Evolution USB Keyboards

249/361
USB MIDI Controller Keyboard

225C/249C/361C
USB MIDI Controller Keyboard with additional programmable rotary controllers

WWW.EVOLUTION.CO.UK

EVOLUTION 249/361/225C/249C/361C MIDI KEYBOARD MANUAL

1.   POWER SUPPLY

There are three methods of powering the Evolution USB Keyboard. **Only use one method at one time**

Soundcard as power source

Using the supplied self powered connector cable connect the 5 pin male plug to the Evolution MIDI keyboard and the 15 pin male plug to the MIDI port on your PC soundcard.

IMPORTANT – DO NOT USE THIS CABLE TO POWER ANY OTHER EQUIPMENT

or

AC Power
You can also use an AC adapter (not included) with the following specification: 9-12V DC output, 250-300mA, centre positive.

or

USB
Connect to the USB port on your computer. The keyboard is powered from USB.
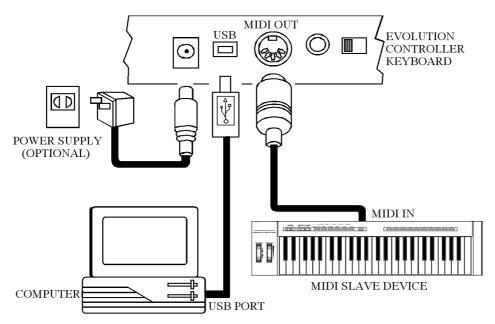
Note: Do not leave the adapter plugged in for long periods of time if the unit is not in use.

2.   Preparation

2-1 Connect the unit with other MIDI equipment you may have:
You can connect the keyboard to any other MIDI device such as a sound module or drum machine as shown below. Note that the keyboard does not have MIDI in capability and so can not receive MIDI data.

If you are not connecting via USB, you will need to use an external power supply to connect to other MIDI devices. If you are using USB the keyboard will be powered from the USB port and the external power supply is not necessary. The keyboard can act in MIDI THRU mode receiving data from the computer and transmitting it to any other connected MIDI device.

Turn on the POWER switch.
Turn all other equipment on.
Press the BANK MSB and TRANSPOSE simultaneously to select '**MIDI out from USB'** (only necessary if using the USB port).

3.   Demo

Pressing octave up and down together plays a short demonstration. Please note that the sounds are set for a GM sound system and the demo will sound differently on other sound synthesizers.
Press the octave up and down keys once more to end demo.

4.   Entering Numbers

When any number is entered it adheres to the following rules:-

Increment/Decrement Keys

Initially the LED display starts flashing.
The value displayed can be incremented/decremented using the +/- keys.
Pressing both + & - should call up the default value for that parameter.
The LED display shows the new value.
The new value is sent out except for the CONTROL ASSIGN which sends data when the display stops flashing)
When the display stops flashing the keyboard returns to normal operation.

Numeric Keys

Initially the LED display starts flashing.
A numeric value can be typed in using the numbers 0-9.
As each key is pressed the display continues to flash, the time-out value is reset.
When a *complete number** has been entered the display stops flashing and the value is selected.
Alternatively, if no key is pressed and the display stops flashing the number on the display is selected.
The update routine is triggered, so that the new value is sent out.
When the display stops flashing the keyboard returns to normal operation.

* The following table shows how many keys are required to enter a complete number:-

	1 key	2 keys	3 keys
Channel	2-9	01,10-16	
Memory	0-9		
Program Changes		13-99	000-012, 100-127
Bank LSB/MSB		13-99	000-012, 100-127
Control Select	2-9	01,10-14	
Control Assign		14-99	000-013, 100-132

5.   Sending a PROGRAM CHANGE number

Using the PROGRAM switch and the numeric keys, you can send any MIDI PROGRAM CHANGE from 0-127.

Press the PROGRAM switch. The LED starts to flash showing the current PROGRAM number (instrument sound).
Press the numeric keys to alter the PROGRAM CHANGE number. You can also use the "+" or "-" keys to change the value.

Note: * if you don't do anything for 3 seconds the LED stops flashing and shows the current PROGRAM CHANGE number.
•   if the number you press is larger than 127, it will return to the previous PROGRAM CHANGE number.

6.   PROGRAM & BANK CHANGE MEMORY

You can assign a selected PROGRAM CHANGE as well as a BANK LSB and a BANK MSB to one of ten numeric keys (0-9). Once stored, simply pressing one of the numeric keys will send the desired PROGRAM and BANK CHANGES. The stored information is held in non-volatile memory which will remember even if the power is turned off.

Select the desired PROGRAM CHANGE, BANK LSB and MSB. Please refer to respective chapters for information on how to do this.
Press the MEMORY switch. The LED starts to flash.

Press the numeric key (from 0 to 9) you wish to assign the data to. The PROGRAM and BANK CHANGE information is stored on the selected numeric key.

7.   Setting the MIDI Transmit Channel

There are 16 MIDI transmit channels available. Once you have set the unit's MIDI channel, the unit sends all MIDI messages on this MIDI channel. Be sure to match the channel with the RECEIVE channel of any connected equipment.

Press the CHANNEL switch. The LED shows the present TRANSMIT channel
Press one (or two) of the numeric keys to change the channel. The LED changes to the pressed number.
You can also use +/- switches to increase or decrease the value.

Note: * if you do nothing after step 3-1 for 3 seconds, the LED will return to show the present PROGRAM CHANGE number.
            The default CHANNEL is 1 when power is turned on.

If you have a **MK-225C/MK-249C/MK-361C**, you can assign each of the rotary controls to a different channel individually. You can store a single channel for each of the controllers that is independent of the Keyboard channel. This allows you to transmit control data on multiple channels simultaneously. To do this:

1. Press both 'CONTROL SELECT' buttons and release.
2. The LED display shows the current controller which has been selected.
3. As the LED toggles the display between the new controller and its assignment, presss the CHANNEL button. A small 'c' in the first digit indicates that it is displaying the channel for the selected controller, the other 2 digits display the current controller channel.
4. Press one (or two) of the numeric keys to change the channel. The LED changes to the pressed number.
5. You can also use +/- switches to increase or decrease the value.

Note: You can select a new controller by moving any one of the rotary controllers.
            If you have one of the new blue LED keyboards you can alternatively use the 'CONTROL ASSIGN' buttons.

When a Controller is assigned a channel of 0 it means that rather than have a single, assigned channel it reads the current Keyboard channel instead and generates MIDI data on the same channel as notes played on the keyboard.

8.   SLIDER ASSIGN

Moving the SLIDER transmits MIDI CONTROL CHANGE messages to any connected equipment. The Slider defaults to sending Channel Volume messages on the selected channel, but you can re-assign the slider to any other controller.

Number	Functions
1 – 127	Standard MIDI controllers
128	Pitch Bend Sensitivity
129	Fine Tune
130	Coarse Tune
131	Channel Pressure
132	Velocity

With Evolution 249/361. Press the SLIDER ASSIGN switches (PROGRAM & BANK LSB) together and the LED starts to flash showing the number of the present MIDI controller.
Use numeric keys 0-9 to select a new MIDI controller. You can also use the +/- switches to increase or decrease the value of the number.
With Evolution 225C/249C/361C. Press the CONTROL SELECT switches (MEMORY & PROGRAM) and the LED starts to flash showing the number of the present MIDI controller.
Move the slider. Alternatively, press numeric keys 0-9 to select a new MIDI controller. You can also use the +/- switches to increase or decrease the value of the number. The LED display should flash C13.

Note: * If you do nothing for 3 seconds, the LED will return to show the current PROGRAM CHANGE number.
* If the number you press is not in the range of defined numbers, the previous number will be retained.
* When you assign 120 or 121 as the MIDI controller for the WHEEL, you should move the MODULATION Wheel to the mid-value then return it to the minimum value to send a relative MIDI message.
See Appendix B for a full list of controller numbers.

9.   PITCH BEND WHEEL

Moving the PITCH BEND WHEEL transmits MIDI PITCH BEND messages to any connected equipment. This allows you to bend the pitch of a sound up (or down one tone) to add expression to your performance.

To bend the sound up: Move the WHEEL away from you.
To bend the sound down: Move the WHEEL towards you.

10.   WHEEL ASSIGN

Use the WHEEL to transmit MIDI CONTROL CHANGE messages. You can select and assign 119 types of MIDI functions (1-31, 33-95, 102-121, 128-132)

Number	Functions
1 –127	Standard MIDI controllers
128	Pitch Bend Sensitivity
129	Fine Tune
130	Coarse Tune
131	Channel Pressure
132	Velocity

With Evolution 249/361. Press the WHEEL ASSIGN switches (MEMORY & PROGRAM) together and the LED starts to flash showing the number of the present MIDI controller.
Use numeric keys 0-9 to select a new MIDI controller. You can also use the +/- switches to increase or decrease the value of the number.
With Evolution 225C/249C/361C. Press the CONTROL SELECT switches (MEMORY & PROGRAM) and the LED starts to flash showing the number of the present MIDI controller.
Either move the wheel, or press numeric keys 0-9 to select a new MIDI controller. You can also use the +/- switches to increase or decrease the value of the number. The LED display should flash C14.

Note: * If you do nothing for 3 seconds, the LED will return to show the current PROGRAM CHANGE number.
* If the number you press is not in the range of defined numbers, the previous number will be retained.
* When you assign 120 or 121 as the MIDI controller for the WHEEL, you should move the MODULATION Wheel to the mid-value then return it to the minimum value to send a relative MIDI message.
* See Appendix B for a full list of controller numbers.

11. TRANSPOSE

This function allows you to shift the pitch of the unit in semitones. You can transpose the pitch by 24 half steps (12 up, 12 down).

Press the TRANSPOSE switch. The LED shows the current TRANSPOSE value.
Press the "+" or "-" switch to change the TRANSPOSE value. Each time you press + or -, the keyboard is transposed an additional half step.

* Pressing the + and - switches simultaneously resets the pitch to the default value.

Note: Turning the power off always resets the shifted pitch to the default value.

12. OCTAVE CHANGE

This function allows you to shift the pitch up to three octaves higher or two lower.

Press the OCTAVE UP or DOWN to change the octave range. The LED shows the new OCTAVE value.

* Press OCTAVE UP and DOWN switches simultaneously to reset the pitch to the default value.

Note: if the UP or DOWN switch is not pressed for 3 seconds, the LED will return to show the PROGRAM CHANGE number.

13. Sending BANK MSB and LSB message

You can send any value of MSB or LSB from 0-127.

Press the BANK LSB switch. The LED starts to flash showing the current value of the LSB. Press the numeric keys to change the LSB value. You can also use the "+" or "-" switches to change the value.
Press the BANK MSB switch. The LED starts to flash showing the current value of the MSB. Press numeric keys to change the MSB value. You can also use the "+" or "-" switches to change the value.

Note: * if you don't do anything for 3 seconds the LED stops flashing and shows the current PROGRAM CHANGE number.
          * if the number you input is over 127, it will return to the previous LSB or MSB value.
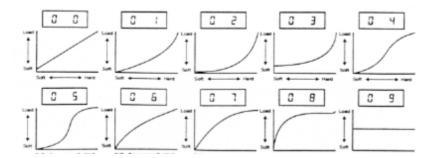
14.   Selecting a VELOCITY CURVE

The VELOCITY CURVEs determine the relationship between how hard the keys are struck and the corresponding velocity that the unit transmits.
This unit allows you to select from 12 VELOCITY CURVEs.

Simultaneously press the CHANNEL and MEMORY switches. The LED starts to flash showing the current number of the VELOCITY CURVE.
Press one of the numeric keys to select a VELOCITY CURVE. The 10 key numbers correspond to the first 10 VELOCITY CURVEs as follows:

You can also use the "+" or "-" switches to access all the VELOCITY CURVEs.

There are 3 Fixed VELOCITY CURVEs which output the following velocity values:

Curve	Velocity
F 0	64
F 1	100
F 2	127

These are achieved by selecting velocity curve 09. F0 will appear on the LED. Use the "+" or "-" keys to select F0-F2.
Note: If you don't do anything for 3 seconds the LED stops flashing and shows the current PROGRAM CHANGE number.

15.   MIDI OUT FROM USB

The MIDI output connector is normally used to send MIDI data from the keyboard. If the keyboard is connected to a computer using USB the MIDI Out can also be used to send data received from USB.

Pressing both 'MIDI OUT FROM USB' buttons flashes the current setting on the LCD display.
The +/- keys can be used to alter the current setting. + selects YES, - selects NO.
Pressing both + and – calls up the default setting which is NO.
When 'NO' is selected the MIDI Out sends the data from the keyboard.
When YES is selected the MIDI Out sends the MIDI data received from USB.

The status of MIDI OUT FROM USB will be saved in non-volatile memory and restored when the keyboard is switched on again. The factory default is set to NO

16.   GM RESET (GENERAL MIDI RESET) – Evolution 249/361 Only

This function allows you to send a GENERAL MIDI MODE RESET message.
Press the BANK LSB and BANK MSB keys together.
Hold the keys down for at about 2 seconds and the reset message is sent.

Evolution 225C/249C/361C Only

17.   Assignable Rotary controllers

All these assignable controllers are selected by the 'CONTROL SELECT' & 'CONTROL ASSIGN' functions for these keyboards.

'*Assignable Controllers*' refers to any of the 8, 12 or 16 assignable Knobs and also includes the assignable Wheel and Slider. The Slider is Assignable Controller 13 or 17(for MK249C and MK-361C only), the Wheel is Assignable Controller 9, 14 or 18.

The basic operation is:-
Press the CONTROL SELECT buttons together. Select the controller by moving it or by typing the number in.
Press the CONTROL ASSIGN buttons and enter the new number using the keypad.

To change one of the assignable controllers, the keyboard uses the following method:

> Press both 'CONTROL SELECT' buttons and release.
> The LED display shows the current Controller which has been selected. The LED's toggle between the controller number and the assigned value. E.g. initially it would toggle between c14 & 01, showing that the Wheel is assigned to the Modulation Wheel controller.
> Select a controller by moving any one of the assignable controllers, the numeric keypad or the +/- keys.
> The LED then toggles the display between the new controller and its assignment.
> Repeat this process to see the *controller number assignment* (0-132) for any **Knob, Slider** or the **Wheel,** by moving the relevant controller or by typing a new number.
>
> If no keys are pressed or any of the assignable controllers moved, the LED display stops flashing after 3 seconds and returns to normal operation.
>
> Press both 'CONTROL ASSIGN' buttons and release.
> The number entered at this point will be assigned to the last selected controller.
> The numeric entry uses the standard data entry system. (see section on Entering Numbers)
> If a complete number is entered the display stops flashing and the new assignment is stored.
> If the +/- keys are used, the revised value is shown on the LED display and the flashing time-out is reset.
> Once a controller has been assigned the current knob/slider/wheel position should be sent out.
> This ensures that when the controller if first moved it does not trigger a large jump from it's previous setting.

During the data entry stage while the LED display is flashing, the **Knobs, Slider** and the **Wheel** *do not function*.

The MIDI keyboard should continue to function at **all times**

18.   Snap Shot

When both SNAP SHOT keys are pressed the MK-249C sends out the settings for all of the Assignable Controllers on the current selected channel. This feature lets you record the settings of the Knobs, Slider & Mod Wheel into your sequencer.

19. SPECIFICATIONS

Evolution 249:

1. Keyboard: 49 standard keys (Velocity sensitive)
2. Control: Switches: (WHEEL, CHANNEL, PROGRAM, MEMORY, TRANSPOSE, GM RESET, VEL CURVE, BANK LSB, BANK MSB, OCTAVE DOWN, OCTAVE UP, POWER ON/OFF, Numeric Keys (0-9), , +)
3. Control: Sliders: (PITCH BEND WHEEL, MODULATION WHEEL, CHANNEL VOLUME/DATA ENTRY)
4. Memory storage – non volatile
5. Display: 3 digit LED
6. Jack: DC IN (DC 9V), MIDI OUT, SUSTAIN, USB
7. Dimension: 800 x210 x80 (mm). *Weight*: 4 kg
Note: Specifications are subject to change without prior notice.

Evolution 361:

1. Keyboard: 61 standard keys (Velocity sensitive)
2. Control: Switches: (WHEEL, CHANNEL, PROGRAM, MEMORY, TRANSPOSE, GM RESET, VEL CURVE, BANK LSB, BANK MSB, OCTAVE DOWN, OCTAVE UP, POWER ON/OFF, Numeric Keys (0-9), , +)
3. Control: Sliders: (PITCH BEND WHEEL, MODULATION WHEEL, CHANNEL VOLUME/DATA ENTRY)
4. Memory storage – non volatile
5. Display: 3 digit LED
6. Jack: DC IN (DC 9V), MIDI OUT, SUSTAIN, USB
7. Dimension: 970 x220 x80 (mm). *Weight*: 5 kg
Note: Specifications are subject to change without prior notice

Evolution 225C:

1. Keyboard: 49 standard keys (Velocity sensitive)
2. Control: Switches: (WHEEL, CHANNEL, PROGRAM, MEMORY, TRANSPOSE, GM RESET, VEL CURVE, BANK L, BANK M, RESET-AC, OCTAVE DOWN, OCTAVE UP, POWER ON/OFF, Numeric Keys (0-9), ?, +)
3. Control: Sliders: (PITCH BEND WHEEL, MODULATION WHEEL, CHANNEL VOLUME/DATA ENTRY)
4. Rotary Controls: 12 rotary controls with assignable controller values
5. Memory storage – non volatile
6. Display: 3 digit LED
7. Jack: DC IN (DC 9V), MIDI OUT, SUSTAIN, USB
8. Dimension: 480 x220 x80 (mm)
9. Weight: 2.3 kg
Note: Specifications are subject to change without prior notice.

Evolution 249C:

1. Keyboard: 49 standard keys (Velocity sensitive)
2. Control: Switches: (WHEEL, CHANNEL, PROGRAM, MEMORY, TRANSPOSE, GM RESET, VEL CURVE, BANK L, BANK M, RESET-AC, OCTAVE DOWN, OCTAVE UP, POWER ON/OFF, Numeric Keys (0-9), ?, +)
3. Control: Sliders: (PITCH BEND WHEEL, MODULATION WHEEL, CHANNEL VOLUME/DATA ENTRY)
4. Rotary Controls: 12 rotary controls with assignable controller values
5. Memory storage – non volatile
6. Display: 3 digit LED
7. Jack: DC IN (DC 9V), MIDI OUT, SUSTAIN, USB
8. Dimension: 800 x210 x100 (mm)
9. Weight: 4 kg
Note: Specifications are subject to change without prior notice.

Evolution 361C:

1. Keyboard: 61 standard keys (Velocity sensitive)
2. Control: Switches: (WHEEL, CHANNEL, PROGRAM, MEMORY, TRANSPOSE, GM RESET, VEL CURVE, BANK L, BANK M, RESET-AC, OCTAVE DOWN, OCTAVE UP, POWER ON/OFF, Numeric Keys (0-9), ?, +)
3. Control: Sliders: (PITCH BEND WHEEL, MODULATION WHEEL, CHANNEL VOLUME/DATA ENTRY)
4. Rotary Controls: 16 rotary controls with assignable controller values
5. Memory storage - non volatile
6. Display: 3 digit LED
7. Jack: DC IN (DC 9V), MIDI OUT, SUSTAIN, USB
8. Dimension: 970 x220 x100 (mm)
9. Weight: 5 kg
Note: Specifications are subject to change without prior notice.

APPENDIX A

MIDI IMPLEMENTATION CHART

Function	Transmitted	Received	Remarks
Basic :Default Channel:Changed	1-16 1-16		
:Default Mode :Messages :Altered	--------- X *********		
Note Number:True Voice	0-127 *********		
Velocity: Note ON : Note OFF	0 X		
After :Key's Touch :Ch's	X •		
Pitch Bend	0		
0,32 1 Control 6 Change 7 64 1-31 33-95 102-121	• • • 0 0 • • •		Bank select Modulation Data Entry Volume Hold 1 Mod Wheel Assign
Program Change:True Number	0-127 *********		
System Exclusive	X		
:Song Position Common:Song Select :Tune	X X X		
System :Clock Exclusive:Commands	X X		
Aux :Local ON/OFF Messages:All Notes OFF :Active Sense :Reset	X X 0 X		
Notes:	• : Can be	set to 0	or X

For support email support@evolution.co.uk
Latest drivers and information at www.evolution.co.uk
Join the Evolution User's group at Yahoo groups, www.yahoogroups.com/group/evolution-users
or e-mail to this address: evolution-users-subscribe@yahoogroups.com

APPENDIX B

STANDARD CONTROLLER NUMBERS

No.	Controller	No.	Controller	No.	Controller
00	Bank Select	51	Gen Purpose 4 LSB	102	Controller 102
01	Modulation	52	Controller 52	103	Controller 103
02	Breath Control	53	Controller 53	104	Controller 104
03	Controller 3	54	Controller 54	105	Controller 105
04	Foot Control	55	Controller 55	106	Controller 106
05	Porta Time	56	Controller 56	107	Controller 107
06	Data Entry	57	Controller 57	108	Controller 108
07	Channel Volume	58	Controller 58	109	Controller 109
08	Balance	59	Controller 59	110	Controller 110
09	Controller 9	60	Controller 60	111	Controller 111
10	Pan	61	Controller 61	112	Controller 112
11	Expression	62	Controller 62	113	Controller 113
12	Effects Controller 1	63	Controller 63	114	Controller 114
13	Effects Controller 2	64	Sustain Pedal	115	Controller 115
14	Controller 14	65	Portamento	116	Controller 116
15	Controller 15	66	Sostenuto	117	Controller 117
16	Gen Purpose 1	67	Soft Pedal	118	Controller 118
17	Gen Purpose 2	68	Legato Pedal	119	Controller 119
18	Gen Purpose 3	69	Hold 2		
19	Gen Purpose 4	70	Sound Variation		
20	Controller 20	71	Resonance		
21	Controller 21	72	Release Time		
22	Controller 22	73	Attack Time		
23	Controller 23	74	Cutoff Frequency		
24	Controller 24	75	Controller 75		
25	Controller 25	76	Controller 76		
26	Controller 26	77	Controller 77		
27	Controller 27	78	Controller 78		
28	Controller 28	79	Controller 79		
29	Controller 29	80	Gen Purpose 5		
30	Controller 30	81	Gen Purpose 6		
31	Controller 31	82	Gen Purpose 7		
32	Bank Select LSB	83	Gen Purpose 8		
33	Modulation LSB	84	Portamento Control		
34	Breath Control LSB	85	Controller 85		
35	Controller 35	86	Controller 86		
36	Foot Control LSB	87	Controller 87		
37	Porta Time LSB	88	Controller 88		
38	Data Entry LSB	89	Controller 89		
39	Channel Volume LSB	90	Controller 90		
40	Balance LSB	91	Reverb Depth		
41	Controller 41	92	Tremelo Depth		
42	Pan LSB	93	Chorus Depth		
43	Expression LSB	94	Celeste (De-tune)		
44	Controller 44	95	Phaser Depth		
45	Controller 45	96	Data Increment		
46	Controller 46	97	Data Decrement		
47	Controller 47	98	Non-Reg Param LSB		
48	Gen Purpose 1 LSB	99	Non-Reg Param MSB		
49	Gen Purpose 2 LSB	100	Reg Param LSB		
50	Gen Purpose 3 LSB	101	Reg Param MSB		

Channel Mode Messages

No.	Controller
120	All Sound off
121	Reset all Controllers
122	Local Control
123	All Notes Off
124	Omni Off
125	Omni On
126	Mono On (Poly Off)
127	Poly On (Mono Off)

Extra Keyboard Messages Possible

No.	Controller
128	Pitchbend sensitivity.
129	Fine Tune
130	Coarse Tune
131	Channel Pressure
132	Velocity