Roland

MIDI KEYBOARD CONTROLLER
PC-160

Owner's Manual

Bedienungsanleitung

Mode d'emploi

Manuale di Istruzioni

Roland®

MIDI KEYBOARD CONTROLLER
PC-160

OWNER'S MANUAL

Thank you, and congratulations on your choice of the Roland PC-160.
The PC-160 is an easy-to-operate, dedicated keyboard controller for
GS compatible sound modules. Please take the time to read through
this Owner's Manual. That way you can feel assured that you
understand every feature the unit offers, and will enjoy many years of
trouble-free operation.

About the PC-160

The Roland PC-160 is a MIDI keyboard controller. It does not contain any sound-generating circuitry, since it is designed to provide for the convenient transmission of Program Change and Bank Select messages, as well as a variety of other MIDI messages (such as reverb and chorus information) to an external sound module. It is particularly suited to control sound modules that comply with the GS Format. (Called simply "GS sound modules" in the following.)

What is the GS Format?

The GS Format is a standardized set of specifications for Roland's sound sources which defines the manner in which multitimbral sound generating unit will respond to MIDI messages. All devices compatible with the GS Format bear the GS logo. Every module or device with the GS logo will respond in the same way to the MIDI messages sent from the PC-160.

*   All GS sound modules from Roland also fully support Level 1 of the General MIDI System.
*   In 1990, the MIDI standard incorporated the Program Change/Bank Select function (provides for the selection of sounds using the values for Controller numbers 0 and 32 together with a Program Number). The GS Format accommodates this form of sound selection, which allows a much larger number of sounds to be selected. However, Bank Selects cannot be used for the Drum Part (ch. 10).

About the Sounds Contained in a GS Sound Module

A GS sound module contains 128 basic sounds (Capital Tones) and a number of Variation Tones. The mapping for the Capital Tones is compatible with Level 1 of the General MIDI System. Capital Tones are stored in Bank 0, while the Variations are stored in Banks 1 through 127. The selection of Variation Tones that are made available will be different depending on the sound module. You should check the manual for any module you are going to use, and familiarize yourself with the sound collection it contains.

About the Drum Sets Provided by a GS Sound Module

The Drum Channel (ch. 10) provides for the use of several Variation Sets in addition to the basic Drum Set (Standard Set: PC #1). Drum Sets are selected using Program Change messages. The types of Variation Sets that are made available will be different depending on the sound module. Refer to the manual for the module you are using so you know what kinds of drum sets it contains.

Main Features of the PC-160

Superb Playability and Expressiveness

Since this standard 49-key keyboard also provides response to velocity, it allows you to express even the finest nuances. In addition, an Octave Shift feature allows you to conveniently shift the soundable range up or down one or two octaves. Moreover, it is equipped with a pitch bend/modulation lever, and provides a jack for connecting a damper pedal.

Complete Range of Control Features

Since the keyboard provides for sound selections that use combinations of Program Change and Bank Select messages (value for CC 00 and CC 32), you can also select any of the Variation Tones that may be available on a GS sound module.

In addition, a variety of continuous controllers (Control Changes) can be assigned to the data entry slider. The slider can then be used for variable control over the desired parameter (reverb or chorus depth, for example) on a GS sound module.

Makes Desk Top Music (DTM) More Enjoyable

The PC-160 is very compact, so it requires only a minimal amount of desktop space. And it can be powered either with an adaptor or batteries. The keyboard is sure to become an invaluable part of any DTM setup, since it can be used for real-time or step recording, as well as for practice while listening to "minus-one" playback.

Important Notes

When using an AC adaptor, use only the specified device (BOSS ACA series). Use of any other AC adaptor could result in damage, malfunction or electric shock.

Power Supply

- Before connecting this unit to other devices, turn off the power to all units; this will help to prevent damage or malfunction.
- Do not use this unit on the same power circuit with any device that will generate line noise; an electric motor or variable lighting system for example.
- The power requirement for this unit is indicated on its nameplate (rear panel). Ensure that the voltage in your installation meets this requirement.
- Avoid damaging the power cord: do not step on it, place heavy objects on it, etc.
- When disconnecting the AC adaptor from the power outlet, grasp the plug itself; never pull on the cord.
- If the unit is to remain unused for an extended period of time, unplug the power cord.
- When installing or replacing batteries, refer to "Battery Replacement" (page 11).

Placement

- Do not subject the unit to temperature extremes (e.g., direct sunlight in an enclosed vehicle). Avoid using or storing the unit in dusty or humid areas, or areas that are subject to high levels of vibration.
- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum.
- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.

Maintenance

- For everyday cleaning wipe the unit with a soft, dry cloth or one that has been slightly dampened with water. To remove stubborn dirt, use a mild, non-abrasive detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzene, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

Additional Precautions

- Protect the unit from strong impact.
- Do not allow objects or liquids of any kind to penetrate the unit. In the event of such an occurrence, discontinue use immediately. Contact qualified service personnel as soon as possible.
- A small amount of heat will radiate from the unit during normal operation.
- Before using the unit in a foreign country, consult with qualified service personnel.
- Should a malfunction occur, or if you suspect there is a problem, discontinue use immediately. Contact qualified service personnel as soon as possible.
- To avoid the risk of electric shock, do not open the unit.

Table of Contents

Panel Descriptions

[1] BENDER/MODULATION lever

[2] DATA ENTRY slider
[3] MIDI/SELECT button
[4] POWER Indicator
[5] START/STOP Button
[6] OCTAVE UP/DOWN/STANDARD Buttons

[7] NUMERIC ENTRY Section (0 to 9)

[8] MIDI CHANNELS Section (1 to 16)
[9] AFTERTOUCH
[10] VELOCITY

[11] REVERB LEVEL

[12] CHORUS LEVEL
[13] PANPOT
[14] VOLUME
[15] TEMPO CLOCK
[16] CC SELECT (Select Control Change)
[17] CC 00

[18] CC 32

[19] PC (Program Change)
[20] CANCEL
[21] ENTER

[23] POWER Switch
[25] AC Adaptor Jack
[24] MIDI OUT Connector
[22] SUSTAIN SWITCH Jack

Power

The PC-160 can be powered either by batteries or an AC adaptor.

Battery Replacement

Six AA batteries are required to run the unit on battery power. We recommend the use of alkaline batteries, since they will provide a more stable, long-lasting source of power. With alkaline batteries, you can expect to obtain about 25 hours of continuous operation, although this depends on how the unit is being used.

* Avoid using new batteries together with old ones. In addition, avoid mixing different types of batteries (e.g., regular carbon and alkaline batteries).
* When replacing batteries, be sure to insert them correctly (to ensure correct polarity).
* Remove the batteries whenever the unit is to remain unused for an extended period of time.

1. Check that the unit is OFF.
2. Remove the battery cover located on the bottom of the instrument.

2) Lift up

1) Press the two tabs forward
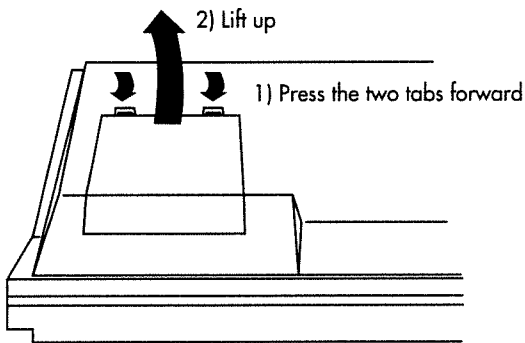
3. Take out the battery case, then insert the six batteries (three on each side).
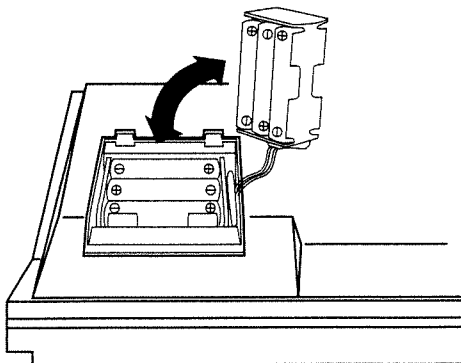
4. Close the battery cover.

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How to Connect the AC Adaptor

Be sure to use only the specified AC adaptor (BOSS ACA series). Using any other type may cause malfunction or electric shock.

* If the unit is to remain unused for an extended period of time, unplug the power cord.

1. Check that the unit is OFF.
2. Connect the AC adaptor to the AC Adaptor jack, then connect the plug to a power outlet.

Setting Up the PC-160

The PC-160 is a MIDI controller. Although it contains no sound-generating circuitry of its own, it can effectively control external units (sound module, computer, etc.) by transmitting a wide variety of MIDI messages.
To ensure maximum benefit from your system, be sure to read this manual and the manuals for all external equipment.

Sound Module Setup

Connect the MIDI OUT connector of the PC-160 to the MIDI IN connector of the sound module.
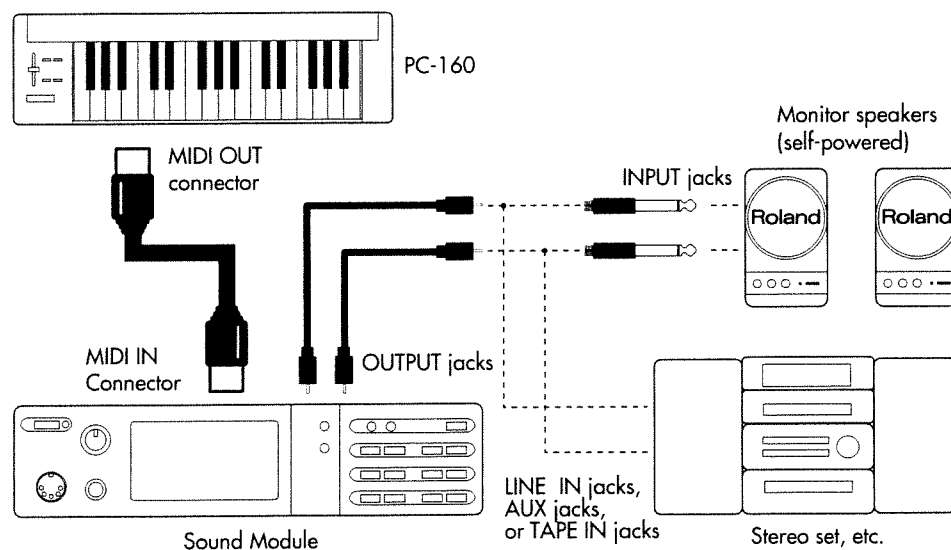
Desk Top Music Setup

* When connecting your computer with a sound module, use only a cable which is designed for the model of computer you are using and its particular kind of connector.

* If the sound module has a COMPUTER switch, make sure it is set to the appropriate position. The correct position will vary depending on the type of computer, the way you are connecting with it, and the requirements of the software you are using.

Computer Connected Using the Serial Connector on the Sound Module

Connect the MIDI OUT connector of the PC-160 to the MIDI IN connector of the sound module.
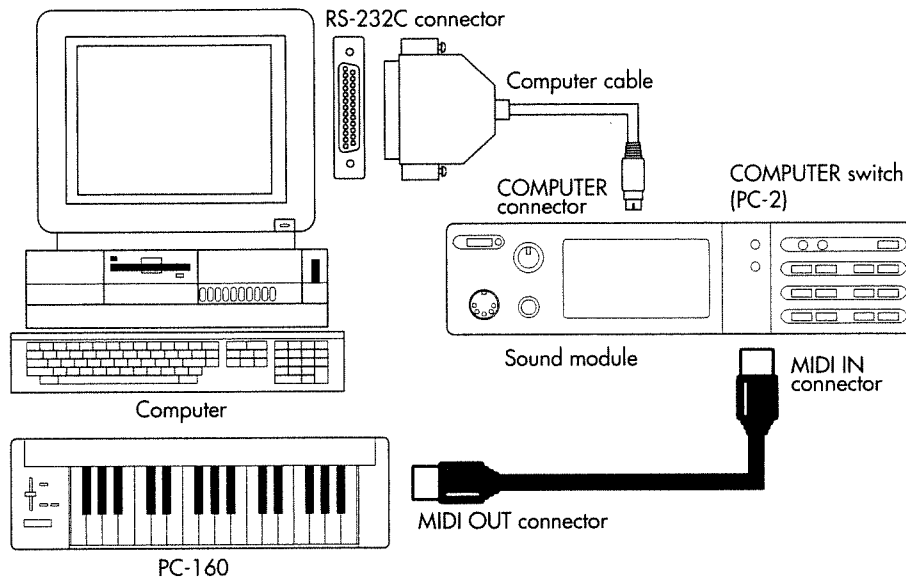
Computer Connected Using the MIDI IN Connector on the Sound Module

Connect the MIDI OUT connector of the PC-160 to the MIDI IN connector of the MIDI processing unit (MPU series, etc.).

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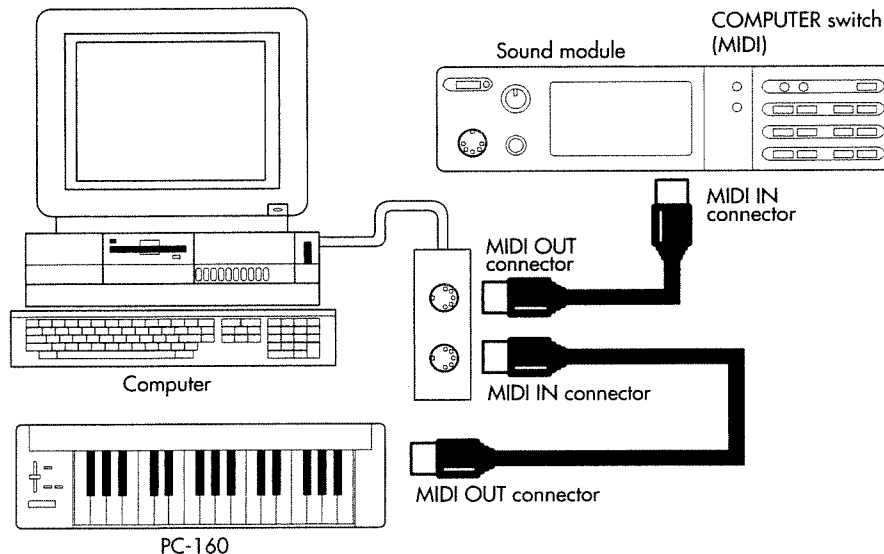
Powering Up

Power to the various devices should be turned on in the appropriate order. First, turn on the units from which MIDI messages will originate (computer, PC-160). Next, turn on the sound module, then the audio reproduction equipment. This unit's power switch [23] is located on its rear panel.
Power off your system in the reverse order.

* This unit is equipped with a circuitry protection feature. A brief interval after power up is required before the unit will operate normally.

Setting the MIDI Channel (MIDI Transmit Channel)

To control the sound module, set the MIDI channel the PC-160 will use to transmit on to the same channel the module is using to receive on. If the sound module is multitimbral, set the channel on the PC-160 so it matches the MIDI channel of the Part in the module that you wish to control.

[Procedure]
1. Press MIDI/SELECT [3] (the LED will light).
2. Press E3 (white key) MIDI CHANNEL [8].
3. Select the MIDI channel composing the number using the 10 Numeric ENTRY Keys [7].
4. Press ENTER [21] to confirm the MIDI Channel.
5. Press MIDI/SELECT [3] again (the LED will go out).

Selecting Sounds on a GS Sound Module (Sending Program Change/Bank Select Messages)

Program Change/Bank Select messages are used to change Tones for an ordinary instrument Part, and for changing Drum Sets for the Drum Part (GS: ch. 10).

Changing Sounds in a GS Sound Module

To change Tones in a GS module, you need to send the Bank Select message (consists of the values for Controller Numbers [CC] 00 and 32) together with the Program Number.
The value of Controller Number 00 (MSB) and that of Controller Number 32 (LSB) work together as a pair to specify a Bank. The Program Number that comes immediately after completes the switch to the desired sound.

On the PC-160, these three messages are always sent as one set:

Value of Controller Number 00 (MSB)

Value of Controller Number 32 (LSB)

Program Number xx

[Procedure]

1. Set the MIDI transmit channel to match that of the desired Part (in the sound module).
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the F4 (white key) (CC 00) [17].
4. Select the value of Controller Number 00 by pressing keys in the NUMERIC ENTRY section [7].
5. Press ENTER [21].
6. Press the G4 (white key) (CC 32) [18].
7. Select the value of Controller Number 32 by pressing keys in the NUMERIC KEYPAD section [7].
8. Press ENTER [21].
9. Press the A4 (white key) (Program Change [PC]) [19].
10. Select the Program Number by pressing keys in the NUMERIC ENTRY section [7].
11. Press ENTER [21].
12. Press MIDI/SELECT [3] again (the LED will go out).

[Example]

How to select the Variation No. 8, Instrument No. 3 sound (Piano 3w) on the SC-55mkII:

1. Set the MIDI transmit channel to match that of the desired Part in the module.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the F4 (white key) (CC 00) [17].
4. Press the "8" key in the NUMERIC ENTRY section [7].
5. Press ENTER [21].
6. Press the G4 (white key) (CC 32) [18].
7. Press the "0" key in the NUMERIC ENTRY section [7].
8. Press ENTER [21].
9. Press the A4 white key (PC) [16].
10. Press the "3" key in the NUMERIC ENTRY section [7].
11. Press ENTER [21].
12. Press MIDI/SELECT [3] again (the LED will go out).

Changing Drum Sets in a GS Sound Module

The Drum Part (ch. 10) of a GS module does not respond to Bank Select messages. However, if you try to send only a Program Change message from the PC-160, a Bank Select message will end up being transmitted along with it anyway because the data for the last sound specified will have been retained in memory. For this reason, you should always send a value of 0 for Controller Numbers 00 and 32 first, then send the Program Number in order to make sure you obtain the Drum Set you need.

[Procedure]
1. Set the MIDI transmit channel to 10.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the F4 (white key) (CC 00) [17].
4. Press the "0" key in the NUMERIC ENTRY section [7].
5. Press ENTER [21].
6. Press the G4 (white key) (CC 32) [18].
7. Press the "0" key in the NUMERIC ENTRY section [7].
8. Press ENTER [21].
9. Press the A4 (white key) (PC) [19].
10. Select the Program Number by pressing keys in the NUMERIC ENTRY section [7].
11. Press ENTER [21].
12. Press MIDI/SELECT [3] again (the LED will go out).

[Example]
How to select the PC #49 Drum set (ORCHESTRA Set) on the SC-55mkII:
1. Set the MIDI transmit channel to 10.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the F4 (white key) (CC 00) [17].
4. Press the "0" key in the NUMERIC ENTRY section [7].
5. Press ENTER [21].
6. Press the G4 (white key) (CC 32) [18].
7. Press the "0" key in the NUMERIC ENTRY section [7].
8. Press ENTER [21].
9. Press the A4 (white key) (PC) [19].
10. Press the "4" key and then "9" in the NUMERIC ENTRY section [7].
11. Press ENTER [21].
12. Press MIDI/SELECT [3] again (the LED will go out).

Useful Features When Playing

Applying Pitch Changes to Notes (Pitch Bend)

Move the BENDER/MODULATION lever [1] (left or right) to transmit Pitch Bend messages, and apply subtle pitch changes to notes.

*   The Pitch Bend range varies depending on how it is set on the sound module.

Modifying the Sound of Notes: Modulation (CC 01)

Moving the BENDER/MODULATION lever [1] forward (away from you) will transmit Modulation messages, changing the sound in real time (usually by adding a vibrato effect).

*   The change obtained with this message will vary depending on the settings for your sound module (the section which handles modulation), or the Tone selected.

Adding a Sustain Effect to Notes: Damper (CC 64)

After connecting a damper pedal (optionally available DP-2/6; FS-5U), you can depress it while playing to send the Hold 1 message (CC 64), causing notes that were playing to be sustained. If an electric organ or other normally sustained type sound was being sounded, the notes will continue for as long as you have the pedal down. The damper pedal should be connected to the SUSTAIN SWITCH jack [22] on the rear of the unit.

Depressing the pedal will transmit an ON value (127), while releasing it will transmit an OFF value (0).

*   The CC 64 (Hold 1) function can be assigned to the DATA ENTRY slider, allowing you to obtain the damper effect by moving the slider.

Start / Stop external sequencer

This button can be used to send MIDI FA and FC (Start and Stop messages) to control the START/STOP function of an external sequencer.

Changing Octaves

Using the OCTAVE [6] buttons (UP, DOWN), the soundable range of the keyboard can be shifted up or down by two octaves, making it possible to access higher or lower notes that normally cannot be reached.

Shift the Sound Range Up One or two Octaves: OCTAVE UP

Press UP . The keyboard will now offer notes within a range an octave higher.

Press UP again. The keyboard will now offer notes within a range two octaves higher.

Shift the Sound Range Down One Octave: OCTAVE DOWN

Press DOWN . The keyboard will now offer notes within a range an octave lower.

Press DOWN again. The keyboard will now offer notes within a range two octaves lower.

- 2 Octaves   - 1 Octave   F2 (Note #: 41)   C8 (Note #: 96)   +1 Octave   +2 Octaves

Natural Range
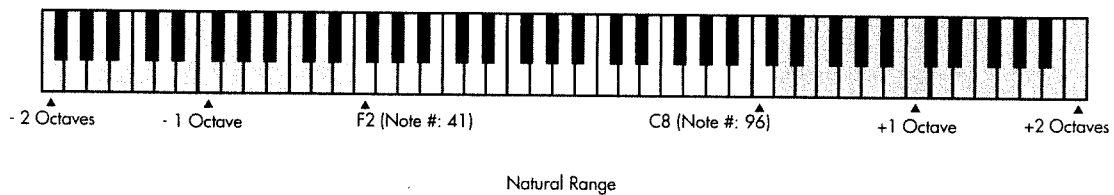
Return to the Normal Sound Range: STANDARD

Press UP and DOWN simultaneously.

F2 (Note #: 41)   C5 (Note #: 72)

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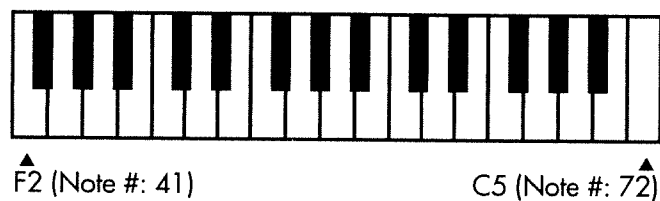
Controlling a Sound Module with the DATA ENTRY Slider

The following functions can be assigned to the DATA ENTRY slider:

Function name	Description
Channel Aftertouch	Alters notes currently being played
Tempo	Speed of an external sequencer
Velocity	Changes dynamics
Reverb Send Level (CC 91)	Sets the depth of Reverb
Chorus Send Level (CC 93)	Sets the depth of Chorus
Volume (CC 07)	Sets the volume level of the Part
Panpot (CC 10)	Sets sound position (localization in the stereo sound field)
CC 00 to 127	Depends on the selected Controller Number

NOTE: Since a slider control accesses digital information, it might not produce any noticeable change in the value if moved by only a small amount. If this happens, move the slider up and down once, then set the value.

Altering the Timbre of Notes Currently Being Played (Channel Aftertouch)

The keyboard on the PC-160 cannot transmit Channel Aftertouch messages. However, such messages can be transmitted by assigning the Channel Aftertouch function to the DATA ENTRY slider on the PC-160.

Channel Aftertouch is a function that lets you alter notes (that have already been played) by applying additional pressure on the keys. The PC-160 can create this Aftertouch effect — simply move the DATA ENTRY slider after Aftertouch has been assigned to it.

[Procedure]

1. Set the MIDI transmit channel to match that of the desired Part.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the F3 (white key) (AFTER TOUCH) [9].
4. Press MIDI/SELECT [3] again (the LED will go out).

   Now, when you move the DATA ENTRY slider, Channel Aftertouch messages (with a value reflecting the slider's position) will be transmitted.

NOTE: A GS sound module will not respond to Aftertouch messages while it remains set at its factory defaults. For details, refer to the owner's manual for the sound module you are using. Computer users should consult the owner's manual for their software, since it may be possible to select a response for Channel Aftertouch within the software.

Changing the Velocity Sensitivity: Velocity

Whenever a key is pressed on the instrument, the value for velocity will be transmitted along with the note information. The following setting allows you to choose the sensitivity of the response to velocity (range of possible change).

Slider position: minimum   Slider position: center   Slider position: maximum

Velocity value / Strength of key touch   Velocity value / Strength of key touch   Velocity value / Strength of key touch

[Procedure]
1. Set the MIDI channel to match that of the Part (sound module) to be controlled.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the G3 white key (VELOCITY) [10].
4. Press MIDI/SELECT [3] again (the LED will go out).
   Move the DATA ENTRY slider to select the minimum value, thus setting the desired range for velocity. With the slider at its maximum, velocity values within the entire 1—127 range can be generated.

Changing the Reverb Depth: Reverb Send Level (CC 91)

This function allows you to set the Reverb depth for each Part.

[Procedure]
1. Set the MIDI transmit channel to match that of the desired Part.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the A3 (white key) (REVERB LEVEL) [11].
4. Press MIDI/SELECT [3] again (the LED will go out).
   Now you can use the DATA ENTRY slider to select the value transmitted for the Reverb Send Level (Effect 1 Depth).

* When a sound module other than a GS or General MIDI module is being used, the relevant parameter may not correctly respond to CC 91 messages.

Changing the Chorus Depth: Chorus Send Level (CC 93)

This function allows you to set the Chorus depth for each Part.

[Procedure]
1. Set the MIDI transmit channel to match that of the desired Part.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the B3 white key (CHORUS LEVEL) [10].
4. Press MIDI/SELECT [3] again (the LED will go out).
    Now you can use the DATA ENTRY slider to select the value transmitted for the Chorus Send Level (Effect 3 Depth).

*   When a sound module other than a GS module is being used, the relevant parameter may not correctly respond to CC 93 messages.

Changing the Volume: Volume (CC 07)

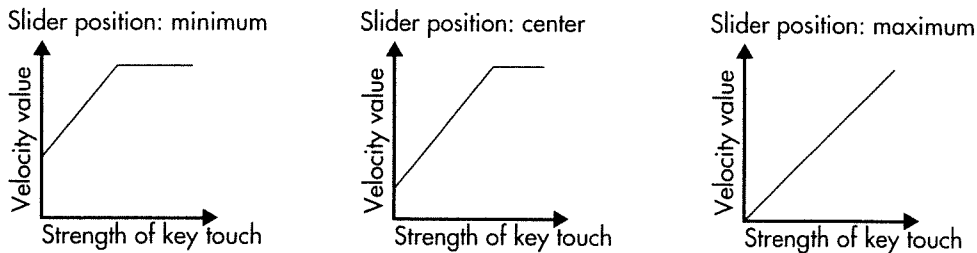This function allows you to adjust the volume level for each Part.

[Procedure]
1. Set the MIDI transmit channel to match that of the desired Part.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the C#4 (black key) (VOLUME) [14].
4. Press MIDI/SELECT [3] again (the LED will go out).
    Now you can use the DATA ENTRY slider to set the value that will be transmitted for the Volume.

Changing the Tempo Speed: Tempo Clock

This function allows you to adjust the tempo of an external sequencer.

[Procedure]
1. Press MIDI/SELECT [3] (the LED will light).
2. Press the D4 (white key) (TEMPO CLOCK) [15].
3. Press MIDI/SELECT [3] again (the LED will go out).
    Now you can use the DATA ENTRY slider to set the speed of an external sequencer.

Setting the Sound Location: Panpot (CC 10)

When the module is connected so its sounds are produced in stereo, this parameter determines the stereo placement (L/R) of the individual sounds produced. For the Drum Part (ch. 10), it alters in a relative manner the overall Panpot setting for percussive instruments (the overall orientation of the Drum Part on a GS module).

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[Procedure]
1. Set the MIDI transmit channel to match that of the desired Part.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the C4 (white key) (PANPOT) [13].
4. Press MIDI/SELECT [3] again (the LED will go out).
   Now you can use the DATA ENTRY slider to set the value to be transmitted for the Panpot. With the slider at the center, the sound will be oriented in the center. When pulled all the way forward, the sound will be heard from the extreme left. When pushed completely back, the sound will come from the right.
* The Panpot parameter for the Roland MT-32 is the reverse of that for a GS sound module.

Assigning Other Controllers (CC 00 to 127) to the DATA ENTRY Slider

By assigning a controller number to the DATA ENTRY slider, the slider can be used for controlling a wide range of features on your sound module.

You will probably only use controller numbers 0~95 because they allow you to obtain "audible" results. Since the PC-160 isn't equipped with a display which allows you to monitor data when transmitting it, it is not suited for operations which involve Registered and Non-Registered Parameter Numbers.

Controllers 00 through 95 (control messages)

Controller Number	Control Function
0	Bank Select MSB
1	Modulation
2	Breath Controller
3	Undefined
4	Foot Controller
5	Portamento Time
6	Data Entry (Used with RPN/NRPN)
7	Main Volume
8	Balance
9	Undefined
10	Panpot
11	Expression Pedal
12	Effect Control 1
13	Effect Control 2
14—15	Undefined
16	General Purpose Controller 1
17	General Purpose Controller 2
18	General Purpose Controller 3
19	General Purpose Controller 4
20—31	Undefined
32	Bank Select LSB
33—63	LSB for controllers 1-31
64	Hold 1 (Damper)
65	Portamento
66	Sostenuto
67	Soft Pedal
68	Undefined
69	Hold 2 (Freeze)
70—79	Undefined
80	General Purpose Controller 5
81	General Purpose Controller 6
82	General Purpose Controller 7
83	General Purpose Controller 8
84—90	Undefined
91	Effect 1 (External Effect) Depth (GS/General MIDI: Reverb Send Level)
92	Effect 2 (Tremolo) Depth
93	Effect 3 (Chorus) Depth (GS: Chorus Send Level)
94	Effect 4 (Delay) Depth
95	Effect 5 (Phaser) Depth

Controllers 96 and above (NRPN/RPN, Channel Mode Messages)

Controller No.	Control Function
96	Data Increment
97	Data Decrement
98	Non-Registered Parameter Number LSB
99	Non-Registered Parameter Number MSB
100	Registered Parameter Number LSB
101	Registered Parameter Number MSB
102—120	Undefined
121—127	Reserved for Channel Mode Messages

[Procedure]
1. Set the MIDI transmit channel to match that of the desired Part.
2. Press MIDI/SELECT [3] (the LED will light).
3. Press the D#4 (black key) (CC SELECT) [16].
4. Select the Controller Number by pressing keys in the NUMERIC ENTRY section [7].
5. Press ENTER [21].
6. Press MIDI/SELECT [3] again (the LED will go out).
   Now you can use the DATA ENTRY slider to transmit the value of the specified Controller Number.

Troubleshooting

Q: The unit cannot be switched on; or it doesn't work at all.

A: Check the batteries. Even if the power indicator is lit, the unit will not work properly if the batteries are nearly dead.

A: Check if you are using the correct AC adaptor. (Use only the specified adaptor — using any other adaptor may result in damage, malfunction or electric shock.)

Q: The sound module does not respond to the movement of the DATA ENTRY slider.

A: Check if the correct function is assigned to the DATA ENTRY slider. Also, note that the module will sometimes not respond if the slider is moved only slightly. If you are unsure, pull the slider all the way down first and then set it to the desired position.

Q: The sound you have requested cannot be selected.

A: Some GS modules, such as those in the Sound Canvas series, have a switch which allows you to turn on or off the reception of Program Change messages and/or Bank Select messages. Be sure this switch is turned ON.

A: Could the sound module have received a GM System On message (the message that orders a module to function as a General MIDI sound module) before you sent Bank Select messages? Since Bank Selects are not recognized in the General MIDI System Level 1 specifications, the module will ignore them if it is currently behaving as a General MIDI device. To correct this situation, send a GS Reset message (which retrieves the GS default settings), or simply switch the module off, then on again.

* The PC-160 cannot transmit GS Reset messages.

A: When specifying the change in sound, did you supply the complete set of values (values for CC 00/CC 32 and Program Number)? When a change in sound is made using the PC-160, the complete set of three values (value for CC 00 and CC 32, then the Program number) is transmitted, even if only the Program Number has been specified. Note also that the values for a sound selection remain stored in memory until the next sound has been successfully selected. So, if even if the message set (Bank Select followed by Program Change) is incomplete, part of the previous values could be sent along with the newly specified ones. As a result, you may end up selecting a totally different sound from the one you had in mind.

A: Does your computer music application use Program Numbers 0 to 127 for sound selection? Since the PC-160 uses numbers 1 to 128, you may need to add one to the number being selected to obtain the correct sound (i.e. "2" instead of "1" as specified in the tone tables of your module).

Q: The GS module does not respond to Aftertouch messages.

A: A GS sound module will not respond to Aftertouch messages when it's in its default mode. Therefore, you need to set the Aftertouch parameters using Exclusive messages. (Refer to the MIDI Implementation for the sound module in question.) If using a computer-based system, you may be able to easily make the required settings using the software.

PC -160
Specifications

Keyboard
32 keys (velocity sensitive)

MIDI Control
MIDI Channels (1 to 16)
Octave Shift (Up, Down, Standard)(+2 / -2)
Start / Stop button
Bender/Modulation Lever (Modulation On / Off)
Data Entry Slider
   Controller Numbers 00/32 (GS Variation selection)
   Channel Aftertouch
   Velocity
   Reverb Send Level
   Chorus Send Level
   Volume
   Panpot
   Others (Controller Numbers 00 to 127)
   Tempo Speed (MIDI F8)

Rear Panel
Power Switch, Sustain Switch jack, AC Adaptor jack, and MIDI OUT connector

Power Supply
DC 9 V: AC Adaptor (Optional) ; Dry Batteries (R6 [AA] type supplied with the package)

Current Draw
50 mA

Dimensions
581(W) x 178(D) x 76,8(H) mm

Weight
1,7 kg

Accessories
Owner's Manual, MIDI Cable
Option
AC Adaptor (BOSS ACA series)
   AC 117 V: ACA 120
   AC 220 V: ACA 220
   AC 240 V: ACA 240
*   In the interest of product development, the specifications and/or appearance
    of this unit are subject to change without prior notice.

MIDI Keyboard Controller
Model PC-160   **MIDI Implementation Chart**

Date :   Jan , 1996
Version : 1.00

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	1	x	
	Changed	1 — 16	x	
Mode	Default	Mode 3	x	
	Messages	x	x	
	Altered	**************	x	
Note Number :	True Voice	36 — 84	x	
		**************	x	
Velocity	Note ON	O	x	
	Note OFF	x	x	
After Touch	Key's	x	x	
	Ch's	O	x	
Pitch Bend		O	x	
Control Change	0—127	O	x	* 1
Prog Change	: True #	1 — 128	x	
		**************	x	
System Exclusive		x	x	
System Common	: Song Pos	x	x	
	: Sog Sel	x	x	
	: Tune	x	x	
System Real Time	: Clock	x	x	
	: Commands	x	x	
Aux Message	: Local ON/OFF	x	x	
	: All Notes OFF	x	x	
	: Active Sense	O	x	
	: Reset	x	x	
Note		* 1 Messages are tx over particular conditions.		

Mode 1: OMNI ON, POLY   Mode 2: OMNI ON, MONO   O : YES
Mode 3: OMNI OFF, POLY   Mode 4: OMNI OFF, MONO   X : NO

Information

When you need repair service, call your local Roland Service Station or the authorized Roland distributor in your country as shown below.

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Los Angeles, CA. 90040-3696, U. S. A.
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Richmond B. C., V6V 2M4
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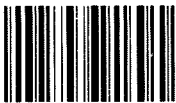TEL: (011) 403 4105

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