Roland

MUSIC ENTRY PAD

CN-20

OWNER'S MANUAL

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Thank you, and congratulations on your purchase of the CN-20 Music Entry Pad.

In order that you may get a sufficient understanding of all the superior functions available, and thus be assured continuing satisfaction, please read this manual in its entirety.

■ *Contents*

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■ *Features of the CN-20*

The CN-20 Music Entry Pad is characterized by the following features:

● The CN-20 is well-suited to computer music systems

The CN-20's simple panel operations allow transmission of a wide range of MIDI messages such as Note or Program Change messages. Whether with a computer-based system or a sequencer unit, performance data can be much more efficiently composed.

● Facilitates entry of chords

The note messages for a chord can be transmitted simply by specifying the root note and the chord type. Thus performances using chords are much easier to input to units such as a sequencer.

● Serves as an enhancement for a MIDI keyboard

The CN-20 outputs any MIDI messages received at MIDI IN as well as the MIDI messages of the unit itself. Electric pianos having no bender lever, or keyboards without aftertouch can effectively have their MIDI capabilities extended through combination with this unit.

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■ *Important Notes*

When employing an AC adaptor, make certain you use only one that has been supplied by the manufacturer. Use of any other power adaptor could result in malfunction or damage.

[Concerning the power supply]

●Whenever you make any connections with other devices, always turn off the power to all equipment first. This will help in preventing malfunction, and damage to speakers.

●Do not force the unit to share the same power outlet as one used for distortion producing devices (such as motors, variable lighting devices). Be sure to use a separate power outlet.

●Before using the AC adaptor, always make certain the voltage of the available power supply conforms to its rating.

●Do not place heavy objects onto, step on, or otherwise risk causing damage to the power cord.

●Whenever you disconnect the AC adaptor from the outlet, always grasp it by the plug, to prevent internal damage to the cord and the hazard of possible short circuits.

●If the unit is not to be used for a long period of time, unplug the cord from the socket.

[Concerning placement]

●Avoid using or storing the unit in the following places, as damage could result.

○Places subject to extremes in temperature. (Such as under direct sunlight, near heating units, above equipment generating heat, etc.)

○Places near water and moisture. (Baths, washrooms, wet floors, etc.) Places otherwise subject to high humidity.

○Dusty environments.

○Places where high levels of vibration are produced.

●Should the unit be operated nearby television or radio receivers, TV pictures may show signs of interference, and static might be heard on radios. In such cases, move the unit out of proximity with such devices.

[Maintenance]

●For everyday cleaning, wipe the unit with a soft dry cloth, or one that is dampened slightly. To remove dirt that is more stubborn, wipe using a mild, neutral detergent. Afterwards, make sure to wipe thoroughly with a soft cloth.

●Never apply benzene, thinners, alcohol or any like agents, to avoid the risk of discoloration and deformation.

[Other Precautions]

●Protect the unit from strong impact.

●Avoid getting any foreign objects (coins, wire, etc.), or liquids (water, drinks, etc.) into the unit.

●Before using the unit in a foreign country, check first with your local Roland Service Station.

●At any time that you notice a malfunction, or otherwise suspect there is damage, immediately refrain from using the unit. Then contact the store where bought, or the nearest Roland Service Station.

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1. Panel Description

(1) Front Panel

Select Button
Selects the type of MIDI messages that are transmitted through the operation of the Control Fader.

Hold Button
Switches hold on/off. When at on, the indicator will light.

Display
Indicates the MIDI channel being used to transmit MIDI messages. Program numbers are indicated when Program Change messages are transmitted.

Mode Buttons
Provides selection from among the 4 modes determining how the note keys will function.

Octave Buttons
Determine the range the note keys will have. When at normal, the C/5 key will be C4 (Note number : 60).

Note Keys
Provide transmission of note messages. They function differently depending on the mode.

Chord Type Keys
Used to specify the type of chord when note messages are transmitted.

Control Fader
Transmits the MIDI messages chosen with the Select button.

Velocity Fader
Adjusts the velocity level when note messages are transmitted.

Root Note Keys
Used to specify the root note when note messages for chords are transmitted.

(2) Rear Panel

DC IN
Provides for connection of the supplied AC adaptor.

MIDI Connectors
Connectors through which the MIDI reception and transmission takes place.

Merge Switch
Selects whether or not the messages received at MIDI IN will be output from MIDI OUT.

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2. Before Starting Out

(1) MIDI messages that the CN-20 transmits

The CN-20 is capable of transmitting the MIDI messages explained below.

● Note Keys
Allow not only for simple transmission of notes corresponding to keys pressed, but also are used to transmit chords. Thus it is quite convenient for step recording with a computer or sequencer.

Note Messages: Note On, Note Off, Velocity (strength of sound)
Program Change Messages: Messages for changing sounds.

● Control Fader
Through operating the control fader, the following MIDI messages can be transmitted.

Control (Control Number 16) : The function controllable varies depending on the sound module used
Volume messages (Control Number 7) : Volume
Pan messages (Control Number 10) : Orientation of sound image
Modulation messages (Control Number 1) : Alterations in vibrato obtained by modulation lever or wheel.
Pitch Bender messages : Modifications in pitch obtained with a bender lever or wheel.
Aftertouch messages: Effect obtained by the aftertouch function.

● Hold Button
Hold messages (Control Number 64)

(2) Making connections

Depending on the way in which it is to be used, the CN-20 should be connected as shown below.

● When used in combination with a sequencer and MIDI sound module

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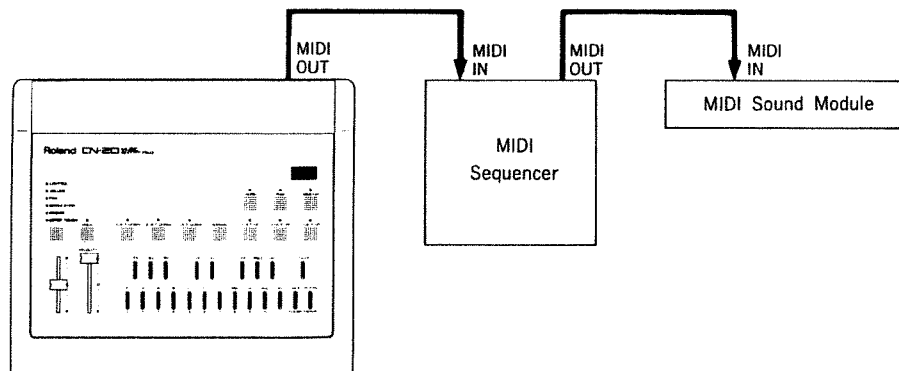
● **When used together with a keyboard controller**
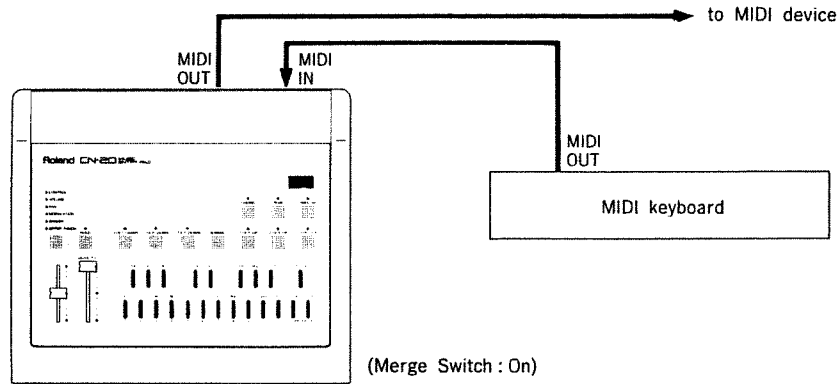
(Merge Switch : On)

* Make certain that the CN-20's Merge switch is set at On when a MIDI device is connected to its MIDI IN.

(3) Turning on power

After confirming that all MIDI cables have been properly connected, turn on power to the connected MIDI device, then turn on the CN-20 power.

① **Insert the power plug into the outlet.**

② **Insert the adapter's other plug into the DC IN jack.**
The power indicator will light.
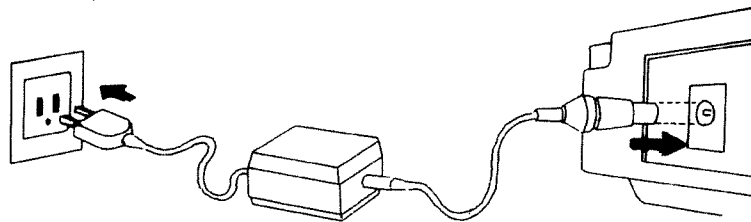
* Since the unit is equipped with a circuit protection device, it requires a brief interval after power is turned on before it can be operated.

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3. The Four Modes

(1) How each mode works

The CN-20 is provided with 4 modes. The Note Keys will function as follows depending on the mode.

● Note Event Mode

The ordinary mode; note messages are transmitted for the keys pressed.

● Chord Mode

The root and type of chord is specified and the note messages for the chord are transmitted.

● Program Change Mode

Program Change (changes in sound) messages are transmitted.

● MIDI Channel Mode

For setting the MIDI channel upon which the CN-20 will transmit MIDI messages.

(2) Changing modes

The mode is selected by means of the Mode buttons. The indicator for a button pressed will light. When any Mode button that has had its indicator lit is again pressed, the indicator will go out, and the unit will then be in the Note Event mode.

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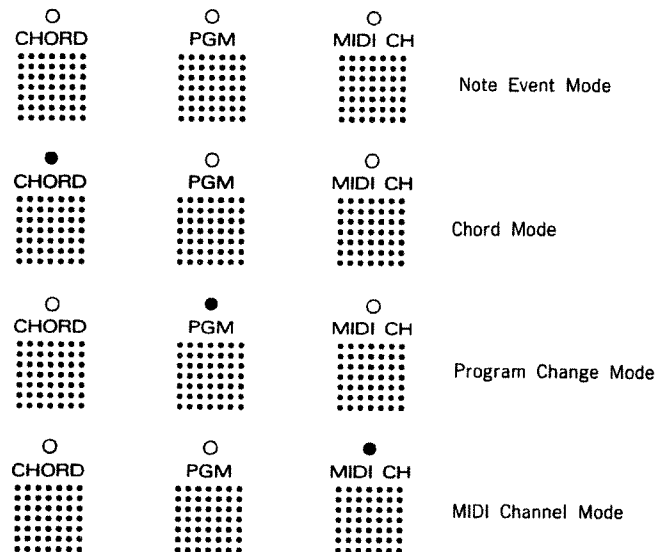
4. Setting MIDI Channels

The following steps are performed to set the MIDI channel upon which the CN-20 will transmit MIDI messages.

① Press the MIDI CH button so the MIDI channel mode is selected.
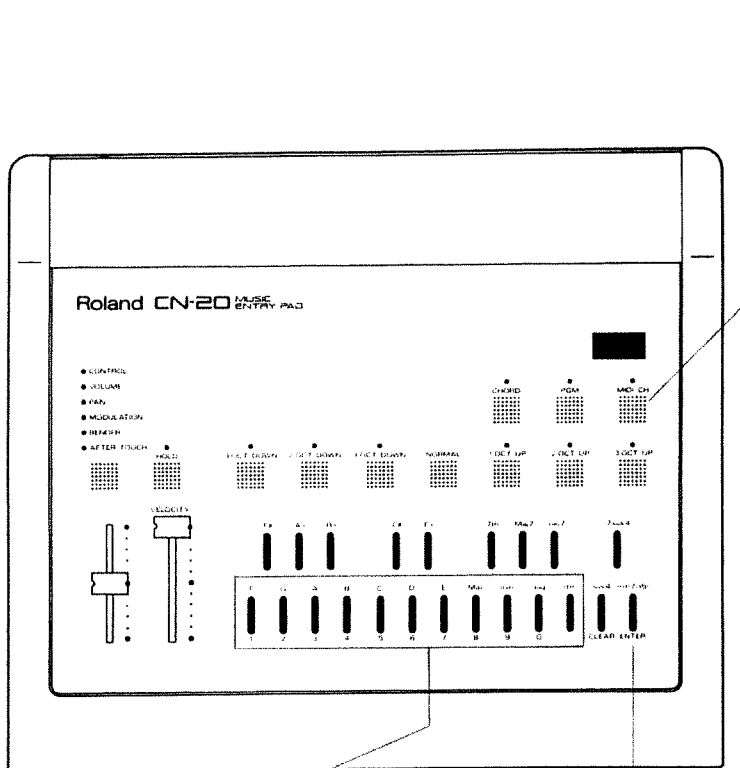
② Specify the MIDI channel using Note Keys 1–9, and 0. The acceptable range for the MIDI channel is from 1 to 16.

③ Press ENTER in the Note Keys. Once ENTER is pressed, the selection of MIDI channel takes effect.

* The MIDI channel specified will appear in the display and be blinking.

* By pressing CLEAR in the Note Keys, you can cancel the selection made in ②. When you have mistakenly selected the wrong channel, press CLEAR, then specify the channel over again.

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5. Transmission of Note Messages

Note messages are transmitted by pressing the Note Keys. When used in combination with the Octave buttons, transmission of note numbers ranging from F0 (note number: 17) up to D8 (note number: 110) can be carried out.

(1) Note message transmission

① **Press any Mode button that has its indicator lit so the unit is in the Note Event mode.**
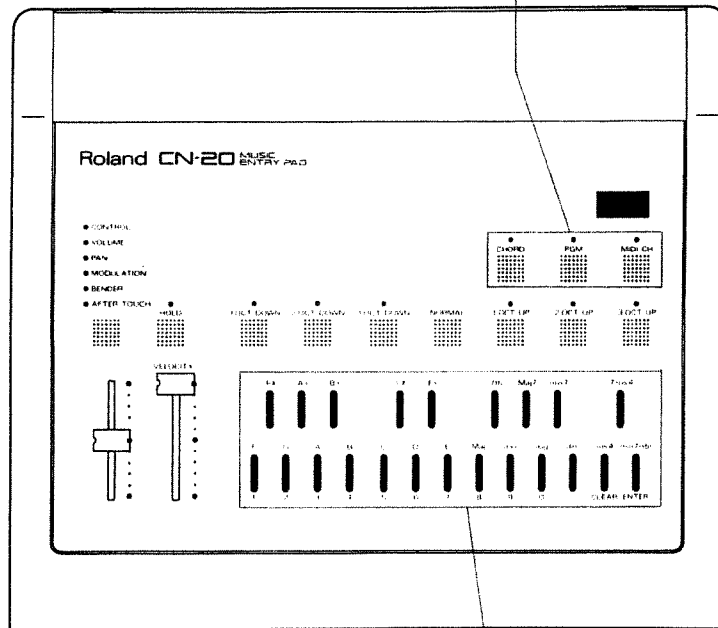
② **Press the note keys. When a note key is pressed the Note On message is transmitted, and when a key is released Note Off is transmitted.**

* Any number of note keys can be pressed at once, and the corresponding number of note messages will be transmitted.

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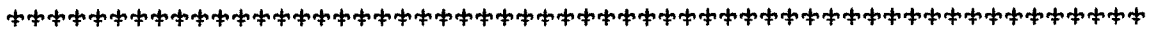
● Settings for velocity

Velocity (strength of sound) is transmitted at the same time that a note key is pressed. The value for velocity is adjusted using the Velocity Fader.
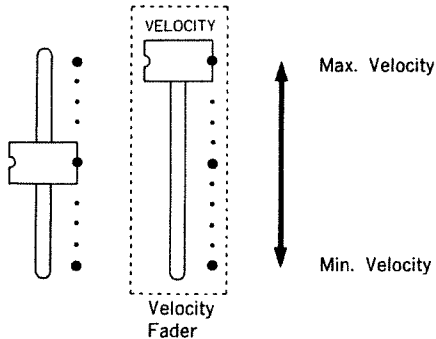
● Changing the range of the note keys

Use the Octave button to change the range of the note keys. With respect to Normal (the C/5 key is C4), the range can be raised or lowered by up to 3 octaves.

Make selection of the desired range for the note numbers.
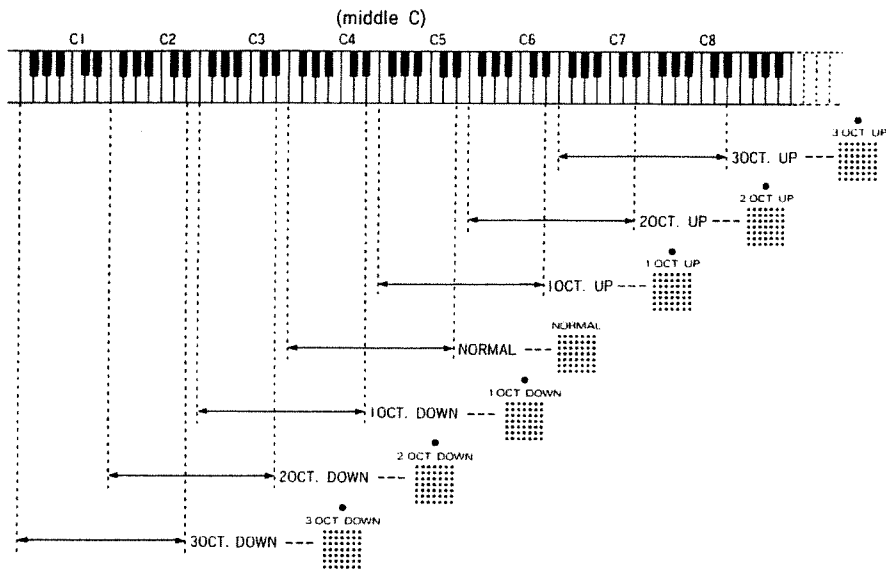
* The range cannot be changed while a note key is pressed.

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(2) Transmission of note messages for chords

Simply by specifying the chord's root and the type, chord note messages can be transmitted.

① **Press the CHORD button to get the Chord mode.**

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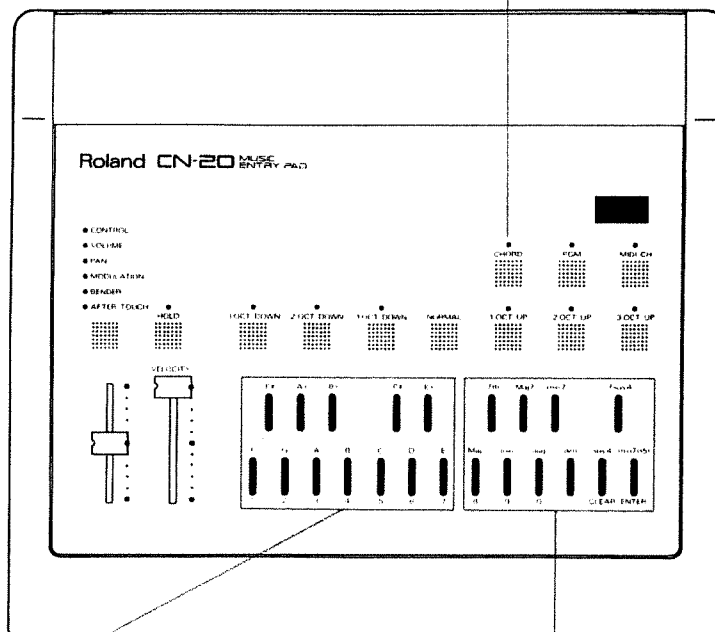
② **Press the note key that is the root.**

③ **While pressing the root note key, specify the chord type by pressing a chord type key.**

When the root note key and the chord type key are pressed at the same time, Note On messages for the notes of the chord will be transmitted. If you remove your finger from either of the keys, Note Off messages are transmitted.

* The value transmitted for velocity is determined by the position of the Velocity Fader. The value for velocity will be the same for every note making up the chord.

* The range of the root note keys is changed by using the Octave buttons.

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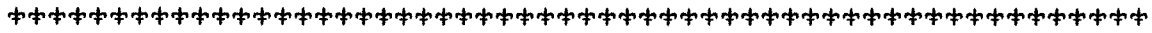
(3) About chords

● Chord Chart

When chords are selected in the Chord mode, chord notes are transmitted as follows:

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● In notation, there are a variety of ways of representing the names for chords. The same chord may have several names. When specifying a chord type, refer to the following chart.

⟨When root is C⟩

Chord Type	CN-20 Indication	Other Possble Indication		
Major	C Maj	C	C△	
Minor	C min	C m	C−	
Seventh	C 7th	C7		
Major seventh	C Maj7	C△7	C M7	
Minor seventh	C min7	C m7	C−7	
Augumented	C aug	C⁺	C⁽⁺⁵⁾	C⁽♯⁵⁾
Diminished	C dim	C○	C dim7	
Minor seventh flat five	C min7(♭5)	C m7⁽⁻⁵⁾	C−7⁽⁻⁵⁾	Cø
Suspended fourth	C sus4			
Seventh suspended fourth	C 7sus4			

● Concerning chords

A chord is composed of its root note and the other notes above it. For example, a C Maj consists of the root note C, and its components E and G.

In order to provide a smooth, musically pleasant chord progression, more than half of the notes for chords transmitted by the CN-20 are inverted. Thus, when composing performance data for a sequencer, you need to create a separate bass part, and enter a root note. For example, when you have entered a C Maj chord, you need to enter a single C for the bass part.
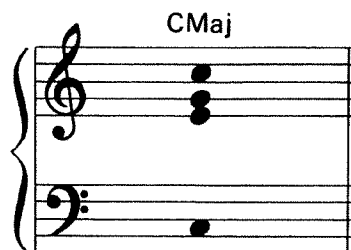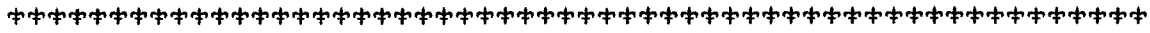
● Entry of 6th chords

When using the CN-20 to enter 6th chords, first enter the applicable seventh chord by referring to the chart below, then enter the root note for the bass part.
For example, to enter a C6 chord, first enter an Amin7 from the chord mode.   Then for the bass part enter a C.

C min7	E♭ 6	E min7	G 6	A♭min7	B 6
G min7	B♭ 6	B min7	D 6	E♭min7	F♯6
D min7	F 6	F♯min7	A 6	B♭min7	D♭6
A min7	C 6	D♭min7	E 6	F min7	A♭ 6

● Indication for specialized chords

When a note other than the chord's root is used for the bass, methods such as the following are used in notation.
For example, when $\frac{C}{E}$ is indicated, the upper part means a C Maj chord and the lower E stands for the E used as the bass note.
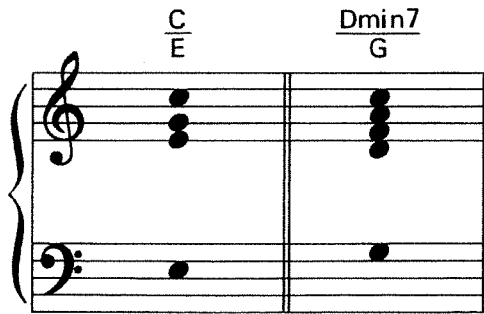
Alternately, $\frac{C}{E}$ can also indicated as C/E, Con E, or C (Bass E).
$\frac{Dmin7}{G}$ can also be indicated as Dmin7/G, Dmin7 on G, or Dmin7 (Bass G).

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6. Transmission of Program Change Messages

Perform the following steps to transmit Program Change (change of sound) messages.

① **Press the PGM button so you are in the Program Change mode.**

Roland CN-20 MUSIC ENTRY PAD
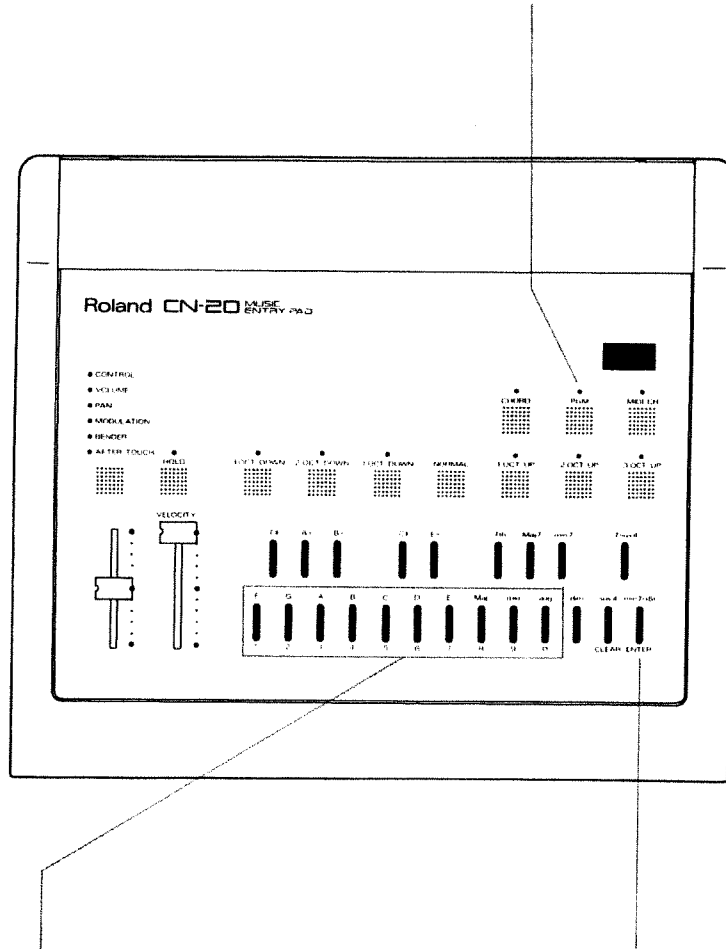
② **Specify the Program Number (1 — 128) using note keys 1 through 9 and 0.**

* The specified Program Number will appear in the display, and be blinking.

③ **Press ENTER in the Note Keys. When a ENTER is pressed the Program Change message is transmitted.**

* By pressing CLEAR in the Note Keys, you can cancel the selection made in ②. When you have mistakenly selected the wrong program number, press CLEAR, then specify the number over again.

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7. Transmission of Other MIDI Messages

The following explains how the Control Fader and Hold button are used to transmit MIDI messages.

● Control Fader

With the Control Fader, MIDI messages such as those for pitch bender or aftertouch can be transmitted. They correspond to the movement of the fader.
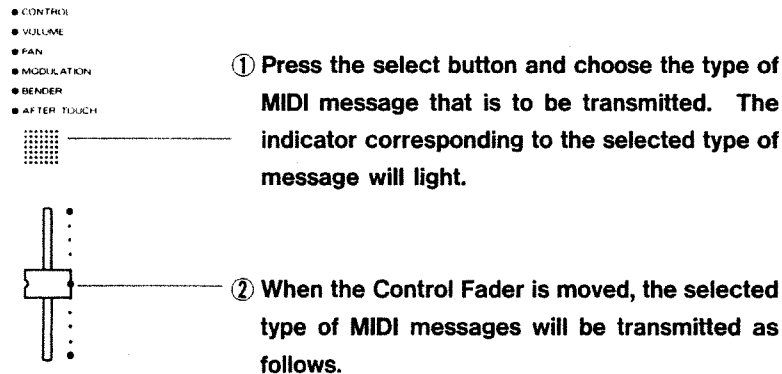
① Press the select button and choose the type of MIDI message that is to be transmitted. The indicator corresponding to the selected type of message will light.

② When the Control Fader is moved, the selected type of MIDI messages will be transmitted as follows.

CONTROL $\left(\begin{smallmatrix} \text{Control} \\ \text{Number : 16} \end{smallmatrix}\right)$	VOLUME $\left(\begin{smallmatrix} \text{Control} \\ \text{Number : 7} \end{smallmatrix}\right)$	PAN $\left(\begin{smallmatrix} \text{Control} \\ \text{Number : 10} \end{smallmatrix}\right)$	MODULATION $\left(\begin{smallmatrix} \text{Control} \\ \text{Number : 1} \end{smallmatrix}\right)$	PITCH BENDER	AFTERTOUCH
127 (7FH) | 64 (40H) | 0 (00H)	127 (7FH) | 64 (40H) | 0 (00H)	127 (7FH) | 64 (40H) | 0 (00H)	127 (7FH) | 64 (40H) | 0 (00H)	8191 (7FH, 7FH) | 0 (00H, 40H) | −8192 (00H, 00H)	127 (7FH) | 64 (40H) | 0 (00H)

* When either Aftertouch, Pitch Bender, or Modulation has been selected, the Select button's indicator will start blinking when the Control Fader is moved. When the value of the position the fader is moved to is "0", it no longer blinks.

* After transmission of either Aftertouch, Pitch Bender, or Modulation has taken place, the values shown below will be transmitted when the Select button is pressed.

Control	Value	Position of Fader
Aftertouch	0	Minimum
Pitch Bender	0	Center
Modulation	0	Minimum

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●Hold

The Hold button is used to transmit Hold On/Off messages (Control Number: 64), which convey the effect obtained by a damper pedal.

```
    ●
   HOLD
  :::::::
  :::::::
  :::::::
  :::::::
```

When the Hold button is pressed, its indicator will light up, and the Hold On messages is transmitted. When the button is pressed again, its indicator goes out, and the Hold Off message is sent.

MIDI Implementation

1. TRANSMITTED DATA

■ Bypassed message

When the Merge switch is set to ON, the CN – 20 will normally perform a bypass function which allows it accept part or all of a complete message sequence through MIDI IN and transmit it through MIDI OUT, EXCEPT UNDER THE FOLLOWING CONDITIONS :
When All Notes Off information is received over a specific MIDI channel while the notes of that specific MIDI channel are actually on, the CN – 20 will totally disregard the message. when the mode message is received while the MIDI status of CN – 20 is All Notes On, the CN – 20 sends out the All Notes Off message before transmitting it via Soft Through.

■ Note event

● Note off

Status	Second	Third
9nH	kkH	00H

n = MIDI Channel   0H – FH (1 – 16)
kk = Note number   11H – 6EH (17 – 110)

● Note on

Status	Second	Third
9nH	kkH	vvH

n = MIDI Channel   0H – FH (1 – 16)
kk = Note number   11H – 6EH (17 – 110)
vv = Velocity   1H – 7FH (1 – 127)

Notes : In the Chord mode, pressing both a root note and a chord type key pad allows the CN – 20 to produce a Note Event message for the three or four notes comprising the designated chord.

■ Control change

● Modulation Depth

Status	Second	Third
BnH	01H	vvH

n = MIDI Channel   0H – FH (1 – 16)
vv = Modulation Depth   0H – 7FH (0 – 127)

● Main Volume

Status	Second	Third
BnH	07H	vvH

n = MIDI Channel   0H – FH (1 – 16)
vv = Volume value   0H – 7FH (0 – 127)

● Panpot

Status	Second	Third
BnH	0AH	vvH

n = MIDI Channel   0H – FH (1 – 16)
vv = Panpot value   0H – 7FH (0 – 127)

● Control

Status	Second	Third
BnH	10H	vvH

n = MIDI Channel   0H – FH (1 – 16)
vv = Control value   0H – 7FH (0 – 127)

Notes : The MIDI data transmitted from MIDI OUT coressponds to the position of the slider.

     Maximum = 127.   Center = 64.   Minimum = 0

● Hold – 1

Status	Second	Third
BnH	40H	vvH

n = MIDI Channel   0H – FH (1 – 16)
vv = 00H : Off
vv = 7FH : On

■ Program change

Status	Second
CnH	ppH

n = MIDI Channel   0H – FH (1 – 16)
pp = Program number   0H – 7FH (1 – 128)

■ Channel Aftertouch

Status	Second
DnH	vvH

n = MIDI Channel   0H – FH (1 – 16)
vv = Channel Aftertouch   0H – 7FH (0 – 127)

Notes :The MIDI data transmitted from MIDI OUT coressponds to the position of the slider.

     Maximum = 127,   Center = 64,   Minimum = 0

■ Pitch Bender

Status	Second	Third
EnH	llH	mmH

n = MIDI Channel   0H – FH (1 – 16)
ll = Pitch Bender change value (Lower byte)   0H – 7FH (0 – 127)
mm = Pitch Bender change value (Upper byte)   0H – 7FH (0 – 127)

Notes : The MIDI data corresponds to the position of the slider.

Maximum :	ll = 7F	mm = 7FH
Center :	ll = 0H	mm = 40H
Minimum :	ll = 0H	mm = 0H

The slider has 128 segments between Maximum and Minimum settings.

Notes : When the Control Change button is switched while the CN – 20 is transmitting Channel Aftertouch, Pitch Bender or Modulation Depth information, the CN – 20 transmits the following default information to prevent confusion at the receiving MIDI device :

Default
Channel Aftertouch   vv = 0H
Modulation Depth   vv = 0H
Pitch Bender   ll = 0H   mm = 40H

MIDI Implementation Chart

	Function ···	Transmitted	Recognized	Remarks
Basic Channel	Default Changed	1 1 — 16	× ×	
Mode	Default Messages Alterd	3 × * * * * * * * *	× ×	
Note Number	True Voice	17 — 110 * * * * * * * *	× * * * * * * * *	
Velocity	Note ON Note OFF	○ 9n v = 1 — 127 ○ 9n v = 0	× ×	
After Touch	Key's Ch's	× ○	× ×	
Pitch Bender		○	×	
Control Change	1 7 10 16 64	○ ○ ○ ○ ○	× × × × ×	Modulation Main Volume Panpot Control Hold 1
Prog Change	True #	○ 0 — 127 * * * * * * * *	× ×	
System Exclusive		×	×	
System Common	Song Pos Song Sel Tune	× × ×	× × ×	
System Real Time	Clock Commands	× ×	× ×	
Aux Messages	Local ON／OFF All Notes OFF Active Sense Reset	× × × ×	× × × ×	
Notes		When the Merge switch is set to ON, the CF — 10 will normally perform a bypass function which allows it accept part or all of a complete message sequence through MIDI IN and transmit it through MIDI OUT.		

Mode 1 : OMNI ON, POLY   Mode 2 : OMNI ON, MONO   ○ : Yes
Mode 3 : OMNI OFF, POLY   Mode 4 : OMNI OFF, MONO   × : No

■ *Specifications*

● Front Panel
Mode Buttons (3) (CHORD, PGM, MIDI CH)
Octave Buttons (7) (±3 octaves)
Hold Button
Select Button
Note Keys (22)
Velocity Fader
Control Fader
Display

● Rear Panel
Merge Switch
MIDI Connectors (IN, OUT)
DC IN Jack

● Power Supply
9 V DC (AC adaptor supplied)

● Current Consumption
110 mA

● Dimensions
284 (W) × 239 (D) × 50 (D) mm
11-3/16" × 9-7/16" × 2"

● Weight
1 kg
2 lb 3 oz

● Supplied Accessories
AC Adaptor
MIDI Cable (1 pc.)
Owner's Manual
MIDI GUIDEBOOK

* The specifications for this product are subject to change without prior notice, in the interest of improvement.

Information

● Please use this AC adaptor only with the specified device.
● Please use the AC Adaptor of an appropriate voltage (120, 220 or 240) depending on the voltage system in your country.
● When the device is not used for a long period, be sure to disconnect the AC adaptor (Power Supply Unit) from the wall outlet.
● When you need repair service, call your local Roland Service Station as shown below or the authorized Roland distributer in your country.

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7200 Dominion Circle
Los Angeles, CA. 90040 - 3647
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☎ (213) 685 - 5141

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