary to transfer the message from text field of generator to SysEx Msg editor of any musical software (Cubase™, Cakewalk™, Sonar™, Midi OX etc.) and than to transmit it to TR-808. Text of generated message can be transferred with help of clipboard for example.

Other way is to use predefined Studio Ware panel for Cakewalk™ or Sonar™ software. Panel is available on supplemental CD ROM. If you choose to use the "Studio Ware" panel, it is necessary to copy CHD_TR808.CakewalkStudioWare file from CD-ROM to your computer's hard disk.

Requested values of all parameters can be set simply in "SETTING – SYSTEM" and "ASSIGN INSTRUMENTS" windows. New values of parameters are then stored in user memory of TR-808 by pressing of "SEND" button.

APPENDICES

A. Warranty conditions

The equipment is provided with thirty-month warranty starting from the date of the equipment take-over by the customer. This date must be specified on warranty list together with dealer's confirmation.

During this period of time, all defects of equipment or its accessories, caused by defective material or faulty manufacturing, will be removed free of charge.

Warranty repair is asserted by the customer against the dealer.

Warranty period is to be extended for the time period, during which the product was under the warranty repair.

The relevant legal regulations take effect in case of cancellation of purchase contract.

The customer will lose the right for free warranty repair, if he will not be able to submit properly filled out warranty list or if the defects of the product had been caused by :

- unavoidable event (natural disaster),
- connecting the device to the incorrect supply voltage,
- inputs or outputs overloading by connecting the signals source or load source with not-corresponding characteristics etc.,
- faulty equipment operation, which is at variance with the instructions referred-to in the operating manual,
- mechanical damage caused by consumer during transportation or usage of equipment,
- unprofessional interference with the equipment or by equipment modification without manufacturer's approval.

B. Error indication

Table 4 – Error status

Error No.	Error description		Number of LED blinks
	Name	Indicated problem	
1	EEPROM Malfunction	MIDI interface internal memory does not communicate with CPU - reset the interface by switching the TR-808 off and on.	1
2	EEPROM Busy	MIDI interface internal memory is reacting too slowly to the CPU requirements -reset the interface by switching the TR-808 off and on.	2
3	EEPROM Failed Cell	Invalid data in the internal memory MIDI cell - reset the interface by switching the TR-808 off and on.	3
4	MIDI Buffer Overflow	MIDI data loss at the MIDI input - too much MIDI data has been sent to the instrument.	4
5	DAC Malfunction	Internal D/A converter of the MIDI interface does not communicate with CPU - reset the interface by switching the TR-808 off and on.	5

The LED embedded in the START / STOP button is used as an error indicator - blinking LED is indicating the error status. The number of LED blinks is indicating the error number (see table 4). To reset the interface switch the TR-808 off and then on. If the same error status is now repeated, contact the authorized service center.

C. Drum maps of C/M, GM, GS and XG standards

Table 5 – C/M , GM, GS, XG standards				
Note No.	Standard			
	C/M Instruments	GM Instruments	GS Instruments	XG Instruments
12	-	-	-	-
13	-	-	-	Muted Surdo
14	-	-	-	Open Surdo
15	-	-	-	High Q
16	-	-	-	Whip Slap
17	-	-	-	Scratch Push
18	-	-	-	Scratch Pull
19	-	-	-	Finger Slap
20	-	-	-	Click Noise
21	-	-	-	Metronome Click
22	-	-	-	Metronome Bell
23	-	-	-	Seq Click Low
24	-	-	-	Seq Click High
25	-	-	Snare Roll	Brush Tap
26	-	-	Finger Slap	Brush Swirl Low
27	-	-	High Q	Brush Slap
28	-	-	Slap	Brush Swirl High
29	-	-	Scratch Push	Snare Roll
30	-	-	Scratch Pull	Castanet
31	-	-	Sticks	Snare Low
32	-	-	Square Click	Sticks
33	-	-	Metronome Click	Bass Drum Low
34	-	-	Metronome Bell	Open Rim Shot
35	Accoustic Bass Drum	Accoustic Bass Drum	Bass Drum 2	Bass Drum Mid
36	Accoustic Bass Drum	Bass Drum 1	Bass Drum 1	Bass Drum High
37	Rim Shot	Side Stick	Side Stick	Side Stick
38	Accoustic Snare Drum	Accoustic Snare Drum	Snare Drum 1	Snare Drum Mid
39	Hand Clap	Hand Clap	Hand Clap	Hand Clap
40	Electric Snare Drum	Electric Snare Drum	Snare Drum 2	Snare Drum High
41	Low Tom	Low Floor Tom	Low Tom 2	Low Floor Tom
42	Closed Hi-Hat	Closed Hi-Hat	Closed Hi-Hat	Closed Hi-Hat
43	Low Tom	High Floor Tom	Low Tom 1	High Floor Tom
44	Open Hi-Hat 2	Pedal Hi-Hat	Pedal Hi-Hat	Pedal Hi-Hat
45	Mid Tom	Low Tom	Mid Tom 2	Low Tom
46	Open Hi-Hat 1	Open Hi-Hat	Open Hi-Hat	Open Hi-Hat
47	Mid Tom	Low-Mid Tom	Mid Tom 1	Low-Mid Tom
48	High Tom	Hi-Mid Tom	High Tom 2	Hi-Mid Tom
49	Crash Cymbal	Crash Cymbal 1	Crash Cymbal 1	Crash Cymbal 1
50	High Tom	High Tom	High Tom 1	High Tom
51	Ride Cymbal	Ride Cymbal 1	Ride Cymbal 1	Ride Cymbal 1
52	-	Chinese Cymbal	Chinese Cymbal	Chinese Cymbal
53	-	Ride Bell	Ride Bell	Ride Cymbal Cup
54	Tambourine	Tambourine	Tambourine	Tambourine

Table 5 – continue				
Note No.	Standard			
	C/M Instruments	GM Instruments	GS Instruments	XG Instruments
55	-	Splash Cymbal	Splash Cymbal	Splash Cymbal
56	Cow Bell	Cow Bell	Cow Bell	Cow Bell
57	-	Crash Cymbal 2	Crash Cymbal 2	Crash Cymbal 2
58	-	Vibraslap	Vibraslap	Vibraslap
59	-	Ride Cymbal 2	Ride Cymbal 2	Ride Cymbal 2
60	High Bongo	High Bongo	High Bongo	High Bongo
61	Low Bongo	Low Bongo	Low Bongo	Low Bongo
62	Muted High Conga	Muted High Conga	Muted High Conga	Muted High Conga
63	Open High Conga	Open High Conga	Open High Conga	Open High Conga
64	Low Conga	Low Conga	Low Conga	Low Conga
65	High Timbale	High Timbale	High Timbale	High Timbale
66	Low Timbale	Low Timbale	Low Timbale	Low Timbale
67	High Agogo	High Agogo	High Agogo	High Agogo
68	Low Agogo	Low Agogo	Low Agogo	Low Agogo
69	Cabasa	Cabasa	Cabasa	Cabasa
70	Maracas	Maracas	Maracas	Maracas
71	Samba Whistle Short	Short Whistle	Short High Whistle	Samba Whistle High
72	Samba Whistle Long	Long Whistle	Long Low Whistle	Samba Whistle Low
73	Quijada	Short Guiro	Short Guiro	Short Guiro
74	-	Long Guiro	Long Guiro	Long Guiro
75	Claves	Claves	Claves	Claves
76	-	High Wood Block	High Wood Block	High Wood Block
77	-	Low Wood Block	Low Wood Block	Low Wood Block
78	-	Muted Cuica	Muted Cuica	Muted Cuica
79	-	Open Cuica	Open Cuica	Open Cuica
80	-	Muted Triangle	Muted Triangle	Muted Triangle
81	-	Open Triangle	Open Triangle	Open Triangle
82	-	-	Shaker	Shaker
83	-	-	Jingle Bell	Jingle Bell
84	-	-	Bell Tree	Bell Tree
85	-	-	Castanets	-
86	-	-	Muted Surdo	-
87	-	-	Open Surdo	-
88	-	-	-	-
89	-	-	-	-
90	-	-	-	-

D. MIDI Implementation Chart

Device : **TR-808 MIDI Interface**
Model : **8-448**

Date : 4 / 2006
Version : 2.0

Function		Transmission	Reception	Remarks
Basic	Default	**X**	10	[1])
Channel	Changed	**X**	1~16	
Mode	Default	**X**	Mode 3	Not Altered
	Messages	**X**	**X**	
Note Number		**X**	12~90	[2])
Velocity	Note ON	**X**	**O**	
	Note OFF	**X**	**X**	
After	Key's	**X**	**X**	
Touch	Channel's	**X**	**X**	
Pitch Bender		**X**	**X**	
Control Changes		**X**	**X**	
Program Change		**X**	0~12	[2])
System Exclusive		**X**	**O**	See System Exclusive description
System	Song Position	**X**	**X**	
Common	Song Select	**X**	**X**	
	Tune	**X**	**X**	
System	Clock	**X**	**O**	
Real Time	Command	**X**	**O**	
Others	Local ON/OFF	**X**	**X**	
	All Notes Off	**X**	**X**	
	Active Sensing	**X**	**X**	
	Reset	**X**	**X**	

Notes :
[1]) Can be changed by SysEx Msg
[2]) Numbers out of range are ignored

Mode 1 : **OMNI ON, POLY**
Mode 2 : **OMNI ON, MONO**
Mode 3 : **OMNI OFF, POLY**
Mode 4 : **OMNI OFF, MONO**

O : Yes
X : No

TR-808 MIDI INTERFACE

Model 8-448 ver. 2.01

USER MANUAL

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