SONY®

MD Multi-Track Recorder

Operating Instructions ——————————————— **EN**

Mode d'emploi ——————————————————— **F**

MD DATA   **Mini Disc**

MDM-X4 Mk2

Notes
- On this unit, the length of the first track you record determines the length of the respective song. For example, if the first track you record is 3 minutes long, other tracks overdubbed onto that song can be no longer than 3 minutes (or less).
- On this unit, the sum of the recorded time and the remaining time may not be the same as the maximum recording time available on the MD. This is because this unit displays the largest section of continuous blank space as the remaining time. Therefore, when blank space is divided into different sections, only the time representing the largest section is displayed.

New Functions Available with Mk2

Synchronization with MIDI Equipment (Mk2)

- **MIDI Chase Lock operation using MIDI Time Code**
  Synchronized operation of two connected MDM-X4 Mk2 units. Improved MTC functionality. Transmission of locate points sets on master unit to synchro unit during MIDI Chase Lock operation. The ability to add offset to the MTC output.

Other Improvements

- **Longer song and disc names.**
  Addition of a scroll function lets you input and display up to 20 characters for each name.
  (See "Naming a Song" and "Naming the Disc" on pages 49 and 51 of the main "Operating Instructions".)

- **During locate point adjustment, the RHSL indicator now blinks at the locate point.**
  This lets you adjust locate points even if they are set in sections with no sound.
  (See step 3 of "Correcting the position of the locate point" starting on page 32 of the main "Operating Instructions".)

- **Expansion of pre-roll/post-roll adjustment range from 1~10 seconds to 1~20 seconds.**
  This gives you a larger margin when using Auto Punch In (etc.) during MIDI sync.
  (See "Pre-roll/Post-roll setting (Roll)" on page 17 of the main "Operating Instructions".)

- **Addition of Song + (plus) and – (minus) commands to the assignable switch settings.**
  Song + : locates the next song (same as pressing ▶▶I).
  Song – : locates the beginning of current song or beginning of previous song (same as pressing I◀◀).
  (See "Assignable switch 1, 2 setting (Sw-1, Sw-2)" on page 17 of the main "Operating Instructions".)

- **Holding down the AMS keys now lets you skip more than one song number.**

Advantages of Using MIDI

Connecting this unit to an external MIDI system (Computer, Sequencer, Sound Module, etc.) allows you to create even higher quality recordings.
For example, if you record the vocal and guitar tracks on this unit, you can synchronize them with sounds from a sound module played back through a sequencer (etc.) during mixdown. This method of mixing allows you to make recordings without using unnecessary tracks.
The MTC (MIDI Time Code), MIDI clock, or MMC (MIDI Machine Control) features allow you to coordinate this unit with external MIDI components. This chapter explains how to use MIDI messages (information) in order to realize the following functions:

- **Synchronization with a MIDI sequencer (etc.).**
  To output MTC signals from this unit's internal clock to synchronize a MTC compatible sequencer.
  → "MIDI Synchronization Using MTC" (page 4 of this booklet)

  To output MIDI Clock signals from this unit's internal clock to synchronize a MIDI Clock compatible sequencer.
  → "MIDI Synchronization Using the MIDI Clock" (page 5 of this booklet)

  To input MTC signals to this unit and sync it to another MDM-X4 Mk2 or other MTC compatible sequencer (etc.).
  → "MIDI Synchronization Using EXT" (page 7 of this booklet)

- **Remote control PLAY and STOP (etc.) from MIDI components.**
  → "Controlling This Unit from Other MIDI Components Using MMC" (page 8 of this booklet)

MIDI Synchronization Using the MIDI Clock

You can use the MIDI clock to synchronize this unit with sequencers (etc.) that are not MTC (MIDI Time Code) compatible. A tempo map must be created in order to use the MIDI clock.
For these operations, this unit will output the sync signals. Make sure the sync setting of your sequencer is on external sync.

Notes
- When using the MIDI clock for synchronization, be sure to create the tempo map before you start recording (see "Creating a tempo map" to the right for details). Also, be sure to listen to the MIDI sound source coming from the sequencer before you start recording.
  It is extremely difficult to create a perfect match between a recorded song and the timing of the tempo map.
  Therefore, if you create a tempo map after recording, the synchronization will be incorrect.
  Tempo information will not be stored on the disc if you create a tempo map but do not make an actual recording.
- When using a sequencer that supports MIDI clock and MIDI song position, you can start playback from an arbitrary position in the song. At this time, the sequencer locates the current song position and starts running in sync. Some sequencers, however, may not be able to follow this unit when you use this unit's locate function. Be sure to check the sequencer's search before synchronized operation.

Connections

Use a MIDI cable to connect this unit to a MIDI compatible sequencer (etc.).

MDM-X4 Mk2 (this unit)
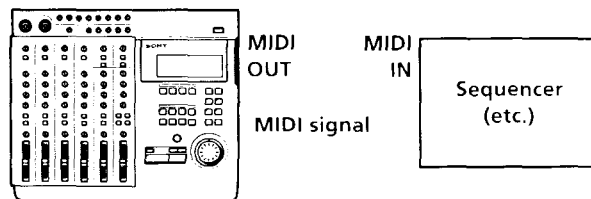
Setup

1 Set this unit's "SYNC" system setting to MCLK.
See "Changing a Setting" (page 18 of the main "Operating Instructions") for details.

2 Set the sequencer to accept external MIDI clock synchronization.
This enables playback of MIDI song data.
Refer to the operating instructions supplied with your sequencer as well.

3 Start playback from this unit.
The sequencer starts playing in sync with this unit.

Creating a tempo map

Setting up tempo information creates the standard signal for synchronization and allows you to use the MIDI clock for synchronization with an external sequencers (etc.).
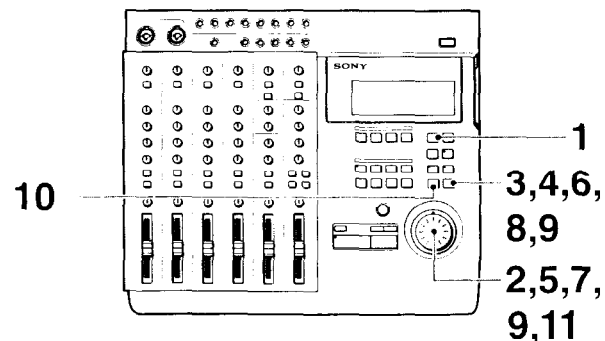You can assign up to 50 tempo maps to each song.

EXAMPLE: Suppose we create the following tempo maps.
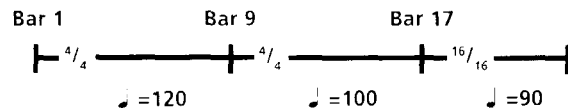
In this case, the tempo will change as shown below

Bar 1~8	$^4/_4$ time	$\downarrow$ =120
Bar 9~16	$^4/_4$ time	$\downarrow$ =100
Bar 17~	$^{16}/_{16}$ time	$\downarrow$ =90

The following step show you how to make the tempo map shown in the previous example.

MIDI Synchronization Using MTC

The following explains how to achieve synchronization with a MTC (MIDI Time Code) compatible sequencer (etc.).
For these operations, this unit will output the sync signals. Make sure the sync setting of your sequencer is on external sync.

Note

Certain sequencers (etc.) may not start simply by inputting the MTC (MIDI Time Code). In such cases, press PLAY (etc.) on the respective equipment so it will be ready to receive the external sync signal before you start the MDM-X4 Mk2.
Refer to the operating instructions supplied with your other equipment for details regarding its operation.

Connections

Use a MIDI cable to connect this unit to a MIDI compatible sequencer (etc.).

MDM-X4 Mk2 (this unit)
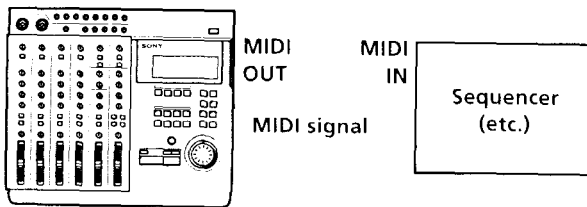
Setup

1 Set this unit's "SYNC" system setting to MTC.
See "Changing a Setting" (page 18 of the main "Operating Instructions") and "Sync mode setting (Sync)" (page 3 of this booklet) for details.

2 Set the sequencer to accept external MTC synchronization.
This enables playback of MIDI song data.
Refer to the operating instructions supplied with your sequencer as well.

3 Start playback from this unit.
The sequencer starts playing in synchronization with this unit.

Adding offset to the MTC output

1 While the disc is in stop mode, turn the jog dial to move the counter display forward to the amount of offset you want to add.

2 Press MARK.

3 Hold down SHIFT and press OUT.

Note

Offset time can only be added when the unit is outputting the sync signal.
Although the master unit's counter display and disc time positions are not be effected, the output MTC signal contains the added offset.

(Example)

If you set a "000 MIN 10 SEC 00 FRM" offset in the counter display of the master unit:
When you start playing the song from the beginning (on the master unit), the time code to be output starts at 23 Hours 59 Minutes 50 seconds 00 Frames. After 10 seconds the time code changes to zero and the synchro unit starts.

**Matching the "A" points
(when the song on master side is late)**

Master song ———— A ————————
                          (10 seconds late)

Sync song — A ——————————————
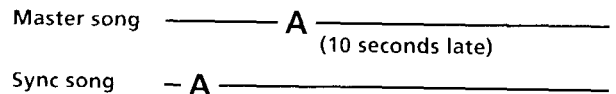
If the master side is ahead of the sync side, switch discs between the master and sync units.

To check the offset setting

When you hold down SHIFT and press OUT, the offset time is displayed and that position is located.

To cancel the offset setting

Use the jog dial (etc.) to set the time in the counter display to zero, then perform steps 2 and 3 above.
Ejecting the disc also cancels the offset.

1 Press EDIT.
[EDIT] appears in the display.

2 Turn the jog dial so that "Song Tempo" appears in the display.
The name of the edit function starts blinking in the display.

3 Press ENTER.
The tempo map setting display appears.

$$01 : ----\; \downarrow\; ---$$

Tempo
Tempo change position
Tempo map number (blinking)

Note
If you do not want to change the tempo information, leave the tempo information numbers blank.

4 Press ENTER again.
The indication for the tempo change position starts blinking.
Tempo map 1 can only be set to the first bar.

5 Turn the jog dial to display 0001.
The units in the display represent bars.
If you hold down SHIFT while turning the jog dial you can specify the tempo change position in 16th note units within the respective bar.

$$01 : 0001 \downarrow 120$$

Blinking

Note
If you do not want to change the tempo information, leave the tempo information numbers blank.

6 Press ENTER.
The indication for the tempo starts to blink.

7 Turn the jog dial to display 120.

$$01 : 0001 \downarrow 120$$

Blinking

8 Press ENTER.
The time setting display appears.

9 Use the jog dial and ENTER to display 04/04.

$$01 : 04/04$$

10 Press ENTER again when finished.
The tempo map number blinks.

11 Turn the jog dial to display 02.

$$02 : ----\; \downarrow\; ---$$

12 Repeat steps 3~9 to create the new tempo map.
When the tempo map is complete, the settings are displayed in order automatically starting from the first tempo change position.

To complete construction of the tempo map
Press EXIT repeatedly until the EDIT display disappears from the display.

Notes
• The time setting is only possible at the beginning of each bar.
• You can assign up to 50 tempo maps to each song. The tempo information can be stored on the disc, but since there is a limited amount of memory on each disc it may not be possible to store 50 tempo maps for each song if there are several songs on a disc. In this case "Tempo Full" will appear in the display when you select the tempo map number.
• Due to the nature of the MD system, MIDI clock information cannot be output and tempo information cannot be stored when using standard music MD discs.

Deleting a tempo map

Use the following operations to delete tempo maps which are no longer necessary. The tempo map numbers located after the tempo map which was deleted are brought forward automatically.

EXAMPLE: Erasing tempo map 5.

1 Press EDIT.
[EDIT] appears in the display.

2 Turn the jog dial so that "Song Tempo" appears in the display.
The name of the edit function starts blinking in the display.

3 Press ENTER.
The tempo map setting display appears.

4 Turn the jog dial to display tempo map 05.

05:0018♩100

Blinking

5 Press ENTER.
The indication for the tempo change position starts blinking.
Tempo map 1 can only be set to the first bar.

**6** Turn the jog dial to the right to display Del.

05: Del♩100

Blinking

7 Press ENTER.
"Deleted" appears in the display and tempo map 5 is deleted.

🔆 The previous operations can also be used to delete tempo map 1. However, tempo map 1 should only be deleted after deleting all the other tempo maps from 2 up.

MIDI Synchronization Using EXT

To connect several MDM-X4 Mk2 units, or sync this unit with another MIDI component that cannot sync to an external source, set this unit to external sync mode and use the MTC (MIDI Time Code) from an external source as the sync signal.

Connecting two MDM-X4

Use a MIDI cable to connect two MDM-X4 Mk2, or an MDM-X4 and an MDM-X4 Mk2 (in this case, be sure to use the MDM-X4 Mk2 as the sync unit).

MDM-X4 Mk2
(or MDM-X4)   MDM-X4 Mk2
Master unit   Sync unit
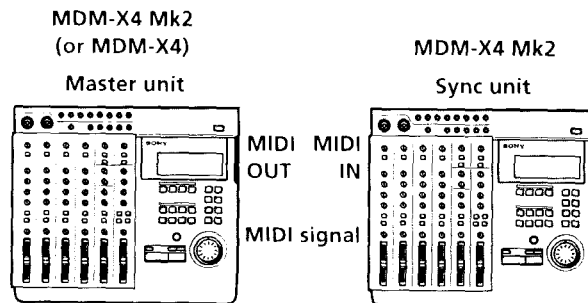
Setup

1 Set the "Sync" system setting of the master unit to MTC.
See "Changing a Setting" (page 18 of the main "Operating Instructions") and "Sync mode setting (Sync)" (page 3 of this booklet) for details.

2 Set the "Sync" system setting of the sync unit to EXT.
See "Changing a Setting" (page 18 of the main "Operating Instructions") and "Sync mode setting (Sync)" (page 3 of this booklet) for details.

3 Set both units to the beginning of the appropriate songs.

4 Start playback on the master unit.
The sync unit starts playing in sync with the master unit. The signal is muted and "Chase" appears in the display window until synchronization stabilizes.
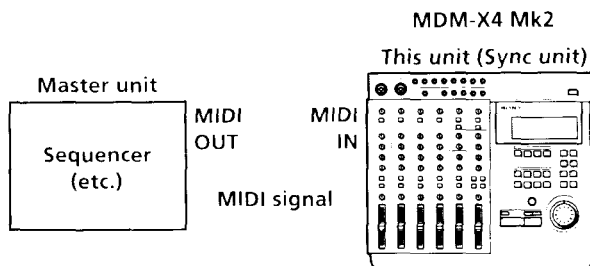
Connecting the MDM–X4 Mk2 to another MIDI Component

Use a MIDI cable to connect this unit to the sequencer (etc.).
In this case, be sure to connected sequencer (etc.) that is capable of outputting MTC (MIDI Time Code) signals to and external device.

MDM-X4 Mk2

This unit (Sync unit)

Master unit

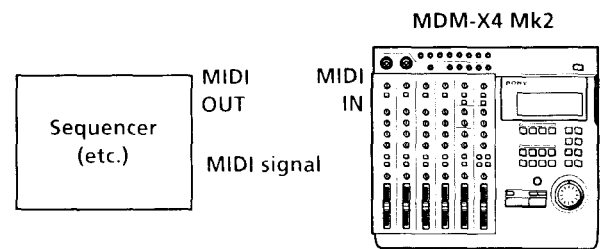Sequencer (etc.) — MIDI OUT — MIDI signal — MIDI IN

Setup

1 Set the master unit to output MTC signals.
Refer to the operating instructions supplied with your sequencer (etc.) for details.

2 Set the "Sync" system setting on this unit to EXT.
See "Changing a Setting" (page 18 of the main "Operating Instructions") and "Sync mode setting (Sync)" (page 3 of this booklet) for details.

3 Start playing the master unit.
This unit starts playing in sync with the master unit (sequencer, etc.). The signal is muted and "Chase" appears in the display window until synchronization stabilizes.

Controlling This Unit from Other MIDI Components Using MMC

You can control this unit from MMC (MIDI Machine Control) compatible external MIDI equipment, such as a sequencer (etc.).

Connections

Use a MIDI cable to connect this unit to a MIDI compatible sequencer (etc.).

MDM-X4 Mk2

Sequencer (etc.) — MIDI OUT — MIDI signal — MIDI IN

Setup

Set this unit's "MMC" system setting to "on".
See "Changing a Setting" (page 18 of the main "Operating Instructions") for details.

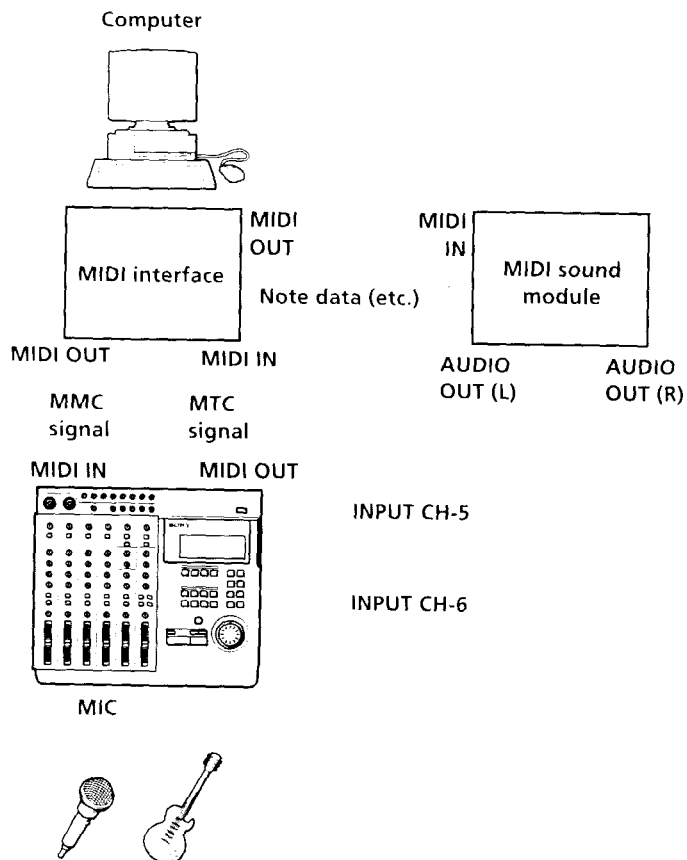This unit accepts the following MMC command/responses:
- **Stop (Command 01)** : Stops the disc. Reception of this command during recording (or rehearsal) will cause recording (rehearsal) to stop.
- **Play (Command 02,03)** : Starts playback. Reception of this command during recording (or rehearsal) will not cause recording (rehearsal) to stop.
- **Fast Forward (FF) (Command 04)** : Fast forward. Reception of this command during recording (or rehearsal) will cause recording (rehearsal) to stop.
- **Rewind (REW) (Command 05)** : Rewind. Reception of this command during recording (or rehearsal) will cause recording (rehearsal) to stop.
- **Record Strobe (Command 06)** : During playback, it starts recording on the recordable track (the track selected with the REC SELECT key). During stop mode, it starts recording (or rehearsal) on the recordable track. Reception of this command during modes not listed above (pause mode, etc.) has no effect on the unit.

- **Record Exit (Command 07)** : Stops recording on all tracks.
- **MMC Reset (Command 0D)** : Resets MMC related information to the state it was in at power on.
- **Write (Command 40,41)** : Writes or changes data in the specified information field (for Track Record Ready only).
- **Locate (Command 44)** : Locates the specified time code.
- **Group (Command 52)** : Checks the device ID list to see whether or not the unit belongs to the current group. If it belongs to the group, that group ID is used to receive MMC data.
This unit can store up to 16 IDs.
- **Track record ready (Response 4F)** : Turns REC SELECT on/off.

Example of a MIDI System

The following explains the construction of a synchronized MIDI system using both MMC and MTC and a MIDI sound module.

Connections

Computer

MIDI OUT   MIDI IN

MMC   MTC
signal   signal

MIDI IN   MIDI OUT

INPUT CH-5

INPUT CH-6

MIC

Features available from this type of system
- You can record live vocal and guitar tracks (acoustic sounds) on this unit and then use MIDI sound control to play them in sync with other sounds played back through a sequencer (etc.).
- You can use MTC to synchronize a sequencer (etc.) with this unit.
- You can use MMC to control this unit from a sequencer (etc.).

1 Press EDIT.
[EDIT] appears in the display.

2 Turn the jog dial so that "Song Tempo" appears in the display.
The name of the edit function starts blinking in the display.

3 Press ENTER.
The tempo map setting display appears.

$$01:----\downarrow---$$

Tempo
Tempo change position
Tempo map number (blinking)

Note
If you do not want to change the tempo information, leave the tempo information numbers blank.

4 Press ENTER again.
The indication for the tempo change position starts blinking.
Tempo map 1 can only be set to the first bar.

5 Turn the jog dial to display 0001.
The units in the display represent bars.
If you hold down SHIFT while turning the jog dial you can specify the tempo change position in 16th note units within the respective bar.

$$01:0001\downarrow120$$

Blinking

Note
If you do not want to change the tempo information, leave the tempo information numbers blank.

6 Press ENTER.
The indication for the tempo starts to blink.

7 Turn the jog dial to display 120.

$$01:0001\downarrow120$$

Blinking

8 Press ENTER.
The time setting display appears.

9 Use the jog dial and ENTER to display 04/04.

$$01:04/04$$

10 Press ENTER again when finished.
The tempo map number blinks.

11 Turn the jog dial to display 02.

$$02:----\downarrow---$$

12 Repeat steps 3~9 to create the new tempo map.
When the tempo map is complete, the settings are displayed in order automatically starting from the first tempo change position.

To complete construction of the tempo map
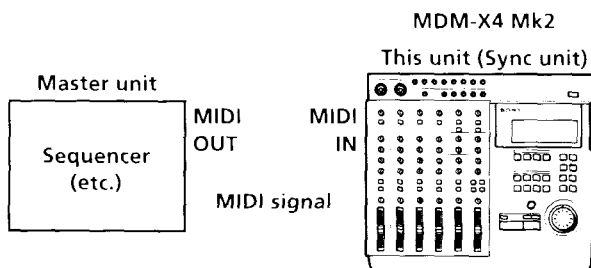Press EXIT repeatedly until the EDIT display disappears from the display.

Notes
• The time setting is only possible at the beginning of each bar.
• You can assign up to 50 tempo maps to each song. The tempo information can be stored on the disc, but since there is a limited amount of memory on each disc it may not be possible to store 50 tempo maps for each song if there are several songs on a disc. In this case "Tempo Full" will appear in the display when you select the tempo map number.
• Due to the nature of the MD system, MIDI clock information cannot be output and tempo information cannot be stored when using standard music MD discs.

Connecting the MDM–X4 Mk2 to another MIDI Component

Use a MIDI cable to connect this unit to the sequencer (etc.).
In this case, be sure to connected sequencer (etc.) that is capable of outputting MTC (MIDI Time Code) signals to and external device.

MDM-X4 Mk2
This unit (Sync unit)

Master unit

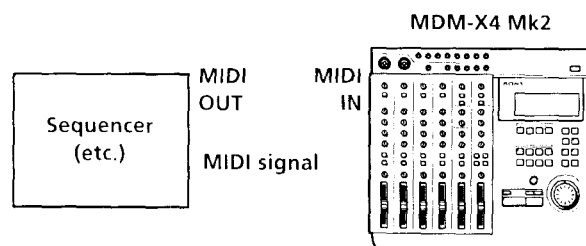Sequencer (etc.) — MIDI OUT — MIDI signal — MIDI IN

Setup

1 Set the master unit to output MTC signals.
Refer to the operating instructions supplied with your sequencer (etc.) for details.

2 Set the "Sync" system setting on this unit to EXT.
See "Changing a Setting" (page 18 of the main "Operating Instructions") and "Sync mode setting (Sync)" (page 3 of this booklet) for details.

3 Start playing the master unit.
This unit starts playing in sync with the master unit (sequencer, etc.). The signal is muted and "Chase" appears in the display window until synchronization stabilizes.

Controlling This Unit from Other MIDI Components Using MMC

You can control this unit from MMC (MIDI Machine Control) compatible external MIDI equipment, such as a sequencer (etc.).

Connections

Use a MIDI cable to connect this unit to a MIDI compatible sequencer (etc.).

MDM-X4 Mk2

Sequencer (etc.) — MIDI OUT — MIDI signal — MIDI IN

Setup

Set this unit's "MMC" system setting to "on".
See "Changing a Setting" (page 18 of the main "Operating Instructions") for details.

This unit accepts the following MMC command/ responses:
- **Stop (Command 01)** : Stops the disc. Reception of this command during recording (or rehearsal) will cause recording (rehearsal) to stop.
- **Play (Command 02,03)** : Starts playback. Reception of this command during recording (or rehearsal) will not cause recording (rehearsal) to stop.
- **Fast Forward (FF) (Command 04)** : Fast forward. Reception of this command during recording (or rehearsal) will cause recording (rehearsal) to stop.
- **Rewind (REW) (Command 05)** : Rewind. Reception of this command during recording (or rehearsal) will cause recording (rehearsal) to stop.
- **Record Strobe (Command 06)** : During playback, it starts recording on the recordable track (the track selected with the REC SELECT key). During stop mode, it starts recording (or rehearsal) on the recordable track. Reception of this command during modes not listed above (pause mode, etc.) has no effect on the unit.

Notes Regarding External Synchronization

During external sync

- Due to the nature of the MiniDisc system, this unit may require a certain amount of time before it can follow the MIDI Time Code being input from an external component. "Chase" appears in this unit's display until the component to which this unit is syncing achieves stability. Recording and playback of sound signals is not possible during the "Chase" display (this unit is muted).
  Wait at least 10 seconds after starting the master unit for the sync to stabilize before starting to record.

- Even after achieving stability, if the MTC signal being input is momentarily interrupted or time code information is dropped "Chase" will reappear and this unit will mute. Also, if the MTC signal stops while recording a new song, recording will stop at that point.

- This unit operates on time codes that starts from the beginning of each song at: 0 hours 0 minutes 0 seconds 0 frames. To sync this unit, input the MIDI Time Code at this point. When outputting a MIDI Time Code from this unit, however, you can add an offset (see page 4 of this booklet for details).

- When syncing two MDM-X4 Mk2 units, operations such as locate point adjustments and setting changes (etc.) all follow the master unit. In other words, locate points set on the master unit are automatically transferred to the sync unit. Therefore, you can perform edit operations using the same locate points as the master unit.

- During external sync operations (playback or recording), only the REC Select and REC key may be operated. The System-SYNC setting is also inaccessible. Perform these operations during stop mode.

- Song Number information is not exchanged during MIDI Time Code synchronization. When using several units in sync, be sure to select the correct song on each unit before you begin.

- Do not sync to a master unit using pitch control. It may take a long time to achieve sync and the sync is likely unlock.

- The amount of data that must be read when starting playback from a song edited using the section edit function is quite large. Therefore, the amount of time required to sync to a song containing a section edit is much longer than that required to sync to one that hasn't. To use a song containing a section edit, we recommend first using Song Copy to make a copy of the song and then synchronizing to the copy instead of the original.

When synchronized operation does not work as expected

Is the MTC (MIDI Time Code) input to the MIDI IN jack being interrupted?

➡ Synchronization will not work if the MIDI Time Code is not input properly.

Does the input MTC contain an offset that is inappropriate for this unit?

➡ The beginning of each song must start at 0 hours 0 minutes 0 seconds 0 frames. Recordings of new songs must always start from this point.

Is the frame rate of the input MTC the same as the frame rate of this unit?

➡ This unit's frame rate can be set to either 25 or 30. Be sure that it is set to the same value as the frame rate being input from the external component.