

MIDI Solutions
PROFESSIONAL SERIES

R8

8-OUTPUT MIDI-CONTROLLED RELAY ARRAY

OPERATING INSTRUCTIONS

MIDI Solutions R8 Operating Instructions M326

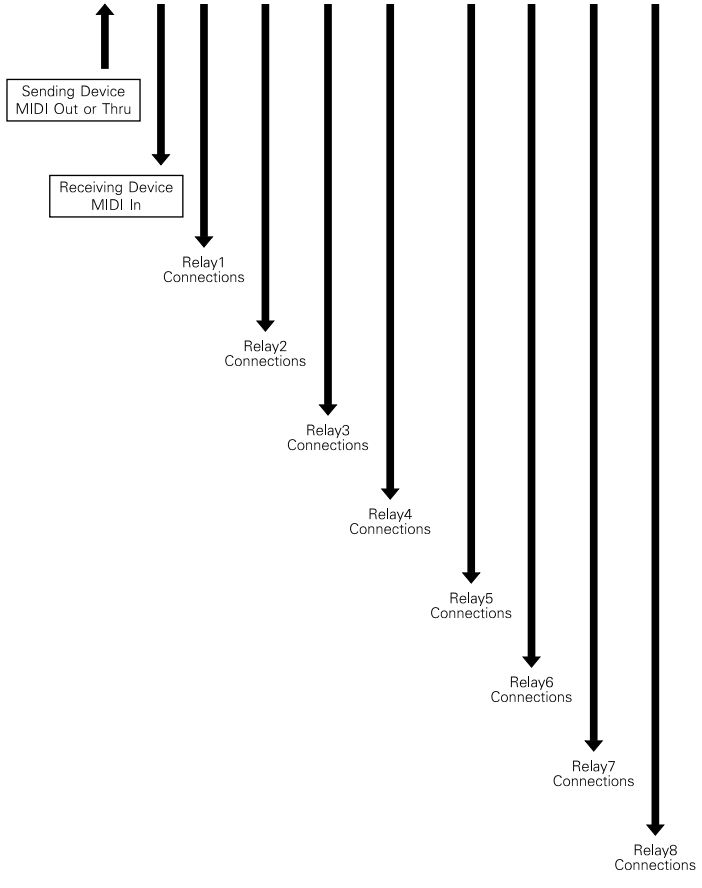
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MIDI Solutions, Inc.
P.O. Box 3010
Vancouver, BC Canada V6B 3X5
www.midisolutions.com

INTRODUCTION

Congratulations on your purchase of the MIDI Solutions R8 8-output MIDI-controlled relay array. The MIDI Solutions R8 contains eight MIDI-controlled relays, enabling footswitch inputs or other momentary connections to be placed under MIDI control. Each of the eight relays can be programmed to respond to unique Note, Controller, Program Change, and System Exclusive messages. All programmed settings are retained in non-volatile memory. The R8 is MIDI-powered and requires no batteries or power supply to operate.



CONNECTIONS

Connect the **In** of the R8 to the MIDI Out of the device being used to program the R8. This is the only connection necessary when programming the R8 (the MIDI Out and Rel1-8 may be left disconnected). Once the R8 is programmed, it may be inserted anywhere in the MIDI setup. The relays (**Rel1-8**) can be connected directly to footswitch inputs using standard 1/4" phone cables. If the relays are being connected to devices other than footswitch inputs, insure that the switching requirements do not exceed the relay ratings on page 11. Connect the **In** of the R8 to the MIDI Out or Thru of the sending MIDI device. Connect the **Out** of the R8 to the MIDI In of the receiving MIDI device. It is recommended that the number of MIDI Solutions products chained together between any two MIDI devices be limited to five.

OPERATION

The R8's MIDI Indicator LED will light as soon as the sending device is turned on, and flashes whenever MIDI data passes through the unit. The R8 responds to MIDI messages according to its programmed settings described on the following pages. All MIDI messages appearing at the MIDI input are sent to the MIDI output. The relays retain their present state when power is removed from the unit.

PROGRAMMING

The R8 is programmed by sending it MIDI System Exclusive programming messages from a device capable of creating System Exclusive messages, such as a computer-based MIDI sequencer. These commands are described in detail on the following pages. For decimal to hexadecimal conversions, see the chart on page 10. Upon receipt of a System Exclusive programming message, the MIDI indicator LED turns off briefly and then flashes rapidly for about one second to indicate that the setting has been stored. Settings are retained in non-volatile memory until reprogrammed with new settings.

PROGRAMMING COMMANDS

Clear Settings

- ▶ To clear all of the R8's settings, send it the following System Exclusive programming message:

F0 00 00 50 26 00 F7 (all values in Hexadecimal)

It is advisable to send the Clear Settings command to the R8 prior to programming the unit to insure that all previous settings are cleared.

Dump Settings

- ▶ To dump all of the R8's current settings, send it the following System Exclusive message:

F0 00 00 50 26 10 F7 (all values in Hexadecimal)

Upon receipt of this command the R8 will dump all of its current settings to its MIDI Out.

Link Settings

- ▶ To link together all of the Note and Controller settings of a given relay, send the R8 the following System Exclusive programming message:

F0 00 00 50 26 05 rr aa F7 (all values in Hexadecimal)

rr = relay# (00 for Rel1 through to 07 for Rel8)

aa is set as follows:

aa = 00: Link OFF - each Note and Controller setting for that relay operates independently

aa = 01: CLOSED Link - Relay closes only if conditions of all Note and Controller settings for that relay are in the closed state

aa = 02: OPEN Link - Relay opens only if conditions of all Note and Controller settings for that relay are in the open state

Note

- To program the R8 to respond to a Note message, send it the following System Exclusive programming message:

F0 00 00 50 26 01 rr aa nn cc (pp) F7

All bytes must be in Hexadecimal format (see p. 10). **pp** is optional.

rr = relay# (00 for Rel1 through to 07 for Rel8)

aa is set as follows:

if **pp** is omitted then:

aa = 00: relay OPEN for Note-ons and Note-offs

aa = 01: relay CLOSED for Note-ons and Note-offs

aa = 02: relay CLOSED for Note-ons, OPEN for Note-offs

aa = 03: relay OPEN for Note-ons, CLOSED for Note-offs

if **pp** is included then:

aa = 00: relay produces CLOSED pulse for Note-ons

aa = 01: relay produces CLOSED pulse for Note-offs

aa = 02: relay produces OPEN pulse for Note-ons

aa = 03: relay produces OPEN pulse for Note-offs

nn = MIDI Note#

cc = MIDI channel (see p. 10)

pp = pulse width in 8 ms increments

The R8 will accept up to 10 Note or Control Change settings per relay.

Example

To program the R8 to close Rel6 when middle C is pressed and open when it is released on any MIDI channel, set **rr = 05** (Rel6), **aa = 02** (relay CLOSED for Note-ons, OPEN for Note-offs), **nn = 3C** (3C is the Hexadecimal value for 60, which is the Note# of middle C - see conversion table p. 10), and **cc = 7F** (see table p. 10). These values result in the following System Exclusive programming message:

F0 00 00 50 26 01 05 02 3C 7F F7

Control Change

- To program the R8 to respond to a Control Change message, send it the following System Exclusive programming message:

F0 00 00 50 26 02 rr aa nn cc (tt pp) F7 (all values in Hex)

All bytes must be in Hexadecimal format (see p. 10). **tt** and **pp** are optional.

rr = relay# (00 for Rel1 through to 07 for Rel8)

aa is set as follows:

if **pp** is omitted then:

aa = 00: relay OPEN for *all* control values

aa = 01: relay CLOSED for *all* control values

aa = 02: relay CLOSED *above* threshold, OPEN *below* threshold

aa = 03: relay OPEN *above* threshold, CLOSED *below* threshold

if **pp** is included then:

aa = 00: relay produces CLOSED pulse *above* threshold

aa = 01: relay produces CLOSED pulse *below* threshold

aa = 02: relay produces OPEN pulse *above* threshold

aa = 03: relay produces OPEN pulse *below* threshold

nn = MIDI Control Change#

cc = MIDI channel (see p. 10)

tt = Threshold value (threshold defaults to 64 if this byte omitted)

pp = pulse width in 8 ms increments

The R8 will accept up to 10 Note or Control Change settings per relay.

Example

To program the R8 to produce a 400 ms closed pulse on Rel8 every time the volume on MIDI channel 16 drops below a value of 10, set **rr = 07** (Rel8), **aa = 01** (relay produces CLOSED pulse below threshold), **nn = 07** (7 is the Control Change# for Volume - see table p. 10), **cc = 0F** (see table p. 10), **tt = 0A** (0A is the hexadecimal value for 10 which is the desired threshold), and **pp = 32** (32 is the hexadecimal value for 50, and 50 x 8 ms = 400 ms). These values result in the following System Exclusive programming message:

F0 00 00 50 26 02 07 01 07 0F 0A 32 F7

Program Change

- ▶ To program the R8 to respond to Program Change messages, send it the following System Exclusive programming message:

F0 00 00 50 26 03 rr (aa pp) cc nn nn ... nn F7 (all values in Hex)

All bytes must be in Hexadecimal format (see p. 10). **aa pp** is optional.

rr = relay# (00 for Rel1 through to 07 for Rel8)

if **aa pp** is omitted then relays CLOSE for all **nn** and OPEN for all other program numbers. Otherwise, **aa pp** are set as follows:

aa = 10: relay produces OPEN pulse for all **nn**

aa = 11: relay produces CLOSED pulse for all **nn**

pp = pulse duration in 8 ms increments

cc = MIDI channel (see p. 10)

nn nn ... nn = program numbers for relay to respond to

New Program Change settings overwrite previous settings.

- Example:** To program the R8 to close Rel1 for programs 5, 7, and 12 on channel 10, send it the following System Exclusive programming message:

F0 00 00 50 26 03 00 09 05 07 0C F7

- If program numbers of the receiving device start at 1 instead of 0, then send the following message:

F0 00 00 50 26 03 00 09 04 06 0B F7

System Exclusive

- ▶ To program the R8 to CLOSE upon receiving a System Exclusive message, send it the following programming messages:

F0 00 00 50 26 04 rr 01 (pp) F7, F0 ... F7 (20 bytes max.)

where **F0 ... F7** is the user-defined Sys. Ex. message

All bytes must be in Hexadecimal format (see p. 10). **pp** is optional

rr = relay# (00 for Rel1 through to 07 for Rel8)

pp = pulse width in 8 ms increments (CLOSED pulse)

- ▶ To program the R8 to OPEN upon receiving a System Exclusive message, send it the following programming messages:

F0 00 00 50 26 04 rr 00 (pp) F7, F0 ... F7 (20 bytes max.)

where **F0 ... F7** is the user-defined Sys. Ex. message

All bytes must be in Hexadecimal format (see p. 10). **pp** is optional

rr = relay# (00 for Rel1 through to 07 for Rel8)

pp = pulse width in 8 ms increments (OPEN pulse)

- Example:** To program the R8 to CLOSE Rel8 when the MIDI Machine Control *Play* command (F0 7F 7F 06 02 F7) is received, and OPEN it when the *Stop* command (F0 7F 7F 06 01 F7) is received, send it the following:

F0 00 00 50 26 04 07 01 F7 F0 7F 7F 06 02 F7

F0 00 00 50 26 04 07 00 F7 F0 7F 7F 06 01 F7

MIDI CHANNEL TABLE

cc must be set according to the following table:

Chan.	cc	Chan.	cc	Chan.	cc
1	- 00	7	- 06	13	- 0C
2	- 01	8	- 07	14	- 0D
3	- 02	9	- 08	15	- 0E
4	- 03	10	- 09	16	- 0F
5	- 04	11	- 0A	ALL	- 7F
6	- 05	12	- 0B		

MIDI CONTROLLER TABLE

Decimal	Hex	Control Function	Decimal	Hex	Control Function
0	00H	Bank Select	80-83	50-53H	General Purpose Controllers (#'s 5-8)
1	01H	Modulation wheel or lever	84	54H	Portamento Control
2	02H	Breath Controller	85-90	55-5AH	Undefined
3	03H	Undefined	91	5BH	Effects 1 Depth (formerly External Effects Depth)
4	04H	Foot controller	92	5CH	Effects 2 Depth (formerly Tremolo Depth)
5	05H	Portamento time	93	5DH	Effects 3 Depth (formerly Chorus Depth)
6	06H	Data entry MSB	94	5EH	Effects 4 Depth (formerly Celeste (Detune) Depth)
7	07H	Channel Volume	95	5FH	Effects 5 Depth (formerly Phaser Depth)
8	08H	Balance	96,97	60H,61H	Data increment, Data decrement
9	09H	Undefined	98,99	62H,63H	Non-Registered Parameter Number LSB, MSB
10	0AH	Pan	100,101	64H,65H	Registered Parameter Number LSB, MSB
11	0BH	Expression Controller	102-119	66-77H	Undefined
12-13	0C-0DH	Effect Controls 1-2	120-127	78-7FH	Reserved for Channel Mode Messages
14-15	0E-0FH	Undefined			
16-19	10-13H	General Purpose Controllers (#'s 1-4)			
20-31	14-1FH	Undefined			
32-63	20-3FH	LSB values for 0-31			
64	40H	Damper pedal (sustain)			
65	41H	Portamento On/Off			
66	42H	Sostenuto			
67	43H	Soft pedal			
68	44H	Legato Fsw (vv=00-3F: Normal, 40-7F: Legato)			
69	45H	Hold 2			
70	46H	Sound Controller 1 (default: Sound Variation)			
71	47H	Sound Controller 2 (default: Timbre/Harmonic Content)			
72	48H	Sound Controller 3 (default: Release Time)			
73	49H	Sound Controller 4 (default: Attack Time)			
74	4AH	Sound Controller 5 (default: Brightness)			
75-79	4B-4FH	Sound Controllers 6-10 (no defaults)			

Dec/Hex		HEXADECIMAL CONVERSION TABLE															
0	00	16	10	32	20	48	30	64	40	80	50	96	60	112	70		
1	01	17	11	33	21	49	31	65	41	81	51	97	61	113	71		
2	02	18	12	34	22	50	32	66	42	82	52	98	62	114	72		
3	03	19	13	35	23	51	33	67	43	83	53	99	63	115	73		
4	04	20	14	36	24	52	34	68	44	84	54	100	64	116	74		
5	05	21	15	37	25	53	35	69	45	85	55	101	65	117	75		
6	06	22	16	38	26	54	36	70	46	86	56	102	66	118	76		
7	07	23	17	39	27	55	37	71	47	87	57	103	67	119	77		
8	08	24	18	40	28	56	38	72	48	88	58	104	68	120	78		
9	09	25	19	41	29	57	39	73	49	89	59	105	69	121	79		
10	0A	26	1A	42	2A	58	3A	74	4A	90	5A	106	6A	122	7A		
11	0B	27	1B	43	2B	59	3B	75	4B	91	5B	107	6B	123	7B		
12	0C	28	1C	44	2C	60	3C	76	4C	92	5C	108	6C	124	7C		
13	0D	29	1D	45	2D	61	3D	77	4D	93	5D	109	6D	125	7D		
14	0E	30	1E	46	2E	62	3E	78	4E	94	5E	110	6E	126	7E		
15	0F	31	1F	47	2F	63	3F	79	4F	95	5F	111	6F	127	7F		

RELAY CONTACT RATINGS

Relay Contact Ratings

Contact Rating: 10 Watts max.

Switching Voltage: 200 VDC max.

Switching Current: 0.5 Amps DC max.

Replacement Fuse

0.5A 3AG Fast Acting

WARRANTY

MIDI Solutions Inc. warrants this product to be free from defects in material and workmanship for a period of one (1) year from date of purchase. This warranty is void if the product has been damaged by accident, misuse, alteration, unauthorized repairs or other causes not arising out of defects in material or workmanship. Under no circumstances will MIDI Solutions be liable for any loss of profits, benefits, time, interrupted operation, commercial loss, or consequential damages arising out of the use or inability to use the product. MIDI Solutions specifically disclaims any implied warranties of merchantability and fitness for a particular purpose. If the product requires service, a Return Merchandise Authorization (RMA) number must be obtained from MIDI Solutions and the product must be shipped prepaid to a specified Service Center. MIDI Solutions will repair or replace the product at our discretion and will pay return shipping fees. The customer is responsible for any damage or loss sustained during shipment in any direction.