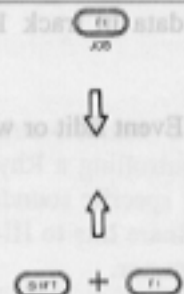


In this mode, song data is saved to disk or loaded from disk. Song data can also be transmitted or received from another QX5FD (or QX5).

### NOTE

The QX5FD uses 3.5" 2DD (720 kByte) disks. Before a new disk can be used by the QX5FD, the disk must be Formatted as explained on page 55.

To enter Load/Save mode, press **[SHIFT] + [LOAD/SAVE]**. Load/Save mode has 9 jobs. Select the job you want by pressing **[JOB]**. (**[SHIFT] + [JOB]** will step back through the jobs.)

	1> LOAD	Load a song (tracks/macros) from disk
	2> SAVE	Save a song (tracks/macros) to disk
	3> RENAME	Rename a disk file
	4> KILL	Kill (delete) a disk file
	5> STATUS	Check available disk space
	6> COPY	Copy an entire disk to another disk
	7> FORMAT	Prepare a new disk for use
	8> MIDI TRANSMIT	Transmit track/macro data to another QX5FD
	9> MIDI RECEIVE	Receive track/macro data from another QX5FD

When you enter Load/Save mode, the QX5FD will read the disk in the drive. If it is not able to, one of the following messages will be displayed in the lower line of the LCD.

\* NO DISK \*

\* NO DIRECTORY \*

\* NO FILE \*

"NO DISK"

There is no disk inserted in the drive.

"NO DIRECTORY"

The disk is unreadable (perhaps wrong format).

"NO FILE"

The disk contains no files.

## 1. LOAD

If a disk is inserted in the disk drive, the QX5FD will look for files (the disk LED will light and you will hear a whirring noise). If one or more QX5FD files are found, the LCD will show a message like the following one.

```

1> LOAD
01:HITSONG    002K
  
```

File name                      File size (kilobytes)

File number (1-99)

Use **<>** or the dial to select the file you want to load. (Files will not necessarily have filenames. See the following explanation in Save.) Now you can move the cursor to select which data is to be loaded. If you Execute loading immediately, ALL data of tracks 1-8 and macros 1-32 will be loaded. See the following explanation.

```

1> LOAD
01:HITSONG    002K
  
```

```

1> LOAD
01:           ALL
  
```

Data to load  
(ALL, SETUP, FLOATING, TR1..M32)

### **Load All**

All data in QX5FD memory will be erased, and whatever is in the selected disk file will be loaded into the track/macro it came from. Tracks/macros that did not receive data from disk will be cleared.

Setup data will also be loaded (page 59).

### **Load Setup**

Only the Setup data (page 59) saved with the track/macro data will be loaded. Track/macro data already in the QX5FD will retain their original data. You may find it useful to save a file containing the settings you usually use, and loading it at the beginning of your session.

### **Load Floating**

If possible, data from disk will be loaded into the track/macro it came from. However if the QX5FD already contains data for that track/macro, the new data will be loaded into the next empty track/macro. Thus, tracks and macros already in QX5FD memory will retain their original data. (During loading, the LCD will show the number of the original track/macro and the number of the track/macro into which it is being loaded.) If there are no more empty tracks/macros in QX5FD memory, any further disk data will be ignored. (The LCD will show "Ignored" for each track/macro of disk data that is not used.)

There will be a short time wait between each track/macro so that you will be able to read the source → destination of each track/macro being loaded. This means that Load Floating will be a bit slower than Load All.

Setup data will not be loaded.

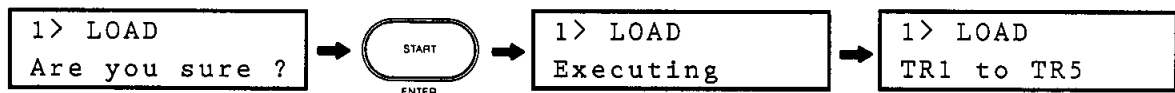
### **Load TR1...M32**

You can specify which tracks/macros you will load from the disk file. For example if you specify "TR7...M03", tracks 7 and 8 and macros 1, 2 and 3 will be loaded from disk. If the disk file contained no data for one or more of the specified tracks/macros, the corresponding QX5FD data will be erased. All other tracks and macros in QX5FD memory will retain their original data.

Setup data will not be loaded.

### **Execute Load**

After you have specified the data to be loaded, execute by pressing **START**. The LCD will flash "Are you sure ?". To load the data, press **START** again. To abort, press **STOP**.



If you are loading "Floating", the LCD will show the number of the original track/macro and the number of the track/macro into which it is being loaded, as in the following example.

---

## **2. SAVE**

This is where you save tracks/macros as a disk file. Use <> or the dial to select an existing file (to write over) or a new (non-existent) file.

```
2> SAVE
01:HITSONG      002K
```

File number (1-99)      Filename (\*\*\*\*\* indicates non-existent file)      File size (\*\* for non-existent file)

## File Name

If you are saving to a new file, you can move the cursor to the Filename and set a filename of up to 8 characters. If the file already exists, you will not be able to set a filename. (See also Rename, below.)

You can save a file without giving it a name, but it is a good idea to give a descriptive name to each file for your own convenience. Unnamed files will be given a filename of 8 spaces.

```
2> SAVE
02: * * * * * * * * * * K
```

Set a filename; (space) A-Z 0-9 !"#%&'()\*+,-./:;<=>?\_

Select a file (1-99)

Use <|> or the dial to move through the characters, and press **CURSOR** to move to the next space (**SHIFT** + **CURSOR** to move back).

If you have previously Saved or Renamed a file, the filename will be saved in the Filename buffer. You can recall this filename by pressing **SHIFT** + >.

When you press **SHIFT** + <, all filename characters from the cursor to the right will be cleared to spaces.

## Save Data

Move the cursor to the right of the filename and specify the data you want to save.

```
2> SAVE
02:NEWSONGS 012K
```

```
2> SAVE
02: TR7..M02 051
```

In the example above, the total size of tracks 7 and 8 and macros 1 and 2 is 51 *blocks*. If the file already exists, its size will be shown in *kilobytes*. Do not confuse the two ways of measuring data.

## Execute Save

To save the data to disk, press **START**. The LCD will flash "Are you sure?". To save the data to disk, press **START** again. To abort, press **STOP**.



---

## 3. RENAME

You can change the name of an existing file.

```
3. RENAME
02:NEW-HITS 012K
```

As explained in Save, select a file (1-99) and move the cursor to the filename. Set a new filename as explained in File Name, above. When you press **START** the filename on disk will be changed. (There is no "Are you sure?" for this job.)

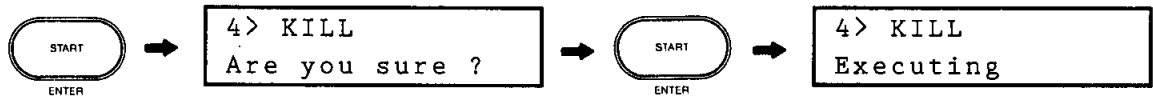
---

#### 4. KILL

You can permanently delete an unwanted file from disk.

```
4> KILL
03:GARBAGE 013K
```

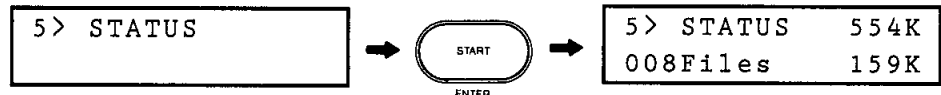
Select a file and press **START**. You will be asked "Are you sure ?". *Remember that a Killed file will be gone forever.* If you really don't need the file, press **START** again and the file will be killed. To quit without killing, press **STOP**, and the operation will be aborted.



---

#### 5. STATUS

This job allows you to see how many files are on disk, the total disk space they occupy, and the remaining free disk space. Press **START** to see the disk status.



In the example above, the disk contains 8 files totaling 159 kilobytes, and there are 554 kilobytes of free space remaining on the disk. (Note that the disk space occupied by a file does not correspond to the size of the internal memory used.) Press **JOB** to leave the Status display.

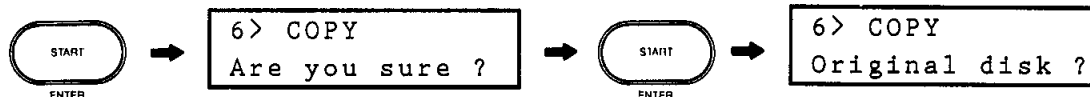


## 6. COPY

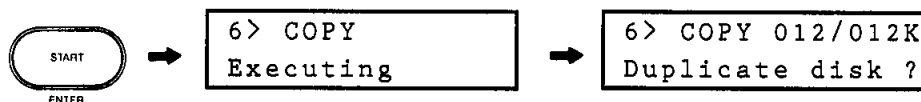
This job allows you to copy an entire disk to another disk. Floppy disks are generally quite reliable, but you should make backup copies of important data.

```
6> COPY
Clear memory ?
```

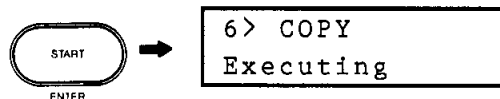
This job needs to use the entire memory of the QX5FD. Executing the job will clear all track/macro data now in QX5FD memory. If you need to keep this data, be sure to Save it to disk before executing Copy. If it is ok to clear memory, press **START**. If you are sure it's ok, press **START** again.



Insert the original disk (the copy source) and press **START**.



The LCD will show the total size of the files it has copied from the Original disk. Insert the duplicate disk and press **START**.



When finished, the display will return to "Clear memory?"

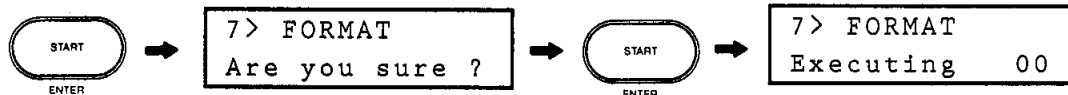
If the total file size was too large to be copied at one pass, the LCD will show something like "043/142K" indicating that 142 kilobytes need to be copied and that 43 kilobytes have already been copied. In this case you will be asked to insert "Original disk?" and then "Duplicate disk?" as many times as necessary.

## 7. FORMAT

New disks need to be Formatted before they can be used by the QX5FD. Formatting will erase all data on the disk, so be careful not to accidentally format an important data disk.

```
7> FORMAT
Mount disk ?
```

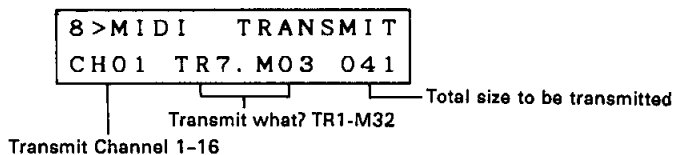
Insert the disk to be formatted and press **START**.



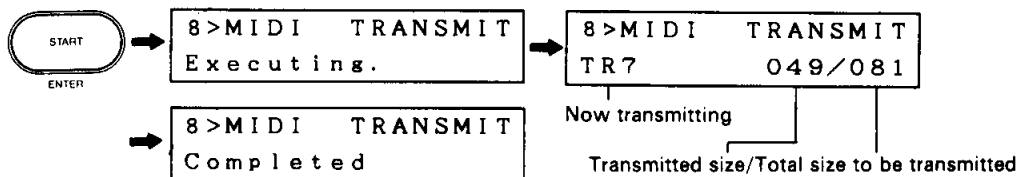
The LCD will count from 00 to 80 while executing. When formatting is complete, the display will return to "Mount disk?"

## 8. MIDI TRANSMIT

You can transmit QX5FD sequence data from MIDI OUT in the form of a System Exclusive message to another QX5FD. (See the Section System Exclusive Data Format for the data format.) It takes about 50 seconds to transmit the entire contents of a QX5FD when it is full (0 free memory). You can specify the MIDI channel on which the data will be sent. (Strictly speaking, a System Exclusive message has no channel, but this is a channel or Device Number within Yamaha System Exclusive format.) The Transmit Channel will initially be set the same as the Device Number (page 64), but you can change it without affecting the Device Number. The Device Number of the receiving QX5FD must match the Transmit Channel of the transmitting QX5FD. Select the tracks and macros to be transmitted as explained in Save (page 51) The total size of the data to be sent is displayed in the lower right. You can transfer sequence data from a QX7/21 and to a QX5FD but not vice versa. A QX5FD and QX5 can freely send and receive data.



When you have specified the tracks/macros you wish to transmit, press **[START]**. You will be asked "Are you sure?", so if you are sure you want to transmit, press **[START]** again. The display will show "Executing", and then show the track or macro currently being sent. When finished, the display will show "Completed" for a second. (While Transmitting, you can abort by pressing **[SHIFT] + [RESET]**.)



---

## 9. MIDI RECEIVE

QX5FD sequence data can be received from another QX5FD (or QX5/7/21). As explained in Transmit (page 55) you must set the Receive Channel to match the Transmit Channel of the transmitting QX5FD. Specify the data (tracks/macros) to be received—All, Floating, or TR1...M32—as explained in Load, page 50.

5>MIDI RECEIVE	
CH01	ALL

Receive Channel 1-16

All, Floating, TR1...M32

When you press **[START]** and answer "Are you sure?" by pressing **[START]** again, the QX5FD will send a Dump Request message from MIDI OUT and wait for sequence data to arrive at its MIDI IN. If the receiving QX5FD's MIDI OUT is connected to the transmitting QX5FD's MIDI IN, transmission will begin automatically. Otherwise you will need to initiate transmission manually. (See the owner's manual for the transmitting device.)

When sequence data begins to arrive, the LCD will show the track or macro currently being received, as explained in Load, page 50. If you have specified "Receive Floating" and there are no more empty tracks or macros to receive the data, the LCD will show "Ignored" for any further incoming track or macro.

---

## DATA MESSAGES

If Sequence Bulk data is transmitted (in response to a dump request) or received while not in Load/Save mode, the following messages will be displayed. When finished, the display will show "Completed" for 1 second. You can press **[SHIFT]** + **[RESET]** to abort, in which case the display will show "Aborted". The displayed numbers are explained in MIDI Transmit and MIDI Receive (pages 55 – 56).

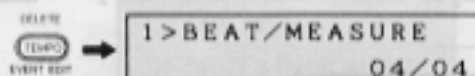
* TRANSMIT *
TR1            018/134

* RECEIVE *
TR5...TR5        042

# SETUP

In Setup mode you will make various settings which are part of the Setup Memory, and will be initialized when the power is turned on. See page 59 for a complete description of the Setup Memory that is saved and loaded along with disk files. To enter Setup mode, double-click **TEMPO**.

(Press twice)

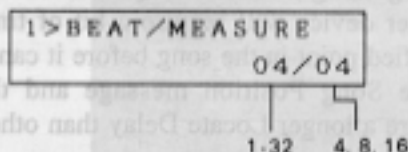


There are 7 jobs in Setup mode. Press **JOB** to select a job. (Press **SHIFT** + **JOB** to move back.)

	1> BEAT/MEASURE	Set the time signature
	2> CLICK	Select when the metronome will sound
	3> REPEAT	Set the entire song to continue repeating
	4> EDIT CONFIRM	Switch "Are you sure?" off/on
	5> FOOT SWITCH	Set the function of the foot switch
	6> LOCATE DELAY	Set a time delay between a position change and Continue
	7> TRACK LABEL	Assign a one-character label to each track/macro

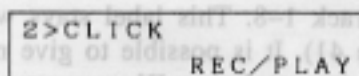
## 1. BEAT/MEASURE

This is where you set the time signature. If you are recording with no other tracks playing back, this time signature is what determines how Measure Marks are recorded. Beat/Measure also will determine how the metronome sounds (see Click, below).



## 2. CLICK

You can set the metronome to sound during recording and playback, only during recording, or to be turned on and off manually (by pressing **SHIFT** + **CLICK**). No matter how Click is set, you will always be able to turn the metronome on/off by pressing **SHIFT** + **CLICK**. There will be an accent on the first beat of the measure.



Manual, Record, Rec/Play

---

### 3. REPEAT

When Repeat is on and the song reaches the end during playback, it will start again from the beginning.

3> REPEAT
OFF

Off/On

---

### 4. EDIT CONFIRM

The "Are you sure?" message that appears when you execute an edit can be switched off. If you would rather not have to press **START** twice when executing, set this Off.

4> EDIT CONFIRM
ON

Off/On

---

### 5. FOOT SWITCH

You can select the function that a foot switch connected to the rear panel jack will have. It will function exactly like the front panel **STOP/CONTINUE** and **START** switches. Use an on/off type switch such as the Yamaha FC-4 or FC-5 (sold separately).

5> FOOT SWITCH
CONTINUE/STOP

Start, Start/Stop, Continue/Stop

---

### 6. LOCATE DELAY

When Locate (page 65) is on and you press **START** to play from the Locate point, or if you move during playback using Measure (page 12), the QX5FD will send a MIDI Song Position message from MIDI OUT. This tells other devices (sequencers, rhythm machines etc.) where we are in the song. (I.e., how many beats from the beginning.) Then the QX5FD sends a MIDI Continue message. However, the other device will require a bit of time (a fraction of a second) to move to the specified point in the song before it can Continue. Locate Delay is the time between the Song Position message and the Continue message. Some devices will require a longer Locate Delay than others.

6> LOCATE DELAY
100ms

100ms-990ms

---

### 7. TRACK LABEL

To help you remember which data is in each track, you can give a one-character label A-Z to each track 1-8. This label stays with the data when tracks are Exchanged (see page 41). It is possible to give more than one track the same label, but this only invites confusion. We suggest you give different labels to each track; for example, "B" for bass, "L" for lead, "M" for melody, etc.

Each track 1-8 and macro 1-32 has its own label, but the label can be seen and changed only for tracks.

## QX5FD SETUP MEMORY CHART

The following Setup Data is saved and loaded along with track/macro data. When the QX5FD power is turned on, settings will be as follows.

Data	Default
TEMPO	120
TEMPO MEMORY	120,120,120
MEASURE MEMORY	1,1,1
CLOCK IN	INT
CLOCK OUT	ON
BEAT/MEASURE	4/4
CLICK	RECORD
REPEAT	OFF
EDIT CONFIRM	ON
FOOT SWITCH	START
LOCATE DELAY	100ms
TRACK LABEL	not labeled
INPUT ASSIGN	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
OUTPUT ASSIGN	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
VELOCITY	ON
AFTER TOUCH	OFF
PITCH BEND	ON
CONTROL CHNG	ON
SYS.EXCLUSIVE	ON
REMOTE IN	ON
REMOTE OUT	ON
ECHO	OFF
DEVICE NUMBER	OFF
STEP TIME	All off
GATE TIME	6
VELOCITY	1
TIE	97
REST	96

In MIDI 1 mode you can make settings determining what the QX5FD will record, and how data will be played back. These settings are part of the Setup Memory, and will be initialized when the power is turned on. See page 59 for a complete description of the Setup Memory that is saved and loaded along with disk files. To enter MIDI 1 mode, double-click **TRACK**.

(Press twice)



1> INPUT ASSIGN  
123456789 10 11 12 13 14 15 16

There are 7 jobs in MIDI 1 mode. Press **JOB** to select a job. (Press **SHIFT** + **JOB** to move back.)

	1> INPUT ASSIGN	Change the channel of incoming data
	2> OUTPUT ASSIGN	Change the channel of outgoing data
	3> VELOCITY	Reception off/on for Velocity data
	4> AFTERTOUCH	Reception off/on for Aftertouch messages
	5> PITCH BEND	Reception off/on for Pitch Bend messages
	6> CONTROL CHANGE	Reception off/on for Control Change messages
	7> SYSTEM EXCLUSIVE	Reception off/on for System Exclusive messages

## 1. INPUT ASSIGN

This determines which channels the QX5FD will accept, and on which channels they will be recorded on. Each place from left to right represents incoming MIDI channels 1-16. Each incoming MIDI channel can be turned off (indicated by a period), or "re-channelized" and recorded on another channel. Use **CURSOR** to move to the channel you want, **<>** and to change the assignment. By pressing **SHIFT** + **<>**, all channels to the right of the cursor will change together.

1> INPUT ASSIGN  
123456789 10 11 12 13 14 15 16

Recorded MIDI Channel, 1-16

When set as shown above, each incoming MIDI channel will be recorded on its original channel. If you can change the output channel of your MIDI keyboard, it is easiest to leave Input Assign set as above, and switch output channels before recording each part.

## 7. TRACK LABEL

1> INPUT ASSIGN  
7 . . 56789 10 11 12 13 14 15 16

When set as shown above, incoming messages on channel 1 will be re-channelized to channel 7. Messages on channels 2-4 will be ignored, and messages on channels 5-16 will be accepted on their original channel.

## Multi-channel recording

When using the QX5FD with more than one tone generator, the usual method is to set each tone generator to a different reception channel, so it can play a different part. Obviously, each part must be on a different MIDI channel. There are three ways to do this.

1. Send the messages from the keyboard on a different channel for each part using a keyboard with selectable output channel. This is easiest and best.
2. After recording each part, use Shift Channel (Track Edit, page 47) to change the channel. However, this will mean that you record listening to one tone generator, and playback listening to another tone generator, which can get confusing if each tone generator contains different voices.
3. Before recording each part, set Input Assign to re-channelize the incoming channel. If you have set Echo (page 64) to "Rec Monitor", you will hear the same tone generator during recording and playback. When using a keyboard with fixed output channel, this is best.

---

## 2. OUTPUT ASSIGN

This determines the channels that the QX5FD will transmit during playback. Make settings in the same way as for Input Assign.

2>OUTPUT ASSIGN
12345678910111213141516

Transmitted MIDI Channel 1-16

As set above, recorded data will be played back on the original channel. As an example of how you might use this function, suppose you had a bass part recorded on channel 3, and wanted to hear how it would sound played back on different tone generators. Changing the Output Assign would let you do this without affecting the recorded data. (You could do the same thing by changing the reception channel of the tone generators, but this might be easier.) When a channel is turned off (indicated by a period "."), data on that channel will not be played back.

---

## 3. VELOCITY

This determines whether the QX5FD will record velocity data. If turned off, all velocity will be recorded with a fixed value of 64. If you really don't need velocity, turning it off will increase the memory capacity. (About 15,000 notes with velocity, 20,000 without velocity.)

3>VELOCITY
------------

ON



---

---

#### 4. AFTERTOUCH

This determines whether the QX5FD will record Aftertouch messages (Common and Individual Aftertouch). On an instrument where Aftertouch cannot be switched off, it is a good idea to turn this off if you don't need to record Aftertouch. Otherwise, the QX5FD memory will quickly be filled up with Aftertouch messages. (The least bit of pressure on the keyboard will send an Aftertouch message.)

4>AFTERTOUCH
ON

---

---

#### 5. PITCH BEND

This determines whether the QX5FD will record Pitch Bend messages. As with Aftertouch, Pitch Bend messages can take up a lot of memory. One way to use this might be to record without Pitch Bend, and add the Pitch Bend later, perhaps to another track (but on the same MIDI channel).

5>PITCH BEND
ON

---

---

#### 6. CONTROL CHANGE

This determines whether the QX5FD will record Continuous Control Changes (control numbers 0-63) such as Modulation Wheel, Foot Controller, Breath Controller, Volume, Portamento Time and Data Entry Slider. (See the list of Control changes on page 26.) Switch-type messages such as Sustain On/Off will always be recorded, regardless of this setting.

6>CONTROL CHNG
ON

---

---

#### 7. SYSTEM EXCLUSIVE

This determines whether the QX5FD will receive and record System Exclusive messages.

7>SYS. EXCLUSIVE
ON

When this is On, System Exclusive messages will be recorded in the same way as Note and Controller messages. Some synthesizers can transmit System Exclusive messages to modify their voice parameters (LFO Speed, EG Rate, or Algorithm Select, etc.). Consult the owner's manual for your keyboard and tone generator.

#### NOTE

System Exclusive messages beginning with "F0, 43, 0n ..." or "F0, 43, 1n ..." or "F0, 43, 2n ..." are for the QX5FD itself (bulk sequence memory). They will be loaded into QX5FD sequence memory if the Device Number "n" matches the QX5FD device number (p. 44). If the QX5FD device number is OFF, all System Exclusive messages will be recorded in the usual way, along with notes and other messages.
--

## MIDI 2

In MIDI 2 mode you can make settings determining how the QX5FD will react to and re-transmit (Echo) MIDI messages. You can also set the Device Number, which determines the channel on which the QX5FD will receive Sequence data. (See MIDI Transmit and Receive, pages 55–56.)

These settings are part of the Setup Memory, and will be initialized when the power is turned on. See page 59 for a complete description of the Setup Memory that is saved and loaded along with disk files. To enter MIDI 2 mode, double-click **CLOCK**.

(Press twice)



1 > REMOTE IN  
ON

There are 4 jobs in MIDI 2 mode. Press **JOB** to select a job. (Press **SHIFT** + **JOB** to move back.)

1 > REMOTE IN	Receive synchronization messages
2 > REMOTE OUT	Send synchronization messages
3 > ECHO	Retransmit incoming data
4 > DEVICE NUMBER	Reception channel for sequence data

### 1. REMOTE IN

This determines whether the QX5FD will receive Song Position, Song Select, Start, Continue and Stop. (MIDI Clock reception depends on the Clock setting, page 14.)

1 > REMOTE IN  
ON

You will usually want to leave this ON. One reason for turning it off might be to let the QX5FD keep on playing even after another sequencer had stopped, but this will not be necessary for most applications.

### 2. REMOTE OUT

This determines whether the QX5FD will transmit Song Position, Song Select, Start, Continue and Stop.

2 > REMOTE OUT  
ON

As with Remote In, you will usually want to leave this ON, so that other sequencers or rhythm machines can be synchronized with the QX5FD.

---

### 3. ECHO

This determines whether Channel messages and System Exclusive messages received at MIDI IN are sent from MIDI OUT. System Exclusive messages for the QX5FD itself (System Exclusive Bulk Sequence Data with sub-status 0,1 or 2) are not Echoed back. Also, System Common messages and System Realtime messages are not Echoed back.

3>ECHO REC MONITOR
-----------------------

Off, Direct, Rec Monitor

Echo Off: Messages received at MIDI IN are not sent from MIDI OUT.

Echo Direct: Messages received at MIDI IN are sent unchanged from MIDI OUT. (MIDI OUT acts as MIDI THRU.) However, received messages are passed through the Key Assign Table (see note). When an All Note Off message is received, the Key Assign Table is searched to see if any notes are still on. If there are, Note Off messages are sent for each of them.

Echo Rec Monitor: Messages received at MIDI IN are passed through Input/Output Assign to be re-channelized or ignored (pages 60-61) and through the message filters (pages 61-62, Velocity, Aftertouch, Pitch Bend, Control Change, System Exclusive). In this way, you can hear exactly what you are recording.

#### NOTE

The QX5FD has a 32 note Playback Key Assign Table that keeps track of which notes are currently on. This means that there can be no more than 32 notes simultaneously on during playback. Likewise, there is a 32 note Record Key Assign Table.
---

---

### 4. DEVICE NUMBER

This is the "System Exclusive MIDI reception channel" for the QX5FD itself. When incoming Sequence Bulk Data has a matching device number and a sub-status of 0, 1 or 2, it will be received into QX5FD system memory. All other incoming System Exclusive messages will be recorded as usual. The QX5FD itself receives two types of System Exclusive message Sequence Bulk data, and Dump Request.

4>DEVICE NUMBER 0 1
------------------------

OFF 1-16

## OTHER FUNCTIONS

---

---

### CLICK

Pressing **[SHIFT]** + **[CLICK]** will turn the metronome on or off at any time. Using the Setup function **[CLICK]** (page 57), you can have the metronome automatically sound during record and playback. By connecting the back panel Click Out to an amp/speaker or mixer, you can hear the click through your monitor system or headphones. When the back panel Click Out is used, the internal click will not sound.

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### RESET

Pressing **[SHIFT]** + **[RESET]** will do the following.

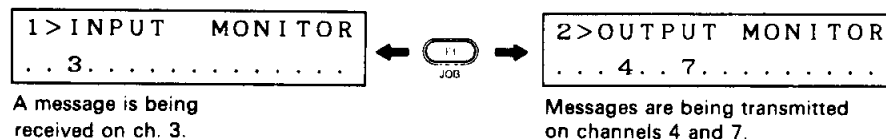
- If pressed during playback, play will stop (just as if you had pressed STOP).
- If pressed while transmitting or receiving data (tape or MIDI), transmission or reception will stop.
- If pressed in Setup, Edit or Load/Save modes, it will return to Tempo, Measure, Track or Clock mode.
- If pressed while in Tempo, Measure, Track or Clock modes, Song Position will be reset to the beginning of the song.

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### MONITOR

This lets you see on what MIDI channel messages are being received and transmitted. Double-click **[MEASURE]**. When a message is received or transmitted, the channel number will be displayed for 0.5 seconds. Press **[JOB]** to select Input or Output monitor.



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### LOCATE

Pressing **[LOCATE]** will turn the Locate LED on/off. Turning Locate on has the effect of setting a new "beginning" for the song. Normally, pressing **[START]** will begin recording or playback from measure 1. However when Locate is on, **[START]** will begin recording from the measure set in Measure Memory **[F2]** (see Measure Memory, page 12). This can be helpful when repeatedly recording or playing from the middle of the song.

Regardless of Locate on/off, an incoming MIDI Start message will always make the QX5FD begin recording or playback from measure 1.

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### LOOP PLAYBACK

When Locate is on, press **[SHIFT]** + **[START]** during playback. Playback will continue in a loop between the measure set in Measure Memory **[F2]** (page 12) and the point at which you pressed **[SHIFT]** + **[START]**.

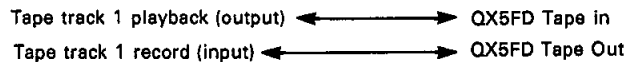
# TAPE SYNC

The QX5FD can be synchronized with a multi-track tape recorder such as the MT1X. One track of tape is used to record and play back an FSK (Frequency Shift Keying) sync signal. When you playback the QX5FD, an FSK sync signal is sent to the tape recorder. When the QX5FD is set to Tape Clock and you playback the tape, the QX5FD receives this FSK sync signal, and plays (or records) in synchronization with the tape.

For example, acoustic instruments such as guitar and vocals could be recorded on tape, and synthesizer parts could be recorded on the QX5FD. For a setup of this type, see the example at the end of this section.

## Connections

Connect the tape recorder to the QX5FD Tape In/Out jacks as shown.



## Recording the Sync Track

1. Set the QX5FD to Internal Clock.
2. Begin recording on tape track 1.
3. Start QX5FD playback.
4. When the QX5FD playback is over, stop the tape.

## Synchronized Playback

1. Set the QX5FD to Tape Clock.
2. Press **START** or **CONTINUE**.
3. Rewind the tape to a point before the sync starts, and playback track 1.
4. The QX5FD will start playing in synchronization with the tape.

## Synchronized Recording

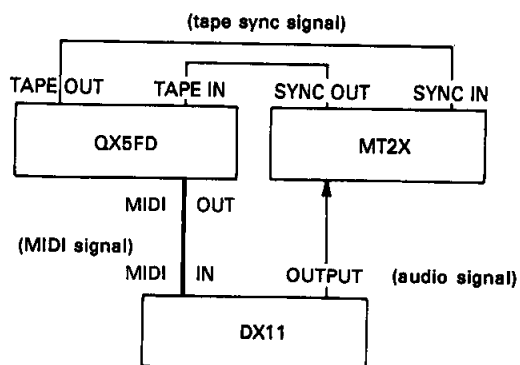
1. Set the QX5FD to Tape Clock.
2. Press **RECORD**, then press **START**.
3. Rewind the tape to a point before the sync signal starts, and playback track 1 (the sync track).
4. The QX5FD will start recording, and tracks 2-8 will play back in synchronization with the tape.

### NOTE

- Before playback, be sure to rewind the tape to a bit before the point where the sync signal starts.
- The FSK signal contains only Timing Clock data. You must press **START** or **CONTINUE** and **STOP** on the QX5FD.
- If you are experiencing difficulty, check the recorded level of the FSK signal. As with any signal recorded on tape, the level should be as high as possible without causing distortion.

### Example

Yamaha MT2X has SYNC IN/OUT terminals for FSK recording and playback.



1. Record the FSK signal via the SYNC IN of MT2X. (It will be recorded on track 1.)
2. At the same time, record the DX audio signal played back by the QX5FD on MT2X track 2.
3. Change the DX voice. Synchronizing the QX5FD to the tape, record another sequence playback on MT2X track 3.
4. In the same way, record MT2X track 4.

In this section we will take you step-by-step through the process of using the QX5FD to create a multi-part composition. If you are new to the QX5FD, working through this tutorial will help you understand the basics of multi-track MIDI recording. You will be introduced to the following subjects:

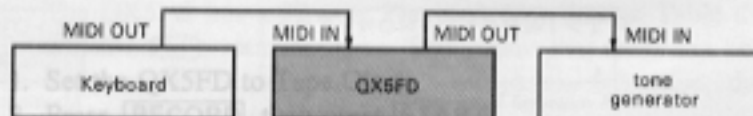
- Tone generators, MIDI channels, QX5FD tracks
- Realtime recording, punch-in recording
- Measure edit operations (Shift, Transpose)
- Track edit operations (Exchange, Copy)

In this example, we will first record a piano track, and add Bass, Strings, and two Brass lines. Along the way we will be learning about various editing operations.

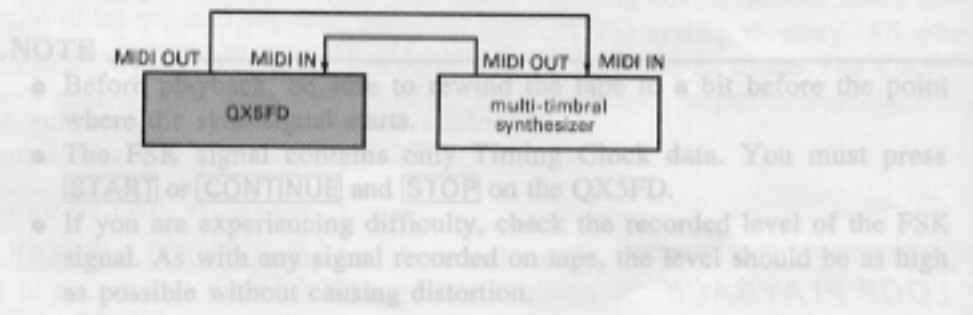
In this tutorial we will tell you exactly *what* to do, but will not always explain *why* we perform certain operations. For detailed explanations, see the corresponding section of this operation manual.

### Connections

We will assume you are using a setup with a keyboard some type of multi-timbral tone generator, whether built into the keyboard (such as the DX11) or external (such as the TX81Z). Make MIDI connections as shown in one of the following setups.



3. Rewind the tape to a point before the sync signal starts, and playback track 1 (the sync track).
4. The QX5FD will start recording, and tracks 2-8 will play back in synchronization with the tape.



### Tone Generator Settings

To take full advantage of the QX5FD's multi-track multi-channel capabilities, your tone generator should be *multi-timbral*—i.e., able to receive MIDI messages of different channels to simultaneously play different sounds. The DX11 and TX81Z are 8-voice multi-timbral, and can play up to 8 notes simultaneously. In this tutorial, we will be using five separate voices. Set your tone generator to its multi-timbral mode (for the DX11 and TX81Z this will be Performance Mode), and make settings as follows. (The operation manual for your tone generator will explain how.)

Inst/Ch	Notes	Voice
1	4	Piano
2	1	Bass
3	1	Strings
4	1	Brass1
5	1	Brass2

The tone generator is now acting as five independent instruments receiving MIDI channels 1–5. The first instrument (set to a Piano voice) will be able to play chords of up to 4 notes, and the other instruments will be able to play 1 simultaneous note each.

### Keyboard Settings

If the tone generator you are using is built into your keyboard (DX11), set your keyboard to Local Off. When you play the keyboard it will transmit messages from MIDI OUT but will not sound the internal tone generator.

Turn the QX5FD on, and set your keyboard to transmit on channel 1. Play a note.

The tone generator should sound the Piano voice. Now set the keyboard to transmit on channel 2, and play the Bass voice. In the same way, check that channels 3, 4 and 5 play the Strings, Brass1 and Brass2 voices.

#### NOTE

If your keyboard has a fixed transmit channel, you will have to set the QX5FD to reassign the input channel number. Quickly press **TRACK** twice. The LCD will show

```
1> INPUT ASSIGN
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
```

The cursor will be blinking at the left-most space, representing incoming MIDI channel 1. Use **<>** or the dial to set the channel you need. In this tutorial when we tell you to change the keyboard transmit channel, you will reassign the input channel number instead. Play your keyboard and change the Input Assign to make sure that channels 1–5 are playing different sounds.



## Click

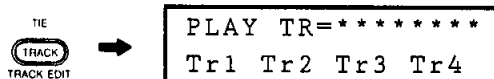
Before we begin recording, we will set the QX5FD's built-in metronome to sound while we record. Double-click (quickly press twice) the **TEMPO** switch, then press **JOB** once. Press **>** once to set Click to "RECORD".



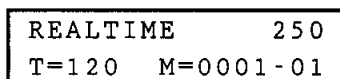
The metronome will now automatically sound whenever we are recording.

## Recording

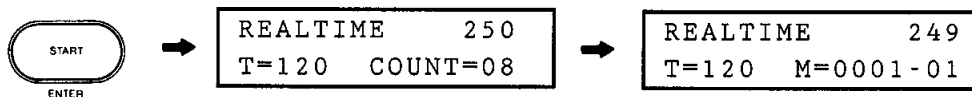
Press **TRACK**. The eight asterisks "\*" indicate that all eight tracks are empty. This will change when we have begun recording.



All set! Press **RECORD**, and the LCD will show



First we will record our Piano track. Make sure you are transmitting on channel 1, and press **START**. After an 8-beat countdown, recording will begin.

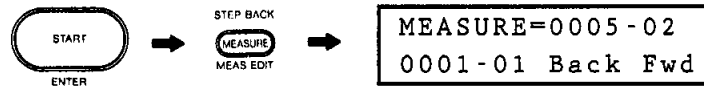


Go ahead and play. Use the dial to adjust the tempo. If you make a mistake, you can press **STOP**, then **RECORD** and **START** again from the countdown, but don't be too fussy. This is a learning experience!

When you have played a song of a reasonable length (30 or 40 measures), press **STOP**. The LCD will briefly show "Executing", and then return to where we were before we began recording (which happened to be the "Beat/measure" setting).



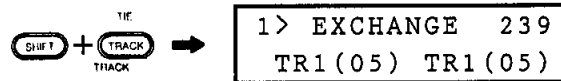
Notice that track 1 now contains data. Press **START** to play it back from the top. While you listen to the playback, press **MEASURE**, and watch as time goes by...



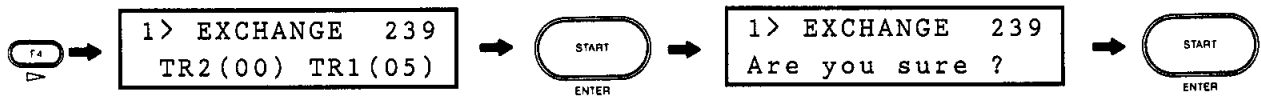
If you're satisfied with your performance, let's go on and record the next part. (If not, re-record by pressing **RECORD** then **START**.)

### Track Exchange

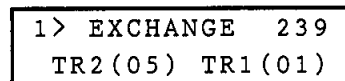
All recording is done on track 1. So if we don't want to wipe out our first recording, we must put it in another track. Hold **SHIFT** and press **TRACK**. (From now on we will write this as **SHIFT** + **TRACK**.)



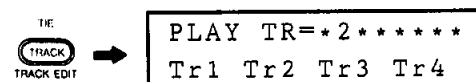
(In the example above, the "(05)" indicates that the data in track 1 occupies 5 blocks of memory.) We want to Exchange track 1 (the Piano part) with track 2 (empty). Press **▷** once, and then press **START**. You will be asked "Are you sure?", so press **START** again.



After a brief "Executing" display, the LCD will now show.



Notice that the Piano part is now in track 2. Press **TRACK** and notice that the PLAY TR display also tells us this.



## Record Part 2

We are ready to record the second part, Bass. Set your keyboard to transmit channel 2 and check that it plays the Bass voice in the tone generator. As we learned when recording the first part, press **RECORD**, then **START**. As you record the Bass, the Piano will play along.



When you come to the end of the song, press **STOP**. The LCD will return to the PLAY TR display, which now indicates that both tracks 1 and 2 contain data.

```
PLAY TR=12*****  
Tr1 Tr2 Tr3 Tr4
```

## Record Part 3 (and 4)

You're learning fast. To record the third part (Strings), ...

1. Exchange track 1 (the bass part) with track 3 (an empty track)
2. Set your keyboard to transmit channel 3 (to play the Strings voice)
3. **RECORD** and **START** to record the Strings part

Good work! By now you're a pro, and don't need to be told that the next step is ...

1. Exchange track 1 (the strings part) with track 4 (an empty track)
2. Set your keyboard to transmit channel 4 (to play the Brass1 voice)
3. **RECORD** and **START** to record the Brass part

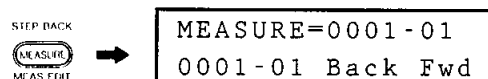
Don't record part 5 (the second Brass part)—we're saving it as a surprise.

## Punch-In/Punch-Out

It is possible that in recording these four tracks you have made a mistake or two? We would not dream of denigrating your keyboard skills, but for educational purposes we will *assume* that you made a few minor slips in measures 12–14 of the Brass part. The rest of the part was perfect. Rather than redoing the whole part, we will use *Punch-in Recording*.

If you are following our example, the imperfect Brass part is still in track 1. (If you are a creative person and made your mistake somewhere else, the Strings part for example, you will have to Exchange it back into track 1.) If you are following our example, your keyboard is still transmitting on channel 4, playing the Brass1 voice. (If not, set your keyboard to play the voice that needs to be corrected.)

Punch-in Recording allow you to record *only over specified measures* and leave the rest of the track unchanged. The point where we begin recording is known as the "Punch-in" point, and point where we stop recording (and resume playing back the original recording) is the "Punch-out" point. To set punch-in/out points, press **MEASURE**.



Now use the <▷ or dial to move to the measure where we will begin recording—the Punch-in point. (Measure 12 in our example.)

MEASURE=0012-01
0001-01 Back Fwd

Press and hold **SHIFT**, and the LCD will show

(hold) **SHIFT** →

MEASURE=0012-01
Save 001 001 001

Still holding **SHIFT**, press **F1**, then press **F3**. This sets the current measure (measure 12) as the punch-in point. (These "measure memories" have several uses. For details, see page 12.)

(hold) **SHIFT** + **F1** , then **F3** →

MEASURE=0012-01
Save 001 012 001

The second measure memory is now the punch-in point (measure 12). Release the **SHIFT** key and use <▷ or the dial to move to the punch-out point. (In our example, measure 14.) Set the punch-out point in the same way as explained above, but this time press **F4**.

MEASURE=0014-01
0001-01 Back Fwd

→ (hold) **SHIFT** + **F1** , then **F4** →

MEASURE=0014-01
Save 001 012 014

### ***Punch-in Recording***

The punch-in/out points are set, and now we must select Punch-In Recording mode. Press **SHIFT** + **RECORD** to get the following display.

**SHIFT** + **RECORD** →

PUNCH IN	223
T=120	M=0014-01

Press **START**, and recording will begin as usual. (There will be no countdown in Punch In recording.) When you reach measure 12, the original data in track 1 will drop out, and recording will begin. When you reach measure 14, the original data will reappear. Press **STOP** and then **START** to listen to the corrected part in track 1.

If you're happy with the corrected Brass part, Exchange it with track 5 (empty). If not, try Punch In recording again.

## Copy and Transpose

Our tone generator has one more voice—Brass2. Let's create a part for this *without recording any data!* Here's how. The Brass part we recorded on channel 4 is now stored in track 5. We will Copy it, Transpose the copied data, change its channel, and play it back to control the fifth voice of the tone generator.

Press **[SHIFT]** + **[TRACK]**, then press **[JOB]** once to get the following display.

```
2> COPY      223
TR1(00) TR1(00)
```

Press **▷** four times to get the following display.

```
2> COPY      223
TR5(03) TR1(00)
```

Track 5 contains our Brass part, and we will now Copy it to track 1. Press **[START]** to execute.

```
2> COPY      220
TR5(03) TR1(03)
```

This data was recorded on channel 4, so we will Shift it to channel 5 to make it play the Brass2 voice. Press **[SHIFT]** + **[MEASURE]**, then press **[JOB]** three times to get the following display.

```
4> SHIFT      220
CH      0001.0001
```

Press **[CURSOR]** twice to move the blinking cursor to the second number, and use **▷** or the dial to move it to the end of the track. (Measure 29 in this example.)

```
4> SHIFT      220
CH      0001.0029
```

Press **[CURSOR]** again and the display will look like this.

```
4> SHIFT      220
CH      01  01
```

Use  $\triangleright$  or the dial to set the first number to "4", press **CURSOR**, and use  $\triangleright$  or the dial to set the second number to "5".

4	>	SHIFT	220
CH		04	05

Press **START** to execute. This will Shift all data of channel 4 in track 1 to channel 5. (If we played back now, Brass1 and Brass2 would play in unison.)

Finally, we will Transpose the data in track 1 (our new Brass2 part) to a fourth below the original Brass1 part. Press **JOB** twice to get the following display.

6	>	TRANPOSE	220
+00		0001.0001	

Use  $\triangleleft$  or the dial to make the Transpose setting "-07". Then press **CURSOR** twice and use  $\triangleright$  or the dial to move it to the end of the track. (Measure 29 in this example.)

6	>	TRANPOSE	220
-07		0001.0029	

Press **START** to execute. This will transpose all data in track 1 down seven semi-tones (a musical fourth).

### ***Playback!***

Press **TRACK** and you will see that we now have five different parts in tracks 1–5. Press **START** to hear our completed composition. Notice that the two horn parts are playing in perfect unison a parallel fourth apart. It will be interesting to try changing the selected voices in your tone generator for each part.

By now you should have an idea of the possibilities of MIDI recording. Read through this operating manual to learn what the QX5FD can do for you and your music.

## ***IDEAS AND SUGGESTIONS***

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- Since the QX5FD requires so little power, you may want to leave it on whenever you practice, to serve as a quick notebook to capture your musical ideas. A riff or motif can be stored in a macro, to leave the tracks free for recording.
- You can use the QX5FD to save and load voice bulk data to and from disk. Set the QX5FD to accept System Exclusive messages. Start realtime recording and dump the data. (See the owner's manual for the other device.) When the data has been completely sent, stop recording and save track 1 to disk.
- Recursive macros! You can call a macro from another macro, and even call it from itself (at the end). This could be used for a repeating phrase. (It will continue playing till all playing tracks ends.)
- Set aside Track 1 for recording and editing. As soon as you have finished working on a track, Exchange it with an empty Track or Macro. This will avoid accidents, and help you keep track of what data is where.
- You may have to go through a few steps, but if you stop to figure it out, almost any imaginable editing operation is possible. For instance, Bass, Piano and Strings are all in one track (on different channels, of course), but you decide to re-do the Bass. Extract the channel the Bass is on. Re-record the Bass, and Track Down to combine the three parts back into one track.
- A song in each track. If you are performing live and need to have instant access to 8 different songs, put one in each track. Play back each song with the other tracks turned off.
- Quantize only notes. The Quantize function affects all events, which sometimes can have unwanted side effects. For instance, if a Program Change comes at the same moment as a Note On, the Note On will not have time to sound correctly. To avoid problems, Extract the Note data, Quantize it, and Track Down to put it back in the original track.

When there has been an error or some unexpected condition, the QX5FD will display error messages as follows.

\* ERROR \*  
Message.....

Message	Meaning
Clock too fast	The buffer for realtime messages (Clock, Start, etc.) has overflowed.
Out of sync	Unable to STOP normally, (Too much data, or tempo too fast).
MIDI buffer over	The input buffer has overflowed.
MIDI data error	Input data error.
Memory full	During record, edit or data loading, the memory has overflowed.
TR1 not ready	You tried to record or enter Event Edit when track 1 was off.
Illegal format	Data loaded from MIDI has incorrect format. (Wrong number of bytes or check sum error).
Invalid data	The data in memory is incorrect, and cannot be played.
Disk full	There is no more space on the disk
Disk protected	The disk's write protect slider is set to Protect
Bad disk	The floppy disk is defective
No disk	There is no disk in the drive
Illegal changed	The LCD and the contents of the disk do not match. (You have changed disks after selecting a file.)



# SYSTEM EXCLUSIVE DATA FORMAT

In addition to System Exclusive messages recorded as sequence data, the QX5FD transmits and receives the following data.

## TRANSMISSION DATA

1. When MIDI Transmit (page 55) is executed, Sequence Bulk data is sent as

MIDI Status byte	F0	(System Exclusive)
ID	43	(Yamaha)
Sub-status/Device no.	0n	(0=Bulk dump, n=device number 0-F)
Format no.	0A	(Sequence data)
Data block (see below)	...	
EOX	F7	(End of Exclusive)

The sequence data has been converted into ASCII format by sending the upper and lower nibbles separately. When a large amount of data is sent, it is divided up so that the byte count is 4096 or less, and sent in blocks as described below. Each block has its own byte count, header and check sum. There must be an interval of 100 msec at the end of each block to allow the QX5FD to process the data. After all blocks have been sent, F7 (EOX) is sent. Each data block has the following format.

Byte count	??	(High 00-7F) Byte count of header + sequence data
Byte count	??	(Low 00-7F)
Header	'L'M' 'N'S'E'Q'1'	(ASCII "LM NSEQ1 ")
Sequence data	...	Number of bytes indicated in Byte Count
Check sum	??	(00-7F) Check sum of Header + Sequence data
100 msec interval (to allow the QX5FD to process the data)		

2. When MIDI Receive (page 56) is executed, a dump request is sent as follows.

MIDI Status byte	F0	(System Exclusive)
ID	43	(Yamaha)
Sub-status/Device no.	2n	(2=Bulk data, n=device number 0-F)
Format no.	0A	(Sequence data)
EOX	F7	

---

---

## RECEPTION DATA

When the QX5FD receives a dump request as above with the appropriate device number, it will transmit Sequence Bulk data in the same format described in 1.

### NOTE

This is how sequence data is stored in the QX5FD internal memory. When sending it as part of a bulk dump, each byte is converted into ASCII format by sending the upper and lower bytes separately.

F0 Top of record  
nn Record number 0: TR1, 1: TR2,... 8: M01, 9: M02... 39: M32  
dd Sequence data  
....  
dd  
F2 End of record

The data for one track or macro begins with F0 and ends with F2. The byte after F0 is the track number. If there is more than one track being sent, the above data is sent successively. The track beginning and end has no relation to the beginning and end of data blocks.

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## RECEPTION/ TRANSMISSION CONDITIONS

The QX5FD does not have to be in Save/Load mode to receive or transmit Sequence Bulk data.

- When a Dump Request is received, the QX5FD transmits all data TR1–M32.
- When Sequence Bulk data is received, it is loaded into TR1–M32. Track and macros not receiving data preserve their original data.
- Data is received only if the device number matches.
- During playback, recording or editing, incoming Dump Requests and Sequence Bulk data are ignored.

## ***SPECIFICATIONS***

---

CAPACITY.....	Approximately 20,000 notes (15,000 notes with velocity)
MAXIMUM SIMULTANEOUS NOTES.....	32
SWITCHES.....	TEMPO, MEASURE, TRACK, CLOCK, DISPLAY, AUTO LOCATE, F1, F2, F3, F4, SHIFT, RECORD, STOP/CONTINUE, START
CONTROLS .....	Dial
LED .....	TEMPO, AUTO LOCATE, RECORD, START
DISPLAY.....	16 Character 2 Line Backlit LCD
TERMINALS.....	MIDI IN, MIDI OUT, MIDI THRU, TAPE IN, TAPE OUT, CLICK, FOOT SWITCH
POWER REQUIREMENT.....	U.S./Canadian Models: 120V (60Hz) General Model: 220-240V (50/60Hz)
POWER CONSUMPTION.....	15 W
DIMENSIONS (W x D x H).....	350 x 300 x 75 mm (13-3/4" x 11-3/4" x 3")
WEIGHT .....	3 kg (6 lbs 10 ozs)
INCLUDED ITEMS.....	MIDI cable (1m) x 2 Floppy disk x 1

## MIDI FORMAT TABLE

	Message	Status Byte	First Data Byte (xx)	Second Data Byte (yy)
CHANNEL MESSAGE	Note off	8n	Note Number	Velocity
	Note on	9n	Note Number	Velocity
	Polyphonic Aftertouch	An	Note Number	Pressure
	Control Change	Bn	(Control Number) 01 Modulation Wheel 02 Breath Controller 04 Foot Controller 05 Portamento Time 06 Data Entry Slider 07 Main Volume 40 Sustain 41 Portamento 42 Sostenuto 43 Soft 60 Data Increment 61 Data Decrement 7A Local 7B All Note Off 7C Omni Off 7D Omni On 7E Mono On 7F Poly On	Data                 00: Off, 7F: On 00 00 00-0F (Number of channels) 00
	Program Change	Cn	Program number	
	Channel Aftertouch	Dn	Pressure	
	Pitch Wheel	En	LSB	MSB
	System Exclusive	F0	Mfr. ID code	(???)
	MIDI Time Code	F1	Time data	
	Song Position Pointer	F2	LSB	MSB
	Song Select	F3	Song number	
		F4, F5		
	Tune Request	F6		
	End of Exclusive	F7		
SYSTEM MESSAGE	Timing Clock	F8		
		F9		
	Start	FA		
	Continue	FB		
	Stop	FC		
		FD		
	Active Sensing	FE		
REALTIME MESSAGE	System Reset	FF		

### NOTE

Explanations of each message are on the following pages. See the MIDI Implementation chart at the end of this manual for the messages that the QX5FD receives and transmits. All numbers are in Hexadecimal. (The QX5FD displays Decimal numbers.)

## MIDI MESSAGES

- 8n Note Off:** The note number indicates which key was released, and velocity indicates how quickly it was released. Very few keyboards have Release Velocity Sensitivity.
- 9n Note On:** The note number indicates which key was pressed, and velocity indicates how hard it was hit. On keyboards which do not have a velocity sensitive keyboard, a medium value of 40 is sent. A Note On message with a velocity of 0 is the same as a Note Off message.
- An Polyphonic Aftertouch:** The note number indicates which key is being pressed, and pressure indicates how hard that key is being pressed. (Ie. each key can send independent aftertouch messages.)
- Bn Control Change:** The control number indicates which controller is being moved, and the data indicates the position of the controller. In this chart, control changes 01-07 are "continuous controllers." (Slider or wheel-type controllers) They carry data in the range of 00-7F. Control changes 40-43 are on/off switch-type controllers. Data 0 is off, data 7F is on.  
Control changes 7A-7F are a special type of control change called Mode Messages, and usually carry a fixed data byte. They tell the receiving tone generator how to behave. The way in which these message are interpreted will depend on the device. (See the MIDI Implementation Chart for your tone generator or synthesizer.)
- Cn Program Change:** This tells the receiving device to switch programs (memories).
- Dn Channel Aftertouch:** Also called "Common Aftertouch", this is found on most keyboards. It indicates the strongest pressure on any part of the keyboard, ie, the "common" value.
- En Pitch Wheel :** To provide finer resolution, this data is sent in two bytes, first the Least Significant Byte (LSB) and then the Most Significant Byte (MSB). Yamaha tone generators and synthesizers ignore the LSB.
- F0 System Exclusive:** After F0 must come an identification number which has been assigned to each manufacturer. Yamaha's number is 43. What comes between this message and F7 (End of Exclusive) is completely up to each manufacturer (but each byte must be between 0 and 7F). Yamaha uses System Exclusive messages to transmit voice data, sequence data, rhythm pattern data, bulk memory data of all kinds, and many other useful things. See the System Exclusive format chart for your device.
- F7 End Of Exclusive (EOX):** This marks the end of a System Exclusive message.
- F1,F2,F3,F8,FA,FB,FC,FF:** MIDI Time Code, Song Position Pointer, Song Select, Timing Clock, Start, Stop, Continue, System Reset are all for controlling sequencers and rhythm machines. See the MIDI Implementation Chart for your device.

## **REFERENCE**

### ***FE Active Sensing:***

If there are no MIDI messages that have to be sent, one of these is sent just to let the receiving devices know that there is still someone out there. If there have not been any MIDI messages for longer than 300 msec, the receiving device assumes that some error has taken place (eg. a MIDI cable was pulled out by mistake) and will stop all notes.

### ***F4, F5, F9, FD:***

These are unused, and reserved for future expansion.

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default Changed			*5
Mode	Default Messages Altered	POLY, MONO (M=1) *****	POLY, MONO (M=1)	*1
Note Number	True voice	0-111 *****	0-111 0-111	*1
Velocity	Note ON Note OFF	o 9nH, v=1-127 x 9nH, v=0	o *2(VELOCITY) x	*1
After Touch	Key's Ch's	o o	o *2(AFTER TOUCH) o *2(AFTER TOUCH)	*1 *1
Pitch Bender		o	o *2(PITCH BEND)	*1
Control Change	0-63	o	o *2(CONTROL CH.)	*1
	64-121	o	o	*1
Prog Change	True #	o 0-127 *****	o 0-127 0-127	*1
System Exclusive		o / o	o / o *2(SYS.EX.)	*3 / *1
System Common	Song Pos Song Sel Tune	o *2(REMOTE OUT) o *2(REMOTE OUT) x	o *2(REMOTE IN) o *2(REMOTE IN) x	*4
System Real Time	Clock Commands	o *2(CLOCK OUT) o *2(REMOTE OUT)	o *2(CLOCK IN) o *2(REMOTE IN)	
Aux Mes-sages	Local ON/OFF All Notes OFF Active Sense Reset	o x o x	o o 123 o x	*1
Notes - *1 Recognized as record data. Transmitted when (1) playback (2) received during echo switch is on. *2 Enabled or disabled by setup. *3 Sequence data. *4 Reset song position. Transmit only when received. *5 Channel of record data is memorized.(INPUT ASSIGN, OUTPUT ASSIGN)				

Mode 1 : OMNI ON, POLY  
Mode 3 : OMNI OFF, POLYMode 2 : OMNI ON, MONO  
Mode 4 : OMNI OFF, MONOo : Yes  
x : No

# **IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS**

INFORMATION RELATING TO POSSIBLE PERSONAL INJURY, ELECTRIC SHOCK, AND FIRE HAZARD POSSIBILITIES HAS BEEN INCLUDED IN THIS LIST.

**WARNING** — When using electronic products, basic precautions should always be followed, including the following:

1. Read all Safety and Installation Instructions, Supplemental Marking and Special Message Section data, and any applicable assembly instructions **BEFORE** using this product.
2. Check unit weight specifications **BEFORE** you attempt to move this product.
3. Main power supply verification. Yamaha Digital Musical Instrument products are manufactured specifically for use with the main supply voltage used in the area where they are to be sold. The main supply voltage required by these products is printed on the name plate. For name plate location please refer to the graphic in the Special Message section. If any doubt exists please contact the nearest Yamaha Digital Musical Instrument retailer.
4. Some Yamaha Digital Musical Instrument products utilize external power supplies or adapters. Do **NOT** connect products of this type to any power supply or adapter other than the type described in the owners manual or as marked on the unit.
5. This product may be equipped with a plug having three prongs or a polarized line plug (one blade wider than the other). If you are unable to insert the plug into the outlet, contact an electrician to have the obsolete outlet replaced. Do **NOT** defeat the safety purpose of the plug. Yamaha products not having three prong or polarized line plugs incorporate construction methods and designs that do not require line plug polarization.
6. **WARNING** — Do **NOT** place objects on the power cord or place the unit in a position where any one could walk on, trip over, or roll anything over cords of any kind. An improper installation of this type can create the possibility of a fire hazard and/or personal injury.
7. Environment: Your Yamaha Digital Musical Instrument should be installed away from heat sources such as heat registers and/or other products that produce heat.
8. Ventilation: This product should be installed or positioned in a way that its placement or location does not interfere with proper ventilation.
9. Yamaha Digital Musical Instrument products are frequently incorporated into "Systems" which are assembled on carts, stands, or in racks. Utilize only those carts, stands, or racks that have been designed for this purpose and observe all safety precautions supplied with the products. Pay special attention to cautions that relate to proper assembly, heavier units being mounted at the lower levels, load limits, moving instructions, maximum usable height and ventilation.
10. Yamaha Digital Musical Instrument products, either alone or in combination with amplification, headphones, or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do **NOT** operate at high volume levels or at a level that is uncomfortable. If you experience any discomfort, ringing in the ears, or suspect any hearing loss, you should consult an audiologist.
11. Do **NOT** use this product near water or in wet environments. For example, near a swimming pool, spa, in the rain, or in a wet basement.
12. Care should be taken so that objects do not fall, and liquids are not spilled into the enclosure.
13. Yamaha Digital Musical Instrument products should be serviced by a qualified service person when:
  - a. The power supply/power adapter cord or plug has been damaged; or
  - b. Objects have fallen, or liquid has been spilled into the product; or
  - c. The unit has been exposed to rain; or
  - d. The product does not operate, exhibits a marked change in performance; or
  - e. The product has been dropped, or the enclosure of the product has been damaged.
14. When not in use, always turn your Yamaha Digital Musical Instrument equipment "OFF". The power supply cord should be unplugged from the outlet when the equipment is to be left unused for a long period of time. **NOTE:** In this case, some units may lose some user programmed data. Factory programmed memories will not be affected.
15. Electromagnetic Interference (RFI). Yamaha Digital Musical Instruments utilize digital (high frequency pulse) technology that may adversely affect Radio/TV reception. Please read FCC Information (rear cover) for additional information.
16. Do **NOT** attempt to service this product beyond that described in the user maintenance section of the owners manual. All other servicing should be referred to qualified service personnel.

**PLEASE KEEP THIS MANUAL  
FOR FUTURE REFERENCE!**

This information on safety is provided to comply with U.S.A. laws, but should be observed by users in all countries.



# SPECIAL MESSAGE SECTION

**ELECTROMAGNETIC INTERFERENCE (RFI):** Your Yamaha Digital Musical Instrument Proapplicable regulations. However, if it is Installed in the immediate proximity of other electronic devices, some form of interference may occur. For additional RFI information see FCC Information section located in this manual.

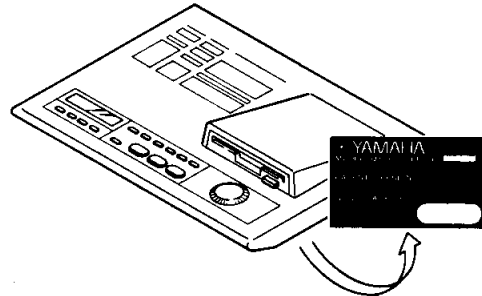
**IMPORTANT NOTICE:** This product has been tested and approved by independent safety testing laboratories in order that you may be sure that when it is properly installed and used in its normal and customary manner, all foreseeable risks have been eliminated. **DO NOT** modify this unit or commission others to do so unless specifically authorized by Yamaha. Product performance and/or safety standards may be diminished. Claims filed under the expressed warranty may be denied if the unit is/has been modified. Implied warranties may also be affected.

**SPECIFICATIONS SUBJECT TO CHANGE:** The information contained in this manual is believed to be correct at the time of printing. Yamaha reserves the right to change or modify specifications at any time without notice or obligation to update existing units.

**NOTICE:** Service charges incurred due to a lack of knowledge relating to how a function or effect works (when the unit is operating as designed), are not covered by the manufacturer's warranty. Please study this manual carefully before requesting service.

**NAMEPLATE LOCATION:** The graphic below indicates the location of the Name Plate on your Yamaha Digital Musical Instrument. The Model, Serial Number, Power requirements, etc., are Indicated on this plate.

You should note the model, serial number and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.



**STATIC ELECTRICITY CAUTION:** Some Yamaha Digital Musical Instrument products have modules that plug into the unit to perform various function. The contents of a plug-in module can be altered/damaged by static electricity discharges. Static electricity build-ups are more likely to occur during cold winter months (or in areas with very dry climates) when the natural humidity is low. To avoid possible damage to the plug-in module, touch any metal object (a metal desk lamp, a door knob, etc.) before handling the module. If static electricity is a problem in your area, you may want to have your carpet treated with a substance that reduces static electricity build-up. See your local carpet retailer for professional advice that relates to your specific situation.

Model \_\_\_\_\_

Serial No. \_\_\_\_\_

Purchase Date \_\_\_\_\_

This information on safety is provided to comply with U.S.A. laws, but should be observed by users in all countries.

## FCC INFORMATION

While the following statements are provided to comply with FCC Regulations in the United States, the corrective measures listed below are applicable worldwide.

This series of Yamaha professional music equipment uses frequencies that appear in the radio frequency range and if installed in the immediate proximity of some types of audio or video devices (within three meters), interference may occur. This series of Yamaha professional music equipment has been type tested and found to comply with the specifications set for a class B computing device in accordance with those specifications listed in subpart J of part 15 of the FCC rules. These rules are designed to provide a reasonable measure of protection against such interference. However, this does not guarantee that interference will not occur. If your professional music equipment should be suspected of causing interference with other electronic devices, verification can be made by turning your professional music equipment off and on. If the interference continues when your equipment is off, the equipment is not the source of interference. If your equipment does appear to be the source of the interference, you should try to correct the situation by using one or more of the following measures:

Relocate either the equipment or the electronic device that is being affected by the interference. Utilize power outlets for the professional music equipment and the device being affected that are on different branch (circuit breaker or fuse) circuits, or install AC line filters.

In the case of radio or TV interference, relocate the antenna or, if the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact your authorized Yamaha professional products dealer for suggestions and/or corrective measures.

If you cannot locate a franchised Yamaha professional products dealer in your general area contact the Electronic Service Division, Yamaha Music Corporation, 6600 Orangethorpe Ave., Buena Park, CA 90620, U.S.A.

If for any reason, you should need additional information relating to radio or TV interference, you may find a booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402 - Stock No. 004-000-00345-4.

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