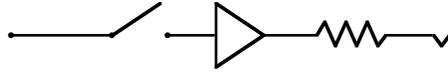


**CUSTOM AUDIO ELECTRONICS INC.**



**RS-10**  
**MIDI FOOT CONTROLLER**

***OPERATING  
GUIDE***

## Introduction

The Custom Audio Electronics RS-10 is a multifunction MIDI foot controller with a professional no frills approach to controlling many functions of a modern guitar system. It features direct access to 10 MIDI control change switches, as well as many other functions. The RS-10 has the capability of storing combinations of these 10 controller switches in 128 memory locations, configured as 32 banks of 4 random access presets. When using the optional Expander, the RS-10 is configured as 22 banks of 6 random access presets with 16 direct access control change switches. In addition to this, MIDI program change commands on 5 separate MIDI channels can be set when each preset is selected.

- Two continuous controller ports (P1 and P2) are included and can be programmed with their own MIDI channels and controller numbers. These are global channel and controller assignments and thus remain the same for all presets.
- Each controller switch and preset switch has its own LED indicator. In addition, a 3 digit 7 segment display shows the bank selected as well as other functions in PROGRAM MODE.

## Powering the RS-10

The RS-10 requires 9VAC at approximately 200ma. Power is applied via pins 6 and 7 of the 7 pin MIDI out port. If your RS-10 is equipped with a 5 pin MIDI Out jack, power will be applied to pins 1 and 3. There is no provision for power input other than these connections. When using the RS-10 with other CAE products, such as the 4x4 or 2x4 Audio Controller, use a 7 pin cable to connect the RS-10 MIDI out to the CAE rack unit's MIDI in. An adapter may be required if the RS-10 is supplied with a 5 pin MIDI out connector. There is no need for an extra 9VAC adapter. The 9VAC that powers the rack unit also supplies power to the RS-10. RS-10's supplied with custom switching systems from CAE may also have XLR connections for power and MIDI out. These are usually 4, 5 or 7 pin configurations. Consult the factory if there are questions regarding phantom powering of other units.

## Storing Preset Combinations in Memory

To store a preset combination of the controller switches (SW0-SW9) (LED off = MIDI controller value 0, LED on = MIDI controller value 127), simply select the bank (1 through 32) using the UP and/or DOWN switches. The display will flash indicating you have yet to select a preset (1 through 4). At this time you are still in the bank/preset you were in before you started. Now select the preset you want (PS-1 to PS-4). The display will indicate the MIDI program change command sent and the respective preset LED will light. Now select the combination of controller switches (SW0 - SW9) you want for that preset. The LED will light, and the respective preset LED will flash indicating an edited preset. Press the preset switch with the flashing LED. The LED will stop flashing and the preset will be stored in memory.

## The Global Preset

The RS-10 (with EX software) contains a unique feature called the Global Preset. It is a preset with all the capabilities of preset 1 through 4 (including MIDI patch changes) but is the same for all banks. To access the Global Preset, just press again any active preset switch 1 through 4. You can tell you are in the Global Preset when NO preset LED's are lit. Once you are in the Global Preset, just select any combination of the 10 direct access controller switches (SW0 - SW9). The combination is automatically stored (See programming MIDI patch change commands in this manual for info on setting Global Patch changes). To exit the Global Preset, select any preset switch.

### To summarize storing a preset combination:

1. Select the bank.
2. Select the preset.
3. Select the combination of controller switches (SW0 - SW9).
4. Press the preset switch again (flashing LED).
5. The respective preset switch LED stops flashing and the combination is stored in memory.

\* Remember, you have direct access to any controller switch (SW0 - SW9) at any time within a preset (You can add or delete from that preset).

\* To update the preset, simply press the respective (flashing LED) preset switch.

## The Program Mode

The RS-10 can be used quite effectively right out of the box with its factory default settings. However, extensive editing, as well as other utility functions can be accessed via the PROGRAM MODE. To enter the PROGRAM MODE, you must be in Bank 1. Once you are in Bank 1, press down the DOWN switch then the UP switch at the same time. Display reads PC1. Press the FUNCTION SELECT switch (PS-1) repeatedly or hold switch down to scroll through utility functions. Below is a list of functions in the order that they appear.

### Function Select Order List - Program Mode

Display reads:

- PC1 Sets MIDI channel and patch changes for group 1
- PC2 Sets MIDI channel and patch changes for group 2
- PC3 Sets MIDI channel and patch changes for group 3
- PC4 Sets MIDI channel and patch changes for group 4
- PC5 Sets MIDI channel and patch changes for group 5
- P-1 Sets MIDI channel and controller number for continuous control port P1
- P-1 Sets MIDI channel and controller number for continuous control port P1
- S-0 Sets MIDI channel and controller number for SW 0
- S-1 Sets MIDI channel and controller number for SW 1
- S-2 Sets MIDI channel and controller number for SW 2
- S-3 Sets MIDI channel and controller number for SW 3
- S-4 Sets MIDI channel and controller number for SW 4
- S-5 Sets MIDI channel and controller number for SW 5
- S-6 Sets MIDI channel and controller number for SW 6
- S-7 Sets MIDI channel and controller number for SW 7
- S-8 Sets MIDI channel and controller number for SW 8
- S-9 Sets MIDI channel and controller number for SW 9

## Program Mode (continued)

- rch Sets MIDI receive channel of RS-10 presets
- Snd Selects function for sending RS-10 data for storage (bulk dump) (\*See procedure for bulk data dump/load)
- rEc Selects function for receiving RS-10 data from storage device (bulk load) (\*See procedure for bulk data dump/load)
- 1 or 2 Master/Slave mode; -1- = Normal Mode, -2- = Master/Slave Mode (\*See notes on Master/Slave Operation)

**To exit PROGRAM MODE press the bank UP or DOWN switch.**

Procedure for selecting MIDI channel numbers and controller numbers for SW0 - SW9 and P1/P2 (when in PROGRAM MODE):

1. Select SW0 - SW9 using FUNCTION SELECT. (PS-1) switch (see list).
2. Select channel number by pressing CHANNEL # (PS-2) switch.
3. Use SW0 - SW9 switches to select the MIDI channel number for that controller switch. Example: Channel 15 - press SW1 then SW5 (The CHANNEL # (PS-2) switch LED flashes indicating an edited channel number).
4. Press CHANNEL # (PS-2) switch again. LED stops flashing and new channel number is stored in memory.

To select a MIDI controller number follow the same procedure using the CTRL # (PS-3) switch. Example: SW0 = controller number 50.

1. Use FUNCTION SELECT switch to select SW0. Display reads S-0.
2. Press CTRL # (PS-3) switch. Display reads 9 (factory default setting).
3. Press SW5 then SW0. Display reads 50 and CTRL # (PS-3) switch LED flashes indicating an edited controller number for SW0.
4. Press CTRL # (PS-3) again. LED stops flashing and new controller number (50) is stored in memory.
5. Press FUNCTION SELECT (PS-1) to continue on to other switches and functions as indicated on the function select order list.

Follow the same procedure to set MIDI channel and controller numbers for P1 and P2.

### Notes:

- \* MIDI channels are indicated in the display by a large C.
- \* MIDI controller numbers are indicated in the display by a small c.

## Programming MIDI Patch Change Commands in the RS-10

The RS-10 (with EX software) is capable of sending 5 different MIDI patch changes (program change) commands on 5 separate channels for each bank/preset selected. Therefore, you must set each MIDI device in your system to a separate MIDI channel and send the required patch changes without mapping. This makes MIDI patch programming much easier and less time consuming. The patch changes are arranged in 5 groups indicated in the display as PC1, PC2, PC3, PC4 and PC5 (accessed via the PS1 FUNCTION SELECT switch in PROGRAM MODE).

### Factory default channel settings are as follows:

- PC1 = MIDI channel 1
- PC2 = MIDI channel 2
- PC3 = MIDI channel 3
- PC4 = MIDI channel 4
- PC5 = MIDI channel 5

NOTE: The factory default settings for patch changes is - - - (as indicated in the display) i.e., no patch changes sent.

1. To set patch change commands, enter PROGRAM MODE (display reads PC1).
2. Use PS-4 (program) switch to scroll up through the available bank/preset numbers as indicated in the display.

- \*Example:
- 1.1 indicates bank 1 preset 1
  - 1.2 indicates bank 1 preset 2
  - 32.4 indicates bank 32 preset 4, etc.

(continued)

## Programming MIDI Patch Change Commands (continued)

3. Use PS-3 (controller #) switch to scroll down through the available bank/preset numbers. When you arrive at the desired bank/preset number, the display will alternate between the selected bank/preset number and - - - (if no patch change is programmed).
4. Now select the desired patch change number (from 1 to 128) using the direct access controller switches SW0 - SW9.
  - \* **Example:** Patch change 54: Press SW5 then press SW4. 54 will be indicated in the display. The PS-4 (program) LED will flash.
5. Press PS-4 (program) switch. the selected patch change is stored at the selected bank/preset and the command is sent via the MIDI out port.
  - \* **NOTE:** To erase a programmed patch change, select the desired bank/preset location, then press SW0. Display shows - - 0 and PS-4 (program) LED flashes. Press PS-4 (program) switch. Display shows - - - , meaning no patch change sent.

Press PS-1 (FUNCTION SELECT) switch to access PC2 through PC5 and repeat above procedure for each device using a separate MIDI channel.

- \* **NOTE:** 0.0 is used to indicate the Global Preset (which is the same for all banks). Use this location to set a Global Patch for each PC group 1 through 5.

## To Program an Alternate RS-10 MIDI Receive Channel:

1. Use FUNCTION SELECT (PS-1) in PROGRAM MODE to scroll until display reads rch.
2. Press CHANNEL # (PS-2). Display reads C16 (factory default setting).
3. Use SW1 through SW9 to select MIDI channel (for numbers 1 through 9 there is no need to select SW0 first).  
Example: Channel 12: Press SW1 then SW2. Display reads C12 and CHANNEL # (PS-2), switch LED flashes indicating an edited channel number.
4. Press CHANNEL # (PS-2). LED stops flashing and the new MIDI channel number is stored in memory.
5. Press FUNCTION SELECT (PS-1) to continue on to other functions as indicated on the FUNCTION SELECT order list.

## Programming Notes:

1. Only channels 1 through 16 are allowed. All others are ignored.
2. Only controller numbers 0 through 127 are allowed. All others are ignored.
3. The program (PS-4) switch can be used to return to the previous (stored) channel or controller number if you incorrectly enter a number while editing.
4. You can exit PROGRAM MODE at any time by pressing either bank UP or DOWN switches to return to bank/preset operating mode.

## Factory Default Settings for CAE RS-10

The factory settings for the RS-10 may be reset with the following procedure. **WARNING!!** This procedure will erase all user programmed data.

1. With AC power off, press and hold switches PS-1 and PS-2 at the same time.
2. Apply AC power with both switches pressed. System will reset. Release both switches.
3. The RS-10 will now contain its factory settings.

NOTE: The factory default for patch changes is no patch changes set.

### Factory Default Settings are as follows:

PC1	MIDI channel 1	
PC 2	MIDI channel 2	
PC3	MIDI channel 3	
PC4	MIDI channel 4	
PC5	MIDI channel 5	
SW0	MIDI channel 15	Controller #9
SW1	MIDI channel 15	Controller #10
SW2	MIDI channel 15	Controller #11
SW3	MIDI channel 15	Controller #12
SW4	MIDI channel 15	Controller #13
SW5	MIDI channel 15	Controller #14
SW6	MIDI channel 15	Controller #15
SW7	MIDI channel 15	Controller #16
SW8	MIDI channel 15	Controller #17
SW9	MIDI channel 15	Controller #18
P 1	MIDI channel 1	Controller #1
P 2	MIDI channel 1	Controller #4
MIDI receive	channel 16	

## RS-10 MIDI Bulk Data Dump/Load Procedure

NOTE: Bulk Dump/Load can only be executed in normal (single footswitch) mode. Master/Slave Function = 1

### To send data: (Bulk/Dump)

1. In PROGRAM MODE use FUNCTION SELECT switch (PS-1) to step through functions until display reads Snd.
2. Press program (PS-4) to send data out the MIDI port.
3. Display will flash indicating data is sent.

**IMPORTANT:** MIDI data dumped by the RS-10 must be sent as a sequence for accurate results. Example: Set Alesis Data Disk SQ to RECV MIDI SEQ.

NOTE: CAE recommends the use of the Alesis Data Disk with SQ (Sequencer Software) for data storage. However, most sequencers or computers with sequencing software will work.

### To receive data: (Bulk/Load)

1. In PROGRAM MODE, use FUNCTION SELECT switch (PS-1) to step through functions until display reads rEc.
2. Press program (PS-4) switch. Display flashes.
3. The RS-10 is now ready to receive data from the storage device or computer via the MIDI in port.
4. Initiate the data dump procedure for the storage device (Data Disk, sequencer or computer).

The RS-10 display will stop flashing when the data is received. Exit FUNCTION SELECT mode by pressing bank UP switch.

## MIDI Input to the RS-10

the RS-10's MIDI input port can be used for bulk data dumps and master/slave operations. It can also receive MIDI program change commands on a selected MIDI channel (factory default = channel 16). Below are charts showing the relationship between MIDI program change commands received and bank/presets selected for both standard and expanded RS-10's. These are fixed and cannot be changed, except by software revision.

**Standard RS-10**

Bank	PS 1	PS 2	PS 3	PS 4
1	1	2	3	4
2	5	6	7	8
3	9	10	11	12
4	13	14	15	16
5	17	18	19	20
6	21	22	23	24
7	25	26	27	28
8	29	30	31	32
9	33	34	35	36
10	37	38	39	40
11	41	42	43	44
12	45	46	47	48
13	49	50	51	52
14	53	54	55	56
15	57	58	59	60
16	61	62	63	64
17	65	66	67	68
18	69	70	71	72
19	73	74	75	76
20	77	78	79	80
21	81	82	83	84
22	85	86	87	88
23	89	90	91	92
24	93	94	95	96
25	97	98	99	100
26	101	102	103	104
27	105	106	107	108
28	109	110	111	112
29	113	114	115	116
30	117	118	119	120
31	121	122	123	124
32	125	126	127	128

**RS-10 with Expander**

Bank	PS-1	PS-2	PS-3	PS-4	PS-5	PS-6
1	1	2	3	4	5	6
2	7	8	9	10	11	12
3	13	14	15	16	17	18
4	19	20	21	22	23	24
5	25	26	27	28	29	30
6	31	32	33	34	35	36
7	37	38	39	40	41	42
8	43	44	45	46	47	48
9	49	50	51	52	53	54
10	55	56	57	58	59	60
11	61	62	63	64	65	66
12	67	68	69	70	71	72
13	73	74	75	76	77	78
14	79	80	81	82	83	84
15	85	86	87	88	89	90
16	91	92	93	94	95	96
17	97	98	99	100	101	102
18	103	104	105	106	107	108
19	109	110	111	112	113	114
20	115	116	117	118	119	120
21	121	122	123	124	125	126
22	127	128	X	X	X	X

**X = Not Recognized**

## RS-10 P1 and P2 Continuous Controller Ports

The RS-10 contains two ports for expression pedal input. These can be used to alter parameters (via MIDI) in effects devices that offer this capability. Separate MIDI channel and controller numbers may be programmed for each port. These settings are Global (the same for all banks/presets). Any passive volume or expression pedal can be used. The resistance value is not critical. **WARNING!!!** Any pedal that is active (requiring a battery) will NOT work and may damage the RS-10. Recommended pedals are Roland FV300L, FV300H, FV100 and the FV200. The cable required is a stereo (TRS) to two mono 1/4" phone plugs. Connect the tip (stereo plug) to the pedal input, ring to the pedal output and sleeve to ground on all 3 plugs. See chart below.

Stereo 1/4" plug	Mono 1/4" plugs
<u>RS-10 P1 or P2</u>	<u>Pedal in = out</u>
Tip _____	Tip (pedal in)
Ring _____	Tip (pedal out)
Sleeve _____	Sleeve (both in and out)

## RS-10 Expander

The RS-10 Expander module is an economical way of increasing the size and capabilities of your existing RS-10. It provides 6 additional direct access controller switches (SW10-SW15) as well as 2 additional presets per bank. Only RS-10's with EX software are able to utilize the expander module. All RS-10's can be upgraded to the EX software. Consult the factory for details. Due to limitations in RS-10 memory, when using the Expander, 22 banks of 6 presets are available (standard RS-10's are 32 banks of 4 presets).

When the RS-10 Expander is connected, the computer automatically increases the function list to accommodate the additional direct access controller switches and presets. You can program them as you would a standard RS-10. If the Expander is disconnected, the RS-10 will return a standard operation. Factory default settings are as follows:

SW10	MIDI channel 15	Controller #19
SW11	MIDI channel 15	Controller #20
SW12	MIDI channel 15	Controller #21
SW13	MIDI channel 15	Controller #22
SW14	MIDI channel 15	Controller #23
SW15	MIDI channel 15	Controller #24

Connect the Expander to the RS-10 with the supplied 7 pin cable.

### **CONNECT WITH THE POWER OFF!!!**

The Expander was designed to be placed on the right side of the RS-10, directly against it. However, it can be placed no more than 2 feet to either side of necessary. Contact factory if a longer cable is necessary.

## Master/Slave Operation

1. A Master/Slave system consists of one master RS-10 and as many as 15 slave RS-10's.
2. Only 1 master can be used in a multiple footswitch system.
3. The master RS-10 is selected via PROGRAM MODE.
4. Enter PROGRAM MODE and scroll through functions using the FUNCTION SELECT (PS-1) switch until display reads 1. This indicates normal single footswitch operation.
5. Press Program (PS-4) to alternate display between 1 (normal) operation and 2 (master) multiple footswitch mode.
6. All other RS-10's connected (via MIDI, in series [see diagram] will automatically become slaves and track the operation of the master RS-10 (including P1 and P2 continuous controller ports).
7. Slave RS-10's cannot enter PROGRAM MODE and will ignore attempts to do so. Only the master can enter PROGRAM MODE.
8. Master RS-10 is indicated upon power up by first showing 2 in the display.

### **IMPORTANT!!**

While it is theoretically possible to connect 15 RS-10's to one master RS-10, the practical limit is 5 slaves and 1 master with the supplied 9VAC power supply. The length of the cable is also a factor in reliable master/slave operation. 5 slaves will work reliably with the standard length cable (25 feet). If more slave units are required, contact Custom Audio Electronics to obtain a higher voltage power supply and custom length cables.