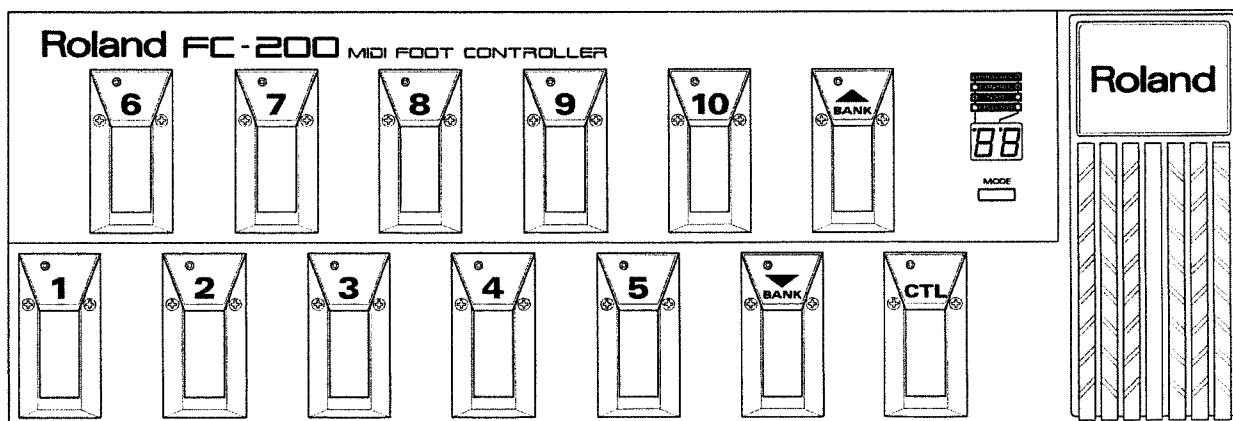


Roland®

MIDI FOOT CONTROLLER

FC-200

Owner's Manual



For Germany

Bescheinigung des Herstellers/Importeurs

Hiermit wird bescheinigt, daß der/die/das

MIDI FOOT CONTROLLER FC-200

(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der BMPT-AmtsblVfg 243/1991 funk-entstört ist. Der vorschriftsmäßige Betrieb mancher Geräte (z. B. Meßsender) kann allerdings gewissen Einschränkungen unterliegen. Beachten Sie deshalb die Hinweise in der Bedienungsanleitung.

Dem Zentralamt für Zulassungen im Fernmeldewesen wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf die Einhaltung der Bestimmungen eingeräumt.

Roland Corporation

4-16 Dojimahama 1-Chome Kita-ku Osaka 530 Japan

(Name und Anschrift des Herstellers/Importeurs)

For the USA

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Unauthorized changes or modification to this system can void the users authority to operate this equipment. This equipment requires shielded interface cables in order to meet FCC class B Limit.

For Canada

CLASS B NOTICE

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

CLASSE B AVIS

Cet appareil numérique ne dépasse pas les limites de la classe B au niveau des émissions de bruits radioélectriques fixés dans le Règlement des signaux parasites par le ministère canadien des Communications.

Introduction

We'd like to take a moment to thank you for purchasing the Roland FC-200 MIDI Foot Controller. In order to fully realize the potential of the FC-200, and to ensure years of trouble-free operation, please take the time to read this manual thoroughly.

MAIN FEATURES

Changing Tones with the Pedals

You can use the pedals to send Program Change messages, making it possible to change Tones without interrupting your performance.

Pedals Designed for Realtime Control

The FC-200 comes with switch pedals and an expression pedal. These make it possible to send Control Change messages, and alter volume levels and sounds as you play.

Six Jacks for Control Change Messages

The FC-200 comes with six jacks that let you hook up precisely the foot switches and expression pedals you need.

Can Be Used As a Pedal Keyboard

The pedals can also work like a pedal keyboard for playing notes.

Two Power Supplies

The FC-200 can be powered by either dry-cell batteries or an AC adaptor.

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IMPORTANT NOTES

When using an AC adaptor, use only the specified device (PSA-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 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 "ABOUT CHANGING THE BATTERIES" (p.33).

Placement

Do not subject the unit to temperature extremes (eg., 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.

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.

Memory Backup

Please be aware that the contents of memory may at times be lost; when the unit is sent for repairs or when by some chance a malfunction has occurred. Important data should be stored in another MIDI device (eg., a sequencer), or written down on paper (if possible). During repairs, due care is taken to avoid the loss of data. However, in certain cases (such as when circuitry related to memory itself is out of order), we regret that it may not be possible to restore the data.

Changing Batteries

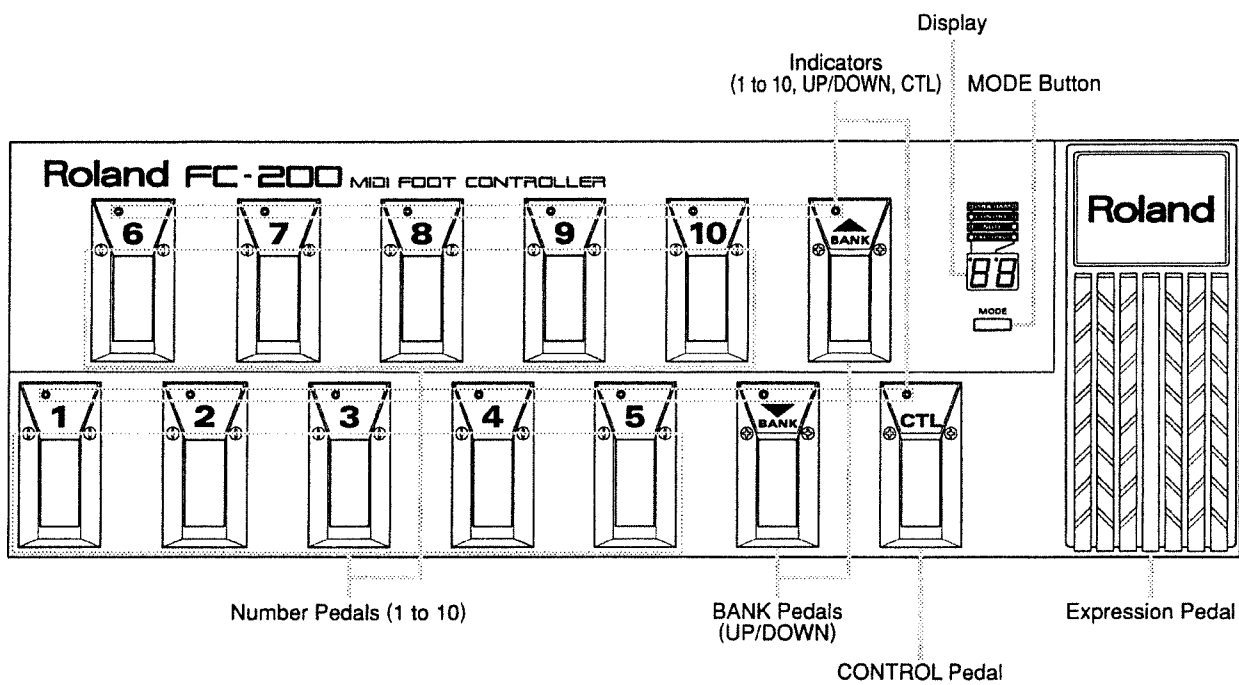
Avoid using new batteries together with old ones. In addition, avoid mixing different types of batteries (eg., regular carbon and alkaline batteries).

When replacing batteries, be sure to insert them correctly (to ensure correct polarity).

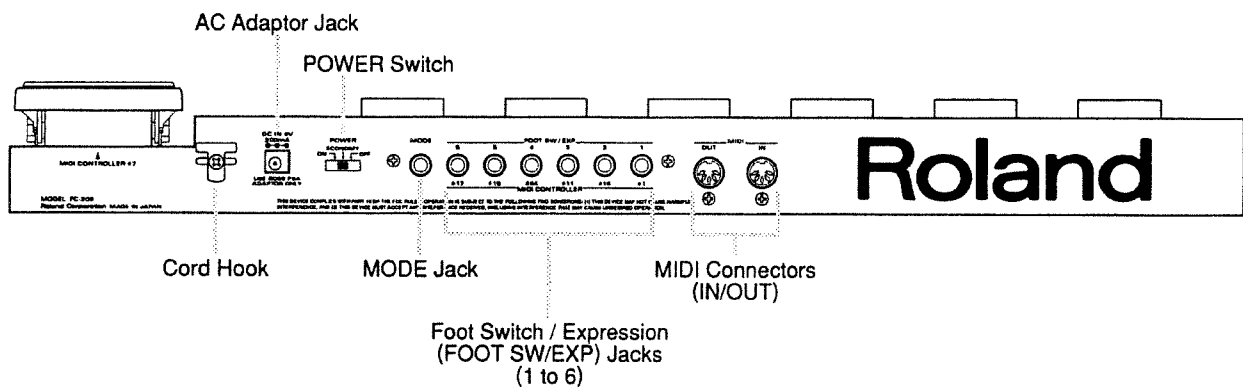
Remove the batteries whenever the unit is to remain unused for an extended period of time.

DESCRIPTIONS

Front Panel



Rear Panel



HOW TO USE THE FC-200

The FC-200 offers the four modes described below. Each of these modes provides its own unique features, so choose the mode according to what you wish to do.

** See "SWITCHING MODES" (p. 10) for an explanation of how to choose a mode.*

Program Change Mode

This mode is for sending Program Change messages.
You can use the pedals to send any of 128 Program Change messages.

Control Change Mode

This mode is for sending Control Change messages.
You can use this mode to send the Control Change messages assigned to the pedals, and enhance the expressiveness of a performance.

Note Mode

This mode is for sending Note messages.
You can use the pedals as a pedal keyboard to send the Note messages assigned to the pedals.

Exclusive Mode

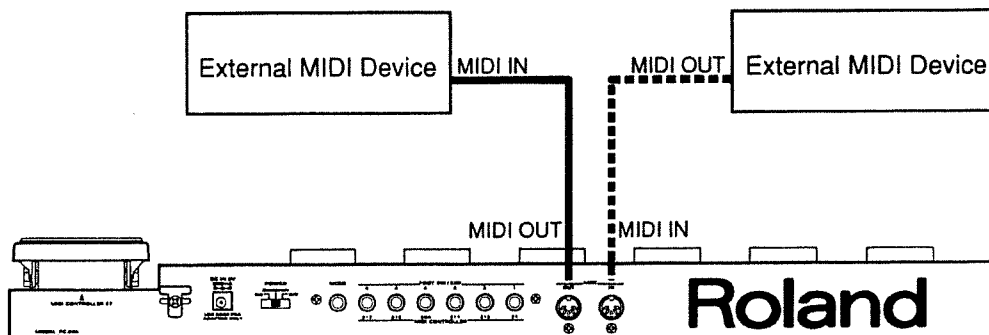
This mode is for sending System Exclusive (SysEx) messages.
You can use this mode to operate other equipment that accepts SysEx messages sent from the FC-200.

As you can see, the pedals function differently depending on the mode you're in. The descriptions in this owner's manual are grouped by mode, so if you need more details, you should check out the section for the particular mode.

Program Change Mode	p. 11
Control Change Mode	p. 14
Note Mode	p. 16
Exclusive Mode	p. 18

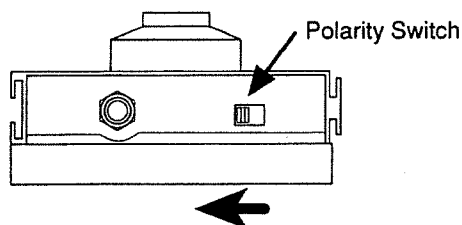
MAKING THE CONNECTIONS

When making connections to other equipment, be sure that all equipment is switched off. If you try to make connections while the power is turned on, the settings for the FC-200 may be changed.



* If you want to use a foot switch for changing the mode, be sure to connect a BOSS FS-5U foot switch (Optional) to the MODE jack.

* When hooking up a separately available BOSS FS-5U foot switch, set the polarity switch as shown below.

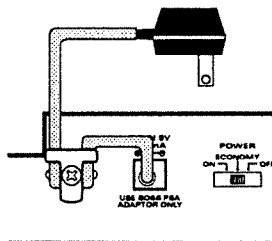


Loading Batteries

The FC-200 is not loaded with batteries when purchased. If you want to use batteries instead of an AC adaptor, then refer to "ABOUT CHANGING THE BATTERIES" (p. 33) and install batteries first.

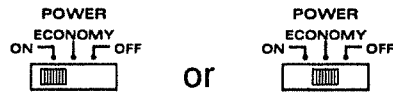
Connecting an AC Adaptor

If you're using a BOSS PSA-Series AC adaptor, here's how to connect the cord and secure it on the cord hook.



SWITCHING ON THE POWER

First, check that you are connected properly with the external MIDI instrument. Then set the power switch on the FC-200 to "ON" or "ECONOMY."



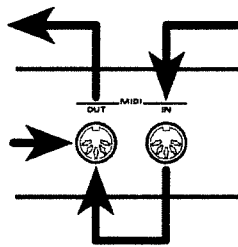
** The FC-200 is in the Program Change mode when first switched on.*

** When the power is turned on, the MIDI channel is set to "1," but you can change the MIDI channel and store the setting in memory. For more information, see "MIDI Channel" (p. 21).*

About the ECONOMY Setting

If you're running the FC-200 on batteries, setting the power switch to "ECONOMY" instead of "ON" makes it possible to use the FC-200 continuously for about 1.3 times longer. The display and indicator may flicker a bit, but this doesn't affect actual operation at all.

The Flow of MIDI Messages



Regardless of what mode you're in, the FC-200 always performs a "Soft Thru." This means that every MIDI message produced by the FC-200 itself, as well as all MIDI messages that arrived at its MIDI IN connector are sent out through the MIDI OUT connector.

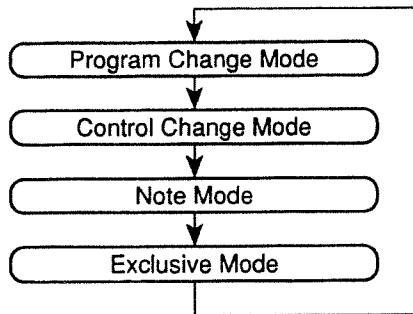
** "Soft Thru" is a function that accepts MIDI messages coming in from the MIDI IN connector and outputs them unchanged from the MIDI OUT connector.*

SWITCHING MODES

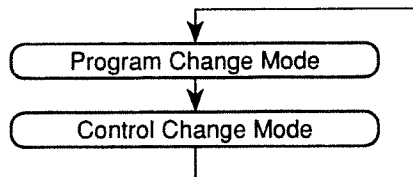
You can change the mode using either the MODE button or a foot pedal plugged into the MODE jack (BOSS FS-5U, Optional).

Each of these methods — pressing the button or stepping on the foot pedal — makes the mode change in a different way.

When the MODE Button is Pressed



When the Foot Pedal is Depressed

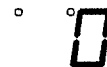


** You can change the way the mode is switched when using the foot pedal. See "MODE Jack Loop Setting" (p. 28) for the details on how to do this.*

Determining the Current Mode

Program Change Mode

The Bank value appears on the display, and the Point indicators do not light up.



Control Change Mode

"CC" appears on the display, and the Point indicator at the top left of the display lights up.



Note Mode

The note range appears on the display, and the Point indicator at the top right of the display lights up.



Exclusive Mode

"SE" appears on the display, and the display's two Point indicators light up.



PROGRAM CHANGE MODE

This is the mode for sending Program Change messages and Control Change messages.

About Program Change Numbers

The Program Change numbers (1 to 128) are obtained by adding the Program Change number corresponding to the Bank (0 to 12) to the Program Change number corresponding to the Number (1 to 10).

Banks 0 to 12 correspond to Program Change numbers as shown below.

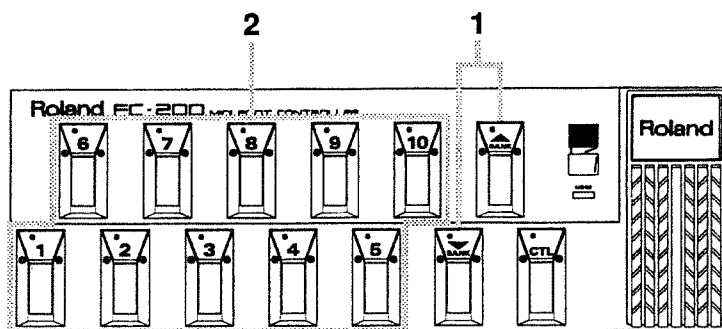
Bank	0	1	2	...	11	12
Program Change number	0	10	20	...	110	120

Numbers 1 to 10 correspond to Program Change numbers as shown below.

Number	1	2	3	...	9	10
Program Change number	1	2	3	...	9	10

For Bank 1 and Number 6, for instance, the Program Change number is $10 + 6$, or 16.
For Bank 2 and Number 10, the Program Change number is $30 (20 + 10)$.

How to Send Program Change Messages



1. Changing the Bank

Each press of a BANK pedal (UP/DOWN) changes the Bank, and the new Bank appears on the display.

Press the UP pedal to increase the Bank number and the DOWN pedal to lower it.

*** Simply changing the Bank does not cause a Program Change message to be sent. The Program Change message is sent when you choose a Number as the next step.**

2. Changing the Number

Press a Number pedal (1 to 10) to choose a Number. The indicator for the Number pedal you've depressed lights up, and a Program Change message is sent.

*** If you want to send a Program Change message for a different Number in the same Bank, you don't have to choose the Bank again — just depress the pedal for the new Number.**

*** In addition to the method just described, you can send Program Change messages just by switching the Bank, or use the Number pedals like a ten-key numeric keypad when switching the Bank. For more details, see "Output of Program Change Messages When Changing Banks" (p. 24) and "Changing Banks Using the Number Pedals" (p. 24).**

Using the Control Pedal

Depressing the Control pedal causes the value for controller number 80 (General-Purpose Controller 5) to be sent.

Depressing the Control pedal sends the message "ON" 127 (7Fh), and releasing it sends the message "OFF" 0 (00h). The pedal indicator lights up when on.

*** You can change the value of the controller numbers. See "Controller Number Setting for Control Pedal" (p. 21).**

*** The Control pedal sends an ON message when depressed and an OFF message when released, which means that it is a "momentary type pedal." You can change this to "latch type" operation, which sends an ON or OFF message each time you depress it — see "Setting for Latch Type Control Pedal Operation" (p. 21).**

*** You can use the Control pedal to send Realtime messages and MMC (MIDI Machine Control) messages. For details, see "ABOUT REALTIME MESSAGES AND MMC MESSAGES" (p. 29).**

Using the Expression Pedal

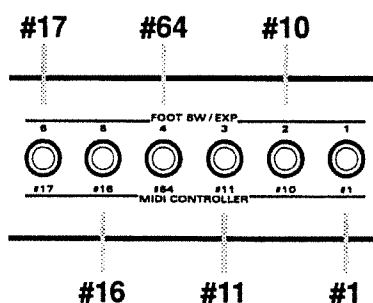
Operating the built-in expression pedal sends the value (0 (00h) to 127 (7Fh)) for Controller Number 7 (“main volume”).

** You can change the value of the controller numbers. See “Controller Number Setting for Expression Pedal” (p. 21).*

Using the Foot Switch/Expression Pedal Jacks

When you connect separately available foot pedals or expression pedals to these jacks, you can use the connected pedals to send the Control Change messages for the controller numbers assigned to each of the jacks.

Shown below are the controller numbers that you can set for the jacks.



** You can change the value of the controller numbers. See “Controller Number Settings” (p. 25).*

** You can use the connected pedal switches to send Realtime messages and MMC (MIDI Machine Control) messages. For details, see “ABOUT REALTIME MESSAGES AND MMC MESSAGES” (p. 29).*

As shown below, the content and timing of the messages that are sent vary depending on what kind of equipment is hooked up. Choose the equipment to connect according to what you want to do.

When a BOSS FS-5L Foot Pedal is Connected:

Pressing the pedal sends an ON 127 (7Fh) message, and pressing it again sends an OFF 0 (00h) message. The indicator for the pedal lights up when on.

** This works just the same as a latch type Control pedal.*

When a BOSS FS-5U Foot Pedal is Connected:

The pedal sends an ON 127 (7Fh) message when depressed and an OFF 0 (00h) message when released.

** This works just the same as a momentary type Control pedal.*

When a Roland EV-5 Expression Pedal is Connected:

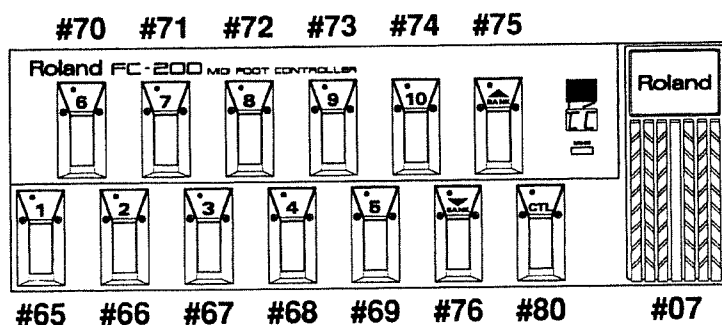
Operating the pedal sends data from 0 (00h) to 127 (7Fh) continuously, depending on the pedal’s function.

CONTROL CHANGE MODE

This is the mode for sending Control Change messages. In this mode, all the pedals can be used to send Control Change messages. You should use this mode at times when you want to send a lot of Control Change messages.

Controller Numbers of the Pedals

The chart below shows the Controller Number settings.



* You can change the value of the controller numbers. See “Controller Number Settings” (p. 25).

* You can use the pedals to send Realtime messages and MMC (MIDI Machine Control) messages. For details, see “ABOUT REALTIME MESSAGES AND MMC MESSAGES” (p. 29).

Using the Control Pedal, Number Pedals, and Bank Pedals

Depressing the Control pedal, a Number pedal (1 to 10), or a Bank pedal (UP/DOWN) sends the Control Change message for the controller number assigned to the corresponding pedal. Depressing a pedal sends an ON 127 (7Fh) message, and depressing it again sends an OFF 0 (00h) message. The indicator for the pedal lights up when on.

* The Control pedal is a momentary type pedal that sends an ON message when depressed and an OFF message when released. You can change this to latch type operation, which sends an ON or OFF message each time you depress it — see “Setting for Latch Type Control Pedal Operation” (p. 21).

* The Bank pedal (UP/DOWN) is a latch type — see “Setting for Latch Type Pedal Operation” (p. 26).

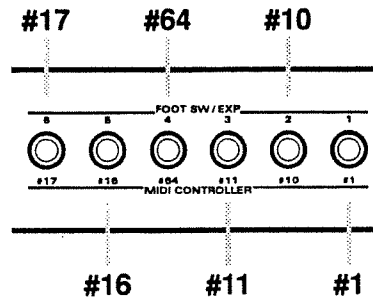
Using the Expression Pedal

Operating the built-in expression pedal sends the value (0 (00h) to 127 (7Fh)) for Controller Number 7 (“main volume”).

Using the Foot Switch/Expression Pedal Jacks

When you connect separately available foot pedals or expression pedals to these jacks, you can use the connected pedals to send the Control Change messages for the controller numbers assigned to each of the jacks.

Shown below are the controller numbers that you can set for the jacks.



** You can change the value of the controller numbers. See "Controller Number Settings" (p. 25).*

** You can use the connected pedal switches to send Realtime messages and MMC (MIDI Machine Control) messages. For details, see "ABOUT REALTIME MESSAGES AND MMC MESSAGES" (p. 29).*

As the chart below shows, the content and timing of the messages that are sent vary depending on what kind of equipment is hooked up. Choose the equipment to connect according to what you want to do.

When a BOSS FS-5L Foot Pedal is Connected:

Pressing the pedal sends an ON 127 (7Fh) message, and pressing it again sends an OFF 0 (00h) message. The indicator for the pedal lights up when on.

** This works just the same as a latch type Control pedal.*

When a BOSS FS-5U Foot Pedal is Connected:

The pedal sends an ON 127 (7Fh) message when depressed and an OFF 0 (00h) message when released.

** This works just the same as a momentary type Control pedal.*

When a Roland EV-5 Expression Pedal is Connected:

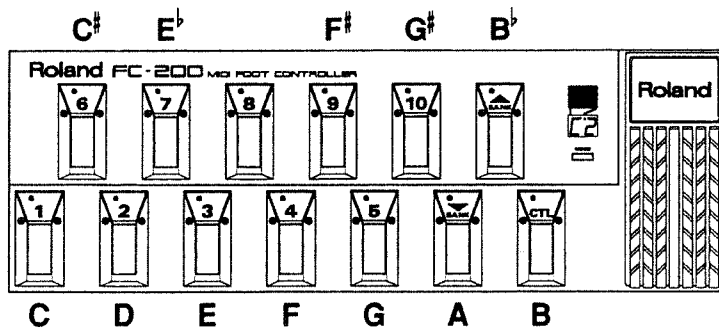
Operating the pedal sends data from 0 (00h) to 127 (7Fh) continuously, depending on the pedal's function.

NOTE MODE

This is the mode for sending Note messages.

Note Range

The following table shows what notes are assigned to the different pedals.



* The indicator for the pedal that the note is assigned to lights up.

When "C2" is shown on the display, it means that pressing the note "do" (Number pedal 1) sends a "C2" Note message. Notes within the C2 to B2 range can be sent by pressing the pedals.

* "C2" refers to a C note ("do") two octaves lower than middle C ("C4") on a piano keyboard.



* The note range available for sending can be changed in octave steps. See "Note Range Setting" (p. 26) for more details.

Changing the Note Range by Octaves During a Performance

During a performance, you can change the note range in octave steps. To do this, connect a BOSS FS-5U foot switch (Optional) to FOOT SW/EXP jack 5 or 6. The operation of the pedal will vary depending on whether it is connected to jack 5 or 6 — read on for more information.

FOOT SW/EXP 5: Octave Shift-Up Function

Each press of the pedal makes the current note range an octave higher. You can raise the note range as high as C6. The display shows the key number when “do” (Number pedal 1) is depressed.

FOOT SW/EXP 6: Octave Shift-Down Function

Each press of the pedal lowers the current note range by an octave. The display shows the key number when “do” (Number pedal 1) is depressed.

**** At the factory defaults, you cannot lower the note range unless you have already connected a foot pedal to FOOT SW/EXP jack 5 and depressed the pedal to raise the note range.***

You can also vary the extent of the note range within which changes can take place when you depress the foot pedal. For details, read “Octave Shift Upper Limit Setting” and “Octave Shift Lower Limit Setting” (p. 27).

**** If you have changed the note range with the foot pedals, the new setting remains active until the power is switched off (even if you change modes).***

Using the Expression Pedal

The expression pedal has the same settings as in the Program Change mode and Control Change mode. Operating the expression pedal causes Control Change messages to be sent.

Using the Foot Switch/Expression Pedal Jacks

When you connect separately available BOSS FS-5U foot switches or Roland EV-5 expression pedals to the FOOT SW/EXP 1, 2, 3, or 4 jacks, the connected pedals will have the same settings as they do for the Program Change mode and Control Change mode. Operating the pedals causes Control Change messages to be sent.

FOOT SW/EXP jacks 5 and 6 are used for the functions of Octave Shift Up/Down, so they do not send Control Change messages.

EXCLUSIVE MODE

This mode is for sending System Exclusive (SysEx) messages.

This is the mode to use when you wish to use SysEx messages from the FC-200 to operate another instrument.

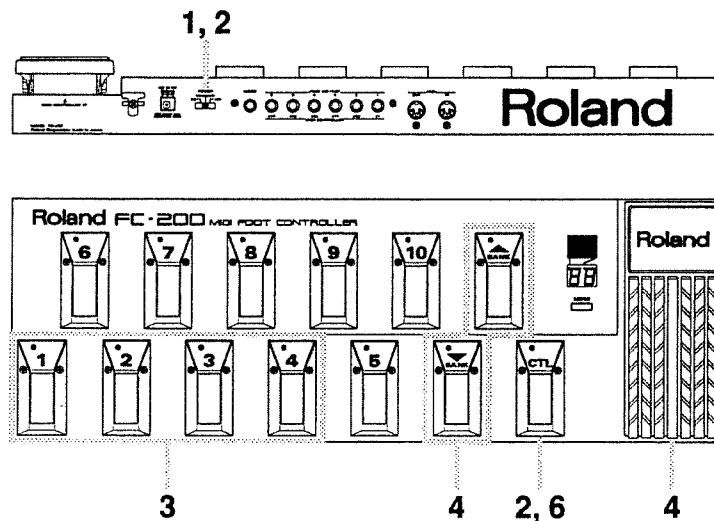
The method of operation depends on the instrument or device that is receiving the SysEx messages. Refer to the manual for the receiving instrument for more information.

EDIT FUNCTION

You can use the Edit function to make changes in the factory default settings and store these changes in memory. Changing the settings on the FC-200 to match the other equipment you are using can make this MIDI foot controller even easier to use.

How to Make Changes

The steps described below are used to make all types of changes.



1. Switch off the power.
2. While keeping down the Control pedal, switch on the power.
The display alternates between the parameter (setting item) and its value (the current contents of the setting).
3. Use the Number pedals 1, 2, 3, and 4 to call up the parameter you wish to change and show it on the display.
The contents of the different parameters are described in the following section, "PARAMETERS WITH SETTINGS THAT CAN BE CHANGED" (p. 21).

Number pedal 1: The parameters cycle backward in reverse order while this pedal is kept depressed.

Number pedal 2: Pressing this pedal changes the displayed parameter to the previous parameter.

Number pedal 3: Pressing this pedal changes the displayed parameter to the next parameter.

Number pedal 4: The parameters cycle forward in normal order while this pedal is kept depressed.

When you stop operating the Number pedals, the display alternates between the selected parameter and its current value.

4. Use the Bank pedals UP, DOWN or Expression pedal to change the value.

Bank pedal UP: Increases the value of the setting. For a parameter with an on/off setting, this pedal switches the parameter on.

Bank pedal DOWN: Decreases the value of the setting. For a parameter with an on/off setting, this pedal switches the parameter off.

5. If you want to change another parameter, repeat steps 3 and 4.

6. Store the changes you've made in memory.

Press the Control pedal to save the new settings in memory. After the settings have been saved, the FC-200 returns to its normal state of operation.

If You Want to Abandon the Changes

If you decide that you don't want to save the changed settings in memory, press the MODE button. The settings all return to their values before changes were made, and the FC-200 returns to its normal state of operation.

PARAMETERS WITH SETTINGS THAT CAN BE CHANGED

This section describes those parameters that have settings which can be changed. The explanations here describe functions and what appears on the display. This section uses bold type to indicate factory default settings.

If you need information on how to make settings for parameters, see "How to Make Changes" (p. 19).

MIDI Channel: 1 to 16

([h) (MIDI Channel)

This sets the channel for sending and receiving MIDI messages.

This MIDI channel setting is also used for the device ID that is employed when sending or receiving System Exclusive (SysEx) messages for MIDI data transfers and similar operations.

Controller Number Setting for Control Pedal: 1 to 31, 30 to 80 to 95

([c)

Sets the controller number for the Control pedal.

This sets the controller number that is used when sending Control Change messages.

Setting for Latch Type Control Pedal Operation: On / Off

(L c)

Latch on/off setting for Control pedal.

This setting determines whether the pedal works as latch type or momentary type pedal when sending Control Change messages.

[n] [On] Latch Type:

Pressing the pedal sends an ON 127 (7Fh) message, and the pedal remains on after it is released. Pressing the pedal again sends an OFF 0 (00h) message. The pedal indicator lights up when on.

[F] [Off] Momentary Type:

Pressing the pedal sends an ON 127 (7Fh) message, and releasing the pedal sends an OFF 0 (00h) message. The pedal indicator lights up when on (in other words, while the pedal is depressed.)

Controller Number Setting for Expression Pedal: 1 to 7 to 31, 33 to 95

([E)

Sets the controller number for the expression pedal.

This sets the controller number that is used when sending Control Change messages.

Bank Select: On / Off

(b5) (Bank Select)

In the Program Change mode, this sets whether Bank Select messages are to be sent together with Program Change messages. This should normally be set to "Off" (not sent).

On [On]: Bank Select messages are sent.

Off [Off]: Bank Select messages are not sent.

With MIDI, you can use combinations of Bank Select messages and Program Change messages to select programs for a large number of Tones and other sounds.

*** A Bank Select message consists of the controller 0 and 32 Control Change messages.**

The FC-200 can send Program Change messages from 1 to 128, so a total of 128 programs can be switched. This is the unit's normal status, whereby Bank Select messages are not sent. However, if you set the FC-200 so that Bank Select messages are sent, the total number of programs that can be selected rises to a maximum of 1,000.

*** To find out whether the receiving instrument can recognize incoming Bank Select messages, refer to the Control Change column in the MIDI Implementation Chart in the manual for the receiving instrument.**

*** If the receiving instrument uses controller numbers 0 and 32 for some function other than Bank Select messages, you should set the FC-200 so that it does not send Bank Select messages.**

The chart below shows the relationship between the MIDI Bank Select and Program Change messages that the FC-200 sends. The Program Change messages enclosed in boxes are not sent.

		PROGRAM CHANGE											
BANK SELECT	0	1	2	.....	27	28	29	30	.....	100	101	.....	128
	1	1	2	.....	27	28	29	30	.....	100	101	.....	128
	2	1	2	.....	27	28	29	30	.....	100	101	.....	128
	...												
	7	1	2	.....	27	28	29	30	.....	100	101	.....	128
	8	1	2	.....	27	28	29	30	.....	100	101	.....	128
	9	1	2	.....	27	28	29	30	.....	100	101	.....	128

*** The value of the Bank Select message can vary for the same Program Change number, and so the message that is sent is different.**

*** If you need information on how to make settings for parameters, see "How to Make Changes" (p. 19).**

The chart below shows the programs indicated by the Bank Select and Program Change messages shown above.

The Bank pedals and Number pedals on the FC-200 are used to send messages, and the values in parentheses show which pedals to use to choose the corresponding program.

		PROGRAM CHANGE												
BANK SELECT	0	1	2	-----	27	28	29	30	-----	100	101	102	-----	128
		(0, 1)	(0, 2)		(2, 7)	(2, 8)	(2, 9)	(2, 10)		(9, 10)	(10, 1)	(10, 2)		(12, 8)
	1													
	2	201	202	-----	227	228	229	230	-----	300				
		(20, 1)	(20, 2)		(22, 7)	(22, 8)	(22, 9)	(22, 10)		(29, 10)				
	7	701	702	-----	727	728	729	730	-----	800				
		(70, 1)	(70, 2)		(72, 7)	(72, 8)	(72, 9)	(72, 10)		(79, 10)				
	8	801	802	-----	827	828	829	830	-----	900				
		(80, 1)	(80, 2)		(82, 7)	(82, 8)	(82, 9)	(82, 10)		(89, 10)				
	9	901	902	-----	927	928	929	930	-----	1000				
	(90, 1)	(90, 2)		(92, 7)	(92, 8)	(92, 9)	(92, 10)		(99, 10)					

The program number indicated by the Bank and Number pedal values shown in parentheses is calculated in exactly the same way as for the Program Change numbers described in "About Program Change Numbers" (p. 11). That is, the Program number is the Bank multiplied by ten, plus the Number (Bank x 10 + Number).

*** The Bank pedals are used to select the Bank, but you can only specify a Bank whose number is within the limit set by the Bank Limit parameter. Read the next section, "Bank Limit," for more details about this.**

Bank Limit: 0 to 12 to 99

(bL) (Bank Limit)

In the Program Change mode, the Bank is selected with the Bank UP and DOWN pedals. This parameter sets the upper limit for the Bank.

If the Bank DOWN pedal is depressed when the current Bank is 0, the Bank switches to the Bank with the number set for the Bank Limit parameter. In the same way, pressing the Bank UP pedal when the Bank is at the number set for the Bank Limit parameter, it switches to Bank 0.

As an example, let's say that you're sending Program Change messages to another instrument that has 40 programs for Tones and the like. In this case, it can be handy to set Bank Limit to "3," because this causes only Banks 0 to 3 to be displayed.

*** When the Bank Select parameter is set to "off," Bank Limit cannot be set to a value of 13 or higher.**

** If you need information on how to make settings for parameters, see "How to Make Changes" (p. 19).*

Output of Program Change Messages When Changing Banks: On / Off

(b \square) (Bank Output)

In the Program Change mode, this sets whether Program Change messages are sent when the Bank is switched.

\square n [On]: A Program Change message is sent when the Bank is switched. The Number is that of the Number pedal chosen before switching the Bank (in other words, the Number pedal whose indicator is lit up).

\square F [Off]: A Program Change message is not sent even when the Bank is switched. Instead, the Program Change message is sent when the Number is selected with a Number pedal.

Changing Banks Using the Number Pedals: On / Off

(b c) (Bank Change)

This setting determines whether the Number pedals can be used like a ten-key numeric keypad when switching Banks in the Program Change mode.

\square n [On]: Pressing the Bank UP pedal makes the left-hand (tens) digit for the Bank shown on the display start to flash. You can then use the corresponding Number pedal to select the desired Bank.

Pressing the Bank pedal DOWN makes the right-hand (units) digit for the Bank shown on the display start to flash. You can then use the corresponding Number pedal to select the desired Bank.

*** Pressing a Number pedal higher than the value set for Bank Limit has no effect.**

\square F [Off]: Each press of a Bank pedal (UP or DOWN) switches the Bank, and the display changes accordingly. Pressing UP increases the Bank and pressing DOWN lowers it.

*** The timing for output of Program Change messages depends on the setting described in "Output of Program Change Messages When Changing Banks."**

*** If you need information on how to make settings for parameters, see "How to Make Changes" (p. 19).**

Controller Number Settings: 1 to 31, 33 to 95

This sets the controller numbers that are used when sending Control Change messages. A different controller number is set for each pedal and jack.

[J 1] : 01 : Sets the controller number for FOOT SW/EXP jack "1."
 [J 2] : 10 : Sets the controller number for FOOT SW/EXP jack "2."
 [J 3] : 11 : Sets the controller number for FOOT SW/EXP jack "3."
 [J 4] : 64 : Sets the controller number for FOOT SW/EXP jack "4."
 [J 5] : 16 : Sets the controller number for FOOT SW/EXP jack "5."
 [J 6] : 17 : Sets the controller number for FOOT SW/EXP jack "6."

[C 1] : 65 : Sets the controller number for Number pedal "1."
 [C 2] : 66 : Sets the controller number for Number pedal "2."
 [C 3] : 67 : Sets the controller number for Number pedal "3."
 [C 4] : 68 : Sets the controller number for Number pedal "4."
 [C 5] : 69 : Sets the controller number for Number pedal "5."
 [C 6] : 70 : Sets the controller number for Number pedal "6."
 [C 7] : 71 : Sets the controller number for Number pedal "7."
 [C 8] : 72 : Sets the controller number for Number pedal "8."
 [C 9] : 73 : Sets the controller number for Number pedal "9."
 [C 0] : 74 : Sets the controller number for Number pedal "10."

[C u] : 75 : Sets the controller number for Bank pedal "UP."
 [C d] : 76 : Sets the controller number for Bank pedal "DOWN."

The controller numbers set for the pedals and jacks remain constant in every mode, but the pedals and jacks used for manipulating Control Change messages differ from one mode to another. Take a look at the following chart.

	Control Pedal	Expression Pedal	CTL / EXP Jack	Number Pedal Bank Pedal
Program Change Mode	○*1	○	○*1	
Control Change Mode	○*1	○	○*1	○*1
Note Mode		○	○(1 to 4)*1*2	
Exclusive Mode				

*1: Settings for Realtime messages and MMC messages can be made instead of controller numbers. When this is done, "FA," "FB," "FC," and "c1" to "c9" are displayed in addition to controller numbers 1 to 31 and 33 to 95. For more details on Realtime and MMC messages, see "ABOUT REALTIME MESSAGES AND MMC MESSAGES" (p. 29).

*2: In the Note mode, the FOOT SW/EXP jacks 1 to 4 can be used to send Control Change messages.

** If you need information on how to make settings for parameters, see "How to Make Changes" (p. 19).*

Setting for Latch Type Pedal Operation: On / Off

This setting determines whether the pedals work as latch type or momentary type pedals when sending Control Change messages. A separate setting is made for each pedal.

[L 1] : Latch on/off setting for Number pedal "1."
[L 2] : Latch on/off setting for Number pedal "2."
[L 3] : Latch on/off setting for Number pedal "3."
[L 4] : Latch on/off setting for Number pedal "4."
[L 5] : Latch on/off setting for Number pedal "5."
[L 6] : Latch on/off setting for Number pedal "6."
[L 7] : Latch on/off setting for Number pedal "7."
[L 8] : Latch on/off setting for Number pedal "8."
[L 9] : Latch on/off setting for Number pedal "9."
[L 0] : Latch on/off setting for Number pedal "10."

[L U] : Latch on/off setting for Bank pedal "UP."
[L D] : Latch on/off setting for Bank pedal "DOWN."

[On] Latch Type:

Pressing the pedal sends an ON 127 (7Fh) message, and the pedal remains on after it is released. Pressing the pedal again sends an OFF 0 (00h) message. The pedal indicator lights up when on.

[Off] Momentary Type:

Pressing the pedal sends an ON 127 (7Fh) message, and releasing the pedal sends an OFF 0 (00h) message. The pedal indicator lights up when on (in other words, while the pedal is depressed.)

Note Range Setting: C0 to C2 to C8

(nr) (Note Range)

This sets the octave for the note range of the Note messages that are sent with the pedals in the Note mode.

The setting specifies the key number when "do" (Number pedal 1) is depressed.

** You can make a setting within the range set by the Octave Shift Upper Limit and Lower Limit settings.*

** If you need information on how to make settings for parameters, see "How to Make Changes" (p. 19).*

Octave Shift Upper Limit Setting: C0 to C6 to C8

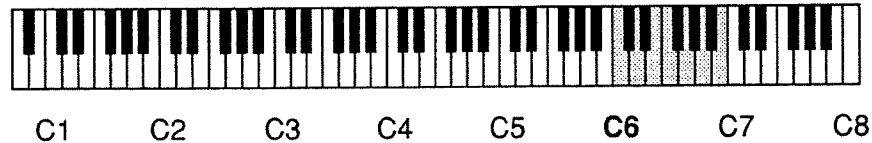
(H₁) (High)

In the Note mode, a foot pedal connected to FOOT SW/EXP jack 5 can be used to raise the note range an octave at a time. This parameter sets the upper limit for raising the note range with the Octave Shift-Up function.

The setting specifies the key number when "do" (Number pedal 1) is depressed.

** The upper limit cannot be set to a value less than the setting made for the Octave Shift Lower Limit.*

** "C6" refers to a C note ("do") two octaves higher than middle C ("C4") on a piano keyboard.*



Octave Shift Lower Limit Setting: C0 to C2 to C8

(L₀) (Low)

In the Note mode, a foot pedal connected to FOOT SW/EXP jack 6 can be used to lower the note range an octave at a time. This parameter sets the lower limit for lowering the note range with the Octave Shift-Down function.

The setting specifies the key number when "do" (Number pedal 1) is depressed.

** The lower limit cannot be set to a value higher than the setting made for the Octave Shift Upper Limit.*

** "C2" refers to a C note ("do") two octaves lower than middle C ("C4") on a piano keyboard.*



Note On Velocity Setting: 1 to 96 to 127

(n₀) (Note On)

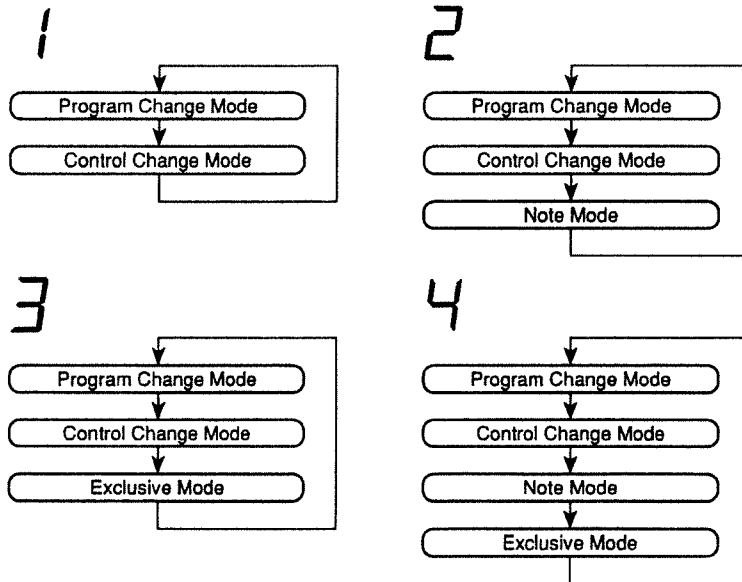
This setting determines the volume of the sound produced when a pedal is depressed in the Note mode. When the velocity is set to a value of 100 or higher, the point indicator at the top left of the display lights up, and only the last two digits of the value appear on the display.

* If you need information on how to make settings for parameters, see "How to Make Changes" (p. 19).

MODE Jack Loop Setting: 1 / 2 / 3 / 4

(JL) (Jack Loop)

This setting determines how the mode will be switched when using a BOSS FS-5U foot switch connected to the MODE jack to change modes.



ABOUT REALTIME MESSAGES AND MMC MESSAGES

Realtime messages and MMC messages are both used to operate externally connected devices. On the FC-200, Realtime and MMC messages can be assigned to the pedals and FOOT SW/EXP jacks instead of controller numbers (p. 25).

About Realtime Messages

These messages are used to operate a MIDI sequencer. If you connect a MIDI sequencer that supports Realtime messages, you can use the pedals on the FC-200 to operate the sequencer.

*** The FC-200 does not output MIDI Clock (F8h) data, so it cannot be used to start or stop some types of MIDI sequencers.**

*** The connected sequencer must be in the "Remote" mode.**

Remote mode: A playback mode that uses the MIDI sequencer's internal clock to control playback according to start and continue messages sent from an external device (in this case, the FC-200).

About MMC (MIDI Machine Control) Messages

These messages are used for MIDI operation of an audio device such as an MTR or tape recorder. If you connect a device that supports MMC messages, you can use the pedals on the FC-200 to operate the MTR or tape recorder.

How to Make the Settings

Refer to "Controller Number Settings" (p. 25) for an explanation of how to make the settings. "FA," "FB," "FC," and "c1" to "c9" are displayed for Realtime and MMC messages in addition to controller numbers 1 to 31 and 33 to 95, so you can select any of these.

Here are the selections that appear on the display, along with the functions that they refer to.

Realtime Messages

[FA] START
[FB] CONTINUE
[FC] STOP

MMC Messages

[c1] STOP
[c2] PLAY
[c3] DEFERRED PLAY
[c4] FAST FORWARD
[c5] REWIND
[c6] RECORD STROBE
[c7] RECORD EXIT
[c8] RECORD PAUSE
[c9] PAUSE

*** If Realtime or MMC messages have been assigned to a FOOT SW/EXP jack, you should connect a BOSS FS-5U foot switch (Optional) to the corresponding jack.**

*** By assigning Realtime or MMC messages to a Number pedal, it is automatically switched to momentary type operation. ("Latch on/off" [p. 26] is set to "off.")**

*** Refer to the manual for the receiving device for information on the operations that take place when the device receives the messages sent with the FC-200.**

DATA TRANSFER USING MIDI

You can use System Exclusive (SysEx) messages to send the FC-200's settings to another MIDI device. This makes it possible, for instance, to reproduce identical settings on another FC-200, or to save the settings on a MIDI sequencer or some other piece of equipment.

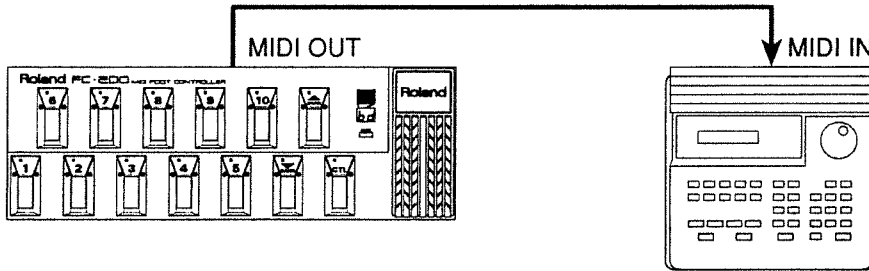
Sending Data (Bulk Dump)

This sends the settings for the FC-200 to another FC-200 or some other external MIDI device.

Making the Connections and Getting Ready

For Storage on a MIDI Sequencer

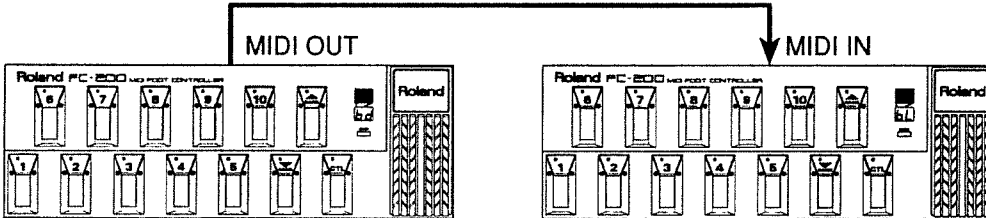
Make the connections as shown below, and get the MIDI sequencer ready to receive System Exclusive (SysEx) messages.



** Refer to the MIDI sequencer's manual for instructions on how to operate the sequencer.*

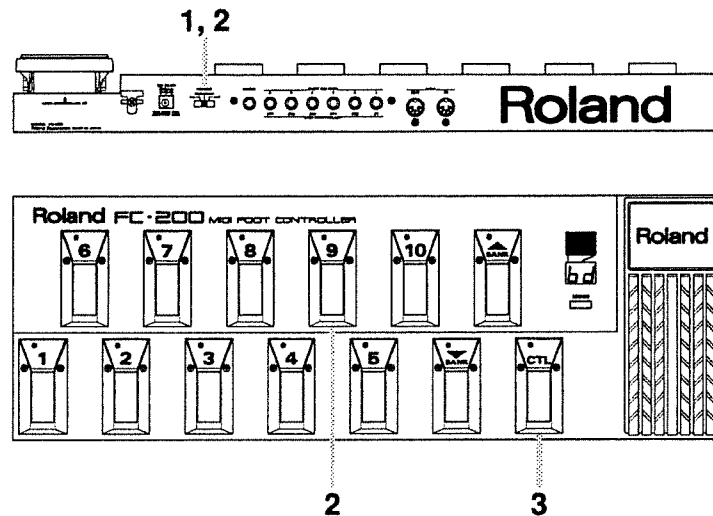
For Copying Data to Another FC-200

Make the connections as shown below, and make sure that the sending FC-200 and the receiving FC-200 are set to the same MIDI channel (device ID).



Sending the Data

(the sending FC-200)

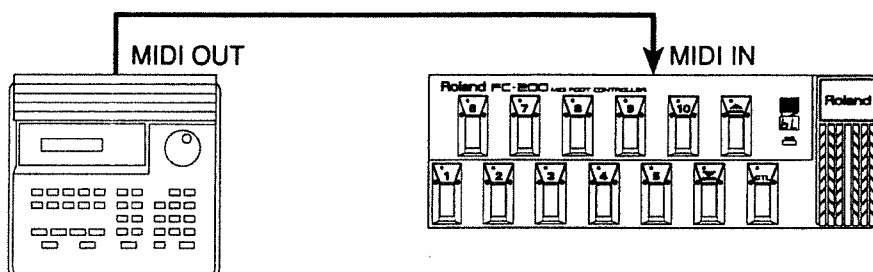


- 1.** Switch off the FC-200 that will be used to send the data.
- 2.** While keeping Number pedal "9" depressed, switch the power back on.
The indicator for the Control pedal flashes, and [*bd*] (Bulk Dump) appears on the display.
- 3.** Press the Control pedal.
The indicator for the Control pedal stops flashing and remains lit continuously, the display readout changes, and the data transmission (bulk dump) starts. When the transmission of data finishes, the devices return to their normal state of operation.

Receiving Data (Bulk Load)

Making the Connections

For sending data stored on a MIDI sequencer to the FC-200, make the following connections.



Receiving Data

1. Make sure the MIDI channel (device ID) for the FC-200 is set to the same MIDI channel as the MIDI sequencer where the data is stored.
 - * *Only System Exclusive (SysEx) messages on matching MIDI channels are received.*
 - * *Refer to the MIDI sequencer's manual for instructions on how to operate the sequencer.*
2. SysEx messages can normally be received at any time while the power is switched on. The readout on the display changes as shown below while data is being received.



- * *All operations and controls for the FC-200 become non-functional while SysEx messages are being received.*

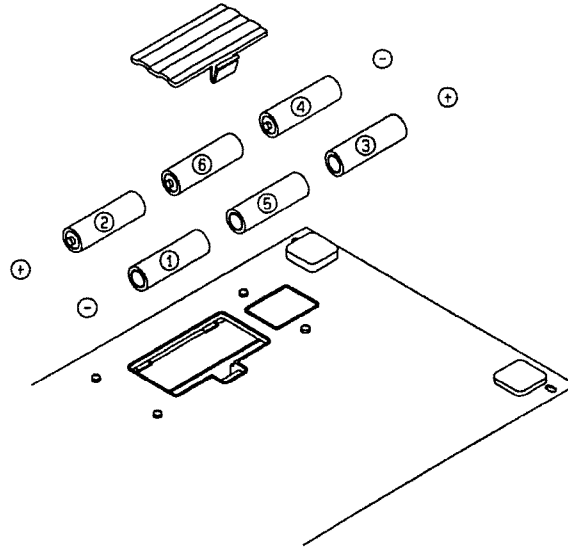
ABOUT CHANGING THE BATTERIES

When Batteries Need Changing

When the FC-200 is operated only on battery power, the display starts to flash when the batteries begin to run down. This is a warning that means you need to replace the unit's six size AA batteries with fresh ones as soon as possible.

** When the display starts to flash, we recommend setting the Power switch to "ECONOMY" (if it isn't already at "ECONOMY"). Of course, you still need to replace the batteries as soon as possible.*

Changing the Batteries



** When changing the batteries, do not mix new batteries with used ones, or mix batteries of different types.*

** Be sure that the positive ("+") and negative ("-") ends of the batteries are positioned correctly when installing new batteries.*

USING MIDI

The FC-200 is equipped with MIDI terminals. Using these terminals to receive data from an external MIDI device makes it possible to switch Program Numbers and change effect settings remotely.

About MIDI

MIDI is the acronym for "Musical Instrument Digital Interface." It is an industry-wide standard that allows for data (such as that representing the music played, or for changes in sounds used) to be exchanged among various instruments and computers. As long as they are MIDI compatible, all devices, regardless of model or manufacturer, can exchange whatever performance data they are both equipped to 'understand.'

MIDI converts every 'performance event' into MIDI data. When received by another instrument, this stream of MIDI data can be used to "play" it, as if that instrument itself were being played.

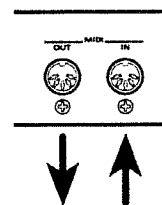
The Exchange of MIDI Data

About MIDI Connectors

In carrying out the exchange of MIDI data, the three connectors shown below are used. MIDI cables can be routed from these connectors in varying ways depending on the kind of setup you have in mind.

- MIDI IN:** Receives data from another MIDI device.
- MIDI OUT:** Transmits data originating in the unit.
- MIDI THRU:** Sends out an exact copy of the data received at MIDI IN.

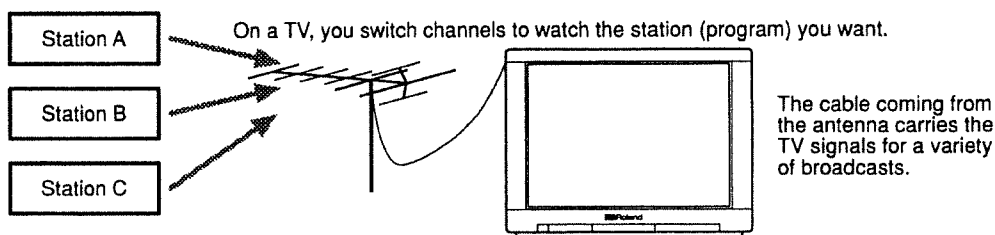
** The FC-200 has MIDI IN and MIDI OUT ports.*



MIDI Channels

In MIDI communications, a single cable simultaneously carries different streams of performance information for a multiple number of MIDI devices. This is possible thanks to the concept of MIDI channels.

MIDI channels are in some ways similar to the channels on a television set. On a TV, a variety of programs broadcast from different stations can be viewed by switching channels. This is because the information on any particular channel is conveyed only when the receiver is set to the same channel that is being used for transmission.



The channels available with MIDI range from 1 through 16. When a musical instrument (the receiver) is set so its channel matches the MIDI channel used by the transmitting device, the MIDI data is successfully 'communicated.'

MIDI Messages Recognized by the FC-200

In order to convey the great variety of expression possible with music, the MIDI standard contains a large range of data 'types' (messages). MIDI messages can be divided into two main types: messages that are handled on each channel (Channel messages); and messages that are handled independently of channels (System messages).

CHANNEL MESSAGES

These messages are used to convey the events of a performance. In most circumstances, they alone are sufficient for providing the range of control needed. The specific results obtained by the various MIDI message of this type are determined by the settings on the unit receiving them.

Program Change Messages

These messages are used for conveying information about changes to another sound. Sounds are changed using Program Change Numbers, numbered from 1 through 128.

Control Change Messages

Control Change messages serve in enhancing the expressiveness of a performance. Every available function can be identified by its own Control Number. The functions which are available for control can vary widely depending on the MIDI device being used.

Note Messages

Note messages convey the notes played during a performance. There are several kinds of Note messages:

- Note Number:** A number representing the position of a key on the keyboard.
- Note On:** Produced when a keyboard key has been pressed.
- Note Off:** Produced when a keyboard key has been released.
- Velocity:** Conveys the amount of strength used when keys are pressed. (Commonly called 'volume'.)

** Note Numbers express the full range of possible keyboard keys, using the numbers 0 to 127. Middle C (C4) is Note number 60.*

SYSTEM MESSAGES

System messages include Exclusive messages, messages used for synchronizing the performance of multiple units, and other messages employed for diagnostic purposes. The RV-70 supports the use of Exclusive messages.

Exclusive Messages

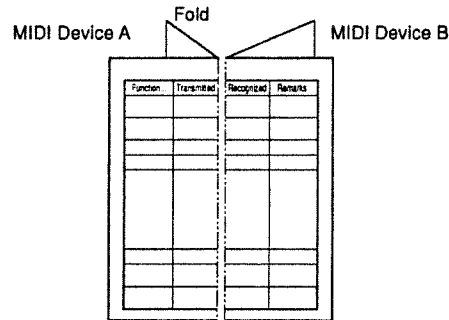
Exclusive messages handle information related to a unit's own unique sounds, or other device-specific information. Generally, such messages can only be exchanged between devices of the same model by the same manufacturer.

Exclusive messages can be employed to save the settings for Parameter Programs into a sequencer, or for transferring such data to another FC-200.

MIDI Implementation Chart

MIDI has made it possible for a wide range of musical instruments to communicate with each other, but that doesn't necessarily mean that the many types of data will all be understood. If communication between two connected MIDI devices is to be successful, it must take place using only the types of data that they have in common.

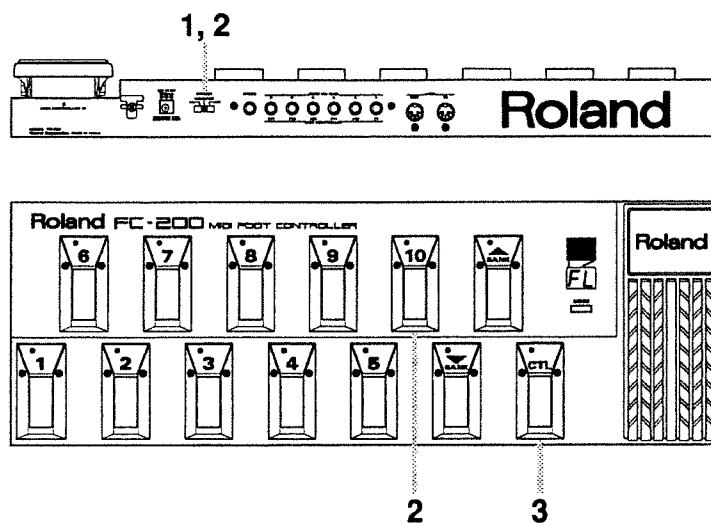
It is for this reason that every owner's manual — for all kinds of MIDI devices — always includes a MIDI Implementation Chart as a quick reference to the types of MIDI messages it is capable of handling. You should compare the MIDI Implementation Charts for any two devices in order to find out which types of data can be exchanged. Since these charts are standardized, you can place them so they overlap. This way you can easily compare the receiving device with the transmitting device.



** For detailed information on how MIDI data is handled on this unit, refer to "ROLAND EXCLUSIVE MESSAGES" (p.39) and "MIDI Implementation" (p.41).*

RETURNING SETTINGS TO THEIR FACTORY DEFAULT VALUES (INITIALIZATION)

Initialization lets you return settings that have been edited to the values they had when the FC-200 was shipped from the factory.



1. Switch off the power.
2. While keeping Number pedal "10" depressed, switch the power back on.
The indicator for the Control pedal flashes, and [FL] appears on the display.
3. Press the Control pedal.
The indicator for the Control pedal stops flashing and remains continuously lit, the display readout changes, and initialization begins. When initialization is finished, the FC-200 returns to its normal state of operation.

IF YOU THINK THERE'S A PROBLEM, CHECK THESE FIRST

If your FC-200 is not functioning properly, or you suspect there is a problem somewhere, check the following items. If you are still unable to correct the problem, contact your Roland retailer or nearest Roland Service Center.

The power doesn't come on.

- Are the batteries loaded correctly?
- Are the batteries dead?

The display readout is flashing.

The batteries are running out of power. Replace with fresh batteries as soon as you can.

I can't change programs on the connected device.

- Are the MIDI cables hooked up correctly?
- Are the two devices set to the same MIDI channel?
- Is the FC-200 in the Program Change mode?
- Is the indicator for a Number pedal flashing?
- No Program Change messages are sent while an indicator is flashing. Press a Number pedal to select a Number and send the data.

Control Change messages are being sent, but there is no change on the receiving device, or it doesn't change as expected.

- Are the MIDI cables hooked up correctly?
- Are the two devices set to the same MIDI channel?
- Do the controller numbers match?
- Check the controller numbers on the FC-200. Check the settings on the receiving device as well.
- Check the setting for pedal operation (latch or momentary type).

No sounds are played in the Note mode.

- Are the MIDI cables hooked up correctly?
- Are the two devices set to the same MIDI channel?

The display shows "Er" when data is sent to the FC-200.

This is displayed when the FC-200 fails to receive System Exclusive (SysEx) messages. The SysEx messages that are being sent contain one or more of the following errors. Correct the data being sent, or try sending the data again.

- Address value
- Address size (2 bytes)
- Data value
- Data size (1 byte)
- Checksum value

ROLAND EXCLUSIVE MESSAGES

1. Data Format for Exclusive Messages

Roland's MIDI implementation uses the following data format for all Exclusive messages (type IV):

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Main data
F7H	End of exclusive

•MIDI status: F0H, F7H

An Exclusive message must be flanked by a pair of status codes, starting with a Manufacturer ID immediately after F0H (MIDI version 1.0).

•Manufacturer ID: 41H

The Manufacturer ID identifies the manufacturer of a MIDI instrument that sends an Exclusive message. Value 41H represents Roland's Manufacturer ID.

•Device ID: DEV

The Device ID contains a unique value that identifies individual devices in the implementation of several MIDI instruments. It is usually set to 00H–0FH, a value smaller by one than that of a basic channel, but value 00H–1FH may be used for a device with several basic channels.

•Model ID: MDL

The Model ID contains a value that identifies one model from another. Different models, however, may share an identical Model ID if they handle similar data.

The Model ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Model IDs, each representing a unique model:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

•Command ID: CMD

The Command ID indicates the function of an Exclusive message. The Command ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Command IDs, each representing a unique function:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

•Main data: BODY

This field contains a message to be exchanged across an interface. The exact data size and content will vary with the Model ID and Command ID.

2. Address-mapped Data Transfer

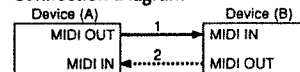
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records—waveform and tone data, switch status, and parameters, for example, to specific locations in a machine-dependent address space, thereby allowing access to data residing at the address a message specifies.

Address-mapped data transfer is therefore independent of models and data categories. This technique allows use of two different transfer procedures: one-way transfer and handshake transfer.

•One-way transfer procedure (See Section 3 for details.)

This procedure is suited to the transfer of a small amount of data. It sends out an Exclusive message completely independent of the receiving device's status.

Connection Diagram



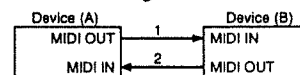
Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

•Handshake-transfer procedure

(This device does not use this procedure)

This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram



Connection at points 1 and 2 is essential.

Notes on the above procedures

- * There are separate Command IDs for different transfer procedures.
- * Devices A and B cannot exchange data unless they use the same transfer procedure, share identical Device ID and Model ID, and are ready for communication.

3. One-way Transfer Procedure

This procedure sends out data until it has all been sent and is used when the messages are so short that answerbacks need not be checked. For longer messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts 20 millisecond intervals.

Types of Messages

Message	Command ID
Request data 1	RQ1 (11H)
Data set 1	DT1 (12H)

•Request data 1: RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.

If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device won't send out anything.

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
aaH	Address MSB
	LSB
ssH	Size MSB
	LSB
sum	Check sum
F7H	End of exclusive

- The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.
- Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
- The same number of bytes comprises address and size data, which, however, vary with the Model ID.
- The error-checking process uses a checksum that provides a bit pattern where the last 7 bits are zero when values for an address, size, and that checksum are summed.

•Data set 1: DT1 (12H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, a DT1 message can convey the starting address of one or more bits of data as well as a series of data formatted in an address-dependent order.

The MIDI standards inhibit non real-time messages from interrupting an Exclusive one. This fact is inconvenient for devices that support a "soft-thru" function. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out in separate 'segments'.

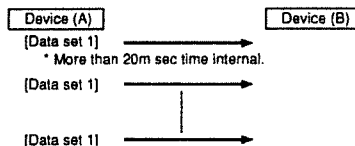
Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
	LSB
ddH	Data MSB
	LSB
sum	Check sum
F7H	End of exclusive

- A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
- Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
- The number of bytes comprising address data varies from one Model ID to another.
- The error-checking process uses a checksum that provides a bit pattern where the last 7 bits are zero when values for an address, data, and that checksum are summed.

•Example of Message Transactions

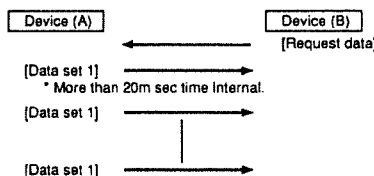
- Device A sending data to Device B

Transfer of a DT1 message is all that takes place.



- Device B requesting data from Device A

Device B sends an RQ1 message to Device A. Checking the message, Device A sends a DT1 message back to Device B.



1. RECOGNIZED RECEIVE DATA

SYSTEM REALTIME MESSAGE

ACTIVE SENSING

Status
FEH

* *When FC-200 receives Active Sensing, it measures time intervals between incoming messages. If the subsequent message will not come within 400 msec after the previous one, FC-200 turns off Active Sensing for a period and stops measuring message intervals.*

SYSTEM EXCLUSIVE MESSAGE

<u>Status</u>	<u>Data</u>	<u>Status</u>
F0H	iiH, ddH,, eeH	F7H

F0H: System Exclusive
ii = ID Number:

The ID Number (manufacturer's ID) is used to distinguish one manufacturer's Exclusive messages from another. Roland's manufacturer ID is 41H.

ID Numbers 7EH and 7FH are used as Universal Non-realtime messages (7EH), and Universal Realtime message (7FH) for extending the MIDI standard.

dd, ..., ee = Data: 00H-7FH (0-127)
F7H: EOX (End of System Exclusive)

System Exclusive messages that the FC-200 can receive are Data Request (RQ1) and Data Set (DT1).

For a detailed explanation about Data Request (RQ1) and Data Set (DT1), refer to "ROLAND EXCLUSIVE MESSAGES" and Section 3.

2. TRANSMITTED DATA

2.1 Sending the Received Messages

Transmits the received message while performing Soft Thru (normal operation).

2.2 Transmitted Messages

CHANNEL VOICE MESSAGE

NOTE OFF

<u>Status</u>	<u>Second</u>	<u>Third</u>
8nH	kkH	vvH

n = MIDI Channel Number: 0H-FH (ch.1-ch.16)
kk = Note Number: 0CH-77H (12-119)
vv = Velocity: 40H (64)

* *Specifically when NOTE Mode is selected.*

NOTE ON

<u>Status</u>	<u>Second</u>	<u>Third</u>
9nH	kkH	vvH

n = MIDI Channel Number: 0H - FH (ch.1-ch.16)
kk = Note Number: 0CH-77H (12-119)
vv = Velocity: 01H-7FH (1-127)

* *Specifically when NOTE Mode is selected.*

CONTROL CHANGE

<u>Status</u>	<u>Second</u>	<u>Third</u>
BnH	ccH	vvH

n = MIDI Channel Number: 0H-FH (ch.1-ch.16)
cc = Control Number: 01H-1FH (1-31)
 21H-5FH (33-95)
vv = Control Value: 00H-7FH (0-127)

* *Does not transmit while in EXCLUSIVE Mode.*

BANK SELECT

<u>Status</u>	<u>Second</u>	<u>Third</u>
BnH	00H	mmH
BnH	20H	llH

n = MIDI Channel Number: 0H-FH (ch.1-ch.16)
mm = Upper bytes of Bank Select Number: 0H-9H (0-9)
ll = Lower bytes of Bank Select Number: 0H (0)

* *Specifically when PROGRAM CHANGE Mode is selected.*
* *Does not transmit when Bank Select = OFF.*
* *Transmits it prior to Program Change when Bank Select = ON.*

PROGRAM CHANGE

<u>Status</u>	<u>Second</u>
CnH	ppH

n = MIDI Channel Number: 0H-FH (ch.1-ch.16)
pp = Program Number: 00H-7FH (prog.1-prog.128)

* *Specifically when PROGRAM CHANGE Mode is selected.*
* *Transmits only Program Change Numbers 0H-63H (1-100) when Bank Select = ON and Bank Select Number is 1 or more.*

SYSTEM REALTIME MESSAGE

START

Status
FAH

* *Does not transmit while in EXCLUSIVE Mode.*

CONTINUE

Status
FBH

* *Does not transmit while in EXCLUSIVE Mode.*

STOP

Status
FCH

* *Does not transmit while in EXCLUSIVE Mode.*

ACTIVE SENSING

Status
FEH

* *During the normal operation, transmits at approx. 250 msec intervals.*
* *When message intervals are being monitored at the input section, the output of Active Sensing messages will cease for a certain period of time if the input interval exceeds 400 msec.*

SYSTEM EXCLUSIVE MESSAGE

Status	Data	Status
F0H	iiH, ddH,, eeH	F7H

F0H: System Exclusive
 ii = ID Number: 41H (65)
 dd, ..., ee = data: 00H-7FH (0-1 27)
 F7H: EOX (End of System Exclusive)

For a detailed explanation, see "ROLAND EXCLUSIVE MESSAGES" and Section 3.

MIDI MACHINE CONTROL (MMC)

Status	Data	Status
F0H	7FH, 7FH, 06H, com	F7H

Byte	Description
F0H	Exclusive Status
7FH	ID Number (Universal Realtime Message)
7FH	Device ID (Broadcast)
06H	Sub-ID#1 (Machine Control Command)
com	Sub-ID#2 (MMC Command)
F7H	EOX (End of System Exclusive)

* FC-200 can set the following MMC commands.

com	Stop
01H	Stop
02H	Play
03H	Deferred Play
04H	Fast Forward
05H	Rewind
06H	Record Strobe
07H	Record Exit
08H	Record Pause
09H	Pause

* Does not transmit while in EXCLUSIVE Mode.

3. EXCLUSIVE COMMUNICATIONS

Using Roland's one-way Exclusive message you can transfer data between FC-200 and another device.

The model ID of the Exclusive message that can be used in the FC-200 is 72H (FC-200). The Device ID can be set with 00H-0FH.

The value is MIDI Channel minus 1.

Request Data 1 RQ1 (11H)

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
dev	Device ID (dev: 00H-0FH)
mdl	Model ID (mdl: 72H) FC-200
11H	Command ID (RQ1)
aaH	Address MSB
bbH	Address LSB
ssH	Size MSB
ttH	Size LSB
sum	Checksum
F7H	EOX (End of System Exclusive)

DATA SET 1 DT1 (12H)

Byte	Description
F0H	Exclusive Status
41H	Manufacturer ID (Roland)
dev	Device ID (dev: 00H-0FH)
mdl	Model ID (mdl: 72H) FC-200
12H	Command ID (DT1)
aaH	Address MSB
bbH	Address LSB
ddH	Data
:	:
eeH	Data

sum	Checksum
F7H	EOX (End of System Exclusive)

4. PARAMETER ADDRESS MAP (Model ID = 72H)

There are two type of the FC-200 Exclusive message. One is an individual parameter communication, the other is a bulk dump communication. In individual parameter communication, One System Exclusive message "FO F7" can only have one parameter.

PEDAL STATUS (Individual area)

Address(H)	Size(H)	Data(H)	Parameter	Description
00 00	00 01	00/7F	Pedal 1 Status	OFF/ON
00 01	00 01	00/7F	Pedal 2 Status	OFF/ON
:	:	:	:	:
00 09	00 01	00/7F	Pedal 10 Status	OFF/ON
00 0A	00 01	00/7F	Pedal UP Status	OFF/ON
00 0B	00 01	00/7F	Pedal DOWN Status	OFF/ON
00 0C	00 01	00/7F	Pedal CTL Status	OFF/ON
00 0D	00 01	00-7F	EXP Pedal Status	0-127
00 0E	00 01	00-7F	Foot SW/EXP 1 Status	0-127
:	:	:	:	:
00 13	00 01	00-7F	Foot SW/EXP 6 Status	0-127

Outputs when pedal is operated while in the EXCLUSIVE Mode. Also outputs Data Set DT1 when Data Request RQ1 is received. Data Set DT1 is ignored.

LED STATUS (Individual area)

Address(H)	Size(H)	Data(H)	Parameter	Description
01 00	00 01	00/7F	Pedal 1 LED Status	OFF/ON
01 01	00 01	00/7F	Pedal 2 LED Status	OFF/ON
:	:	:	:	:
01 09	00 01	00/7F	Pedal 10 LED Status	OFF/ON
01 0A	00 01	00/7F	Pedal UP LED Status	OFF/ON
01 0B	00 01	00/7F	Pedal DOWN LED Status	OFF/ON
01 0C	00 01	00/7F	Pedal CTL LED Status	OFF/ON

Outputs when Data Request RQ1 is received. Receives Data Set DT1 only in the EXCLUSIVE Mode. LED on each pedal changes its status according to received Data Set DT1.

BANK DISPLAY STATUS (Individual area)

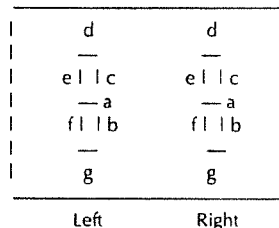
Address(H)	Size(H)	Data(B)	Parameter	Description
02 00	00 01	0abcdefg	Bank Display Right	*1
02 01	00 01	0abcdefg	Bank Display Left	*1

Outputs when Data Request RQ1 is received. Receives Data Set DT1 only in the EXCLUSIVE Mode. Display changes information according to the received Data Set DT1.

*1 Each bit represents ON/OFF of corresponding display segment. Bit "0" = OFF; "1" = ON

Segment No. is as follows:

Bank Display



MODE STATUS (Individual area)

Address(H)	Size(H)	Data(H)	Parameter	Description
03 00	00 01	00-03	Mode Status *1	0: Program Mode 1: Control Mode 2: Note Mode 3: Exclusive Mode
03 01	00 01	00-03	Mode Status *2	0: Program Mode 1: Control Mode 2: Note Mode 3: Exclusive Mode

*1 Outputs on power-up or when Mode change is made.
Also outputs upon receiving Data Request RQ1.
Data Set DT1 is ignored.

*2 Outputs when Data Request RQ1 is received.
Mode is changed when Data Set DT1 is received.

BANK NUMBER (Individual area)

Address(H)	Size(H)	Data(H)	Parameter	Description
04 00	00 01	00-63	Bank Number *1	0-99

Outputs when Data Request RQ1 is received.
Bank Number is changed when Data Set DT1 is received.
The value exceeding the Bank Limit automatically falls to the limit value.

*1 This is not a Bank Select Number.

EDIT PARAMETERS (Individual area)

Address(H)	Size(H)	Data	Parameter	Description
05 00	00 01	00000abcB	Bank Status *1	
05 01	00 01	00-63H	Bank Limit	0-99
05 02	00 01	rrH	Pedal 1 Assign Message *2	
05 03	00 01	rrH	Pedal 2 Assign Message *2	
:	:	:	:	:
05 0B	00 01	rrH	Pedal 10 Assign Message *2	
05 0C	00 01	rrH	Pedal UP Assign Message *2	
05 0D	00 01	rrH	Pedal DOWN Assign Message *2	
05 0E	00 01	rrH	Pedal CTL Assign Message *2	
05 0F	00 01	ccH	EXP Pedal Assign Message *3	
05 10	00 01	rrH	Foot SW/EXP 1 Assign Message *2	
:	:	:	:	:
05 15	00 01	rrH	Foot SW/EXP 6 Assign Message *2	
05 16	00 01	00abcdefB	Latch Status Upper *4	
05 17	00 01	0ghijklmB	Latch Status Lower *4	
05 18	00 01	00-03H	Mode Jack Loop *5	
05 19	00 01	00-08H	Note Range	C0-C8
05 1A	00 01	00-08H	Octave shift High	C0-C8
05 1B	00 01	00-08H	Octave shift Low	C0-C8
05 1C	00 01	01-7FH	Note On Velocity	1-127
05 1D	00 01	00/01H	Pedal CTL Latch Status *6	OFF/ON

Outputs when Data Request RQ1 is received.
Value of each edit parameter changes when Data Set DT1 is received.

*1 Each bit has the following meaning.
Each bit represents OFF when it is set at "0" and ON when set at "1".
00000abcB a: Number pedal is used to select Bank.
b: Outputs Program Change information upon Bank change.
c: Outputs Bank Select information.

*2 rr = 01-1F, 21-5F, 60-6B

*3 cc = 01-1F, 21-5F

rr and cc data represent output messages to be assigned to pedal.

01-1F, 21-5F:	Controller Number	(1-31, 33-95)
60, 61, 62:	Realtime Message	Start, Stop, Continue
63, 64, 65:	MMC(MIDI Machine Control) Command	Command
66, 67, 68:	MMC Command	Stop, Play, Deferred Play
69, 6A, 6B:	MMC Command	Fast Forward, Rewind, Record Strobe
		Record Exit, Record Pause, Pause

* Only Controller Number can be assigned to each Expression pedal.

*4 Each bit reflects latch/momentary setting of each pedal:
0 = momentary; 1 = latch

Latch Status Upper		Latch Status Lower	
00abcdefB	a: Pedal 6 b: Pedal 7 : e: Pedal 10 f: Pedal UP	0ghijklmB	g: Pedal 1 h: Pedal 2 : k: Pedal 5 l: Pedal DOWN m: Pedal CTL

*5 Shows the modes selected by foot switch inserted into the MODE socket.
Each data sets as shown below:

0: PROGRAM Mode -> CONTROL Mode -> PROGRAM Mode -> ...

1: PROGRAM Mode -> CONTROL Mode -> NOTE Mode -> PROGRAM Mode -> ...

2: PROGRAM Mode -> CONTROL Mode -> EXCLUSIVE Mode -> PROGRAM Mode -> ...

3: PROGRAM Mode -> CONTROL Mode -> NOTE Mode -> EXCLUSIVE Mode -> PROGRAM Mode -> ...

*6 Parameter which changes Pedal CTL Latch Status only. Latch Status can also be changed by *4 Latch Status.
When both parameters are received, the status of the latter has priority.

*7 When the message assigned to the pedal contains information other than Controller Number, Latch cannot be turned on.

*8 When transmitting EDIT parameter messages in sequence, the interval between messages must be 20 msec or longer.

FLIP-FLOP STATUS (Individual area)

Address(H)	Size(H)	Data(H)	Parameter	Description
06 00	00 01	00/7F	Pedal 1 flip-flop	OFF/ON
06 01	00 01	00/7F	Pedal 2 flip-flop	OFF/ON
:	:	:	:	:
06 09	00 01	00/7F	Pedal 10 flip-flop	OFF/ON
06 0A	00 01	00/7F	Pedal UP flip-flop	OFF/ON
06 0B	00 01	00/7F	Pedal DOWN flip-flop	OFF/ON
06 0C	00 01	00/7F	Pedal CTL flip-flop	OFF/ON

Outputs when Data Request RQ1 is received.
Flip-flop of each pedal changes when Data Set DT1 is received.
Indicator lights if pedal flip-flop is ON while in the CONTROL CHANGE Mode.

*1 Ignored if the pedal is set at momentary.

NOTE RANGE STATUS (Individual area)

Address(H)	Size(H)	Data(H)	Parameter	Description
07 00	00 01	00-08	Current Note Range	C0-C8

Outputs when Data Request RQ1 is received.
Current note range is changed upon receiving Data Set DT1.
*1 This is not an Edit parameter.

EDIT PARAMETERS (Bulk area)

Address(H)	Size(H)	Data(H)	Parameter	Description
10 00	00 1E	—	Edit Parameters *1	1 packet
11 00	00 1E	—	Factory Preset *2	1 packet

Only the above-mentioned address can be used as the start address.

*1 Output during Bulk Dump operation.
Also outputs upon receiving Data Request RQ1.
The value of Edit parameter is changed upon receiving Data Set DT1.

*2 Default data of Edit parameter value.
Outputs when Data Request RQ1 is received.
Data Set DT1 is ignored.

MIDI Implementation Chart

Function***		Transmitted	Recognized	Remarks
Basic Channel	Default	1 - 16	x	Memorized
	Changed	1 - 16	x	
Mode	Default	x	x	
	Messages Altered	x *****	x	
Note Number	True Voice	12 - 119	x	
		*****	x	
Velocity	Note ON	o 1 - 127	x	
	Note OFF	o 64	x	
After Touch	Key's	x	x	
	Ch's	x	x	
Pitch Bend		x	x	
Control Change	0, 32	o	x	Bank Select *1
	1 - 31	o	x	
	33 - 95	o	x	
Prog Change	True #	o	x	Program Number 1 - 128
		*****	x	
System Exclusive		o	o	
System Common	Song Pos	x	x	
	Song Sel	x	x	
	True	x	x	
System Real Time	Clock	x	x	
	Commands	o	x	
AUX Messages	Local ON/OFF	x	x	
	All Notes OFF	x	x	
	Active Sense	o	o	
	Reset	x	x	
Notes		*1: Can be set to o or x by manual operation or through Exclusive message.		

Mode 1 : OMNI ON, POLY
 Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO
 Mode 4 : OMNI OFF, MONO

o : Yes
 x : No

SPECIFICATIONS

FC-200 : MIDI FOOT CONTROLLER

Connectors

MIDI Connectors (IN / OUT)
MODE Jack
Foot Switch / Expression (FOOT SW / EXP) Jacks (1 to 6)
AC Adaptor Jack

Controls

Number Pedals (1 to 10)
BANK Pedals (UP / DOWN)
Control (CTL) Pedal
Expression Pedal
MODE Button
POWER Switch

Display

7 segments, 2 characters (LED)

Indicators

Number Pedals (1 to 10)
BANK Pedals (UP / DOWN)
Control (CTL) Pedal

Power Supply

9 V DC: Dry Batteries (R6 (AA) type) x 6
AC Adaptor

Current Draw

125 mA (in the "ON" mode)
76 mA (in the "ECONOMY" mode)

* Expected battery life under continuous use:

Carbon 13 hours (in the "ON" mode)
16.5 hours (in the "ECONOMY" mode)

These figures will vary depending on the actual conditions of use.

Dimensions

600 (W) x 203 (D) x 47 (H) mm
23-5/8 (W) x 8 (D) x 1-7/8 (H) inches

Weight

3.2 kg / 7 lbs 1 oz (including battery)

Accessories

Owner's Manual
Dry Batteries (R6 (AA) type) x 6

Options

AC Adaptor PSA-Series (BOSS)
Foot Switch: DP-2, FS-1, FS-5U / 5L (BOSS)
Expression Pedal: EV-5, FV-300L (BOSS) + PSC-33

*** In the interest of product development, the specifications and/or appearance of this unit are subject to change without prior notice.**

Information

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

U. S. A.

Roland Corporation U.S.
7200 Dominion Circle
Los Angeles, CA. 90040-
3696, U. S. A.
TEL: (213) 685 5141

CANADA

Roland Canada Music Ltd.
(Head Office)
5480 Parkwood Way
Richmond B. C., V6V 2M4
CANADA
TEL: (604) 270 6626

Roland Canada Music Ltd.
(Montreal Office)
9425 Transcanadienne
Service Rd. N., St Laurent,
Quebec H4S 1V3, CANADA
TEL: (514) 335 2009

Roland Canada Music Ltd.
(Toronto Office)
346 Watline Avenue,
Mississauga, Ontario L4Z
1X2, CANADA
TEL: (416) 890 6488

AUSTRALIA

Roland Corporation
Australia Pty. Ltd.
38 Campbell Avenue
Dee Why West. NSW 2099
AUSTRALIA
TEL: (02) 982 8266

NEW ZEALAND

Roland Corporation (NZ)
Ltd.
97 Mt. Eden Road, Mt. Eden,
Auckland 3, NEW ZEALAND
TEL: (09) 3098 715

UNITED KINGDOM

Roland (U.K.) Ltd.
Rye Close Ancells Business
Park Fleet, Hampshire GU13
8UY, UNITED KINGDOM
TEL: (0252) 816181

Roland (U.K.) Ltd.,

Swansea Office
Atlantic Close, Swansea
Enterprise Park, Swansea,
West Glamorgan SA79FJ,
UNITED KINGDOM
TEL: (0792) 700 139

IRELAND

The Dublin Service
Centre Audio
Maintenance Limited
11 Brunswick Place Dublin 2
Republic of Ireland
TEL: (01) 677322

ITALY

Roland Italy S. p. A.
Viale delle Industrie 8 20020
ARESE MILANO ITALY
TEL: (02) 93581311

SPAIN

Roland Electronics
de España, S. A.
Calle Bolivia 239 08020
Barcelona, SPAIN
TEL: (93) 308 1000

GERMANY

Roland Elektronische
Musikinstrumente
Handelsgesellschaft mbH.
Oststrasse 96, 22844
Norderstedt, GERMANY
TEL: (040) 52 60090

FRANCE

Guillard Musiques Roland
ZAC de Rosarge Les Echets
01700
MIRIBEL FRANCE
TEL: (72) 26 5060

Guillard Musiques Roland

(Paris Office)
1923 rue Léon Geoffroy
94400 VITRY-SUR-SEINE
FRANCE
TEL: (1) 4680 86 62

BELGIUM/HOLLAND/

LUXEMBOURG
Roland Benelux N. V.
Houtstraat 1 B-2260 Oevel-
Westerlo BELGIUM
TEL: (014) 575811

DENMARK

Roland Scandinavia A/S
Langebrogade 6 Box 1937
DK-1023 Copenhagen K,
DENMARK
TEL: 31 95 31 11

SWEDEN

Roland Scandinavia A/S
Danvik Center 28 A, 2 tr.
S-131 30 Nacka SWEDEN
TEL: (08) 702 0020

NORWAY

Roland Scandinavia Avd.
Kontor Norge
Lilleakerveien 2 Postboks 95
Lilleaker N-0216 Oslo 2
NORWAY
TEL: (02) 73 0074

FINLAND

Fazer Musik Inc.
Länsituulentie POB 169,
SF-02101 Espoo FINLAND
TEL: (00) 43 5011

SWITZERLAND

Roland (Switzerland) AG
Musitronic AG
Gerberstrasse 5, CH-4410
Liestal, SWITZERLAND
TEL: (061) 921 1615

AUSTRIA

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