100
YAMAHA 1887-1987

PORTATONE
PSR-6300

[MIDI]
Introduction

YAMAHA

INTRODUCTION

You probably hear a lot about MIDI (Musical Instrument Digital Interface), a universal standard that lets electronic music instruments "communicate." Up to now, what was programmed on one instrument could almost never be used on another. But MIDI lets you program a song or phrase on one instrument and play it on another. You can even play 10 different instruments at once. And you can store the information too.

This booklet will teach you how to use MIDI. It has been divided into different Grades and Lessons, which increase in difficulty as they go along. Start out with Grade 1 and work your way through. Each Lesson covers a specific MIDI aspect, and the level of difficulty is governed by the Grade. We'll mainly be using the YAMAHA PSR-6300 keyboard, so naturally, some instructions may not work with other instruments. But all MIDI systems operate in a similar manner, so it will be easy to work on another MIDI system.

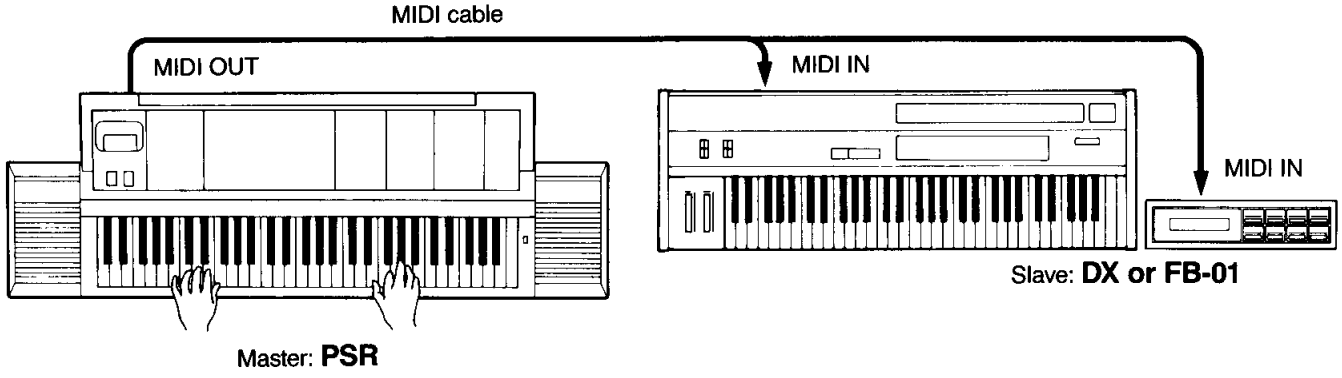
CONTENTS

LESSON 1-1 SYSTEM CONNECTIONS

All MIDI compatible instruments have MIDI IN/OUT jacks (some have MIDI THRU). Connect the "Master" instrument MIDI OUT to the "Slave" instrument MIDI IN with a MIDI cable, as shown. The following section shows you how to connect your PSR to other MIDI instruments.

If you want to expand the PSR's range of expression by adding a Voice you have created yourself, then connect the PSR to the Digital Synthesizer DX Series or FM Sound Generator FB-01, as shown below.

Sample Connection 1: PSR → DX or FB-01



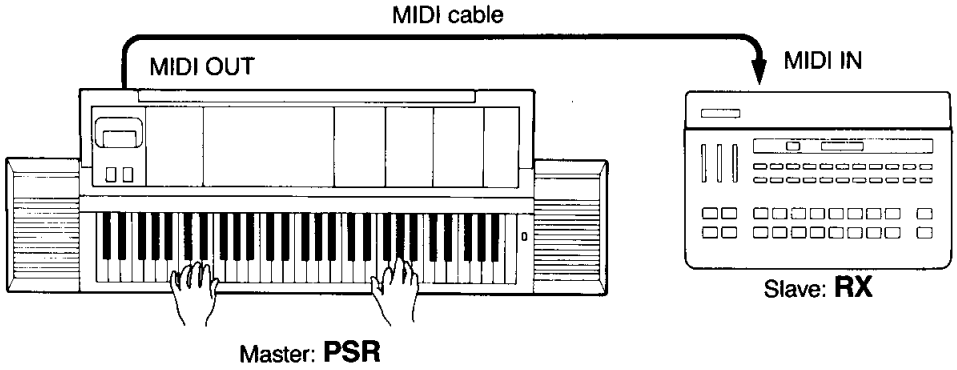
Playing the PSR now automatically plays the DX or FB-01 in unison. Changing the PSR's UPPER ORCHESTRA Voice also changes the DX's or FB-01's Voice. For example, if you set the PSR to BRASS 1, which is the first PSR UPPER ORCHESTRA Voice, the DX or FB-01 shifts to the first internal preset Voice. And if you set the PSR to PIANO, the 9th PSR UPPER ORCHESTRA Voice, the DX or FB-01 shifts to the 9th preset Voice. The DX's or FB-01's Voice changes automatically because it is linked with the PSR's UPPER ORCHESTRA section.

In the above MIDI connection, data flows in one direction only; from the PSR to the DX or FB-01. Even if you change the DX's or FB-01's Voice, the PSR's Voice remains the same.

- You can't use the RHYTHM, AUTO BASS CHORD, and TRANSPOSER functions in the above MIDI connection, so keep them turned off.
- Try different Voice combinations of the PSR and DX or FB-01. When you have a number of good combinations, rearrange the DX's Voices or arrange the RAM area of the FB-01 in order so that selecting any PSR UPPER ORCHESTRA Voice automatically selects the proper Voice on the DX or FB-01.
- The PSR can also be connected to other MIDI keyboards. But first check the other keyboards' MIDI specifications, as some models are subject to certain restrictions.
- When an instrument with a HOLD function is connected, turning on the Sustain of the PSR may activate the HOLD function and the note may not stop.

Sample Connection 2: PSR → RX

Now let's use MIDI to synchronize rhythms together. We'll be using the programmable MIDI drum machines in the Yamaha RX series.



In the above MIDI connection, the PSR's Timing Clock is sent to the RX, so the two play in time with each other.

You can store a rhythm pattern in the RX and play it in time with the PSR rhythm, or play the PSR keyboard in time with the RX rhythm by turning down the PSR's rhythm volume.

LESSON 1-2 BASIC PSR-6300 MIDI FUNCTIONS

The MIDI system of the Yamaha PSR-6300 keyboard can send and receive the following main kinds of data.

1. Key Note ON/OFF data
2. Pitch Bend data
3. Program Change (Upper Orchestra Voice Selection)
4. Control Change (Upper Orchestra's Sustain, Volume, and Portamento and Modulation for Solo)
5. Timing Clock, Start/Stop
6. Performance Data stored in the Music Programmer
7. Key Note, Program Change and Control Change data for each of the Solo, Upper Orchestra, Lower Orchestra, Chord, Bass and Rhythm parts can be sent independently. Key Note, Program Change and Control Change data can also be simultaneously received on different MIDI Channels.

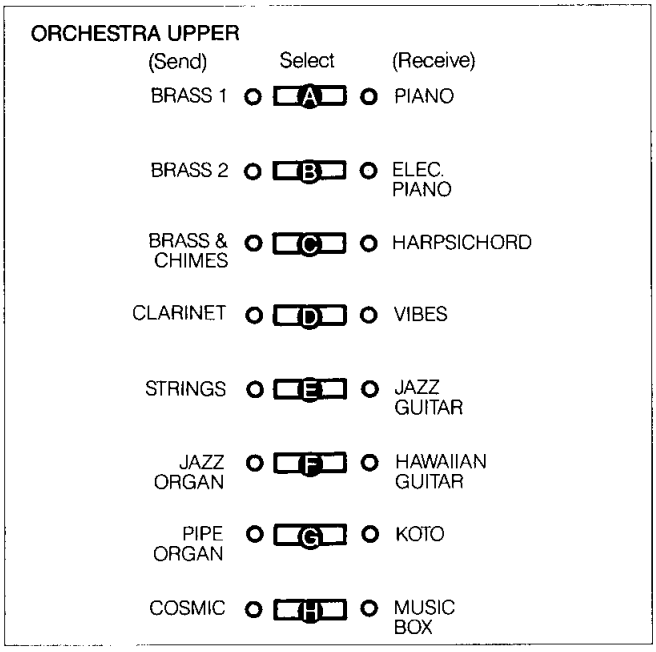
- The PSR-6300 cannot send or receive the following kinds of data.
  1. Data for functions not on PSR unit.
  2. Notes exceeding the PSR unit's pitch range.
- Whenever you turn on the power of your PSR, you activate the Default Mode, which turns on the Internal Clock and the OMNI ON/POLY setting.

GRADE 2 GENERAL MIDI APPLICATIONS

The previous Lessons covered applications for a typical MIDI keyboard. Now let's look at the MIDI features unique to the Yamaha PSR series.

The PSR-6300 is equipped with a MIDI MODE Selector. Find it?

<PSR-6300>



You can select specific MIDI functions by holding down the MIDI MODE Selector and pressing the buttons marked A — H in the figures below.

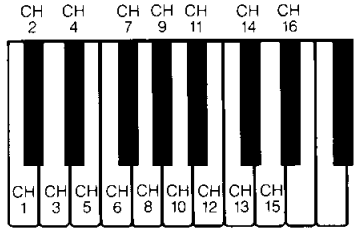
- Ⓐ MIDI Channel Select
- Ⓑ Music Programmer Send Mode
- Ⓒ PSR Exclusive Mode
- Ⓓ Key Note Only
- Ⓔ Timing Clock Select
- Ⓕ Local Off
- Ⓖ Panel Data Send
- Ⓗ Data Dump

- These functions cannot be adjusted while the rhythm is running. Now let's cover each function.

LESSON 2-1 MIDI CHANNEL SELECT

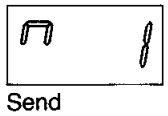
When the power is turned on (Default Mode), your PSR will receive all data sent to it. This is called OMNI ON. But you can also assign different types of data to a specific MIDI Channel number, which lets you send or receive only the data you select. As long as the numbers of the Master Send Channel and Slave Receive Channel are the same, data from the Master Channel can be received by the Slave Channel; if not, the data are ignored. There are 16 MIDI Send and 16 MIDI Receive Channels; from 1 — 16.

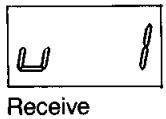
The 16 keys at the very left of the keyboard are used to select the MIDI Channel number.



Hold down the MIDI MODE Selector and press the key corresponding to the MIDI Channel number you want.

The selected MIDI Channel number will be indicated on the LED display.


Send


Receive

Operation

Selecting the MIDI Send Channel

❶ Hold down the MIDI MODE Selector and press the BRASS 1/PIANO button (button Ⓐ) to turn on the BRASS 1 lamp, which activates the Send Mode.
❷ Hold down the MIDI MODE Selector and press the keyboard key corresponding to the MIDI Channel number you want. (See figure at the bottom of page 4.)

Selecting the MIDI Receive Channel

❶ Hold down the MIDI MODE Selector and press the BRASS 1/PIANO button (button Ⓐ) to turn on the PIANO lamp, which activates the Receive Mode.
❷ Hold down the MIDI MODE Selector and press the keyboard key corresponding to the MIDI Channel number you want. (See figure at the bottom of page 4.)
❸ Hold down the MIDI MODE Selector and press the BRASS 1/PIANO button (button Ⓐ) again. The PIANO lamp will go out, reactivating the OMNI ON Mode. The PSR will remember the MIDI Send and Receive Channels selected previously, until the power is turned off.

LESSON 2-2 MUSIC PROGRAMMER SEND MODE

The PSR-6300 has a Music Programmer which can memorize performance data. In the Normal Mode, performance data can be stored in the Music Programmer but cannot be sent to the MIDI OUT jack. But in the Music Programmer Send Mode, performance data for the Solo, Upper Orchestra, Lower Orchestra, Bass, and Chord parts can each be sent from the Music Programmer to other MIDI keyboards. Each part is set to a specific MIDI Send Channel, which cannot be changed.

CH1: Upper Orchestra **CH4: Solo**
CH2: Lower Orchestra **CH5: Chord**
CH3: Bass

As Bass and Chord data are all sent as Key Note data, you can use synthesizers (DX, etc.) without auto play features to play the auto bass and chord patterns from the PSR.

Operation

Sending MIDI data without Voice Selection Information

❶ Hold down the MIDI MODE Selector and press the BRASS 2/ELEC. PIANO button (button Ⓑ) to turn on the BRASS 2 lamp.
❷ Set the MIDI Receive Channel of the Slave unit to the Channel number of the desired part from the PSR. (You don't have to set the Receive Channel if all the parts will be played by one keyboard.)
❸ Press the MUSIC PROGRAMMER PLAY BACK button(s) of the part(s) you want to send. The Slave unit will begin playing.

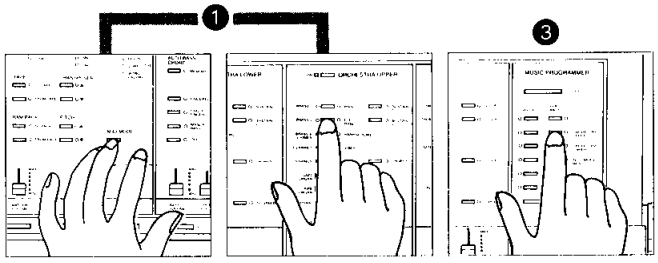
Operation

Sending MIDI data together with Voice Selection Information (Available on models with Serial No. 7875 and later.)

❶ Hold down the MIDI MODE Selector and press the BRASS 2/ELEC. PIANO button (button Ⓑ) twice to turn on the ELEC. PIANO lamp.

❷ Set the MIDI Receive Channel of the Slave unit to the Channel number of the desired part from the PSR. (You don't have to set the Receive Channel if all the parts will be played by one keyboard.)

❸ Press the MUSIC PROGRAMMER PLAY BACK button(s) of the part(s) you want to send. The Slave unit will begin playing.
Note: The harmonized sounds provided by the Duet and Trio functions are not sent.

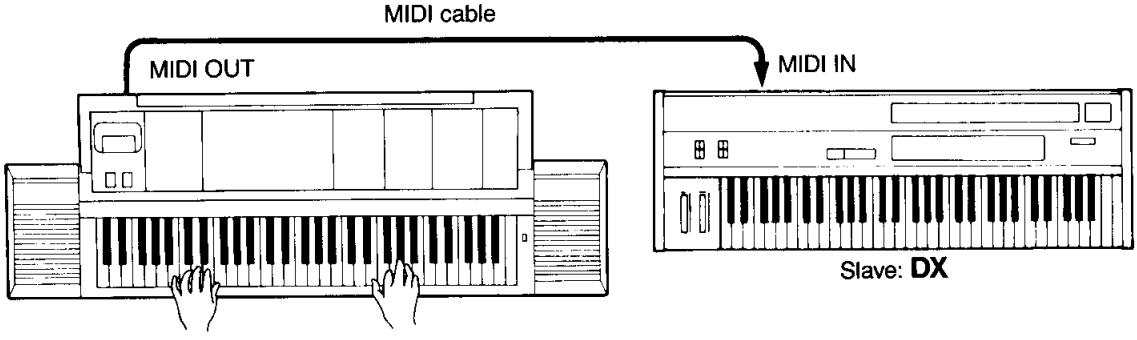


Hold down MIDI MODE Selector | Press BRASS 2/ELEC. PIANO button | Press MUSIC PROGRAMMER PLAY BACK button(s)

- Be sure to program songs in advance into the Music Programmer. (For details, refer to the Owner's Manual.)

Sample Connection 3: PSR → DX

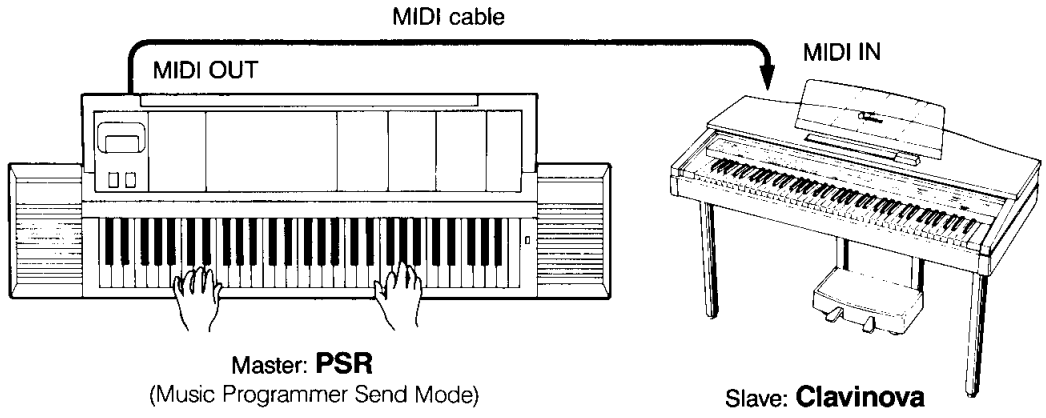
Let's play a song stored in the PSR's Music Programmer on the DX.



1. Set the Slave DX to OMNI ON, and it will Receive data from all MIDI Channels. The PSR Upper Orchestra, Lower Orchestra, Solo, Chord, and Bass parts will all be played on the DX. But you can't set different Voices independently for each part.
2. If you only want to play the Bass part on the DX, set the DX's MIDI Receive Channel to 3, which is the PSR's MIDI Send Channel for the Bass part.

Sample Connection 4: PSR → Clavinova

Now let's use the PSR to play a digital piano like the Yamaha Clavinova series.

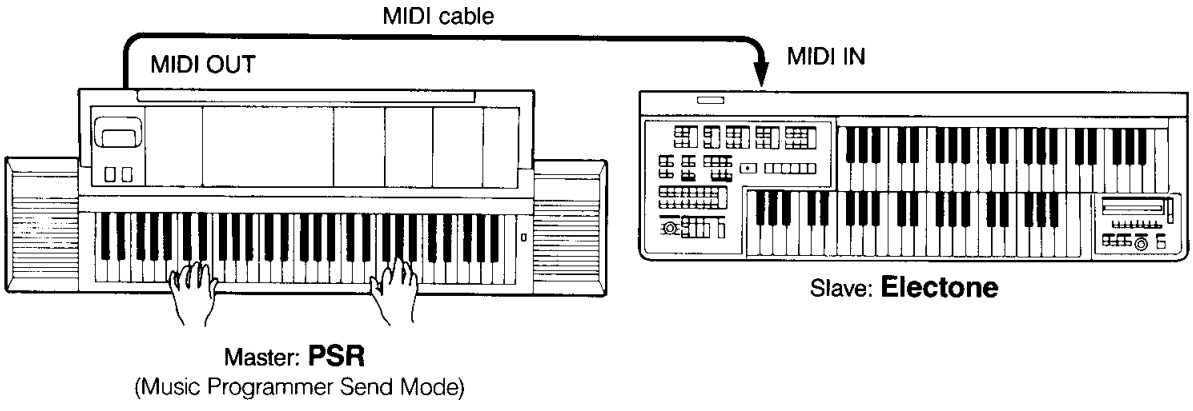


1. If you don't select any MIDI Receive Channels for the Slave Clavinova, the PSR's Upper Orchestra, Lower Orchestra, Solo, Chord, and Bass parts will all be played on the Clavinova.
2. If your Clavinova has an internal rhythm section like the CVP Series, it will also receive Rhythm Start data and Timing Clock signals. Thus you must first carry out the following procedures.

1) Set the CVP's Timing Clock to EXT, referring to its Owner's Manual.
2) Select a rhythm pattern on the CVP that suits the song programmed into the PSR's Music Programmer. (The Rhythm Name will not be received on the Slave keyboard.)

Sample Connection 5: PSR → Electone (ME, MC, MR)

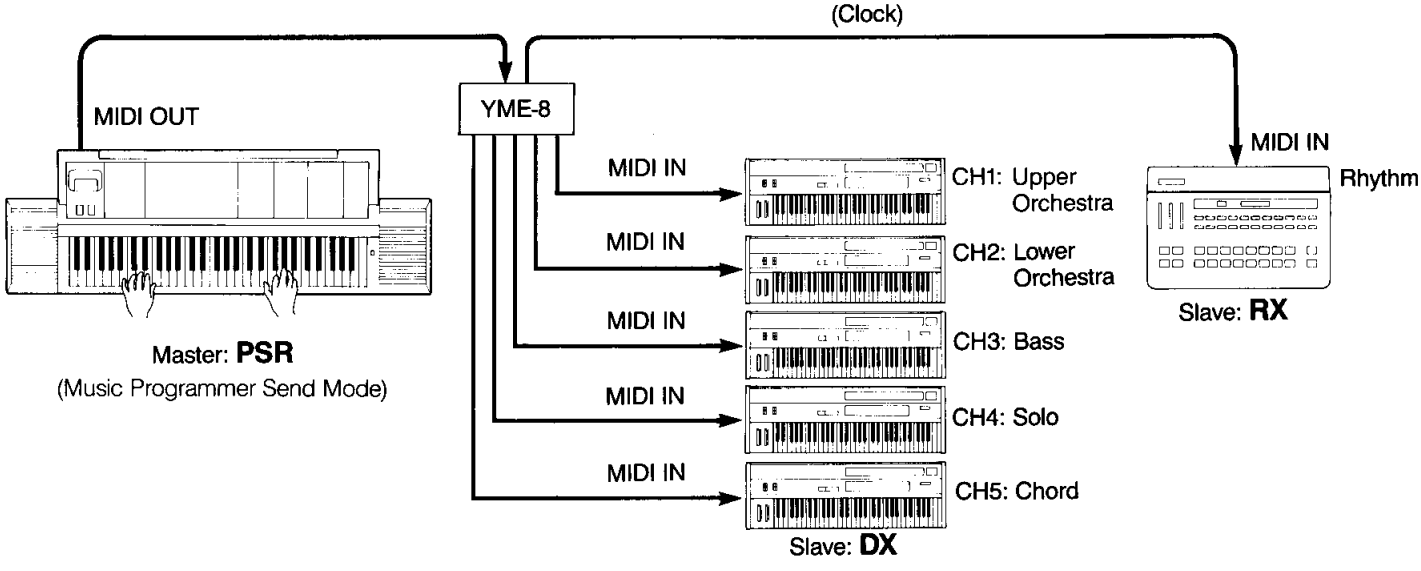
Let's use the PSR to play a MIDI compatible Yamaha Electone. The Electone will only receive and play performance data for the Upper Orchestra, Lower Orchestra, and Bass parts.



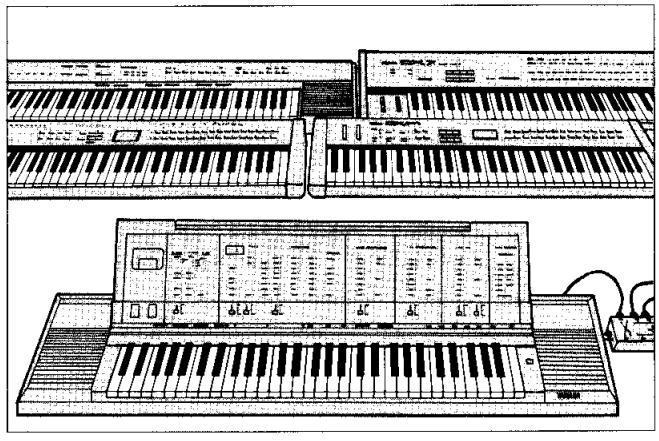
1. The Electone's MIDI Receive Channels are Channel 1 (Upper Orchestra) for the Upper Keyboard, Channel 2 (Lower Orchestra) for the Lower Keyboard, and Channel 3 (Bass) for the Pedals, and cannot be changed. Since Channels 4 and 5 are ignored, the PSR's Solo and Chord parts cannot be played on the Electone.
2. The Electone can also receive Rhythm Start data and Timing Clock signals. As with the CVP Series Clavinovas, you must first carry out the following procedures.
   1) Set the Electone's Timing Clock to EXT, referring to its Owner's Manual.
   2) Select a rhythm pattern on the Electone that suits the song programmed into the PSR's Music Programmer. (The Rhythm Name will not be received on the Slave keyboard.)

Sample Connection 6: PSR → DX × 5, RX × 1

You can play multiple DX and RX units from the PSR if you use a Parallel MIDI Expander Box like the YAMAHA YME-8. This lets you use different Voices for the Upper Orchestra, Lower Orchestra, Solo, Bass, and Chord parts.

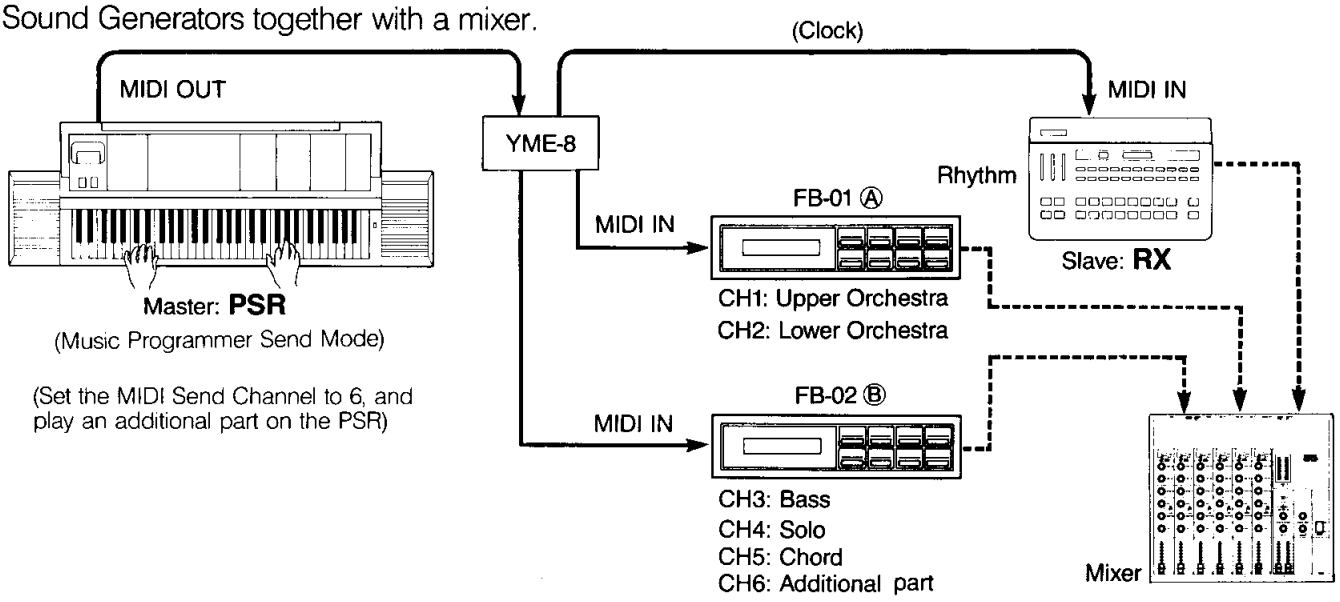


1. The rhythm pattern will not be sent from the MIDI OUT jack, so first program the RX with a rhythm part suited to the song you'll be using.
2. If you are only using a few instruments, you can use the MIDI THRU connection jacks, but it is safer to use the YME-8.
3. Select a Voice for each DX that suits the part it will play.



Sample Connection 7: PSR → FB-01 ×2, RX ×1

Instead of using a number of keyboards as in Sample Connection 6, let's use two FB-01 FM Sound Generators together with a mixer.



The above connection combines the Music Programmer's auto-play functions with an additional part played on the PSR's keyboard. Thus we can play 5 "Instruments" with 2 FB-01 units and 1 RX unit simultaneously from the PSR. The FB-01 Sound Generator is a multi-timbral tone generator capable of playing multiple parts. However if all parts of the Music Programmer are played, more than 8 notes will be needed and a single FB-01 unit will be insufficient. This is why two FB-01 units are used in this example.

If the Lower Orchestra part is not used, a single FB-01 may be sufficient with channel allocations made in the following manner.

CH1: 3 notes (for Upper Orchestra part)
CH3: 1 note (for Bass part)
CH4: 1 note (for Solo part)
CH5: 3 notes (for Chord part)

1. Since the rhythm pattern will not be sent from the MIDI OUT jack, first program the RX with a rhythm part suited to the song you'll be using.
2. Select Voices for each FB-01 unit that suits the part it will play.

		Music Programmer Send Mode	
	MIDI →	IN	OUT
MUSIC DATA PROCESSED BY MIDI		MIDI Data Receivable (CH)	Music Programmer Send Mode
Upper Orchestra	Key Note Data	1-16	CH1
	Voice Select	1-16	CH1
	Sustain 1, 2 & OFF	1-16	CH1
	Volume Control	1-16	CH1
	Pitch Bend	1-16	CH1
Lower Orchestra	Key Note Data	1-16	CH2
	Voice Select	×	CH2
	Sustain 1, 2 & OFF	×	CH2
	Volume Control	×	CH2
	Pitch Bend	×	CH2
Bass	Key Note Data	×	CH3
	Voice Select	×	×
	Volume Control	×	CH3
Solo	Key Note Data	×	CH4
	Voice Select	×	CH4
	Sustain 1, 2 & OFF	×	CH4
	Volume Control	×	CH4
	Portamento	×	CH4
	Modulation	×	CH4
	Pitch Bend	×	CH4
Chord	Key Note Data	×	CH5
	Voice Select	×	×
	Volume Control	×	CH5
Rhythm	Rhythm Select	×	×
	Volume Control	×	×

LESSON 2-3 PSR EXCLUSIVE MODE

Only Upper Orchestra data can be sent and received in the Normal MIDI Mode. But in the PSR Exclusive Mode, the following data can also be sent and received, enabling the PSR to be used as a Voice module.

1. The Key Note data for the Upper Orchestra, Lower Orchestra, Solo, Bass, and Chord parts can be assigned to separate MIDI Channel numbers, and sent and received.
2. The panel settings for the Upper Orchestra, Lower Orchestra, Solo, Bass, and Chord parts can be assigned to separate MIDI Channel numbers, and sent and received.

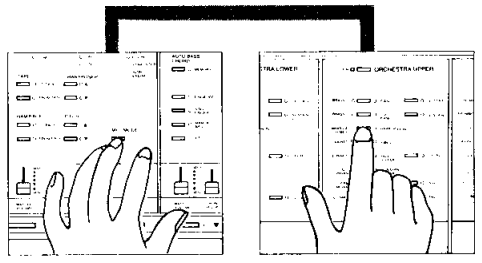
Each of the 7 sections is set to a specific MIDI Channel number, which cannot be changed.

	Section	Data Sent and Received	Max. simultaneous number of notes
CH1	Upper Orchestra	Key Note, Voice, Sustain, Volume, Pitch Bend	4
CH2	Lower Orchestra	Key Note, Voice, Sustain, Volume, Pitch Bend	4
CH3	Bass	Key Note, Voice, Volume	1
CH4	Solo	Key Note, Voice, Sustain, Volume, Pitch Bend, Modulation*, Portamento*	1
CH5	Chord	Key Note, Voice, Volume	4
CH15	Rhythm	Key Note, Rhythm Name, Volume	The maximum simultaneous number of rhythm notes depends on the specifications of the Custom Accompaniment.
CH16	Others	Tempo, Transposer, Pitch etc.	

* Data is sent on CH4 and received on CH1.

Operation

- Press the BRASS & CHIMES/ HARPSICHORD button (button ◉) while holding down the MIDI MODE Selector. The BRASS & CHIMES lamp will light up.



While holding down the MIDI MODE Selector

Press the BRASS & CHIMES/HARPSICHORD button

An external sequencer can be used in this mode to control the Voice circuit of each Channel independently, which brings out the full capabilities of the PSR-6300 automatic performance functions.

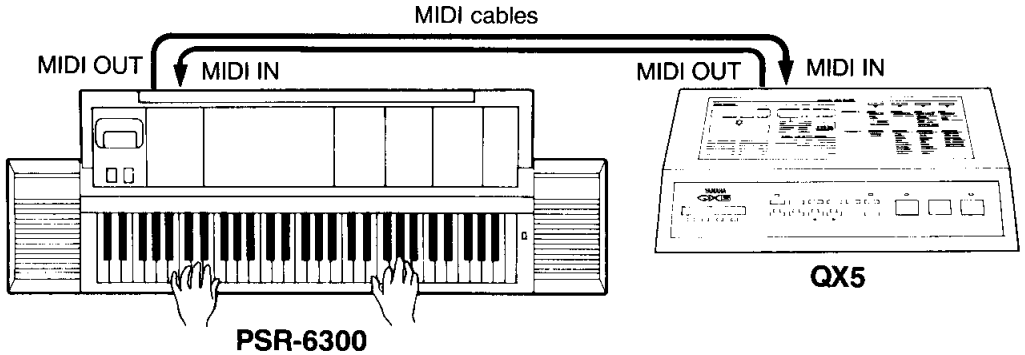
External Sequencing System (Example)

- Yamaha Digital Sequence Recorder QX5
- Yamaha MSX Music Computer CX5M + MSX Software

  Software: FM Music Composer (YRM-101)
  FM Music Composer II (YRM-501)
  MIDI Recorder (YRM-301)

e Connection 8: PSR ⇆ QX5 (multi-track recording)

Now let's use the Yamaha QX5 Digital Sequence Recorder to create a full-scale arrangement for the PSR. Since you can record completely scored Bass, Chord, and Rhythm parts with the QX5, this method is ideal for creating and recording each part yourself rather than using the patterns preset in the PSR.

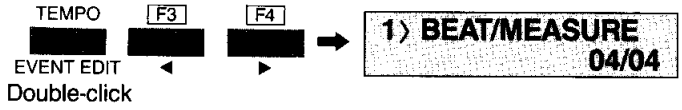


Use two MIDI cables and connect the MIDI IN and MIDI OUT jacks of the PSR-6300 and QX5 together as shown. Now you can transfer MIDI data between the two instruments.

Step 1

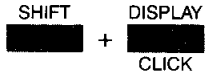
(Time Signature: QX5)

Double-click the TEMPO button of the QX5 and select the time signature.



If the PSR's internal rhythm patterns are not used, any time signature can be used, including complex types as well as standard 4/4 time.

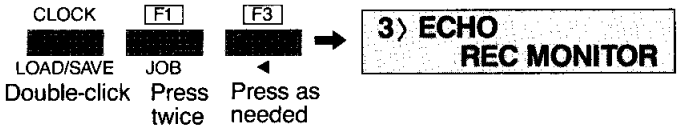
Activate the QX5's metronome function. (No metronome sound will be heard if the QX5 Timing Clock is already set to EXT.) There is no need to set the QX5 tempo as the tempo is determined by the PSR.



Step 2

(Echo Mode: QX5)

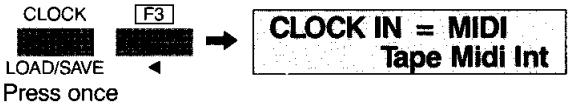
Set the QX5 ECHO Mode to REC MONITOR. This is accomplished by 1) double clicking the CLOCK button, 2) pressing the JOB button twice, and then using the [▶] key until REC MONITOR is displayed. Now the PSR's keyboard data, etc., will be sent to the QX5, combined with the QX5's performance data and sent back to the PSR.



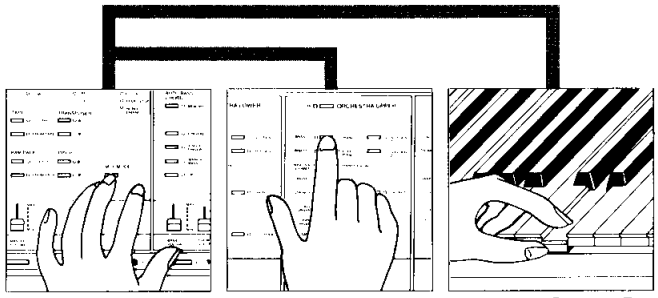
Step 3

(Clock: QX5)

As we'll be using the PSR's Timing Clock, set the QX5 Clock to MIDI (external). Press the CLOCK button once followed by the [◀] key. The metronome sound will no longer be heard. (Set the QX5 Clock to INT (internal) if you want to use the QX5's Timing Clock.)



Step 4
(Assigning the MIDI Channel: PSR*)*

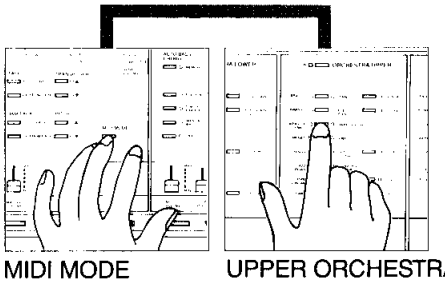


MIDI MODE | UPPER ORCHESTRA BRASS 1 | Rhythm=CH15=D_2

If the PSR Exclusive Mode has already been selected for recording on another channel, first release the PSR Exclusive Mode and change the channel.

Hold down the MIDI MODE Selector and press the BRASS 1/PIANO button to light up the BRASS 1 lamp. Press the appropriate Channel number key on the PSR keyboard while pressing the MIDI MODE Selector. For example, the 15th key (D_2) is pressed if the Rhythm part is to be recorded on CH15.

Step 5
(PSR Exclusive Mode: PSR*)*



MIDI MODE | UPPER ORCHESTRA BRASS & CHIMES

While holding down the MIDI MODE Selector, press the BRASS & CHIMES button to light up the BRASS & CHIMES lamp.

Step 6
(Recording: PSR and QX5*)*

Let's now try recording all of the parts. The first step is to record the rhythm. (If the rhythm is not needed, proceed to record the other parts. Record the parts in the most convenient order.)

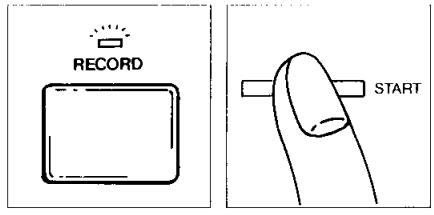
There are two ways to record the rhythm part.

A. The first way is to use the PSR's Keyboard Percussion tone generator. You can enter the rhythm pattern by tapping the PSR keyboard. (The tone generator of CH15 is set to EXTERNAL.)

B. The second way is to use the preset rhythm patterns of the PSR. (The tone generator must be set to INTERNAL.)

First, press the RECORD button of the QX5. As the QX5 Clock is set to MIDI (external), the QX5 will not start by itself.

Press the PSR's START button, which activates the QX5's metronome. Immediately begin playing the keyboard.

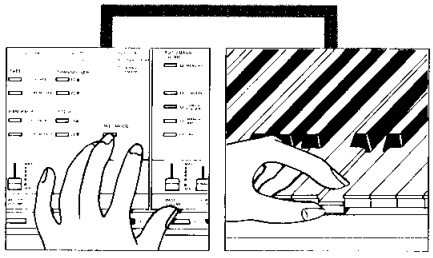


Press RECORD (QX5) | Press START (PSR)

1. If the PSR's rhythm tone generator is set to EXTERNAL (it is normally set to EXTERNAL), use the PSR's Keyboard Percussion tone generator to record the rhythm pattern in real time, following the QX5's metronome. The performance data from the PSR's keyboard will be sent to the QX5 and then back to the PSR's MIDI IN jack, thereby activating the PSR's rhythm tone generation source on MIDI Channel 15.

2. If recording in real time is too difficult, set the PSR's rhythm tone generator to INTERNAL and press the START button. The PSR's preset rhythm pattern will start together with the metronome of the QX5. If you alter the rhythm pattern with the Rhythm Selector or Volume, the QX5 will record it as a Program Change or Control Change.

- **Setting the tone generator (CH 15) to INTERNAL**
  When using the PSR's preset rhythm patterns, set the PSR's rhythm tone generator (CH15) to INTERNAL. Hold down the MIDI MODE Selector and press the 15th key (D_2) on the PSR keyboard.

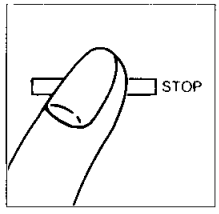


MIDI MODE CH15=D_2

Step 7

***(Ending:* PSR)**

When you finish recording, press the PSR's STOP button, which stops the QX5 as well as the PSR.



STOP (PSR)

Step 8

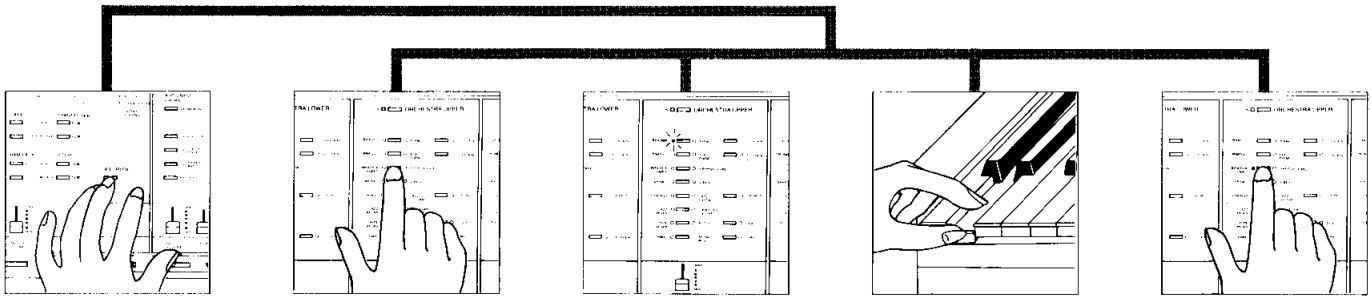
***(Tracking Down:* QX5)**

Each time you use the QX5 to record a new part, track down (EXCHANGE) the previously recorded parts and keep Track 1 open. (Refer to QX5 Owner's Manual.)

Recording and Playing Back Bass, Chord, Orchestras, and Solo

Now let's record the Bass, Chord, Upper Orchestra, Lower Orchestra, and Solo parts. The different parts are recorded on separate channels by repeating Steps 4 through 6. Set the MIDI Channel to CH3 when you are working with the Bass part, 5 for the Chord part, 1 for the Upper Orchestra part, 2 for the Lower Orchestra part, and 4 for the Solo part. Since the channel cannot be changed while the PSR Exclusive Mode is selected, first release the PSR Exclusive Mode and then change the channel. You can play back previously recorded parts while recording a new part.

Return to Step 4 (PSR)



While pressing MIDI MODE

First, perform the following operations while pressing the MIDI MODE Selector:

1) BRASS & CHIMES OFF

Turn off the BRASS & CHIMES lamp. (Releases PSR Exclusive Mode)

2) Make sure BRASS 1 lamp is ON

Make sure that BRASS 1 lamp is illuminated. (Indicates Channel Setting Mode)

3) Press appropriate key
Bass=CH3=D_1
Chord=CH5=E_1
U. Orch.=CH1=C_1
L. Orch.=CH2=$C^{\sharp}_1$
Solo=CH4=$E^{\flat}_1$

Press the appropriate Channel number key. (Channel No. assignment)

4) BRASS & CHIMES ON

Light up the BRASS & CHIMES lamp by pressing the button again. (Indicates PSR Exclusive Mode)

1. The changes in volume for each part during the song, Upper Orchestra, Lower Orchestra, and Solo Voice changes, and Sustain ON/OFF are recorded as Control Changes or Program Changes.
2. Although you will not find Voice Selectors for the Bass and Chord parts on the PSR Control Panel, it is possible to record Bass and Chord voice changes. First activate the Normal Mode and set the MIDI Channel to 3 or 5. Select the Voices using the Voice Selectors, according to the table below. You can select from among 16 Voices each for the Bass and Chord parts. When recording in this state, the Solo or Upper Orchestra Voices can be monitored during recording but the QX5 will record this as Bass or Chord Program Changes. The proper Bass and Chord Voices will be selected when the recording is played back by the QX5.

No.	CH3: Bass Voices (Also used as Solo Selectors)	CH5: Chord Voices (Also used as Upper Orchestra Voice Selectors)
1.	Bass 1	Electric Guitar
2.	Bass 2	Jazz Guitar
3.	Electric Bass 1	Fuzz Guitar
4.	Electric Bass 2	Folk Guitar
5.	Electric Bass 3	Banjo
6.	Slap and Pop Bass	Piano
7.	Tuba	Percus.
8.	Piano	Chimes
9.	Synth Bass 1	Brass 1
10.	Synth Bass 2	Brass 2
11.	Synth Bass 3	Accordion
12.	Synth Bass 4	Cosmic
13.	Timpani	Organ
14.	Brush	Piccolo
15.	Organ 1	Synth
16.	Organ 2	Brush

3. Since the QX5 is set to receive on all MIDI channels, the switch and volume operation data assigned to CH16 will also be recorded. If you forgot any Program Changes or Control Changes, set the QX5 to the RECORD Mode and record the necessary data. (Refer to the QX5 Owner's Manual.)
4. Use the PSR Exclusive Mode for playback. You can use either the PSR Clock or the QX5 Clock as the Master Clock.

		PSR Exclusive Mode	
	MIDI →	IN	OUT
MUSIC DATA PROCESSED BY MIDI		MIDI Channel for operation data	MIDI output of keyboard data, switch and volume settings
Upper Orchestra	Key Note Data	CH1	CH1-16
	Voice Select	CH1	CH1
	Sustain 1, 2 & OFF	CH1	CH1
	Volume Control	CH1	CH1
	Pitch Bend	CH1	CH1
	Upper Orchestra ON/OFF	×	CH16
Lower Orchestra	Key Note Data	CH1	(CH2)
	Voice Select	CH2	CH2
	Sustain 1, 2 & OFF	CH2	CH2
	Volume Control	CH2	CH2
	Pitch Bend	CH2	CH2
	Lower Orchestra ON/OFF	×	CH16
Bass	Key Note Data	CH3	(CH3*)
	Voice Select	CH3	×
	Volume Control	CH3	CH3
Solo	Key Note Data	CH4	(CH4*)
	Voice Select	CH4	CH4
	Sustain 1, 2 & OFF	CH4	CH4
	Volume Control	CH4	CH4
	Pitch Bend	CH4	CH4
	Modulation	CH1	CH4
	Portamento	CH1	CH4
	Solo ON/OFF	×	CH16
Chord	Key Note Data	CH5	(CH5*)
	Voice Select	CH5	×
	Volume Control	CH5	CH5
Rhythm	Key Note Data	CH15	(CH15*)
	Rhythm Select	CH15	CH15
	Volume Control	CH15	CH15
Others	Tempo-Speed	CH16	CH16
	Other Switches	CH16	CH16
Real Time	Start/Stop	O	O
	Clock	EXT	INT

Note:
Key Note data can be matched to the tone generator by changing the MIDI Send Channel.

LESSON 3-1 KEY NOTE ONLY

Use the Key Note Only mode when you don't want to exchange Control Change and Program Change data between the Master and Slave instruments. You can only transfer Key Note and Clock data.

Operation

- Hold down the MIDI MODE Selector and press the CLARINET/VIBES button, lighting up the CLARINET lamp.

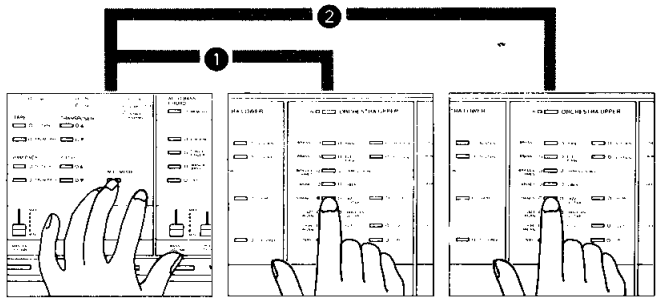
LESSON 3-2 SELECTING INT/EXT TIMING CLOCK

Use this function to set the Timing Clock to INTERNAL or EXTERNAL. This lets you synchronize the tempo of two instruments with built-in rhythm functions, such as the RX and PSR.

Operation

❶ INT → EXT
In the Default Mode (when the power is turned on) the Clock is set to INTERNAL.
Hold down the MIDI MODE Selector and press the STRINGS/JAZZ GUITAR button (button ⓔ), lighting up the STRINGS lamp.

❷ EXT → INT
Follow the procedure for INT → EXT and press button ⓔ again so the lamp goes out.



Press the MIDI MODE Selector and STRINGS/JAZZ GUITAR

The lamp lights up for EXT Clock,

and goes out for INT Clock.

LESSON 3-3 LOCAL OFF

This mode allows the PSR to be used simply for sending data to the Slave keyboard. It is used to turn off the sound from the Master keyboard. No sound will be heard from the PSR-6300 when its keyboard is played.

Operation

- Holding down the MIDI MODE Selector, press the JAZZ ORGAN/HAWAIIAN GUITAR button (button ⓕ). The JAZZ ORGAN lamp will light up and the LOCAL OFF Mode will be selected.

LESSON 3-4 SENDING CONTROL PANEL DATA

With this MIDI function, Control Panel Setting data can be sent all at once when using computers or sequencers with your PSR, or when using your PSR with other PSR units.

Operation

- Holding down the MIDI MODE Selector, press the PIPE ORGAN/KOTO button (button Ⓖ), and the Control Panel Settings of the two units will become identical.

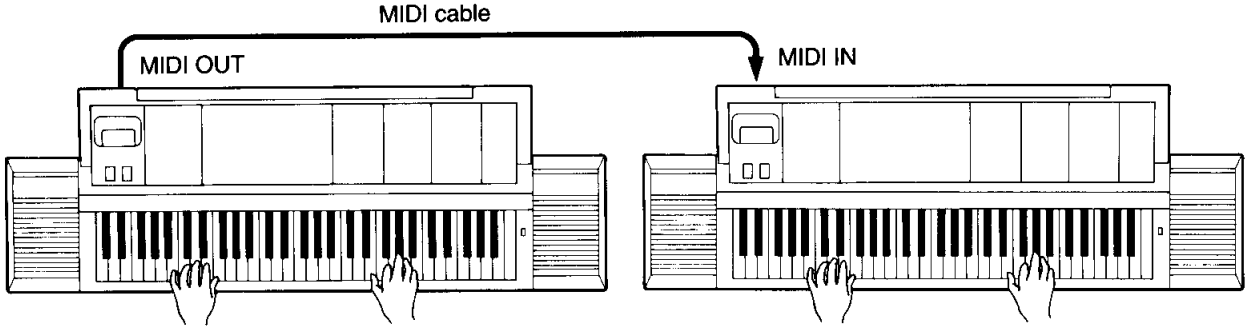
LESSON 3-5 DATA DUMP

This function lets you transfer data recorded in the PSR Music Programmer to the memory of a different PSR unit.

Operation

- Holding down the MIDI MODE Selector, press the COSMIC/MUSIC BOX button (button Ⓗ), and the memory contents of both units will become identical.

Sample Connection 9: PSR → PSR



Master: **PSR-6300**

Slave: **PSR-6300**

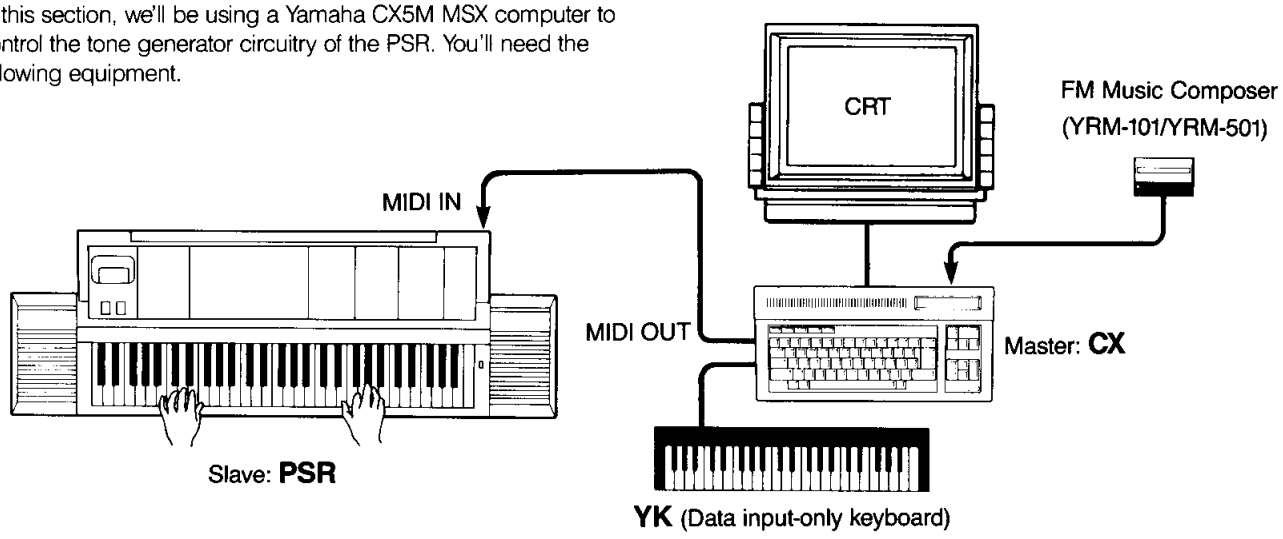
First connect the two units together as shown, then carry out the Data Dump procedure. The memory contents of the Master unit will be copied to the Slave unit.

Note:

1. This operation will only work when a PSR-6300 keyboard is connected to another PSR-6300.
2. The Music Programmer and Custom Accompaniment data will be copied.

LESSON 4-1 USING A MUSIC COMPUTER

In this section, we'll be using a Yamaha CX5M MSX computer to control the tone generator circuitry of the PSR. You'll need the following equipment.



- The FM Music Composer (YRM-101/YRM-501) is a program that lets you write notes onto a music score on a CRT.
- If you are using the Yamaha SFG-05 Synthesizer Unit, you can enter data from the PSR keyboard, so you won't need the YK keyboard.
- Music data entered with the above system can only be saved onto tape. Carry out the following procedure if you want to save music data onto floppy disk.
  1. Exchange the CX5M's synthesizer unit for the SFG-05.
  2. Hook up a floppy disk drive.
  3. Use the YRM-501 (FM Music Composer II).

There are two basic ways of using this system to play the PSR automatically.

1. Multi-part performance using the Normal Mode and a single Voice.
2. Performances using the PSR Exclusive Mode and different Voices for different MIDI Channels.

1. Automatic Performances in the Normal Mode

This method is suited for multi-part arrangements using a single Voice, such as piano compositions, string quartets and brass ensembles, etc.

Enter (mdon=1) at the beginning of each part arranged on the FM Music Composer. In the Normal Mode, the PSR will only receive data for the parts designated as (mdon=).

2. Automatic Performances in the PSR Exclusive Mode

The PSR Exclusive Mode was already covered on page 10. But you can carry out full-scale arrangements for your PSR-6300 automatic performances, just as if you were using the Yamaha QX5 Sequence Recorder. Simply designate the MIDI Channel as mdon=1, mdon=2, mdon=3, mdon=4, mdon=5 and mdon=15 for the respective parts arranged on the FM Music Composer. In fact, although we recorded the performance data into the QX5 by playing the part directly, the performance data can also be entered into the FM Music Composer by using a music score. This feature makes it easy to create complex arrangements, even if you have no special keyboard training.

Set the PSR to the PSR Exclusive Mode. You can also use the Sm (Send MIDI) command to enter a "PSR Exclusive Mode" Execute command into the column right before the performance data. (See page 24.) Write in the "PSR Exclusive Mode" Execute command 1 byte at a time, using decimal numbers.

Write in the data so that the Upper Orchestra part is set to MIDI Channel 1, Lower Orchestra to Channel 2, Solo to Channel 4, Bass to Channel 3, Chord to Channel 5, and Rhythm to Channel 15. But if any notes are missing, enter them as decimal numbers, using the Sm command. The computer's tone generator circuitry can also produce up to 8 notes simultaneously. Enter Voice, Sustain and Volume data into the respective Voice Channels by using Program Changes and Control Changes. The other switches can also be controlled by Exclusive Messages or by entering the corresponding data for the 16 MIDI Channels.

You can modify the FM Music Composer's separately available MSX COMPUTER MUSIC COLLECTION data tape for automatic performances with the PSR. Load the data from the tape, then designate the MIDI Channels for the respective parts as (mdon=n).

LESSON 4-2 CHANNEL VOICE MESSAGE

With the PSR-6300, keyboard data can be switched freely among MIDI Channels 1-16, but you can also assign the Channels to specific data by using the PSR Exclusive Mode.

1. Channel 1 (Upper Orchestra)

a) Key On Data

The keyboard range is C_1-C_6 for the PSR-6300. Notes outside the keyboard range will not be produced. Normally, data corresponding to the keyboard will be sent and received.

< Data Configuration >

	Key On	→ Key No.	→ Velocity	Total 3 bytes
Decimal	144	36-96	1-127	
Hexadecimal	90H	kkH (24H-60H)	vvH (01H-7FH)	

Example:

Data for Send MIDI (Sm) command when note C_3 is played with mezzo forte strength on the PSR keyboard.
Sm=144 Sm=60 Sm=64

Notes:

1. Key On events are used to handle key press/key release data, and Key Off events can also be received. The data for Key Off events begin with 128 (80H) on Channel 1.
2. The Key Off operation follows the above data configuration with Velocity 0.

b) Control Changes

This function lets you control the Volume and Sustain of the Upper Orchestra Channel. You can receive Channel Mode messages (OMNI, MONO, POLY), All Note Off messages, the Local Off message which lets you separate the keyboard from the tone generation source, as well as the Local On message which reconnects the keyboard and tone generator circuitry. All the data in the table can be received, but Local On/Off and All Note Off message cannot be sent.

< Data Configuration >

	Control Change	→ Control No.	→ Value	Total 3 bytes
Decimal	176	Value in following table	Value in following table	
Hexadecimal	B0H			

Value of c	Parameter	Value of d
1	MODULATION	0-127
5	PORTAMENTO TIME	0-127
7	VOLUME	0-127 (32 steps)
64	SUSTAIN	SUS OFF: 0-31 SUS 1: 32-63 SUS 2: 64-127
65	PORTAMENTO ON/OFF	OFF: 0 ON: 1-127
122	LOCAL ON/OFF	OFF: 0 ON: 1-127
123	ALL NOTE OFF	0
124	OMNI OFF	0
125	OMNI ON	0
126	MONO	0
127	POLY	0

Note:

Modulation and Portamento settings are only effective for the Solo part. The data is received on CH1, rather than CH4.

c) Program Changes

Using MIDI Channel 1, you can change the Upper Orchestra Voices. Pressing the Upper Orchestra Voice Selectors activates the Program Change function and sends out the Voice data.

< Data Configuration >

	Program Change	→ Program No.	Total 2 bytes
Decimal	192	0-15	
Hexadecimal	C0H	ppH	

Value of p	Voice	Value of p	Voice
0	BRASS 1	8	PIANO
1	BRASS 2	9	ELEC. PIANO
2	BRASS & CHIMES	10	HARPSICHORD
3	CLARINET	11	VIBES
4	STRINGS	12	JAZZ GUITAR
5	JAZZ ORGAN	13	HAWAIIAN GUITAR
6	PIPE ORGAN	14	KOTO
7	COSMIC	15	MUSIC BOX

d) Pitch Bend

< Data Configuration >

	Pitch Bend	→ Value (2 bytes)	Total 3 bytes
Decimal	224	0-127, 0-127	
Hexadecimal	E0H	00H-7FH, 00H-7FH	

Note:

Neutral pitch (no pitch bend) is set by a value of (0, 64).

2. Channel 2 (Lower Orchestra)

a) Key On Data

The keyboard range is C_1-C_6. Notes outside the keyboard range will not be produced. Normally, data corresponding to the keyboard will be sent and received.

< Data Configuration >

	Key On	→ Key No.	→ Velocity	Total 3 bytes
Decimal	145	36-96	1-127	
Hexadecimal	91H	kkH (24H-60H)	vvH (01H-7FH)	

b) Control Changes

This function lets you control the Volume and Sustain of the Lower Orchestra Channel. You can receive Channel Mode messages (OMNI), too.

< Data Configuration >

	Control Change	→ Control No.	→ Value	Total 3 bytes
Decimal	177	Value in table below	Value in table below	
Hexadecimal	B1H	ccH	ddH	

Value of c	Parameter	Value of d
7	VOLUME	0-127 (32 steps)
64	SUSTAIN	SUS OFF: 0-31 SUS 1: 32-63 SUS 2: 64-127
124	OMNI OFF	0
125	OMNI ON	0

c) Program Changes

Using MIDI Channel 2, you can change the Lower Orchestra Voices. Pressing the Lower Orchestra Voice Selectors activates the Program Change function and sends out the Voice data.

< Data Configuration >

	Program Change	→ Program No.	Total 2 bytes
Decimal	193	0-15	
Hexadecimal	C1H	ppH	

Value of p	Voice	Value of p	Voice
0	BRASS ENS. 1	8	PIANO
1	BRASS ENS. 2	9	ELEC. PIANO
2	HORN	10	HARPSICHORD
3	HARD BRASS	11	CLAVI
4	STRING ENS.	12	LUTE
5	ELEC. ORGAN	13	TOY PIANO
6	HARMONICA	14	BELLS
7	WAVE	15	FANTASY

d) Pitch Bend

< Data Configuration >

	Pitch Bend	→ Value (2 bytes)	Total 3 bytes
Decimal	225	0-127, 0-127	
Hexadecimal	E1H	00H-7FH, 00H-7FH	

Note:
Neutral pitch (no pitch bend) is set by a value of (0, 64).

3. Channel 3 (Bass)

a) Key On Data

The keyboard data receive range is G_0-C_6. The PSR-6300 can receive notes outside its keyboard range.

< Data Configuration >

	Key On	→ Key No.	→ Velocity	Total 3 bytes
Decimal	146	30-96	1-127	
Hexadecimal	92H	kkH (1EH-60H)	vvH (01H-7FH)	

b) Control Changes

This function lets you control the Volume of the Bass Channel. The Volume Control Data range is from 0-127. Each time the data change by 4 numbers, the Volume changes by one step. Channel Mode Messages (OMNI ON and OMNI OFF) can also be received.

< Data Configuration >

	Control Change	→ Control No.	→ Value	Total 3 bytes
Decimal	178	Value in table below	Value in table below	
Hexadecimal	B2H	ccH	ddH	

Value of c	Parameter	Value of d
7	VOLUME	0-127 (32 steps)
124	OMNI OFF	0
125	OMNI ON	0

c) Program Changes

Using MIDI Channel 3, you can use Program Changes to change the Bass Voice.

< Data Configuration >

	Program Change	→ Program No.	Total 2 bytes
Decimal	194	0-15	
Hexadecimal	C2H	ppH	

Value of p	Voice	Value of p	Voice
0	BASS 1	8	SYNTH BASS 1
1	BASS 2	9	SYNTH BASS 2
2	ELECTRIC BASS 1	10	SYNTH BASS 3
3	ELECTRIC BASS 2	11	SYNTH BASS 4
4	ELECTRIC BASS 3	12	TIMPANI
5	SLAP & POP BASS	13	BRUSH
6	TUBA	14	ORGAN 1
7	PIANO	15	ORGAN 2

4. Channel 4 (Solo)

a) Key On Data

The keyboard data range is C_1-C_6.

< Data Configuration >

	Key On	→	Key No.	→	Velocity	Total 3 bytes
Decimal	147		36-96		1-127	
Hexadecimal	93H		kkH (24H-60H)		vvH (01H-7FH)	

b) Control Changes

This function lets you control the Volume and Sustain of the Solo Channel. Channel Mode Messages (OMNI ON and OMNI OFF) can also be received.

< Data Configuration >

	Control Change	→	Control No.	→	Value	Total 3 bytes
Decimal	179		Value in table below		Value in table below	
Hexadecimal	B3H		ccH		ddH	

Value of c	Parameter	Value of d
7	VOLUME	0-127 (32 steps)
64	SUSTAIN	SUS OFF: 0-31 SUS 1: 32-63 SUS 2: 64-127
124	OMNI OFF	0
125	OMNI ON	0

c) Program Changes

Using MIDI Channel 4, you can change the Solo Voices. Control Panel Operation data are not sent out in the Normal MIDI MODE, but Program Changes can be used to send and receive Control Panel Operation data when the Solo part is assigned to MIDI Channel 4.

< Data Configuration >

	Program Change	→	Program No.	Total 2 bytes
Decimal	195		0-15	
Hexadecimal	C3H		ppH	

Value of p	Voice	Value of p	Voice
0	TRUMPET	8	ELEC. GUITAR
1	TROMBONE	9	PERCUS. 1
2	HORN	10	PERCUS. 2
3	SAXOPHONE	11	POP SYNTH
4	VIOLIN	12	BLUES SYNTH
5	JAZZ FLUTE	13	FUNK SYNTH
6	PICCOLO	14	SLAP SYNTH 1
7	OBOE	15	SLAP SYNTH 2

d) Pitch Bend

< Data Configuration >

	Pitch Bend	→	Value (2 bytes)	Total 3 bytes
Decimal	227		0-127, 0-127	
Hexadecimal	E3H		00H-7FH, 00H-7FH	

Note:
Neutral pitch (no pitch bend) is set by a value of (0, 64).

5. Channel 5 (Chord)

a) Key On Data

The keyboard data receive range is C_1-C_6. When playing the PSR normally, selecting the Rhythm Pattern also selects the Chord section's Voice. But using MIDI also lets you use the Chord section as a Voice generator.

< Data Configuration >

	Key On	→	Key No.	→	Velocity	Total 3 bytes
Decimal	148		36-96		1-127	
Hexadecimal	94H		kkH (24H-60H)		vvH (01H-7FH)	

b) Control Changes

This function controls the Volume of the Chord Channel, and also lets you receive Channel Mode Messages.

< Data Configuration >

	Control Change	→	Control No.	→	Value	Total 3 bytes
Decimal	180		Value in table below		Value in table below	
Hexadecimal	B4H		ccH		ddH	

Value of c	Parameter	Value of d
7	VOLUME	0-127 (32 steps)
124	OMNI OFF	0
125	OMNI ON	0

c) Program Changes

Although the Accompaniment Chord Voices do not have any control on the Control Panel, the MIDI functions of Channel 5 can be used to change the Accompaniment Chord Voices.

< Data Configuration >

	Program Change	→	Program No.	Total 2 bytes
Decimal	196		0-15	
Hexadecimal	C4H		ppH	

Value of p	Voice	Value of p	Voice
0	ELEC. GUITAR	8	BRASS 1
1	JAZZ GUITAR	9	BRASS 2
2	FUZZ GUITAR	10	ACCORDION
3	FOLK GUITAR	11	COSMIC
4	BANJO	12	ORGAN
5	PIANO	13	PICCOLO
6	PERCUS.	14	SYNTH
7	CHIMES	15	BRUSH

6. Channel 15 (Rhythm)

a) Key On Data

PCM Rhythm Voices are assigned to the keys from $G^{\sharp}_{3}$-B_5. You can use external keyboards or sequencers to control the PSR-6300's PCM Rhythm Voices by sending Key Number data corresponding to the PCM Rhythm Voices that you want.

< Data Configuration >

	Key On	→ Key No.	→ Velocity	Total 3 bytes
Decimal	158	68-95	1-127	
Hexadecimal	9EH	kkH (44H-5EH)	vvH (01H-7FH)	

The Key Numbers, k, correspond to the PCM Rhythm Voice as follows:

Value of k	Voice (keyboard)	Value of k	Voice (keyboard)
68	CONGA LOW ($G^{\sharp}_{3}$)	82	CUICA HIGH ($A^{\sharp}_{4}$)
69	BASS DRUM (A_3)	83	HI-HAT OPEN (B_4)
70	CONGA HIGH ($A^{\sharp}_{3}$)	84	CYMBAL (C_5)
71	TOM LOW (B_3)	85	CLAVES ($C^{\sharp}_{5}$)
72	TOM MID (C_4)	86	CRASH CYMBAL (D_5)
73	BONGO ($C^{\sharp}_{4}$)	87	AGOGO LOW ($D^{\sharp}_{5}$)
74	TOM HIGH (D_4)	88	E. TOM LOW (E_5)
75	TIMBALE LOW ($D^{\sharp}_{4}$)	89	E. TOM MID (F_5)
76	SNARE HEAVY (E_4)	90	AGOGO HIGH ($F^{\sharp}_{5}$)
77	SNARE LIGHT (F_4)	91	E. TOM HIGH (G_5)
78	TIMBALE HIGH ($F^{\sharp}_{4}$)	92	COWBELL ($G^{\sharp}_{5}$)
79	RIM SHOT (G_4)	93	SNARE BRUSH (A_5)
80	CUICA LOW ($G^{\sharp}_{4}$)	94	HAND CLAPS ($A^{\sharp}_{5}$)
81	HI-HAT CLOSED (A_4)	95	ACCENT (B_5)

b) Control Changes

This function controls the Volume of PCM Rhythm Voices. The Volume Control Data range is from 0-127. Each time the data change by 4 numbers, the Volume changes by one step. The Control Changes function also lets you receive Channel Mode Messages.

< Data Configuration >

	Control Change	→ Control No.	→ Value	Total 3 bytes
Decimal	190	Value in table below	Value in table below	
Hexadecimal	BEH	ccH	ddH	

Value of c	Parameter	Value of d
7	VOLUME	0-127 (32 steps)
124	OMNI OFF	0
125	OMNI ON	0

c) Program Changes

This function controls the type of Rhythm Pattern.

< Data Configuration >

	Program Change	→ Program No.	Total 2 bytes
Decimal	206	0-23	
Hexadecimal	CEH	ppH	

Value of p	Rhythm	Value of p	Rhythm
0	DISCO	12	SHUFFLE
1	POPS	13	REGGAE
2	ROCK 'N' ROLL	14	HARD ROCK
3	8 BEAT	15	BOOGIE
4	16 BEAT	16	SALSA
5	ELECTRIC POP	17	RHUMBA
6	HEAVY METAL	18	SAMBA
7	COUNTRY	19	BOSSANOVA
8	BIG BAND	20	MARCH/POLKA
9	SWING	21	6/8 MARCH
10	BOUNCE	22	WALTZ
11	SLOW ROCK	23	JAZZ WALTZ

7. Channel 16 (Other Controls)

The PSR-6300 has many switches and controls other than those used for the Voices. Since Voice switches and controls have a direct effect on the Voices, they are set to the main MIDI Voice Channels, along with Key On/Off data and Program Changes functions. But the Tempo Control, Transposer Switch or Rhythm Variation Switch, etc., are not set to any specific MIDI Channel, since they are used by the entire PSR system. Therefore, these controls have been set to the Control Changes and Program Changes functions of MIDI Channel 16.

a) Key On Data

Since MIDI Channel 16 is used for the above parameters, it does not control any Key On data.

b) Control Changes

This function controls the Tempo, Split Selector, Rhythm Variation, and Fill In functions. The Tempo Control Data range is 0-127. Each time the data change by 2 numbers, the Tempo changes by one step.

< Data Configuration >

	Control Change	→ **Control No.**	→ **Value**	**Total 3 bytes**
Decimal	191	Value in table below	Value in table below	
Hexadecimal	BFH	ccH	ddH	

Value of c	Parameter	Value of d
7	TEMPO	0-127 (64 steps)
9	SPLIT OFF	0
	SPLIT (L)	54
	SPLIT (M)	59
	SPLIT (H)	64
10	RHYTHM VARIATION OFF	0
	RHYTHM VARIATION ON	1
15	FILL IN OFF	0
	FILL IN 1	1
	FILL IN 2	2
	FILL IN 3	3
	FILL IN 4	4
18	INTRO/ENDING	0-127 (any value)

c) Program Changes

This function controls many different operations, all of which are controlled by entering specific numbers. Other switches and controls not covered by the Program Changes function can be processed by using System Exclusive Messages. (See Lesson 4-4 System Exclusive Messages.)

< Data Configuration >

	Program Change	→ **Program No.**	**Total 2 bytes**
Decimal	207	Value in following table	
Hexadecimal	CFH	ppH	

Value of p	Switch
0	RHYTHM SYNCHRO START
3	FINGERED CHORD
4	SINGLE FINGER CHORD
5	AUTO BASS CHORD OFF
6	ABC MEMORY OFF
7	ABC MEMORY ON
11	SOLO OFF
12	SOLO ON
13	UPPER ORCHESTRA OFF
14	UPPER ORCHESTRA ON
15	LOWER ORCHESTRA OFF
16	LOWER ORCHESTRA ON
23	DUET/TRIO OFF
24	DUET ON
25	TRIO ON
26	UPPER CHORUS OFF
27	UPPER CHORUS ON
39	TRANSPOSE −6
40	TRANSPOSE −5
41	TRANSPOSE −4
42	TRANSPOSE −3
43	TRANSPOSE −2
44	TRANSPOSE −1
45	TRANSPOSE 0
46	TRANSPOSE 1
47	TRANSPOSE 2
48	TRANSPOSE 3
49	TRANSPOSE 4
50	TRANSPOSE 5
51	TRANSPOSE 6
54	CH1 INT (UPPER ORCH.)
55	CH1 EXT (UPPER ORCH.)
56	CH2 INT (LOWER ORCH.)
57	CH2 EXT (LOWER ORCH.)
58	CH3 INT (BASS)
59	CH3 EXT (BASS)
60	CH4 INT (SOLO)
61	CH4 EXT (SOLO)
62	CH5 INT (CHORD)
63	CH5 EXT (CHORD)
82	CH15 INT (RHYTHM)
83	CH15 EXT (RHYTHM)
84	MANUAL BASS

LESSON 4-3 SYSTEM REAL TIME MESSAGES

Besides the previously described Channel Voice messages, MIDI messages also include System Real Time messages and System Exclusive messages which control the entire system.

System Real Time messages are mainly for controlling the rhythm and are indispensable messages when connecting the PSR to an RX or to keyboards with rhythm functions. Each datum consists of a single byte.

F8H (248): Timing Clock	1st byte only
FAH (250): Start	1st byte only
FCH (252): Stop	1st byte only
FEH (254): Active Sensing	1st byte only
FFH (255): System Reset	1st byte only

LESSON 4-4 SYSTEM EXCLUSIVE MESSAGES

System Exclusive Messages are special messages that give specific PSR models the data required to perform certain specialized functions. These messages can be used to operate switches and activate special modes like the Exclusive Mode, and they can also be used as Data Send requests.

1. Sending Specialized Operation Data

< Data Configuration >

	Exclusive	→ YAMAHA	→ Single Keyboard	→ Model ID	→ Special	→ Function	→ End	Total 7 bytes
Decimal:	240	67	115	8	17	Value in table below	247	
Hexadecimal:	F0H	43H	73H	08H	11H	nnH	F7H	

Value of n	Function
1	SOLO CHORUS OFF
2	SOLO CHORUS ON
3	LOWER CHORUS OFF
4	LOWER CHORUS ON
5	TO UPPER OFF
6	TO UPPER ON
7	PITCH BEND RANGE OCT
8	PITCH BEND RANGE 5TH
9	PITCH BEND RANGE 3RD
10	PITCH BEND RANGE 2ND
11	KEY VELOCITY SENSITIVITY HIGH
12	KEY VELOCITY SENSITIVITY NORMAL
13	KEY VELOCITY SENSITIVITY LOW
14	FOOT SWITCH (GLIDE)
15	FOOT SWITCH (PORTAMENTO)
16	FOOT SWITCH (FILL IN)
17	FOOT SWITCH (START/STOP)
18	FOOT SWITCH (INTRO/ENDING)
20	CUSTOM 1
21	CUSTOM 2
22	CUSTOM 3
23	CUSTOM 4
24	CUSTOM 5
25	CUSTOM 6

Value of n	Function
26	CUSTOM 7
27	CUSTOM 8
28	KEYBOARD PERCUSSION ON/OFF
29	REGISTRATION PROGRAM OFF EVENT
30	REGISTRATION PROGRAM ON EVENT
31	REGISTRATION 1
32	REGISTRATION 2
33	REGISTRATION 3
34	REGISTRATION 4
35	REGISTRATION 5
36	MUSIC PROGRAMMER OFF
37	SOLO RECORD
38	UPPER RECORD
39	LOWER RECORD
40	ACCOMPANIMENT RECORD
41	SOLO PLAY
42	UPPER PLAY
43	LOWER PLAY
44	ACCOMPANIMENT PLAY
45	ACCOMPANIMENT STEP WRITE
46	PAUSE
47	BASS RECORD
48	BASS PLAY

2. Sending Commands

< Data Configuration >

	Exclusive	→ YAMAHA	→ Single keyboard	→ Model ID	→ Command	→ End	Total 6 bytes
Decimal:	240	67	115	8	Value in table below	247	
Hexadecimal:	F0H	43H	73H	08H	xxH	F7H	

Value of x	Command
2	TIMING CLOCK INT
3	TIMING CLOCK EXT
4	SK STANDARD VOICE
5	SK NON-STANDARD VOICE
6	MEMORY SAVE REQUEST
7	MEMORY LOAD REQUEST
10	MODE OFF
13	MUSIC PROGRAMMER SEND MODE
15	PSR EXCLUSIVE MODE
16	MIDI NO CONNECT MODE

Notes:

1. The PSR will not acknowledge MEMORY SAVE REQUEST and MEMORY LOAD REQUEST commands unless the model ID code (08H) is set.
2. The PSR will acknowledge the above function commands except while Saving or Loading data on tape.

Example:

Data for Send MIDI (Sm) command when the PSR is set to the PSR Exclusive Mode.

Sm=240 Sm=8
Sm=67 Sm=15
Sm=115 Sm=247

3. Transferring Memory Data

< Data Configuration on Receiving Side >

	Exclusive	→ YAMAHA	→ Single Keyboard	→ Model ID	→ Memory Data Load Request	→ End	Total 6 bytes
Decimal	240	67	115	8	7	247	
Hexadecimal	F0H	43H	73H	08H	07H	F7H	

< Data Configuration on Sending Side >

	Control Change	→ All Note Off	→ Value	→ Exclusive	→ YAMAHA	→ Single Keyboard	→ Model	→
Decimal	176-191	123	0	240	67	115	8	
Hexadecimal	BnH (n=Channel No.)	7BH	00H	F0H	43H	73H	08H	

----------→	Memory Data Save Request	→ Set of Data Strings	→ End
Decimal	6	Appropriate values	247
Hexadecimal	06H	Appropriate values	F7H

Note:

Binary numbers are used for the data strings, and the format is as follows.

Ohhhhhhh . . . . . Header (one ASCII character)
OOOOLLLL
Data Length (4 bytes)
OOOOLLLL
OOOOdddd
Data (Variable Length)
OOOOdddd
Osssssss Check Sum

PSR-6300 MIDI Decimal ↔ Hexadecimal Data Conversion Table

The 0-127 data in this table designate Pitch, Number, Volume and Switch settings and other important factors.

Application and Range Pitch Data 36-96 Bank Number 0-15 Volume Setting 0-127 Switch Setting 0 or 127 Data 0-127 etc.	0 00H	1 01H	2 02H	3 03H	4 04H	5 05H	6 06H	7 07H	8 08H	9 09H	10 0AH	11 0BH	12 0CH	13 0DH	14 0EH	15 0FH
	16 10H	17 11H	18 12H	19 13H	20 14H	21 15H	22 16H	23 17H	24 18H	25 19H	26 1AH	27 1BH	28 1CH	29 1DH	30 1EH	31 1FH
	32 20H	33 21H	34 22H	35 23H	36 24H	37 25H	38 26H	39 27H	40 28H	41 29H	42 2AH	43 2BH	44 2CH	45 2DH	46 2EH	47 2FH
	48 30H	49 31H	50 32H	51 33H	52 34H	53 35H	54 36H	55 37H	56 38H	57 39H	58 3AH	59 3BH	60 3CH	61 3DH	62 3EH	63 3FH
	64 40H	65 41H	66 42H	67 43H	68 44H	69 45H	70 46H	71 47H	72 48H	73 49H	74 4AH	75 4BH	76 4CH	77 4DH	78 4EH	79 4FH
	80 50H	81 51H	82 52H	83 53H	84 54H	85 55H	86 56H	87 57H	88 58H	89 59H	90 5AH	91 5BH	92 5CH	93 5DH	94 5EH	95 5FH
	96 60H	97 61H	98 62H	99 63H	100 64H	101 65H	102 66H	103 67H	104 68H	105 69H	106 6AH	107 6BH	108 6CH	109 6DH	110 6EH	111 6FH
	112 70H	113 71H	114 72H	115 73H	116 74H	117 75H	118 76H	119 77H	120 78H	121 79H	122 7AH	123 7BH	124 7CH	125 7DH	126 7EH	127 7FH

Note: The shaded area represents pitch data that can be received by the PSR-6300.

The 128-239 data in this table define Status, which designates what type of data will be sent.

	Channel 1 (Upper Orchestra)	Channel 2 (Lower Orchestra)	Channel 3 (Bass)	Channel 4 (Solo)	Channel 5 (Chord)	Channel 6	Channel 7	Channel 8	Channel 9	Channel 10	Channel 11	Channel 12	Channel 13	Channel 14	Channel 15 (Rhythm)	Channel 16 (Controls)
Key Off Event	128 80H	129 81H	130 82H	131 83H	132 84H	133 85H	134 86H	135 87H	136 88H	137 89H	138 8AH	139 8BH	140 8CH	141 8DH	142 8EH	143 8FH
Key On Event	144 90H	145 91H	146 92H	147 93H	148 94H	149 95H	150 96H	151 97H	152 98H	153 99H	154 9AH	155 9BH	156 9CH	157 9DH	158 9EH	159 9FH
Polyphonic Key Pressure	160 A0H	161 A1H	162 A2H	163 A3H	164 A4H	165 A5H	166 A6H	167 A7H	168 A8H	169 A9H	170 AAH	171 ABH	172 ACH	173 ADH	174 AEH	175 AFH
Control Changes	176 B0H	177 B1H	178 B2H	179 B3H	180 B4H	181 B5H	182 B6H	183 B7H	184 B8H	185 B9H	186 BAH	187 BBH	188 BCH	189 BDH	190 BEH	191 BFH
Program Changes	192 C0H	193 C1H	194 C2H	195 C3H	196 C4H	197 C5H	198 C6H	199 C7H	200 C8H	201 C9H	202 CAH	203 CBH	204 CCH	205 CDH	206 CEH	207 CFH
Channel Pressure	208 D0H	209 D1H	210 D2H	211 D3H	212 D4H	213 D5H	214 D6H	215 D7H	216 D8H	217 D9H	218 DAH	219 DBH	220 DCH	221 DDH	222 DEH	223 DFH
Pitch Bender	224 E0H	225 E1H	226 E2H	227 E3H	228 E4H	229 E5H	230 E6H	231 E7H	232 E8H	233 E9H	234 EAH	235 EBH	236 ECH	237 EDH	238 EEH	239 EFH

Note: The darker shaded area is used during the PSR Exclusive Mode.
The lighter shaded area is used together with the Basic Channel Shift function.

The 240-255 data in this table are Status bytes for common data used by the entire system.

Application: Overall System Messages	Header for System Exclusive Messages	System Common Messages						End of Exclusive	System Real Time Messages							
		(Undefined)	Song Position Pointer	Song Select	(Undefined)	(Undefined)	Tune Request		Timing Clock	(Undefined)	Start	Continue	Stop	(Undefined)	Active Sensing	System Reset
	240 F0H	241 F1H	242 F2H	243 F3H	244 F4H	245 F5H	246 F6H	247 F7H	248 F8H	249 F9H	250 FAH	251 FBH	252 FCH	253 FDH	254 FEH	255 FFH

Note: Also refer to the "MIDI Implementation Chart" in the PSR Owner's Manual.

01478W Printed in Japan