Carbon 61

USB MIDI CONTROLLER

OWNER'S MANUAL

SAMSON®

Contents

Introduction

Thank you for purchasing the Samson Carbon 61, 61-key USB keyboard controller! The Carbon 61 can easily integrate with your Windows or Mac digital production workstation. The keyboard can also be powered directly by an Apple iPad (using the Apple iPad Camera Connection Kit, not included), and can be used to control many iOS MIDI apps, like GarageBand. The Carbon 61 features a 61-key velocity-sensitive semi-weighted keyboard, an assignable fader, a data knob, pitch bend and modulation wheels, and a 3-digit LED display.

The Carbon 61 is the perfect addition to your DAW or controlling virtual instrument software. To get you started making music immediately, we have included Native Instruments Komplete Elements, which contains over 1000 sounds and effects.

In these pages, you'll find a detailed description of the features of the Carbon 61 keyboard controller, as well as a guided tour of its control panel, and instructions for setup and use. You'll also find a warranty card enclosed. Please don't forget to fill it out and mail it in so that you can receive online technical support, and so that we can send you updated information about these and other Samson products in the future.

We recommend you record your serial number in the space provided below, for future reference.

Serial number: _____

Date of purchase: _____

With proper care and maintenance, your Carbon 61 will operate trouble-free for many years. Should your keyboard ever require servicing, a Return Authorization (RA) number must be obtained before shipping your unit to Samson. Without this number, the unit will not be accepted. Please call Samson at 1-800-3SAMSON (1-800-372-6766) for an RA number prior to shipping your unit. Please retain the original packing materials and, if possible, return the unit in its original carton. If your Carbon 61 was purchased outside of the United States, contact your local distributor for warranty details and service information. Also, be sure to check out our website (www.samsontech.com) for information about our full product line.

Carbon 61 Features

The Samson Carbon 61 utilizes state-of-the-art technology and is engineered to the finest detail. Here are some of its main features:

- 61-key, velocity-sensitive, semi-weighted, keyboard
- Assignable Data encoder and Volume fader
- Pitch Bend and assignable Modulation wheels
- 3-digit, 7-segment LED display which provides real-time feedback
- Dedicated Octave up/down buttons
- Transpose up/down buttons, assignable to Program and MIDI Channel up/down
- Edit key for adjusting up to 14 MIDI and control parameters
- Sustain Pedal Input
- USB connection for power and MIDI
- 5-pin MIDI Out to connect to standard external MIDI devices
- Integrated iPad stand
- Includes Native Instruments Komplete Elements software

System Components

- Samson Carbon 61 USB Keyboard
- USB Cable
- Two iPad rubber shoe adaptors
- Native Instruments Komplete Elements installation DVD
- Carbon 61 Owner's Manual

Minimum System Requirements

Windows (PC)

- Windows XP/Vista/Win7
- 800MHz or higher, 256MB RAM or larger, USB port

Mac OS

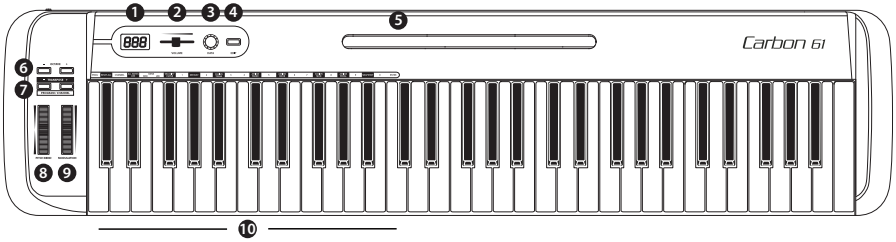
- Mac OS X 10.4.9 or higher
- 733MHz or higher, 512MB RAM or larger, USB port

Apple iPad

- iOS v4.2 or higher

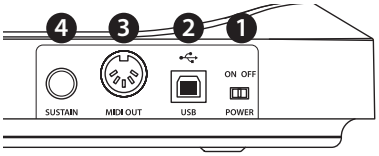
We recommend that you also check the minimum system requirements for the software you are using with your Carbon 61, as they may be greater than the above.

Front Panel Controls and Functions



1. **Display -** 3 x 7-segment LED display shows controller data in real-time in Performance mode, and the adjustable parameters in Edit mode
2. **VOLUME Fader -** This fader is preset from the factory to send MIDI volume (CC #7) messages. The VOLUME fader can be assigned to control different MIDI parameters in Edit Mode (see p.14 for more information).
3. **DATA Knob -** This endless rotary encoder is preset from the factory to send MIDI pan (CC #10) messages. The DATA knob can be assigned to control different MIDI parameters in Edit Mode (see p.14 for more information).
4. **EDIT Button -** Press this button to enter Edit Mode. In Edit Mode, you can adjust the keyboard's parameters (see p.14 for more information).
5. **iPad Holder -** Place an Apple iPad horizontally in this slot. Use the included rubber shoes to securely hold your iPad in place (see p.11 for more information).
6. **OCTAVE +/– Buttons -** Press the OCTAVE buttons to shift the octave of the keyboard up or down up to four octaves, to extend the range of the keyboard. Each time you press the OCTAVE button, the range of the keyboard shifts up or down 12 notes.
7. **TRANSPOSE +/– Buttons -** Press the TRANSPOSE buttons to shift the range of the keyboard up or down up to 12 semitones (half-steps). The TRANSPOSE buttons can also be assigned to send MIDI Program and MIDI Channel messages (see p.14 for more information).
8. **PITCH BEND Wheel -** Use this wheel to raise or lower the pitch of notes played on the keyboard.
9. **MODULATION Wheel -** This wheel is usually used to add modulation (CC #1) to the sound being played. The MODULATION wheel can be assigned to send different MIDI parameters in Edit Mode (see p.14 for more information).
10. **Function Keys -** In Edit Mode, the first 25 keys of the keyboard are assigned to functions and numerical digits 0–9 (see p.14 for more information).

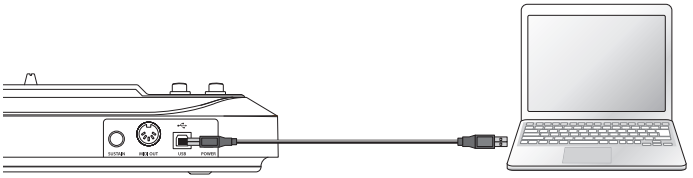
Rear Panel Controls and Functions



1. **POWER Switch -** Slide this switch to turn the keyboard on and off.
2. **USB Connection -** Connect a standard USB cable from this port to the USB connection on a computer or iPad to provide power to the keyboard, as well as to send and receive MIDI data.
3. **MIDI OUT -** Use a 5-pin MIDI cable to connect the Carbon 61 to an external MIDI device.
4. **SUSTAIN Pedal Input -** Connect a ¼" sustain or expression pedal to this input. This input is preset from the factory to send MIDI sustain (CC #64) messages. The SUSTAIN pedal input can be assigned to send different MIDI parameters in Edit Mode (see p.14 for more information).

Quick Start

1. Connect the Carbon 61 to your computer or iPad using the supplied USB cable. The unit will receive power and transmit MIDI data via the USB connection. Slide the POWER switch to the left to turn on the keyboard.

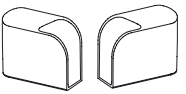


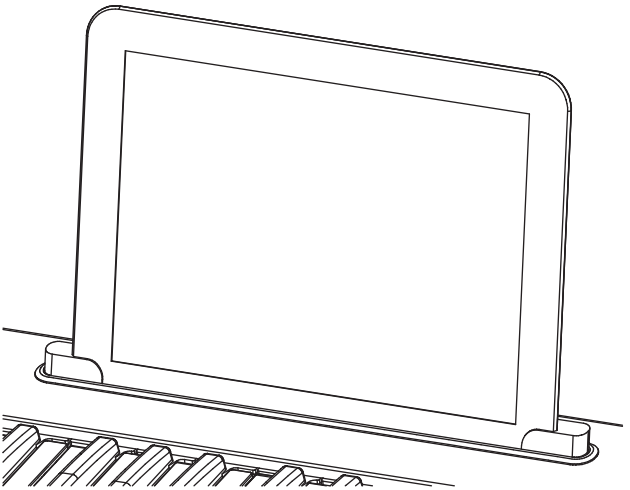
Note: To connect directly to an iPad, you will need to use the Apple iPad Camera Connection Kit (not included).

2. Launch your DAW or virtual instrument software, and set the Carbon 61 as the MIDI Input device.
3. To use the Carbon 61 with an external MIDI device (such as a sound module), connect a 5-pin MIDI cable to the MIDI OUT on the rear of the Carbon 61, and to the MIDI IN of the external device.

Connecting an iPad

The Carbon 61 features an area designed to accommodate an Apple iPad. To securely fit your iPad, we have included two rubber shoe adaptors. The adaptors are stored in the bottom of the Carbon 61.





Insert the rubber shoes into the left and right corners of the iPad holder (as shown in the above illustration). Then, slide your iPad into the rubber shoes. Plug the Apple iPad Camera Connection Kit adaptor or Lightning to USB Camera Adapter to the iPad, and connect the iPad to the keyboard via the included USB cable.

Basic Operation

Modes

The Carbon 61 has two operation modes: **Performance Mode** and **Edit Mode**.

Performance Mode - In this mode, the 61 velocity-sensitive keys transmit note and velocity information via the USB or MIDI output. The assignable controllers, pitch bend and modulation wheels all transmit continuous controller information.

Edit Mode - In this mode, use the first 25 keys on the keyboard to access functions and enter numerals 0-9. The rest of the keyboard will transmit note and velocity information. This mode is activated by pressing the EDIT button. Refer to the section on Edit Mode (p.14) for details.
Note: The factory default for transmitting control information is channel 1. The keyboard can be assigned to transmit on another MIDI channel in Edit Mode.

Performance Parameters

OCTAVE Buttons
The OCTAVE buttons shift the octave of the keyboard up or down 12 notes at a time, to extend the range of the keyboard. They can be used to shift the octave up or down a maximum of four octaves. As you press these buttons, the octave shift value will be shown on the display. The default value is 0.

The **OCTAVE "-"** button will shift the keyboard down one octave each time the button is pressed, and will light red when the keyboard range is below the 0 value.

The **OCTAVE "+"** button will shift the keyboard up one octave each time the button is pressed, and will light red when the keyboard range is above the 0 value.

Press both OCTAVE buttons together to reset the keyboard range to 0.

TRANSPOSE Buttons
The TRANSPOSE buttons shift the range of the keyboard up or down by one semitone (half-step). They can be used to transpose notes up or down by a maximum of 12 semitones. As you press these buttons, the shift value will be shown on the display. The default value is 0.

The **TRANSPOSE "-"** button will shift the keyboard down one semitone each time the button is pressed, and will light red when the keyboard range is below the 0 value.

The **TRANSPOSE "+"** button will shift the keyboard up one semitone each time the button is pressed, and will light red when the keyboard range is above the 0 value.

You can also set the TRANSPOSE buttons to send Program +/- or MIDI Channel +/- information. Refer to the section Edit Mode (p.14) for details.

MODULATION Wheel
The MODULATION wheel is usually used to add vibrato effects to tones you are playing. The data range of the MODULATION wheel is 0–127. The default MIDI controller number is CC #1. You can assign another controller number to the modulation wheel in Edit Mode. Refer to the section Edit Mode (p.14) for details.

Basic Operation

VOLUME Fader

The VOLUME fader sends MIDI information to control the performance of the device that is connected to the keyboard. The factory setting is channel volume, but can be assigned to another parameter in Edit Mode. Refer to the section Edit Mode (p.14) for details.

DATA Knob

The DATA knob sends MIDI information to control the performance of the device that is connected to the keyboard. The factory setting is pan control, but can be assigned to another parameter in Edit Mode. Refer to the section Edit Mode (p.14) for details.

PITCH BEND Wheel

The PITCH BEND wheel is used to bend notes played on the keyboard by raising or lowering the pitch. The response and range of this controller is based on the patch or sound source that is being controlled. The pitch bend wheel is spring-mounted and will return to the center position when it is released.

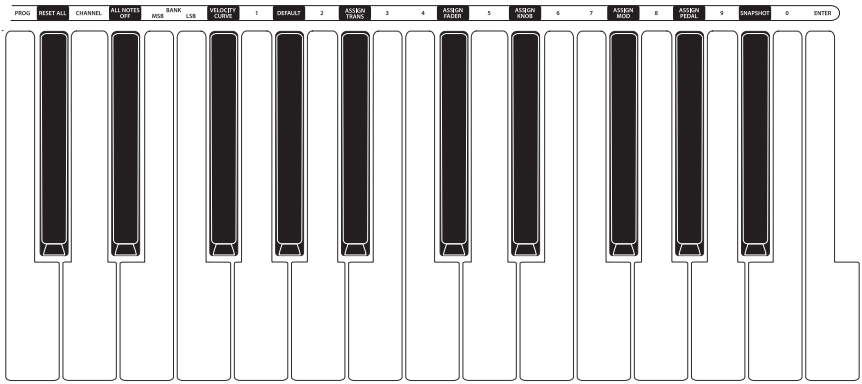
SUSTAIN Pedal Input

You can connect a momentary footswitch or damper pedal to the rear panel SUSTAIN Pedal input. The default setting for the pedal input is sustain (CC #64). You can assign another function to the pedal input in Edit Mode. Refer to the section Edit Mode (p.14) for details.

When the keyboard is powered on, it will detect the polarity of a connected pedal. To reverse the pedal's polarity, press the pedal when powering on the keyboard.

Edit Mode

Edit Mode is where you can access and adjust the parameters of the Carbon 61 to suit your needs. To access Edit Mode, press the EDIT button on the top panel of the keyboard. The button will light red, and the display will read "Set" to indicate that you are in Edit Mode. In Edit Mode, the first 25 keys on the keyboard become function and numerical keys, and will not transmit any note data. The last 24 keys will continue to transmit note information in Edit Mode, so you can see, in real time, how your changes have affected the performance. The VOLUME fader, PITCH and MODULATION wheels will also continue to function normally, but their performance data will not be shown on the display. To exit Edit Mode, and return to Performance Mode, press the EDIT button a second time. The button will no longer light red once in Performance Mode.



MIDI Functions

PROG (Program Change)
When pressed, the current program number flashes on the display. To change the program, either rotate the DATA knob, or enter the new program number using the numerical keys (0–9). You can enter a program number ranging from 0-127. After you enter the desired program number, press the ENTER key. The Carbon 61 will transmit the program change, and the display will stop flashing. If the number entered is out of range, an "-E-" (error) will display for three seconds, and then return to the last set program number (no information will be transmitted).

CHANNEL (MIDI Channel)
When pressed, the current MIDI channel number flashes on the display. To change the MIDI channel that the Carbon 61 is transmitting on, either rotate the DATA knob, or enter the new program number using the numerical keys. You can enter a number ranging from 1–16. When you reach the desired channel number, press the ENTER key. The Carbon 61 will be set to transmit on the new channel, and the display will stop flashing. If the number is out of range, "-E-" (error) will be displayed for three seconds, and then return to the last set channel number.

Edit Mode

BANK MSB & LSB

In order to store more than the 128 patches, devices generally arrange patches into multiple banks. To access the different banks, MIDI requires an identifier made up of two MIDI messages: Most Significant Byte (MSB) and Least Significant Byte (LSB). These two messages, along with a program change command, will allow you to select a bank, and a patch within that bank. Consult your device's manual for a list of corresponding MSB's and LSB's related to different banks.

To set the BANK MSB or BANK LSB, press the corresponding function key, and the current MSB or LSB will flash on the display. Rotate the DATA knob or type in the desired MSB or LSB number, and press ENTER. You can input numbers ranging from 0-127. The Carbon 61 will transmit the new MSB or LSB to your device. If the number is out of range, "-E-" (error) will flash on the screen for three seconds, and then return to the last set number.

Note: To recall a new patch, a bank change must be followed by a program change.

Assigning Controllers

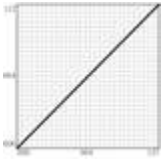
VELOCITY CURVE

The velocity curve is how the keyboard interprets the speed with which a particular key is pressed, and the relative MIDI velocity number it transmits. The Carbon 61 has four different curves you can utilize (1–4, described below). To change the velocity curve, press the key assigned to VELOCITY CURVE. The current selection will flash on the display. Rotate the DATA knob or use the numerical keys to select the desired curve. Press the ENTER key to confirm the selection, and the keyboard will be set to the new velocity curve. It you choose a number out of range, "-E-" (error) will flash on the display for three seconds, and then return to the last set velocity number.

Available Velocity Curves

No.	Type	Description
1	Normal	Linear type curve - Default
2	Soft	Results in a lower transmitted velocity (and corresponding volume)
3	Hard	Results in a higher transmitted velocity (and corresponding volume)
4	Fixed	Note velocity is fixed to 127

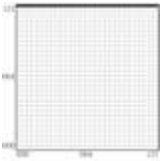
1 - Normal



2 - Soft

3 - Hard

4 - Fixed



Edit Mode

ASSIGN TRANS

Press the ASSIGN TRANS key to change the function that the TRANSPOSE "+" and "-" buttons control. There are three parameters that can be assigned:

1 - Transpose 2 - Program Change 3 - MIDI Channel

When pressed, the current function number will flash on the display. Rotate the DATA knob, or enter the control code using the numerical keys. Press the ENTER key to confirm the selection. If the number input is out of range, the display will flash "-E-" (error) for three seconds, and then return to the last set function number.

Note: When the TRANSPOSE button is set to 2 (program change) or 3 (MIDI channel), the indicators will not work. In addition, when the TRANSPOSE button is set to 2 (program change), the button has an accelerate feature (when the button is pressed and held down, the number will rapidly change so that you can access higher program numbers more quickly).

ASSIGN FADER

Press the ASSIGN FADER function key to adjust the controller number assigned to the VOLUME fader. When pressed, the current controller number will flash on the display. Rotate the DATA knob, or enter the controller number (0–148) using the numerical keys. Refer to the MIDI Continuous Controller (CC) List on p.18 for a list of codes and their corresponding functions. Press the ENTER key to confirm your selection. If the number input is out of range, the display will flash "-E-" (error) for three seconds, before returning to the last set CC number.

ASSIGN KNOB

Press the ASSIGN KNOB function key to adjust the controller number assigned to the DATA knob. When pressed, the current controller number will flash on the display. Rotate the DATA knob, or enter the controller number (0–148) using the numerical keys. Refer to the MIDI Continuous Controller (CC) List on p.18 for a list of codes and their corresponding functions. Press the ENTER key to confirm your selection. If the number input is out of range, the display will flash "-E-" (error) for three seconds, before returning to the last set CC number.

ASSIGN MOD

Press the ASSIGN MOD function key to adjust the controller number assigned to the MODULATION wheel. When pressed, the current controller number will flash on the display. Rotate the DATA knob, or enter the controller number (0–148) using the numerical keys. Refer to the MIDI Continuous Controller (CC) List on p.18 for a list of codes and their corresponding functions. Press the ENTER key to confirm your selection. If the number input is out of range, the display will flash "-E-" (error) for three seconds, before returning to the last set CC number.

Edit Mode

ASSIGN PEDAL

Press the ASSIGN PEDAL function key to adjust the controller number assigned to the SUSTAIN PEDAL input. The default setting is CC #64. When pressed, the current controller number will flash on the display. Rotate the DATA knob, or enter the controller number (0–148) using the numerical keys. Refer to the MIDI Continuous Controller (CC) List on p.18 for a list of codes and their corresponding functions. Press the ENTER key to confirm your selection. If the number input is out of range, the display will flash "-E-" (error) for three seconds, before returning to the last set CC number.

Keyboard Settings

RESET ALL

The RESET ALL function transmits the Reset All Controllers control change, #121, with a value of 0. This message sets controllers to their initial or default state. When you press the RESET ALL function key, the display will first show "No" (indicating that you do not want to reset all functions). If you do want to reset all controllers, press the numerical key 1, or rotate the DATA knob until "Yes" appears on the display. Press the ENTER key to confirm, and all controllers will be reset instantly. If you press the ENTER key while the display shows "No", the reset will be cancelled.

ALL NOTES OFF

The ALL NOTES OFF function sends an "all notes off" message in order to stop any stuck notes. Press the ALL NOTES OFF function key and the keyboard will instantly send the "all notes off" message, and any sustaining notes should stop.

DEFAULT

The DEFAULT function returns all of the Carbon 61 parameters to the original factory settings. Press the DEFAULT function key, and the display will show "No" (indicating that you do not want to reset to all default, factory settings). If you do want to reset all controllers to their factory settings, press the numerical key 1, or rotate the DATA knob until "Yes" appears on the display. Press the ENTER key to confirm, and all controllers will be reset instantly. If you press the ENTER key while the display shows "No", the reset will be cancelled.

SNAPSHOT

The SNAPSHOT function transmits all of the current controller values for the VOLUME fader, DATA knob, PITCH BEND wheel, program number, and channel number at once, so that you can get a full picture of your current settings. Press the SNAPSHOT key to view these values.

MIDI Continuous Controller (CC) List

CC#	Description	Type
0	Bank Select	Controller
1	Modulation wheel	Controller
2	Breath control	Controller
3	Undefined	Controller
4	Foot controller	Controller
5	Portamento time	Controller
6	Data Entry	Controller
7	Channel Volume	Controller
8	Balance	Controller
9	Undefined	Controller
10	Pan	Controller
11	Expression	Controller
12	Effect control 1	Controller
13	Effect control 2	Controller
14	Undefined	Controller
15	Undefined	Controller
16	General Purpose #1	Controller
17	General Purpose #2	Controller
18	General Purpose #3	Controller
19	General Purpose #4	Controller
20	Undefined	Controller
21	Undefined	Controller
22	Undefined	Controller
23	Undefined	Controller
24	Undefined	Controller
25	Undefined	Controller
26	Undefined	Controller
27	Undefined	Controller
28	Undefined	Controller
29	Undefined	Controller
30	Undefined	Controller
31	Undefined	Controller
32	Bank Select	Controller
33	Modulation wheel	Controller
34	Breath control	Controller
35	Undefined	Controller
36	Foot controller	Controller
37	Portamento time	Controller
38	Data entry	Controller
39	Channel Volume	Controller
40	Balance	Controller
41	Undefined	Controller
42	Pan	Controller
43	Expression	Controller
44	Effect control 1	Controller
45	Effect control 2	Controller
46	Undefined	Controller
47	Undefined	Controller
48	General Purpose #1	Controller
49	General Purpose #2	Controller
50	General Purpose #3	Controller
51	General Purpose #4	Controller
52	Undefined	Controller
53	Undefined	Controller
54	Undefined	Controller
55	Undefined	Controller
56	Undefined	Controller
57	Undefined	Controller
58	Undefined	Controller
59	Undefined	Controller
60	Undefined	Controller
61	Undefined	Controller
62	Undefined	Controller
63	Undefined	Controller
64	Damper pedal	Controller
65	Portamento on/off	Controller
66	Sustenuto on/off	Controller
67	Soft pedal on/off	Controller
68	Legato Footswitch	Controller
69	Hold 2	Controller
70	Sound Variation	Controller

MIDI Continuous Controller (CC) List

71	Timbre/Harmonic Intens.	Controller
72	Release Time	Controller
73	Attack Time	Controller
74	Brightness	Controller
75	Decay Time	Controller
76	Vibrato Rate)	Controller
77	Vibrato Depth	Controller
78	Vibrato Delay	Controller
79	Sound Cont.	Controller
80	General Purpose #5	Controller
81	General Purpose #6	Controller
82	General Purpose #7	Controller
83	General Purpose #8	Controller
84	Portamento Control	Controller
85	Undefined	Controller
86	Undefined	Controller
87	Undefined	Controller
88	Undefined	Controller
89	Undefined	Controller
90	Undefined	Controller
91	Reverb Send Level	Controller
92	Tremolo Depth	Controller
93	Chorus Send Level	Controller
94	Celeste/Detune Depth	Controller
95	Phaser Depth	Controller
96	Data entry +1	Controller
97	Data entry -1	Controller
98	NRPN LSB	Controller
99	NRPN MSB	Controller
100	RPN LSB	Controller
101	RPN MSB	Controller
102	Undefined	Controller
103	Undefined	Controller
104	Undefined	Controller
105	Undefined	Controller
106	Undefined	Controller
107	Undefined	Controller
108	Undefined	Controller
109	Undefined	Controller
110	Undefined	Controller
111	Undefined	Controller
112	Undefined	Controller
113	Undefined	Controller
114	Undefined	Controller
115	Undefined	Controller
116	Undefined	Controller
117	Undefined	Controller
118	Undefined	Controller
119	Undefined	Controller
120	All Sound Off	Controller
121	Reset All Controllers	Controller
122	Local control on/off	Controller
123	All notes off	Controller
124	Omni mode off	Controller
125	Omni mode on	Controller
126	Poly mode off	Controller
127	Poly mode on	Controller
128	Pitch Bend Sensitivity	RPN
129	Fine Tuning	RPN
130	Coarse Tuning	RPN
131	Vibrato Rate	NRPN
132	Vibrato Depth	NRPN
133	Vibrato Delay	NRPN
134	Low Pass Filter Cutoff Frequency	NRPN
135	Low Pass Filter Resonance	NRPN
136	High Pass Filter Cut-off Frequency	NRPN
137	EQ Low Gain	NRPN
138	EQ High Gain	NRPN

MIDI Continuous Controller (CC) List

139	EQ Low Frequency	NRPN
140	EQ High Frequency	NRPN
141	EG Attack Time	NRPN
142	EG Decay Time	NRPN
143	EG Release Time	NRPN
144	Channel Pressure	After Touch
145	Program Change	Others
146	Song Select(Song #)	Others
147	Master Volume	SysEx
148	Master Balance	SysEx

MIDI Note Numbers

International Organization Standardization system of MIDI note numbers. Middle C is MIDI note number 60 (C4).

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

Specifications

Keyboard	61-key, semi-weighted, velocity sensitive
Display	3-digit, 7-segment
Controls	Volume Fader, Data Knob, Edit Button, Octave +/- buttons, Transpose +/- buttons, Pitch Bend Wheel, Modulation Wheel
Functions	Program Number, Reset All, MIDI Channel, All Notes Off, Bank MSB, Bank LSB, Velocity Curve, Default, Assign Trans, Assign Fader, Assign Knob, Assign Mod, Assign Pedal, Snapshot
Pedal Input	1/4" TRS
MIDI	MIDI over USB, 5-Pin MIDI OUT
Power	USB Bus Power
Accessories	USB Cable iPad rubber shoes Native Instruments Komplete Elements DVD
Dimensions	37.9" x 8.75" x 3" 962 mm x 222 mm x 76 mm
Weight	7.48 lbs 3.4 kgs