YAMAHA

# QX3

## DIGITAL SEQUENCE RECORDER
## ENREGISTREUR DE SEQUENCE NUMERIQUE
## DIGITAL-SEQUENZER

# OWNER'S MANUAL
# MANUEL DE L'ACHETEUR
# BEDIENUNGSANLEITUNG

Thank you for purchasing the Yamaha QX3 Digital Sequence Recorder. The QX3 is a 16-track MIDI sequencer with a capacity of 24,000 notes, and can play a song chain of up to 48,000 notes. Realtime recording, step recording, and several punch-in modes of recording are possible. Extensive editing functions are provided, and the built-in 3.5" floppy disk drive also functions as a storage device for MIDI bulk data. The human-engineered front panel switches and large illuminated LCD make for maximum ease and efficiency in editing or entering data. Some of the many features of the QX3 are ...

- 16 tracks, each with unlimited simultaneous polyphony.
- Each track's input and output channel can be set independently.
- Incoming data can be recorded on any track, or can be split by MIDI channel and recorded on several tracks.
- Realtime, punch-in, and step recording.
- Three modes of punch-in recording.
- Autolocate functions
- Capacity of 24,000 notes with velocity, and playback a song chain of up to 48,000 notes.
- Built-in 3.5" 720 Kbyte floppy disk drive.
- MIDI data recorder function for saving and loading system exclusive bulk data to and from disk.
- Editing dial for scrolling through events or measures.
- Numeric key pad for speedy data entry.
- Illuminated 2-line 40-character LCD with variable contrast control.
- Two assignable MIDI OUT terminals.
- Measures can be of any time signature 1–64/1,2,4,8,16,32, and measures of different time signatures can be used in a single song.
- Songs can be chained together for successive playback.
- Selectable sync clock: internal, MIDI, tape.
- Time resolution of 96 clocks per quarter note.

In order to take full advantage of the QX3's functions, please read this manual carefully.

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# PRECAUTIONS

- Avoid placing the QX3 in direct sunlight or close to a source of heat. Also, avoid locations where the unit is likely to be subjected to vibration, excessive dust, cold or moisture.
- Avoid rough handling, such as applying excessive force to the switches or dropping the unit. While the internal circuitry is of reliable integrated circuit design, the unit should be treated with care.
- Always grip the plug directly when removing it from an AC outlet. Removing the plug from the AC outlet by pulling the cord can result in damage to the cord and possibly a short circuit. It is also a good idea to disconnect the QX3 from the AC outlet if you don't plan to use it for an extended period of time.
- If necessary, clean the QX3 using a slightly damp cloth, and dry with a soft cloth. Never use solvents (such as benzine or thinner) since they can melt or discolor the finish.
- All computer circuitry, including that in the QX3, is sensitive to voltage spikes. For this reason, the unit should be turned off and unplugged from the AC outlet in the event of an electrical storm. This precaution will avoid the chance that a high voltage spike caused by lightning will damage the unit.
- Computer circuitry is also sensitive to electromagnetic radiation. Be careful not to set it too close to equipment (such as a television set) that generates electromagnetic fields. Proximity to such equipment could cause malfunctions in the QX3's digital circuitry and interfere with the operation of the other unit.
- When inserting a disk in the disk drive, make sure it is facing the correct way (label up).
- This unit contains no user servicable parts. Opening it or tampering with it can lead to electrical shock as well as damage, and will void the product warranty. Refer all servicing to qualified Yamaha personnel.

# FRONT/REAR PANEL

## FRONT PANEL

① **JOB TABLE:** Jobs executable in each mode are listed on the front panel.

② **LCD:** This is a two-line, 40-character Liquid Crystal Display, illuminated for visibility. The rear panel Contrast control adjusts the viewing angle.

③ **SYNC MIDI/TAPE:** These LEDs indicate that the QX3 is synchronized to an external clock (MIDI or Tape).

④ **MIDI IN:** This LED flashes when MIDI data is received at the MIDI IN terminal—red for Channel messages, green for Exclusive messages.

⑤ **FDD:** This LED lights when the floppy disk is being accessed. *While it is lit, do not remove the floppy disk.*

⑥ **TRACK:** An LED indicates the status of each track; Playback (green), Muted (blinking green) or Record/Edit (red).

⑦ **NOTE VALUE KEYS:** In Edit mode, these keys are used to enter the time value of each note (whole note to 32nd note). When pressed while holding the SHIFT key, they enter the dynamics of each note (*ppp* – *fff*).

⑧ **NOTE NAME KEYS:** In Edit mode, these keys are used to enter the note name and octave of each note.

⑨ **NUMERIC KEY PAD:** These keys used to enter data and select jobs. When pressed while holding the SHIFT key in Edit mode, they are used to enter an event type.

⑩ **INS:** In Edit mode, this key switches between Insert and Change mode.

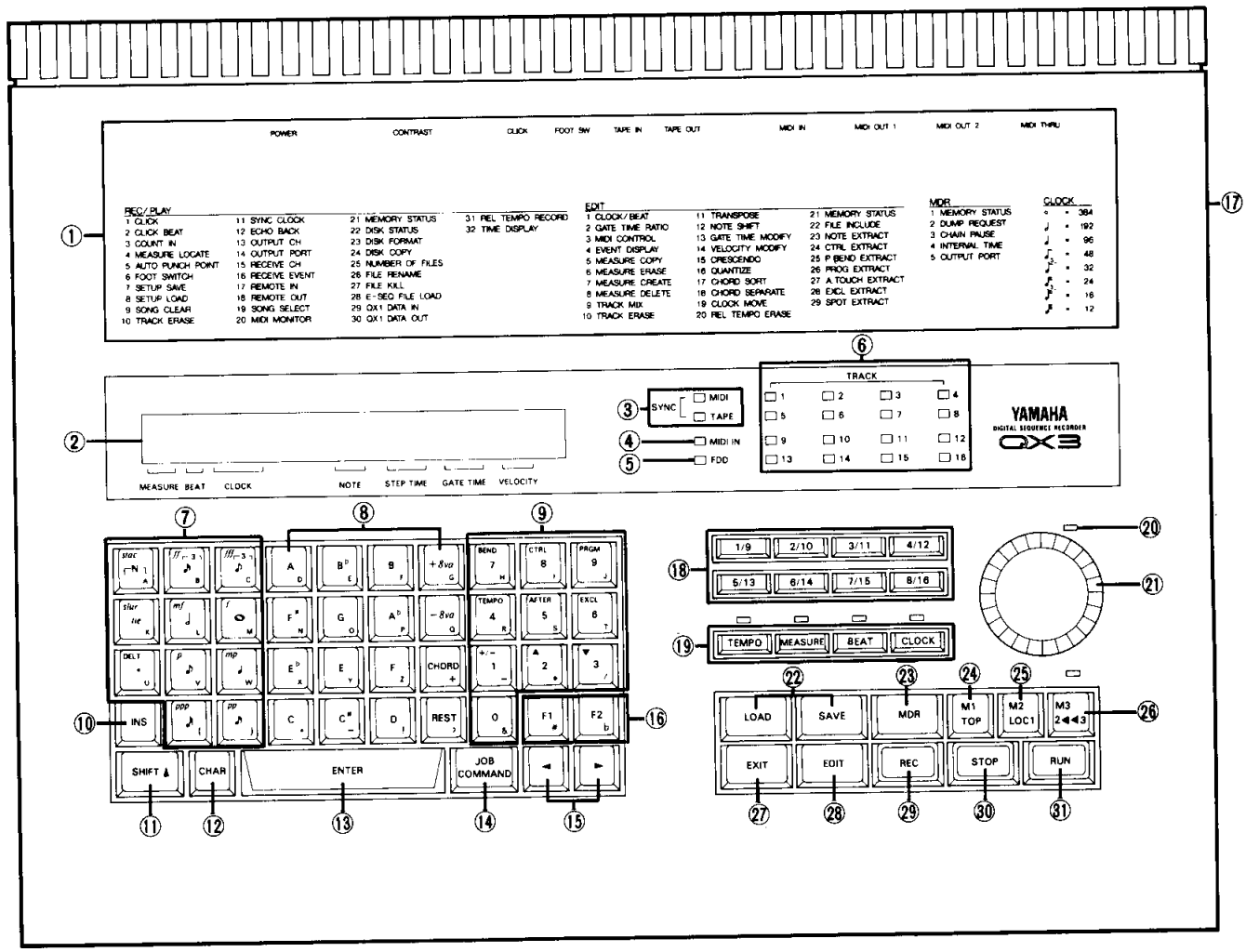
⑪ **SHIFT:** When this key is pressed, functions printed in green are accessed by each key. When pressed while holding the CHAR key, lower-case letters can be entered for track and file names.

⑫ **CHAR:** When entering filenames or track names, press this key to input the characters printed on each key. Press while holding the SHIFT key to input lower-case characters.

⑬ **ENTER:** Press this key to execute the selected job, enter a number from the numeric key pad, or finalize a change or insertion in Edit mode.

⑭ **JOB COMMAND:** To select a job, press JOB COMMAND, use the numeric key pad to enter the job number, and press ENTER.

⑮ **◀▶ :** These keys move the cursor in the LCD.



⑯ **F1/F2:** These keys can be set to perform any sequence of up to 128 keystrokes.

⑰ **FLOPPY DISK DRIVE (right side):** A 3.5" 2DD floppy disk drive for saving and loading data is built-in.

⑱ **TRACK SELECT 1/9–8/16:** In play mode, these keys mute and un-mute tracks. In Record mode they select the track(s) to be recorded, and in Edit mode they select the track to be edited. Press while holding the SHIFT key to select tracks 9–16.

⑲ **TEMPO/MEASURE/BEAT/CLOCK:** These keys determine the function of the dial. In play and Record modes, the dial can set the Tempo or be used to scroll through the measures of a song. In Edit [Insert] mode, the dial can select the location (by Measure, Beat or Clock) of the event to be inserted.

⑳ **TEMPO LED:** This LED flashes red on the first beat of each measure, and green on other beats.

㉑ **DIAL:** In Play and Record modes, the dial is used to change the tempo or to scroll measure by measure. In Edit mode, the dial is used to scroll through events in a track. When saving or loading from disk, the dial selects a file number 1–99.

㉒ **LOAD/SAVE:** In each mode, these keys are used to load or save data to and from disk.

㉓ **MDR:** In MIDI Data Recorder mode, you can use the QX3 floppy disk to store System Exclusive Bulk Data from another device.

㉔ **TOP:** In Play, Record or Edit modes, press this key to jump to the top of the song. Press while holding the SHIFT key to set location M1 to the current measure.

㉕ **LOC1:** In Play or Record modes, press this key to jump to location M1. Press while holding the SHIFT key to set location M2 to the current measure.

㉖ **2 ◀◀ 3 (autolocate):** When Autolocate is on (indicated by the LED), playback will start and end at (or loop between) locations M2 and M3. In record mode, recording will end at the M3 location, and you will return to the M2 location. Press while holding the SHIFT key to set location M3 to the current measure.

㉗ **EXIT:** Press this key to exit a job command without executing, or to return to PLAY mode from EDIT, RECORD or MDR modes.

㉘ **EDIT:** In Edit mode you can change or insert individual events into a track.

㉙ **Rec:** In Record mode you have a choice of realtime or punch-in recording.

㉚ **STOP:** Press this key to stop playback or recording.

㉛ **RUN:** Press this key to begin playback or recording from the current measure. Press while holding the SHIFT key loop playback.

## REAR PANEL

**MIDI THRU:** All messages received at MIDI IN are retransmitted unchanged from this terminal.

**MIDI OUT 1,2:** Playback data is transmitted from these terminals as specified by the Output Port setting (p.12) for each track.

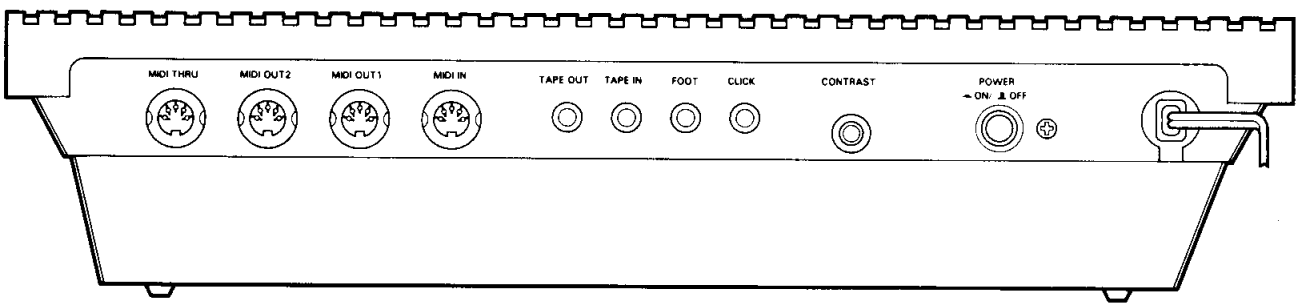
**MIDI IN:** Data received here can be recorded by the QX3. This incoming data can be retransmitted from the MIDI OUT terminals as specified by the Echo Back setting (p.12).

**TAPE IN/OUT:** These jacks transmit and receive a FSK synchronization signal for synchronizing the QX3 to a tape recording.

**FOOT:** A foot switch can be set to punch in/out, exit from a playback loop, or run/stop (p.10).

**CLICK:** The metronome signal as set by the Click and Click Beat jobs (p.10) is sent from this jack. (The QX3 has no internal click speaker.)

**CONTRAST:** This knob adjusts the viewing angle of the LCD.



# INTRODUCING THE QX3

**When you play a MIDI keyboard, MIDI messages are sent telling of notes played, controllers moved, program changes sent, etc. The QX3 records these messages and 'plays them back', causing a separate MIDI tone generator to produce sound. Instead of recording the *sound*, you are recording the performance.**

## Connections

Connect the MIDI OUT of your keyboard to the QX3 MIDI IN. The data on each track of the QX3 can be transmitted from either or both of the two MIDI OUT terminals. If you have more than one tone generator, connect one to each MIDI OUT and 'daisy chain' the others using the THRU terminals. For use with several tone generators, use a MIDI thru box such as Yamaha's YME-8, or a programmable MIDI junction controller such as Yamaha's MJC-8. (Using two MIDI OUT terminals avoids problems which can occur when you send more data than a single MIDI terminal can handle.)

Data coming into the QX3 can be 'Echoed Back' from its OUT terminals. If your keyboard has no internal tone generator, set the QX3 Echo Back so you can hear yourself play (see p.12). When power is turned on, Echo Back is off.

## Tracks

The QX3 has 16 tracks, and each track holds data for a single MIDI channel. In other words, *channels are not distinguished within a track.* The channel number of outgoing data is determined by the Output Channel (p.12) setting of each track. If you want to record incoming data of several channels simultaneously, you need to record on two or more tracks, each set to receive a different channel.

There is no limitation to the number of notes that a track can simultaneously sound.

Each track has independent settings for...

**Receive Channel:** Receive on a certain channel (or all channels—omni).

**Output Channel:** Transmit on a specified channel 1–16.

**Output Port:** Transmit from either MIDI OUT 1 or MIDI OUT 2.

## Measures

Measures can be of any time signature 1–64/1,2,4,8,16,32. Measures of different time signatures can be used in a single song, but measure divisions are shared by all tracks. Once a measure has been recorded, its time signature cannot be changed.

## Memory

The memory in the QX3 is volatile; i.e. recorded data disappears when the power is turned off. To preserve a recording, you must save it to disk (p.9). Settings you make for the QX3 itself (Echo Back, Channel settings, etc.) are also in volatile memory, and can be saved to disk as a Setup file (p.11).

A song of up to 24,000 notes can be recorded and edited, and several songs can be chained together for playback of up to 48,000 notes.

## Disk

The floppy disk can store a total of up to 112 files (but no more than 99 of each type).

**Song and Song Chain files (1–99).** Musical 'sequence' data p.8.

**Bulk and Bulk Chain files (1–99).** System Exclusive bulk data p.26.

**Setup files (1–99).** Data for QX3 internal settings p.11.

Please use 3.5" dual-side double-density (2DD) floppy disks, and initialize them using Disk Initialize (p.14). The format is 9 sectors per track (720 Kbytes), and is compatible with MSX-DOS. Single-sided disks with 9 sectors per track (360 Kbytes) can be read and written to, but not formatted by the QX3. Disks formatted with 8 sectors per track (640 Kbytes) cannot be used.

## Sync

For recording and playback, the QX3 can synchronize to its internal clock, MIDI clock, or tape clock. Select using Sync Clock (p.11). If MIDI or tape clock is selected, the front panel indicator will light.

## Click

To hear the metronome, connect the rear panel CLICK jack to a mixer/amp system. (The QX3 does not have an internal click speaker.) Click (p.10) determines when the click will sound; off, record, record/play, or always. Click Beat (p.10) sets the click to sound on the quarter, eighth, or sixteenth beat.

## Try it out!

Here's a short example to show you how easy QX3 operation is. (We will assume the power has just been turned on.) Press REC and then RUN. After the 2-bar count-in, play a few measures. Press STOP (the display will return to measure 1 and show 'SONG PLAY') and press RUN to hear the playback.

Let's suppose you heard a mistake. Press STOP, then EDIT. Set the dial to scroll through CLOCKs and use it to find the wrong note. There it is! That F♯ should have been a B♭. Press the B♭ key (use +8*va* and -8*va* to adjust the octave if necessary) and press ENTER.

Now EXIT back to play mode, press TOP to return to the beginning of the song, and RUN to hear the corrected playback.

# RECORD

When power is turned on, the QX3 will be in SONG PLAY mode. Press REC to enter RECORD mode. There are three ways to record; Realtime, Punch-in and Step. (Step recording is part of EDIT mode, p.16.)

The following points apply to both Realtime and Punch-in recording.

- Data recorded onto a track is *added* on top of the previous data in the track. (The previous data is not erased.)
- If the Receive Channel (p.12) for the track has been set to Omni, all incoming channels will be recorded into that track, and you will not be able to separate the data afterwards.
- If the Receive Channel for the track has been set to a specific channel, incoming data of only that channel will be recorded.
- If Autolocate (p.7) is on, recording will run to Location M3, stop, and return to Location M2.
- Incoming data will be recorded subject to the settings made in the Receive Event job command (p.12).
- You can use the dial (or the numeric key pad) to select the measure at which to begin recording.
- A foot switch (p.10) can be used to start and stop recording, and to punch in/out.

## Realtime Record

This records notes and control signals (pitch bend, sustain pedal, etc.), and other MIDI data in the same timing as you play them. From PLAY mode, press REC and you will be in REALTIME RECORD mode. Press the Track Select switch(s)[1] for the track(s) you wish to record on, and the track LED will blink red. (Press the Track Select switches while holding the SHIFT key to select track 9-16.) When RUN is pressed (or MIDI Start or Continue signal is received), recording will begin after a two-bar count-in.[2] (The LCD) will show 'Recording'.)

When you are finished, press STOP. You will return to SONG PLAY mode, at the measure where you began recording.

```
REALTIME RECORD      Meas:001   Free:240K
SONG :01  ********     b=120    Time:04/04
```

Song number and name  Tempo  Time signature

If no data has been recorded yet, you may set the time signature. Use the ◀ ▶ keys to move the cursor, use the numeric key pad to enter the time signature, and press ENTER. (The time signature cannot be changed for measures that already exist, but you may create new measures of any time signature. See p.19.)

## Punch-in Record

This is the same as Realtime Record except that recording is done only between the punch-in and punch-out points. To enter punch-in record mode, press REC while holding the SHIFT key. Each press of SHIFT + REC will step through the three types of punch-in recording.

[1] You may record on more than one track at once. Each track will record only the channel it has been set to receive (p.12).

[2] The count-in can be turned off using the Count In job command (p.10). When synchronized (p.11) to tape or MIDI clock, there will be no count-in.

**JUST:** Recording will begin the instant you press ENTER or the foot switch (p.10 punch-in), and end at the instant you press EXIT or the foot switch (punch-out).

**MEAS:** Same as JUST except that recording begins and at the top of the next measure.

**AUTO:** Recording will begin and end at the punch in/out points you set (p.10)

Tracks selected for record will blink red.

When you press RUN, or when a MIDI START or CONTINUE signal is received, playback will begin, and the LCD will show

MEAS
AUTO

```
JUST PUNCH Waiting  Meas:001  Free:240K
SONG :01  ********     b=120  Time:04/04
```

When you press ENTER or press the foot switch, recording will begin, and the LCD will show 'Punching'. Notes in the track that were still sounding when punch-in recording began will be retained. Notes you play that were already depressed when punch-in recording began will be recorded as if they had been played at the punch-in point. (If you punch-in during the count-in, recording will begin from the top of the first measure, and all notes you played during the count-in will be recorded at the top.)

When you punch-out, the LCD will return to 'PUNCH Waiting'. You may continue punching in and out as many times as you wish. Notes in the track that were still depressed at the punch-out point will be erased. Notes you play that were still depressed when recording ended will be recorded, but recorded as though they were released at the punch-out point.

**Autolocate**

If Autolocate is on, recording will end when location M3 is reached, and you will return to location M2 and stop. If a MIDI START or CONTINUE message is received, recording will begin from the current measure whether or not Autolocate is on.

**Save/Load**

As we mentioned earlier, your recording is in volatile memory, and you must save it to disk if you wish to keep it. See p.9.

# PLAY

When power is turned on, the QX3 will be in this mode. From any other mode, you can return to PLAY mode by pressing EXIT. There are two types of playback.

**Song Play:** Playback a single song. When you load (p.9) a Song file you will automatically enter Song Play mode.

**Chain Play:** Playback a chain of songs. When you load a Song Chain file you will automatically enter Chain Play mode.

## Song Play

When you press RUN or when a MIDI Start or Continue message is received, the LCD will show 'SONG Playing' and playback will begin.

```
SONG PLAY            Meas:001
SONG :**  ********     b=120   Time:04/04
```

- Press the dial function keys TEMPO or MEASURE and use the dial to change the tempo or move through the measures. (Measures cannot be selected during playback).
- Tracks that contain data will be indicated by a green LED.
- Pressing a track select switch will mute the playback. Muted tracks are indicated by a flashing green LED.
- Pressing RUN while holding the SHIFT key will loop the playback, and the song will continue repeating from top to end. A loop mark ↻ will be displayed in front of the 'Meas' in the LCD.

When you press STOP or when a MIDI Stop message is received, playback will stop, and the LCD will go back to 'SONG PLAY'.

While stopped, pressing the TOP key will return you to the top of the song. Pressing the LOC1 key will move to location M1.

If AUTOLOCATE is on, playback will stop at location M3 and return to location M2. If you have looped the playback by pressing RUN while holding the SHIFT key, playback will continue looping between locations M2 and M3. Playback can also be started and stopped using a foot switch (p.10).

## Chain Play

When you load a Song Chain file you will automatically enter Chain Play mode. In Chain Play mode you cannot Edit or Record song data. To create a Song Chain file, see CHAIN EDIT mode (p.25).

Currently playing Step x Current repetition

```
CHAIN PLAY           Meas:001   Seq:03x02
SONG :01  ********     b=120   Time:04/04
```

For example, the display above indicates that the third song in the chain is now playing back for the second time.

When you press RUN or when a MIDI Start or Continue message is received, playback will begin, and the LCD will show 'CHAIN Playing'.

When you press STOP or when a MIDI Stop message is received, playback will stop, and the LCD will return to 'CHAIN PLAY'.

By pressing RUN while holding the SHIFT key you can loop the playback just as in Song Play mode. (The entire chain will continue to repeat.)

By pressing EXIT or pressing the Foot Switch (set to Loop Out; see p.10) you can exit a repeating song. When the end of the song is reached, playback will continue with the next song in the chain.

Chain play is the same as Song Play mode except for the following points.

- Autolocate does not function in Chain Play mode.
- You can use the dial to change the tempo of an individual song while it is playing. The will not affect the tempo of the other songs.

## Load

When in Play mode, press LOAD to load a song from disk into memory. The LCD will show

```
SONG LOAD FILE
SONG :01 [********]              Size:***K
```

Use the dial to select a Song or Song Chain file 1-99 and press ENTER. The data will be loaded from disk *and the data already in QX3 memory will be lost.* (If data already exists in memory, you will get a warning message.)

Output Channel and Output Port for each track 1-16 and the Tempo will be loaded along will the song.

## Save

When in play mode, press SAVE to save the song data in memory to disk. Song and Song Chain filenames will be read from the disk and the LCD will show

```
SONG SAVE FILE
SONG :01 [filename]              Size:***K
```

Use the dial to select a file number 1-99, use CHAR + character keys to enter a filename (the ◀ ▶ keys move the cursor), and press ENTER to save the file to disk. (If a file already exists at that file number, you will get a warning message.) You may use the same name for more than one file.

## MIDI Synchronization

When the QX3 is connected to other devices (rhythm machines, other sequencers, etc.), it keeps in synchronization by transmitting and receiving various messages.

Whenever the song position changes while stopped in Record or Play mode, (and if the Record/Play job Remote Out p.13 is switched On), a MIDI Song Position Pointer message is transmitted, indicating the current position from the top of the song. Rhythm machines and other sequencers that recognize this message will adjust their position to match this. A Song Position Pointer is also transmitted when you enter PLAY/RECORD mode from EDIT.

The QX3 interprets incoming START (FAh) and CONTINUE (FBh) messages in the same way-playback or recording will begin immediately from the *current* measure.

# RECORD/PLAY JOBS

When in Record or Play mode, you can perform various useful functions by pressing JOB COMMAND, entering the job number using the numeric key pad, and pressing ENTER. If the job requires you to enter data, use the ◄ ► keys to move the cursor, use the numeric key pad to set the data, and press ENTER again to execute the job. Escape without executing the Job Command by pressing EXIT.

### 1. Click

**Use the numeric key pad to select when you want the click to sound; during recording, during recording and playback, or constantly. The QX3 has no internal speaker. You will need to connect the rear panel CLICK jack to an amp/speaker system to hear the click.**

### 2. Click Beat

Use the numeric key pad to select the click beat; quarter note, eighth note or sixteenth note.

### 3. Count In

When sync (p.11) is Internal, you have the option of a two measure count in before recording from the top. The default setting is On.

### 4. Measure Locate

This job sets the three measure locate memories. Move the cursor, use the numeric key pad to enter the measure numbers, and press ENTER.

In PLAY or RECORD mode, press the M1 key to jump to the M1 location. M2 and M3 determine the auto-locate points (p.7).

These measure locate memories can also be set while in PLAY mode. Press M1, M2 or M3 while presssing the SHIFT key. The memory will be set to the current measure. (The advantage of using this job is that you can see what the three current settings are.)

### 5. Auto Punch Point

Here you can set the punch in/out points used in Auto Punch-in recording (p.6). Enter the measure numbers and the sixteenth notes for both punch points.

### 6. Foot Switch

**This sets the function of the footswitch[3] connected to the rear panel jack. You have the following options.**

1. PUNCH IN/OUT: See Punch-in Record, p.6.
2. LOOP OUT: Pressing the footswitch will break out of a repeating song in Chain Play, p.8.
3. RUN/STOP: The footswitch alternately acts as the front panel RUN and STOP keys.

[3] Sold separately. Use a footswitch such as the Yamaha FC-4 or FC-5.

## 7. Setup Save

Settings you make for the QX3 can be saved in a Setup file. This file will contain the following data.

| PARAMETER | DATA |
|---|---|
| SYNC CLOCK | 1:INTERNAL 2:MIDI 3:TAPE |
| MEASURE LOCATE | 3 measure numbers |
| CLICK | 1:REC 2:REC/PLAY 3:ALWAYS 4:OFF |
| CLICK BEAT | 1:4 beats 2:8 beats 3:16 beats |
| ECHO BACK | 1:RECORD 2:DIRECT 1 3:DIRECT 2 4:OFF |
| RECEIVE CH. | MIDI channel for each track 1–16 |
| RECEIVE EVENT | Velocity, Control, Pitch Bend, Aftertouch, Exclusive |
| REMOTE IN | ON/OFF |
| REMOTE OUT | 1:BOTH 2:OUT 1 3:OUT 2 4:OFF |
| FUNCTION KEY | Up to 128 keystrokes for each of 2 function keys. |
| FOOT SW | 1:PUNCH IN/OUT 2:LOOP OUT 3:RUN/STOP |
| PUNCH POINT | Location for punch in/out points. |
| COUNT | ON/OFF |
| SONG SELECT | ON/OFF |
| CLOCK/BEAT | The number of clocks per beat the dial will move. |
| GATE TIME RATIO | Gate time percentage for each note value. |
| EVENT DISPLAY | On/off for each type of event. |
| MIDI CONTROL | Control number for Tie, Rest and Velocity. |
| DUMP REQUEST | ON/OFF |
| CHAIN PAUSE | ON/OFF |
| INTERVAL TIME | 0–9.9 seconds |
| OUTPUT PORT | in MDR mode, MIDI OUT 1/2 |

Output channel and output port settings are saved and loaded along with song data.

Using the dial, select a file number 1–99, enter a filename, and press ENTER. If there is already a file with that number, you will be asked whether it can be written over.

## 8. Setup Load

A file of QX3 settings saved using the above job can be loaded. Use the dial to select a file and press ENTER.

## 9. Song Clear

This job clears all song data in the QX3 memory as if the power had just been turned on. Press ENTER and if you are sure, press 'Y'.

## 10. Track Erase

This command erases all data in the tracks you specify. Press the track keys to select the tracks to erase (the track indicator LED turns red) and press ENTER. If you are sure, press 'Y' (while holding the CHAR key) and the tracks will be erased.

Measure marks and relative tempo data will be unaffected.

## 11. Sync Clock

This determines the synchronization source for recording and playback. The default setting is Internal.

1. Internal: The QX3 will synchronize to its own internal clock.
2. MIDI: The QX3 will synchronize to MIDI CLOCK (F8h) signals from another sequencer or rhythm machine connected to the MIDI IN terminal of the QX3.
3. Tape: The QX3 will synchronize to the FSK timing signals from the real panel TAPE IN jack. See Tape Sync, p.28.

If MIDI or Tape clock is selected, Relative Tempo (p.18) will have no effect.

## 12. Echo Back

Data coming into the QX3 can be Echoed Back (retransmitted) from the OUT terminals. If you keyboard has no internal tone generator, set Echo Back so you can hear yourself play. The default setting is Off (incoming data will not be retransmitted).

1. Off: Data will not be Echoed Back.
2. Record: Data will be Echoed Back just as it would be played back. This depends on the settings for Output Channel, Output Port, Receive Channel, and Receive Event (p.12).
3. Direct 1: Data will be retransmitted unchanged from MIDI OUT 1.
4. Direct 2: Data will be retransmitted unchanged from MIDI OUT 2.

System messages (MIDI clock, Start, Continue, Stop) are never echoed back, but if Remote In and Out are both on, incoming System messages will be received and then transmitted. (in effect, echoed back.)

## 13. Output Ch

This determines the output channel of each track. The default setting is for tracks 1–16 to transmit on MIDI channels 1–16. If you are not using all 16 channels, it may be useful to set tracks 9–16 to transmit channels 1–8, and use a pair of tracks for each channel to make editing easier.

Output Channel settings for each track are saved and loaded along with song data.

## 14. Output Port

This determines which output port (MIDI OUT 1 or 2) each track will transmit from. When set to 0, the track will transmit from both output ports. The default setting is MIDI OUT 1 for all tracks.

Tracks with especially heavy data (lots of Aftertouch or Pitch Bend) can be assigned to separate MIDI OUTs to avoid congestion and delay.

Output Port settings for each track are saved and loaded along with song data.

## 15. Receive Ch

This determines the MIDI channel that each track will receive when recording. Tracks can be set to receive the same channel. The default is all tracks set to omni (receive all channels).

## 16. Receive Event

The QX3 can be set to receive (1) or ignore (0) the following types of MIDI data. The default setting is to receive everything except Aftertouch.

**VEL (Velocity):** When Velocity is off, all incoming notes will be given a velocity of 64.

**CTR (Control):** This only affects the 'continuous controllers' 1-63. Regardless of this setting, control changes 64-120 and 122-127 will always be received, and control change 121 (all note off) will never be received.

**P.B. (Pitch Bend):** Received or ignored.

**PRG (Program Change):** Received or ignored.

**A.T. (Aftertouch):** Received or ignored.

**EXL (Exclusive):** This refers to System Exclusive messages such as parameter changes, recorded as part of a sequence. A single message must not exceed 1024 bytes. The QX3 itself does not process the Exclusive message in any way. If the message contains a device number or channel number, it will be played back just as it was received.

### 17. Remote In

This determines whether or not to receive the following MIDI System messages. The default setting is to receive System messages.

- Song Position Pointer (F2h)
- Start (FAh)
- Continue (FBh)
- Stop (FCh)

MIDI Song Select (F3h) reception is set by a separate job (p.13).

### 18. Remote Out

This determines how the following MIDI System messages are transmitted from MIDI OUTs 1 and 2; from MIDI OUT 1, MIDI OUT 2, BOTH (1 and 2), or NEITHER. The default setting is BOTH.

- Song Position Pointer (F2h)
- Clock (F8h)
- Start (FAh)
- Continue (FBh)
- Stop (FCh)

When this is on, MIDI Continue (FBh) will be transmitted whenever you continue from the middle of a song.

### 19. Song Select

When this is On, MIDI Song Select messages (F3h) will be received and transmitted. When a Song Select message is received, the corresponding song or song chain will be loaded into memory, and you will go to the top of the song. When a song or song chain is loaded into memory, the corresponding MIDI Song Position Pointer message will be transmitted. The default setting is to ignore Song Select messages.

### 20. MIDI Monitor

This job displays the MIDI messages that are received at MIDI IN. Incoming data will be displayed regardless of the Receive Event setting (p.12). The following messages will be displayed.

- Note On
- Pitch Bend
- Control Change
- Program Change
- Aftertouch
- Exclusive

### 21. Memory Status

This command lets you see how much memory is available. The QX3 has 240 kilobytes of recording memory. Press EXIT to leave the job.

### 22. Disk Status

Insert a disk *before* selecting this job. The LCD shows the used and free space on the disk, and the total number of files (0–112).

### 23. Disk Initialize

Before a disk can be used, it must be initialized (formatted). *This will erase all data that is currently on the disk.* Insert a new 3.5" 2DD floppy disk and press ENTER. If you are sure, press 'Y' and initializing will begin. The lower right corner of the LCD will show a countdown from 79–0 indicating the time to completion.

### 24. Disk Copy

This job copies all data (Song, Bulk and Setup files) from one disk to another disk. Insert the source disk and press ENTER. (This job uses memory space occupied by the song data, so if song data exists, you will be warned, and given a chance to exit safely.) The data will be loaded from the disk, and you will be told to insert the destination disk (be sure it has been properly formatted) and press ENTER again. *All files on the destination disk will be erased.* Once saving to disk has begun, you will not be able to leave the job by pressing EXIT. For large amounts of data, it may be necessary to repeat the above loading and saving operations.

### 25. Number of Files

Insert a disk *before* selecting this job. The LCD shows the number of files of each type (song, song chain, bulk, bulk chain and setup).

### 26. File Rename

This job lets you rename a disk file. Insert a disk and rotate the dial to scroll through the filenames. Enter a new filename (use the CHAR key and ◄ ► keys) and press ENTER to rename the file.

### 27. File Kill

This job lets you delete an unwanted file. Select the file as explained above and press ENTER. If you are certain that you want to kill the file, press 'Y' and the file will be deleted.

### 28. E-seq File Load

The MSX MIDI Recorder program and Yamaha electones and pianos equipped with MDR store sequence data in a format called 'E-seq'. Using this job, the QX3 can read these files from disk and convert them into QX3 format.

### 29. QX1 Data In

This job allows you to receive bulk sequence data from the QX1 via MIDI. *This will erase the song data in the QX3 memory.* Press RUN, and use the QX1 job command Data Out to transmit the data. When reception begins, the QX3 will display 'Data Receiving' and show the amount of free memory. When reception is complete, the QX3 will exit the job. While receiving, you can press EXIT to abort the job, but this will cancel data that has already been received.

### 30. QX1 Data Out

This job allows you to transmit bulk sequence data to the QX1 via MIDI. Execute the QX1 job command Data In, and press the QX3 RUN key to begin transmitting. The QX3 will display 'Data Transmitting', and when finished, will exit the job. While transmitting, you can press EXIT to abort transmission.

Data for tracks 9-16 will not be transmitted, since the QX1 has only tracks 1-8. No job command is needed to transmit data to another QX3—simply use the disk.

### 31. Rel Tempo Record

You can record Relative Tempo data in realtime using the dial. When you press RUN, playback will begin from the current measure, and the LCD will show 'REL TEMPO RECORD'. Use the dial (or the numeric key pad and

ENTER) to change the tempo. Tempo changes will be recorded as Relative Tempo data (p.18). When you press STOP, recording will end.

While this command is selected, synchronization will automatically be set to Internal.

Relative Tempo data can be erased using the Edit mode job command Relative Tempo Erase (p.22).

**32. Time Display**

This job calculates the time length of the specified section of the song in memory. For a song in memory, use the numeric key pad to specify the measures to be calculated and press ENTER. Once the time has been displayed, you may use the numeric key pad or dial to change the Tempo and see how it affects the total time.

# EDIT

In this mode you can modify, insert or delete individual events (notes, control changes, etc.) or measures. EDIT mode also includes Step Recording. To enter EDIT mode, press EDIT from either PLAY or RECORD mode. To go back to PLAY mode, press EXIT.

Using the track select keys, select the track you want to edit. The selected track LED will light red.

## Measure, Beat and Clock

The position of each event is displayed by Measure, Beat and Clock. One clock is 1/96 of a quarter note. For example, if the time signature is 2/8, each beat will be an eighth note (48 clocks), and each measure will be 2 beats long.

## Change and Insert

Pressing the INS key will switch between CHANGE and INSERT.

**CHANGE (an existing event):** Use the dial to move through the track displaying each event. As you turn the dial, note events will be transmitted, so you can hear where you are. (The gate time may be too short for you to hear sounds with a slow attack. If so, use the sustain pedal connected to your keyboard.) By editing the displayed data (or position) and pressing ENTER, you can modify (or move) individual events.

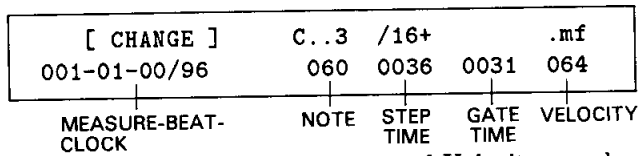
**INSERT (a new event):** Use the dial to select the position of the event you want to enter. (The dial function keys MEASURE, BEAT and CLOCK determine in which increments the dial will move.) When you press ENTER, the specified event will be inserted and you will move forward the amount of the step time. (This will not affect the position of subsequent events already in the track.) Obviously, while in INSERT mode you will not be able to see existing events.

For your editing convenience, you can use job command Clock/Beat on p.19 to specify how a measure will be broken into beats. You can then use the dial (press BEAT) to move in increments of this setting.

In both CHANGE and INSERT Modes, use the QX3 panel keys to enter data and press ENTER to finalize the change or insert the new event. You can move the event by entering new data for MEASURE-BEAT-CLOCK. To delete a displayed event, press DELT while holding the SHIFT key.

## Note Display

Note events are displayed as follows.




Note number, Step time, Gate time, and Velocity are shown as musical data on the upper line and as numerical data on the lower line.

**Note:** The note name ($C_{-2}$-$D\#_{7}$) and MIDI note number (000-127) are displayed.

**Step Time:** The time until the next note. If the Step time is a precise note value, the upper line will display the note value in addition to the numerical data on the lower line. A '+' indicates a dot, a '++' indicates a double dot, and '-n' indicates a 'n-tuplet'. (For example, '/4-5' would indicate a quintuplet played over a quarter note.) If the next note occurs at the same time as this note, the step time will be 0 and the upper line will show 'chor' (chord).

**Gate time:** This is the gate time (duration) of the note in clocks (0001-9999).

**Velocity:** The MIDI Note On velocity (001-127).

## Note Editing

You can use the QX3 front panel for very convenient editing (CHANGE) and entry (INSERT) of data.

- Note Name keys (C–B) will enter a successively higher octave when pressed repeatedly. (A successively lower octave when pressed while holding the SHIFT key.)
- *+8va, −8va* keys adjust the octave up or down.
- *ppp* – *fff* keys specify the velocity. You can also use a MIDI controller to set the velocity (p.19).
- Note Length Keys (thirty-second note – whole note, sixteenth and eighth triplets) set the step time to the selected note value, and set the gate time (duration) to the length specified in Gate Time Ratio p.19 (default is 90% of the step time). By pressing the same note length key again, you can double the step and gate times.
- -N- is used to divide the current step time, allowing you to enter 'n-tuplets'. Press -N-, then press a numeric key 2-9. You can press -N- again to further subdivide this. For example, if you wanted to enter 7 notes over a whole note and put 5 notes over the last note of the 'septuplet', you would press the whole note key, -N-, 7, enter six notes, -N-, 5, and enter five notes.
  Since note values will not always be evenly divisible into a measure, you might not end exactly on the measure bar. In this case, use the dial (set to CLOCK) to correct your position.
- *tie* is used to tie several note values together. For example, if you wanted a note equal to a tied whole and eighth note, you would press the whole note key, *tie*, and the eighth note key. You may tie as many notes as you wish.
- 'dot' increases the gate and step times by 50% (i.e. a 'dotted' note). You can continue pressing this key to further lengthen gate and step times.
- *slur* makes the gate time (duration) equal the displayed step time.
- *stac* cuts the gate time (duration) in half. You can continue pressing *stac* to further shorten the gate time.
- CHORD sets the step time to 0, so the next entered note will be at the same location.
- REST sets the note number to 255 (rest). 'Rest' data is not actually present in the track; instead the step time is lengthened appropriately.
- In INSERT mode DELT will erase the previously entered data and move back to the position of the deleted data. If the previously entered data was a chord, all notes in the chord will be deleted together. In CHANGE mode, DELT will delete the currently displayed data and move to the next data.
- You can use MIDI controllers to enter ties and rests. See p.19.

## Step Record

In Edit [INSERT] mode, you can enter notes one at a time from the QX3 panel switches or from a MIDI keyboard, to record phrases that would be difficult to play by hand. (There is no separate 'STEP RECORD' mode.) Before entering notes, you must specify the note length from the QX3 panel. When you release each note, it will be recorded (there is no need to press ENTER), and the position will move ahead by the step time. To enter chords, press and release the notes together.

## Other Events

Other events (Pitch Bend, Control Change, Program Change, and After-touch) are displayed as follows, with the type of event shown on the top line and the data shown on the lower line.

```
  [ CHANGE ]   ---- Control Chng ----
001-01-00/96           007  127
```

Use the event keys (BEND, CTRL, PRGM, AFTER) to enter the type of event, and use the numeric key pad to enter the data. Press ENTER to finalize the Change or to Insert the data.

## Exclusive

Short (less than 1024 bytes) System Exclusive messages such as parameter changes are recorded in the track along with notes and control changes etc. These can be changed or inserted just like other data in the track. The LCD will show the exclusive message 8 digits at a time. (The F0h and F7h at the beginning and end will not be displayed.)

```
  [ CHANGE ]   --- Exclusive ---  0001
001-01-00/96   ** ** ** ** ** ** ** **
```

Press the EXCL key and use the numeric key pad and character keys A–F (while pressing the CHAR key) to enter each digit in *hexadecimal* notation. The current byte number is shown in the upper right of the LCD. By pressing ◁ ▷ while holding the SHIFT key you can move the display in steps of 8 bytes.

## Relative Tempo

When the QX3 sync clock is set to Internal, Relative Tempo marks in a track can change the song tempo by 10%–200%. The resulting tempo will stay within the 20–300 bpm tempo range of the QX3. (When the sync clock is Tape or MIDI, Relative Tempo has no effect.) Just like measure bars, Relative Tempo data is common to all tracks. It will be displayed while editing any track.

```
  [ CHANGE ]   --- Relative Tempo ---
001-01-00/96           120%
```

Use the TEMPO key and the numeric key pad to enter the data. Relative Tempo can also be recorded in real time—useful for gradual changes in tempo. See p.14.

## Track Name

At the top of the track you can enter a 16-character name for each track.

```
  [ CHANGE ]   ===  Top of Track  ===
001-01-00/96     [ NAME 16 CHAR   ]
```

There is also an '=== End of Track ===' mark at the end, but no name or data can be entered.

## Measure

Measure marks cannot be moved, but you can change the time signature of a measure *if there is no data in any track for that measure.* In this way, you can lengthen or shorten the measure. Measures are shared by all tracks, so all tracks will be affected by this.

```
  [ CHANGE ]   =====  Meas.Bar  =====
001-01-00/96       TIME:04/04
```

# EDIT JOBS

In EDIT mode you can perform the following 29 jobs. Press JOB COMMAND, use the numeric key pad to enter the job number, and press ENTER.

### 1. Clock/Beat

Here you can set the number of clocks per beat. This has no effect on the time signature—it is simply a convenience for editing. This determines the number of clocks the dial will move when set to 'Beat'.

### 2. Gate Time Ratio

Here you can specify the gate time (duration) of notes you enter in Step Recording (p.17). The gate time can be specified as a percentage (10%–200%) of the step time. The default Gate Time is 90% of the Step.

### 3. MIDI Control

In step recording (p.17) you can use MIDI controllers to enter ties, rests, and velocity data.

| Data | Range | Default |
|---|---|---|
| TIE | 064–121 | 097 (Data Decrement) |
| REST | 064–121 | 096 (Data Increment) |
| VELOCITY | 000–063 | 006 (Data Entry Slider) |

In the default settings, a DX7 Data Entry slider can control Velocity, and the −1/+1 switches will enter Ties and Rests.

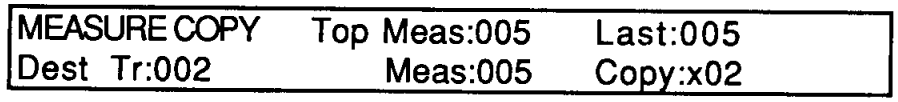
### 4. Event Display

This determines which types of data are displayed in edit mode. For example, if you are editing only the notes in a track that contains alot of Pitch Bend data, you may want to mask the Pitch Bend data so that it is not displayed. The following types of data can be masked.

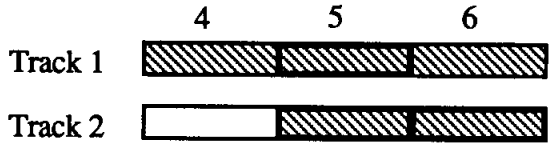
- Note
- Control change
- Pitch bend
- Program change
- Aftertouch
- Exclusive
- Relative tempo

### 5. Measure Copy

Measures of the track you are currently editing may be copied any number of times to another location on the same or a different track. This overwrites any data that exists in this section of the destination track. The time signatures of the source and destination tracks must match.




Assume Track 1 is the track currently being edited for the example above. The settings displayed in the LCD will copy measure 5 of Track 1 to measure 5 of Track 2 twice. Notice that this overwrites measures 5 and 6 in track 2.

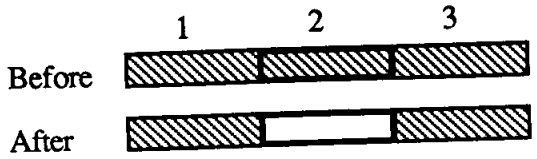


## 6. Measure Erase

Data on the specified measures will be erased while the measures themselves remain.

```
MEASURE ERASE
                          Top Meas:002  Last:002
```

The above example will erase the data in measure 2 on the track currently being edited:




## 7. Measure Create

This allows you to create (insert) any number of empty measures of the specified time signature. The number of measures (Size) will be inserted on all tracks in the song at a specific location (Top Meas).

The possible values for the time signatures includes:

| 1 - 64 |
|---|
| 1,2,4,8,16,32 |

```
MEASURE CREATE        Time:04/04
(All  Tracks)         Top Meas:002 Size:001
```

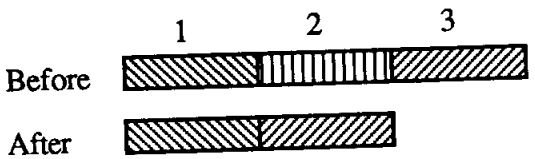
The above example will create one 4/4 measure at the second bar as shown in the illustration below. Notice that from measure 2 forward, all tracks in the QX3 shifted over to make room for the newly created bar.


## 8. Measure Delete

Specific measures will be deleted from all tracks. Subsequent measures will be moved up to fill the space.

```
MEASURE DELETE
(All  Tracks)          Top Meas:002 Last:002
```

The above example deletes the second measure on all tracks and moves measure 3 forward to become the 'new' measure 2:

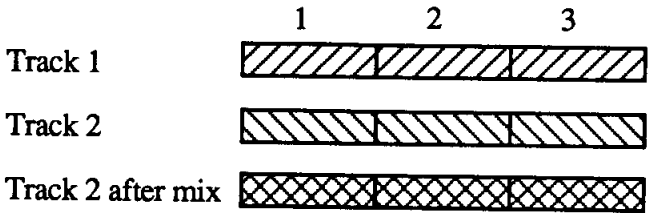


## 9. Track Mix

Selected measures of the track being edited will be mixed with another track over the specified range. The source and destination tracks will each retain their original data. In other words, the data from both tracks will be mixed.

```
TRACK MIX
Dest Tr:02          Top Meas:001    Last:003
```

The above example will mix bars 1—3 of track 1 (currently being edited) with track two as shown in the illustration below.




## 10. Track erase

This erases all data in the track(s) you specify. Press the TRACK SELECT button to select the track(s) you want to erase Remember to use the SHIFT key to select tracks 9-16. As you select the track(s), the appropriate LED(s) will turn red. Press ENTER. If you are sure, hold down CHAR and press 'Y' and the track(s) will be erased. This is the same as described in RECORD/PLAY job 10.

## 11. Transpose

All notes in the specified measures of the track being edited will be transposed by the specified interval ± 99 notes (use the +/— keys while holding the SHIFT key to enter a negative number). The note numbers will not go beyond the MIDI note range of 0—127.

## 12. Note Shift

A certain note can be converted to another note over the specified measures of the track being edited. This is especially useful when using the QX3 to control a rhythm machine that has a different instrument assigned to each note. For example, all bass drum notes can be shifted to snare drum notes. The owner's manual of your rhythm machine has a list of instrument note numbers.

## 13. Gate Time Modify

The gate time (note duration) of all notes in the specified measures of the track being edited can be changed by a rate of 10%—200%. The resulting gate time will not go below 1.

Note: Values greater than 100% will affect the articulation of subsequent notes.

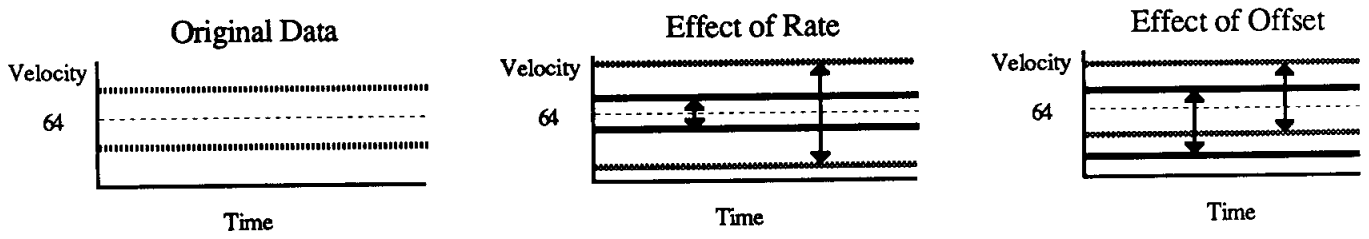
## 14. Velocity Modify

The velocity of all notes in the specified measures of the track being edited can be changed (compressed or expanded around the central velocity value of 64) by the Rate (1%—200%) you specify. A fixed Offset value (±99) can also be added. The resulting velocity is

$$\text{New velocity} = (\text{Old velocity} - 64) \times \text{Rate} + 64 + \text{Offset}$$

For example, if the Rate is 100%, then the Offset value will simply be added to the velocity of all notes. If the Rate is greater than 100%, the velocity of all notes will be moved proportionately *further away from* the center velocity value of 64. If the Rate is less than 100%, the velocity of all notes will be moved proportionately *closer to* the center velocity value of 64. In other words, Rate can be used to expand or reduce the dynamic range of your playing. A Rate of 0% gives all notes the same velocity.

The Rate and Offset parameters can be used independently to create a wide variety of velocity modify effects. The following diagrams show how changes affect the original velocity data for Rate ("dynamic range") and Offset (affect all velocity evenly)."




**15. Crescendo**

The velocity of all notes in the specified measures of the track being edited can be gradually changed over a Range of ± 99. The Range setting is the amount of the last change in velocity.

**16. Quantize**

Events in the specified measures of the track you are editing will be moved to the nearest multiple of the clock setting you specify (1-99 clocks). Use the numeric key pad or the note value keys (sixteenth, eighth, quarter, etc.) to enter a clock setting.

Notice that this affects all events—control and program changes as well as notes—and may move a Program Change message onto the very same clock as a note. Sending a program change *immediately* before a note might not leave the tone generator enough time to produce the note correctly, so you may want Extract (p.23) the notes to a different track and quantize them separately. After Quantizing the notes, you can then mix this 'work track' to the original track, which has the control data and program changes.

**17. Chord Sort**

Events within the specified measures of the track being edited that have the same timing (chords) can be sorted (rearranged) up or down. This makes them chords easier to see, and can also be used with the Chord Separate job (see below) to create arpeggios.

**18. Chord Separate**

Events that have the same timing can be separated by the specified number of clocks. When used with the Chord Sort job, this can create 'instant arpeggios'. However, chords can not be separated further than the next chord or Measure Bar.

**19. Clock Move**

All data in the specified measures of the track being edited can be moved forward or backward over a range of ± 999 clocks.

**20. Rel Tempo Erase**

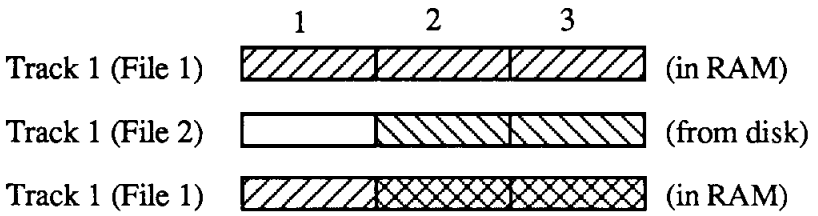
Relative Tempo data (p.18) for the entire song (all tracks) can be erased from the specified measures.

**21. Memory Status**

This is dame job as described in RECORD/PLAY JOBS.

**22. File Include**

A song file may be read from disk and overlaid on top of the current song data at a specific location. The data still exists in the file from which it came.




Use the dial to select the desired file, then type in the measure number. Data from the selected file will be added to the current tracks at the selected measures. The current song (with the additional data) may then be saved to disk.

**23. Note Extract**

Notes in the specified range will be removed between the Top and Last measures on the track being edited and added to the data on the Destination track. Press the note keys on the QX3 front panel to enter values. Subsequent presses of the same key will increase the value an octave at a time. To lower the octave, hold SHIFT and press the note keys. Use the ◀ ▶ keys and the numeric key pad to enter value for the Destination Track, Top and Last measure parameters.

| | |
|---|---|
| NOTE EXTRACT | 060=C..3 to 060=C..3 |
| Dest Tr:2 | Top Meas:001 Last:010 |

The above example extracts all middle C's from measures 1 through 10 on the current track and moves them to the same measures on track 2.

**24. Ctrl Extract**

Control messages in the specified measures will be removed from the track being edited and added to the data in the specified Destination track.

**25. P.Bend Extract**

Pitch Bend messages in the specified measures will be removed from the track being edited and added to the data in the specified Destination track.

**26. Prog Extract**

Program Change messages in the specified measures will be removed from the track being edited and added to the data in the specified Destination track starting at the specified measure.

**27. A.Touch Extract**

Aftertouch messages in the specified measures will be removed from the track being edited and added to the data in the specified Destination track.

**28. Excl Extract**

System Exclusive messages in the specified measures will be removed from the track being edited and added to the data in the specified Destination track.

## 29. Spot Extract

All data in the specified range of each specified measure will be removed from the track being edited and added to the data in the specified Destination track. The section of each measure to be extracted is specified in clocks from the beginning of the measure. For example, you can use this to transfer all notes occuring in the first beat of the measure to a different track, modify the velocity or move the track in time (Clock Move), and mix it back into the original track.

Note:
Use the +/– keys while holding the SHIFT key to enter a negative number.

# CHAIN EDIT

In Chain Edit mode you can create or modify a Chain file for successive playback of several songs (Song Chain) or successive transmission of several bulk data files (Bulk Chain). A single chain can contain either Song or Bulk files. The two types cannot be mixed. *Entering Chain Edit mode will erase all song data in QX3 memory.* To enter Chain Edit mode, press EDIT while holding the SHIFT key. (If song data exists in memory, you will get a warning message.) The LCD will show.

```
CHAIN EDIT              [ CHANGE ]
      ====  TOP OF CHAIN  ====
```

Now you can load and edit an existing chain file from disk (see Load, below) or create a new chain file (see Insert and Change, below).

## Insert and Change

Pressing the INS key will switch between CHANGE (modify existing steps in the chain) and INSERT (new files into the chain). While editing a chain file, the LCD will show as follows.

```
                              [INSERT]
CHAIN EDIT              [ CHANGE ]
SONG :01  ********  Seq:01    Play:x01
```

Chain type: (Song or Bulk) Position in chain Number of repetitio

- When you enter CHANGE mode, BEAT is automatically selected. When you enter INSERT mode, CLOCK is automatically selected.
- When BEAT is selected, use the dial to move through the steps in the chain.
- When CLOCK is selected, use the dial to select Song or Bulk files to use in the chain. When you press ENTER, the displayed file will be selected for the current step in the chain. (In CHANGE mode it will replace the previous file at this step. In INSERT mode it will be inserted into the chain at this step.)
- Press DELT while holding the SHIFT key (when in CHANGE mode) to delete the currently displayed file from the chain.
- To change the number of repetitions.
  Use the numeric key pad and ENTER.

A single chain may contain either Song or Chain files (not mixed). Setup files cannot be chained.

## Save Chain

If you exit Chain Edit mode without saving the Chain to disk, the chain will be lost. To save the chain, press SAVE. Use the dial to select a filenumber 1–99, enter an 8-character filename using CHAR plus the character keys and press ENTER. If a file already exists at that number, you will get a warning message.

## Load Chain

To edit a chain (either type) that already exists, press LOAD. If data already exists in memory (including the chain you wish to edit), hold down CHAR and press 'Y' to answer 'Yes' and clear it from memory. Then use the dial to select the chain file you wish to edit and press ENTER to load the chain into memory. Now you can edit the chain as described above in Insert and change.

## Play or Transmit Chain

To play a Song Chain, go back to Song Play mode and load the Song Chain File. To transmit a Bulk Chain, go back to MDR mode and load the Bulk Chain File.

# MDR

The QX3 can be used as a MIDI Data Recorder to save and load System Exclusive bulk data (voice data, etc.) to and from other devices. When you enter MDR mode, *all song data currently in memory will be erased.* Press MDR and you will be asked 'Are you sure?' so press 'Y'. *This will erase all song data currently in memory.* In MDR mode you can perform various related jobs. See p.27.

## Data Receive

To receive bulk data, press REC. The LCD will show

```
Data Receive                    Free:480K
BULK :**  ********              Req:OFF
```

Up to 480 Kbytes of bulk data can be received. The bulk file has not been named yet, so the name and number are displayed as asterisks. REQ indicates whether a Dump Request message is to be sent (p.27). Press RUN and the LCD will show 'Data Waiting'. If you have specified a Dump Request message, it will now be sent. If not, you will have to manually operate the other device to transmit the bulk data you want to store. When data begins to arrive, the LCD will show

```
Data Receiving                  Free:480K
BULK :** ********               Block:01
```

and will continue receiving bulk data until you press STOP. A bulk data file may contain more than one MIDI System Exclusive bulk data message, and as each message of F0h–F7h is received, the BLOCK display will increment.

You can abort reception by pressing EXIT, but the previously received data will be lost.

When you press STOP, reception will end, and the LCD will return to

```
MIDI DATA RECORDER
BULK : ** ********              Block:01
```

## Data Transmit

To transmit the bulk data in the QX3 memory, press RUN. The LCD will show 'Data Transmitting', and show the data block currently being transmitted. Bulk data will be transmitted from the MIDI OUT you specified for Out Port (p.27). (The default is MIDI OUT 1.) You may also specify an Interval Time (p.27) to be inserted every 4 Kbytes so that the input buffer of the receiving device is not overloaded.

## Data Save

To save the bulk data to disk, press SAVE. Select a filenumber 1–99, enter a filename, and press ENTER.

## Data Load

To load bulk data from disk, press LOAD. Select a Bulk or Bulk Chain file 1-99 and press ENTER.

# MDR JOBS

When in MDR mode, you can perform the following 5 jobs. Press JOB COMMAND, use the numeric key pad to enter the job number, and press ENTER. Use the numeric key pad to select the setting and press ENTER again to execute the job. Escape without executing the Job Command by pressing EXIT.

**1. Memory Status**

This command lets you see how much memory is available. The QX3 has 4 kilobytes of chain memory. Press EXIT to leave the job.

**2. Dump Request**

You can use this to automatically send a single Yamaha System Exclusive Dump Request message every time MDR reception is begun (p.26). Set the Out Port, Channel, and Format (the type of data to be requested). System Exclusive bulk data format numbers are listed in the owner's manual for each device. This Dump Request message has the format 'Status (F0h), I.D. (43h), Sub-status/Ch. (2nh), Format Number (ff), EOX (F7h). For example a TX816 has format number 02h for 64 Performance bulk data, and a DX7 has format number 09h for 32 Voice bulk data. Devices that require a Dump Request message of another format will not respond to this job command.

The default setting is Off.

**3. Chain Pause**

When transmitting a chain of bulk files, you may want to pause between files, perhaps to change the setting of the receiving device. (For example, suppose each module of a TX816 is set to receive the same channel, but you want to send different voice data to each module. You would switch off the Protect for a single module, transmit, switch protect back on, switch protect for the next module off, transmit...)

When Chain Pause is on, the LCD will show 'PAUSE!!' after transmitting each bulk file. When you press ENTER the next file will be transmitted.

The default setting is Off.

**4. Interval Time**

By rapidly sending large quantities of bulk data, it is possible to overload the input buffer of the receiving device. This Interval Time setting inserts a time wait between every F0h–F7h data block or 1 Kbyte of data, whichever comes first. You can specify a wait of up to 9.9 seconds in steps of 100 msec.

The default setting is 100 msec.

**5. Output Port (MDR)**

This is where you specify which MIDI OUT (1 or 2) you will send the bulk data from.

The default setting is OUT 1.

# OTHER FUNCTIONS

## Function Keys

You may assign a sequence of up to 128 keystrokes (i.e. a 'key macro') to the two keys F1 and F2, to speed up operations that you frequently perform. This can be done while in any mode.

1. Press F1 (or F2) while pressing the SHIFT key. The LCD will show 'LOG/ON (F1)'.
2. Now press the keys to perform any operations you wish. Up to 128 keystrokes will be recorded. Dial movements can also be defined as part of the function key assignment. (For example, a function key could be defined as moving the dial several clicks clockwise, and when TEMPO is selected in Play mode, used to instantly speed up the tempo by a preset amount.) Use ▼▲ while pressing the SHIFT key instead of moving the dial.
3. Press F1(or F2) while pressing the SHIFT key, and the sequence of keystrokes will be remembered.

For example, if you set a function key to the keystrokes JOB, 1, ENTER and then press F1, you will select job command 1. Remember that this data is in volatile RAM just like all QX3 settings. If you want to keep it, be sure to save it as a Setup file (p.11).

## Tape Sync

When recording or playing back, a FSK (Frequency Shift Keying) sync signal is always transmitted from the rear panel TAPE OUT jack. This audio signal can be recorded on one track of a multi-track recording. To synchronize QX3 playback (or record) with the tape:

1. Set the QX3 clock to Tape (p.11).
2. Rewind the tape to a point just ahead of where the sync signal starts.
3. Press QX3 RUN. (The LCD will show 'RECORDING' or 'PLAYING' but the measures will not start changing yet.)
4. Start the tape playback.

The FSK signal is only a *timing clock* signal – it does not contain information as to where we are in the song. Thus, you must always sync from the top of the song.

# IDEAS AND SUGGESTIONS

- Measure relationships between tracks are fixed. In most cases, this makes for minimum confusion. However you can use Measure Copy (p.19) to rearrange measures if you need to. For example, suppose you want to exchange the first measures 1–10 of a track with measures 51–60, *without* disturbing the other tracks.

  1. Copy measures 1–10 to the end of the track.
  2. Erase measures 1–10.
  3. Copy measures 51–60 to measure 1.
  4. Erase measures 51–60.
  5. Copy the measures from the end of the track to measure 51.
  6. Delete the extra measures at the end.

  A bit of work, but it can be done.

- Data cannot be copied onto measures that have a different time signature. Normally you would not want to do this anyway, but suppose you need to copy several measures of 3/4 to another section which is in 4/4.

  1. Create several measures of 4/4 immediately following the data you want to copy.
  2. **Use Clock Move (p.22) to move the desired data into the blank measures of the time signature you just created. (Clock Move allows you to shift the position of recorded data up to 999 clocks at a time. If you are moving a long section, you may need to execute several times.) Be sure to calculate exactly how many clocks you need to move the data.**
  3. The data is now in measures of the correct time signature. Copy to the desired destination as usual.
  4. Delete the temporary measures you created in step 1.

- Default track channel settings are...

  Each track receives all channels

  Tracks 1–16 transmit channels 1–16.

  In this condition it is handy to set Echo Back (p.12) to 'Record'. Incoming notes will be echoed back on the channel of the track that is ready to record or edit. This means that you don't have to change the transmit channel on your MIDI keyboard. Simply select a different track on the QX3, and notes you play will be THRUed on the selected channel.

- **The Function Keys (p.28) can be defined as frequently-used jobs, but also to enter repetitive data in Edit mode. In Edit Change mode, for example, you could define a key to 'ENTER and move to the next event'. In Edit Change mode you could define a key to enter a chord of notes.**

- In Chain Play (p.8) you can press RUN while pressing the SHIFT key to loop the playback. This loop could be a backing accompaniment for you to solo over. When you have soloed enough, press the footswitch to exit the loop and go on to the rest of the song.

## MDR JOBS

When in MDR mode, you can perform the following 5 jobs. Press JOB COMMAND, use the numeric key pad to enter the job number, and press ENTER. Use the numeric key pad to select the setting and press ENTER again to execute the job. Escape without executing the Job Command by pressing EXIT.

**1. Check Memory** This is the same job as described in PLAY/REC JOBS.

**2. Dump Request** You can use this to automatically send a single Yamaha System Exclusive Dump Request message every time MDR reception is begun (p.26). Set the Out Port, Channel, and Format (the type of data to be requested). System Exclusive bulk data format numbers are listed in the owner's manual for each device. This Dump Request message has the format 'Status (F0h), I.D. (43h), Sub-status/Ch. (2nh), Format Number (ff), EOX (F7h). For example a TX816 has format number 02h for 64 Performance bulk data, and a DX7 has format number 09h for 32 Voice bulk data. Devices that require a Dump Request message of another format will not respond to this job command.

The default setting is Off.

**3. Chain Pause** When transmitting a chain of bulk files, you may want to pause between files, perhaps to change the setting of the receiving device. (For example, suppose each module of a TX816 is set to receive the same channel, but you want to send different voice data to each module. You would switch off the Protect for a single module, transmit, switch protect back on, switch protect for the next module off, transmit ...)

When Chain Pause is on, the LCD will show 'PAUSE!!' after transmitting each bulk file. When you press ENTER the next file will be transmitted.

The default setting is Off.

**4. Interval Time** By rapidly sending large quantities of bulk data, it is possible to overload the input buffer of the receiving device. This Interval Time setting inserts a time wait between every F0h−F7h data block or 1 Kbyte of data, whichever comes first. You can specify a wait of up to 9.9 seconds in steps of 100 msec.

The default setting is 100 msec.

**5. Output Port (MDR)** This is where you specify which MIDI OUT (1 or 2) you will send the bulk data from.

The default setting is OUT 1.

# MIDI IMPLEMENTATION CHART

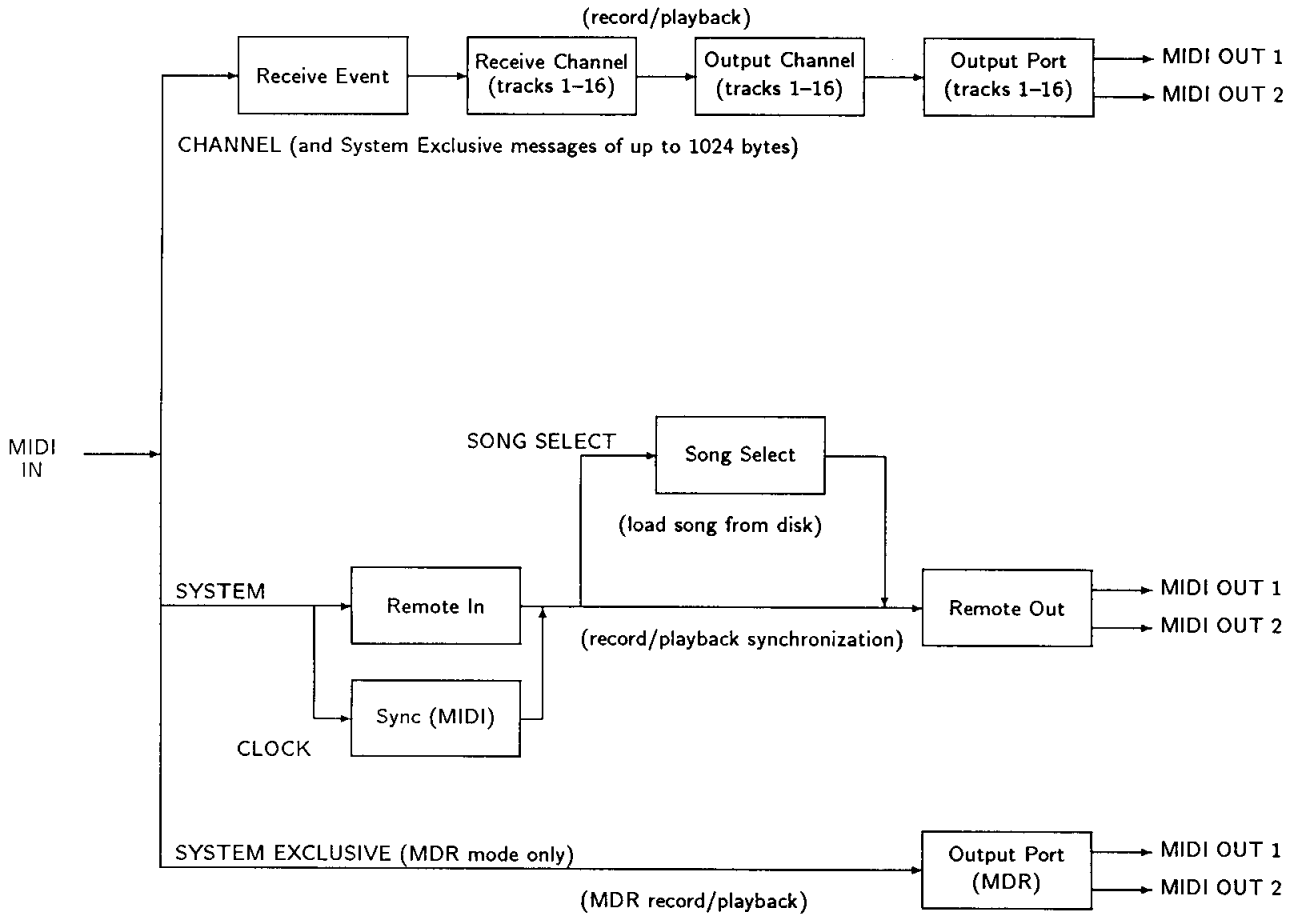
[ Digital Sequence Recorder ] Date : 6/24, 1987
Model QX3 MIDI Implementation Chart Version : 1.0

| Function ... | Transmitted | Recognized | Remarks |
|---|---|---|---|
| Basic Default | | | |
| Channel Changed | | | |
| Mode Default | | | |
| Mode Messages | POLY, MONO<br>OMNI ON, OMNI OFF | POLY, MONO<br>OMNI ON, OMNI OFF | *1 |
| Note Number : True voice | 0-127<br>********** | 0-127 | *1 |
| Velocity Note ON | o 9nH,v=1-127 | o *2 | *1 |
| Velocity Note OFF | x 8nH,v=64 | x | |
| After Touch Key's | x | x | |
| After Touch Ch's | o | o *2 | *1 |
| Pitch Bender | o | o *2 | *1 |
| Control Change 0-63 | o | o *2 | *1 |
| Control Change 64-121 | o | o | *1 |
| Prog Change : True # | o 0-127<br>********** | o 0-127 | *1 |
| System Exclusive | o / o | o / o *2 | *3 / *1 |
| Common : Song Pos | o *2 | o *2 | |
| Common : Song Sel | o *2 | o *2 | |
| Common : Tune | x | x | |
| System Real Time : Clock | o *2 | o *2 | |
| System Real Time : Commands | o *2 | o *2 | |
| Aux : Local ON/OFF | o | o | *1 |
| Aux : All Notes OFF | x | x | |
| Mes- : Active Sense | o | o | |
| sages : Reset | x | x | |

Notes: *1 = Recognized as record data. Transmitted when (1)playback
(2)received during echo switch is on.
*2 = Enabled or disabled by command.
*3 = Sequence data.

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

# MIDI RECEPTION/TRANSMISSION




Note 1: Active Sensing (FEh) messages are normally sent from both MIDI outs, but active sensing transmission from MIDI OUT 2 is interrupted during disk access.

Note 2: During disk access, incoming MIDI data is ignored.

Note 3: The QX3 itself receives and transmits only one type of system exclusive data—sequence bulk data for the QX1 as explained in the QX1 Data In/Out job commands.

# INDEX

## SERVICE

The QX3 is supported by Yamaha's worldwide network of factory trained and qualified dealer service personnel. In the event of a problem, contact your nearest Yamaha dealer.

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