

FM SOUND EXPANDER

EMT-1

USER'S GUIDE

BEDIENUNGSANLEITUNG

MANUEL DE L'UTILISATEUR

MANUAL DE INSTRUCCIONES

Thank you for purchasing a Yamaha EMT-1 FM Sound Expander. The EMT-1 is a sophisticated but easy-to-use FM Sound Expander designed primarily for use with Yamaha Clavinova, PortaTone and PortaSound instruments, and which incorporates the very latest Yamaha digital synthesis technology. Original Yamaha FM tone generator technology delivers a wide range of rich, vibrant voices that can significantly enhance the musical scope of keyboards that feature the MIDI interface. In order to obtain maximum performance, we urge you to read this User's Manual thoroughly before using your EMT-1, and keep the manual in a safe place for later reference.

Contents

	Page		Page
1. The Power Supply	2	5. MIDI Control	11
2. Description of Controls and Connectors	3	6. Troubleshooting	13
3. System Examples	4	7. MIDI System Exclusive Message	13
4. Operation	5	8. Specifications	14

Precautions ... READ THIS FIRST!

To ensure safe, reliable operation of your EMT-1, please read the following precautions carefully.



••• Choosing a Location for your EMT-1

Avoid placing the EMT-1 in the following locations to prevent possible damage:

- Locations exposed to direct sunlight or near sources of heat.
- Excessively cold locations.
- Locations exposed to high humidity or excessive dust.
- Locations subject to vibration or shock.
- Locations next to transformers or motors (e.g. refrigerators or similar heavy equipment), fluorescent lighting fixtures, television receivers, etc. This type of equipment emits electrical noise which may cause a buzzing or humming sound from the EMT-1.



••• Never Apply Unnecessary Force

The EMT-1 is a precision electronic device, and can be damaged if dropped or subject to strong physical shocks. Handle it with care.



••• The Power Supply

Use **ONLY** the specified power supply for the EMT-1, and always turn the power switch **OFF** and disconnect the power adaptor from the AC wall outlet after use.

CAUTION:

Do not place the AC power adaptor on top of the EMT-1.



••• External Cleaning

Clean the outer case with a soft, dry cloth. Never use solvents such as benzine or thinner, as these can damage the finish.



••• Connection with Other Devices

Before connecting the EMT-1 to a keyboard or other electronic device, make sure the power to both devices is turned **OFF**.

1 The Power Supply

The EMT-1 is designed for use with an optional Yamaha Power Adaptor. Read the following instructions carefully to ensure that you select the appropriate Power Adaptor and connect it properly.

Using the EMT-1 Alone

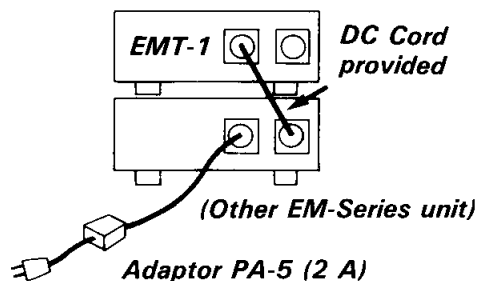
If you intend to use the EMT-1 alone (without other Yamaha EM-series devices), select a Yamaha PA-1, PA-4 (PA-40 in U.S.) or PA-5 Power Adaptor. Attempting to use other power adaptors can result in serious damage to the EMT-1.

Using the EMT-1 with Other EM-series Devices

If you plan to use the EMT-1 together with another EM-series device (such as the EMT-10 AWM Sound Expander), select the Yamaha PA-5 Power Adaptor. The PA-5 has sufficient power capacity (2 Amperes) to power two or three EM-series devices as long as their total power consumption does not exceed 2 Amperes.

Connect the power supply as shown in the diagram to the right. Use the DC cord provided to connect the DC OUT jack of the device powered by the PA-5 to the DC IN jack of the second device.

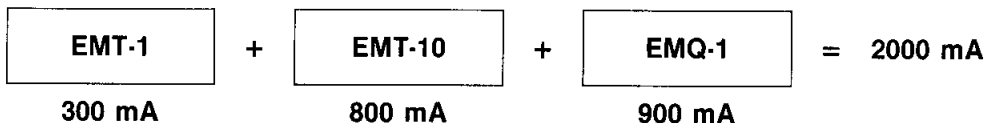
(Rear Panel)



Powering 3 or More EM-series Devices

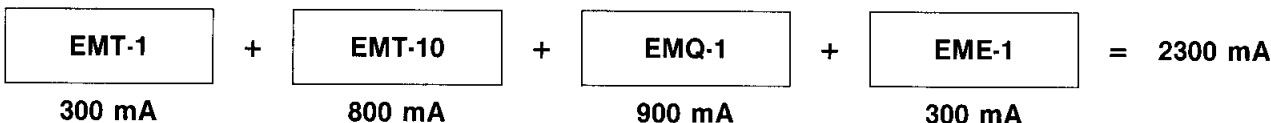
A single PA-5 Power Adaptor can supply a maximum of 2 Amps (2000 mA), and can therefore be used to power three or more EM-series devices as long as their total power consumption does not exceed this value.

[Combination Example 1]



The total power consumption of the combination shown above does not exceed 2000 mA, so a single PA-5 is sufficient.

[Combination Example 2]



In this case the 2000 mA limit is exceeded, and two Power Adaptors will be required.

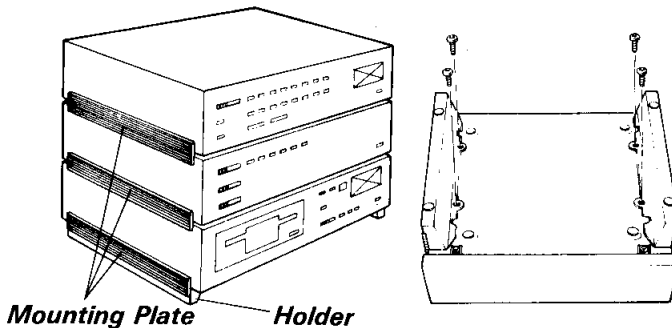
NOTE: DC OUT → DC IN jack connections should be made only between EM-series Expander Modules. Do not use an EM-series DC OUT jack to power other equipment.

Installing the Holders and Mounting Plates

- The EMT-1 comes supplied with two holders and two mounting plates. If you will be placing the EMT-1 on top of a Clavinova or other keyboard with top-mounted speakers, the holders and mounting plates raise the EMT-1 to prevent obstruction of the speaker.

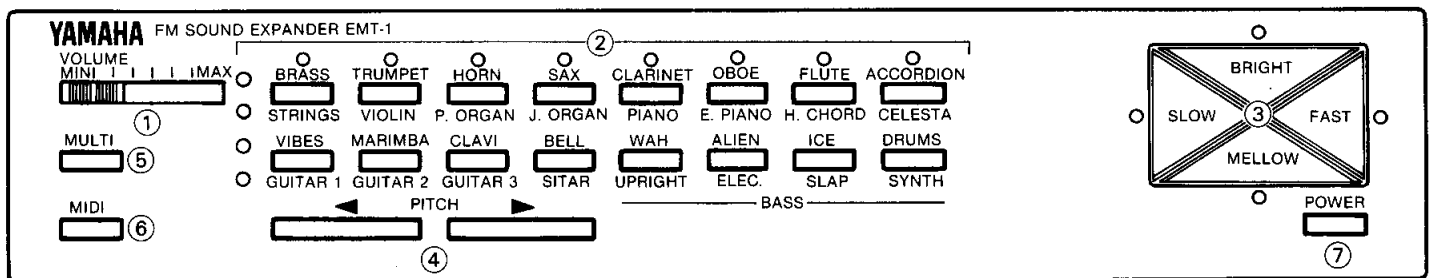
Attach one of the mounting plates to the five grooves on one of the holders. Then attach the mounting plate to the grooves on one side of the EMT-1. For added stability screw two of the screws provided into the holes in the bottom panel via the holes in the holder. Repeat this process with the remaining holder and mounting plate on the other side of the EMT-1.

- To mount an EM-series device on top of another, use only the mounting plates to connect the grooves of the upper and lower units.



2 Description of the Controls and Connectors

Front Panel



① VOLUME Control

The VOLUME control adjusts the volume level of the EMT-1's voices delivered via the rear-panel LINE OUT jacks.

- Signals received via the rear-panel AUX IN jacks are not affected by the VOLUME control.

② Voice Selectors & Indicators

The EMT-1's 32 superb FM voices are selected using these 16 selector buttons. The LED indicators above and to the left of the voice selectors indicate the currently selected voice.

③ Voice Variator and Indicators

The BRIGHT and MELLOW buttons make it possible to vary the tonal quality of the selected voice in 5 steps, while the FAST and SLOW buttons allow variation of the attack of the selected voice. The LED indicators associated with these buttons provide a rough indication of the type of voice variation currently selected. These indicators also show the status of many of the EMT-1's other functions.

④ PITCH Controls

The PITCH controls allow tuning the EMT-1 over a 1/2-tone range.

⑤ MULTI Button

The MULTI button activates the EMT-1's special MULTI TIMBRE mode, allowing four different voices to be controlled on four different MIDI channels from a MIDI sequencer or a Disk Recorder such as the Yamaha EMQ-1.

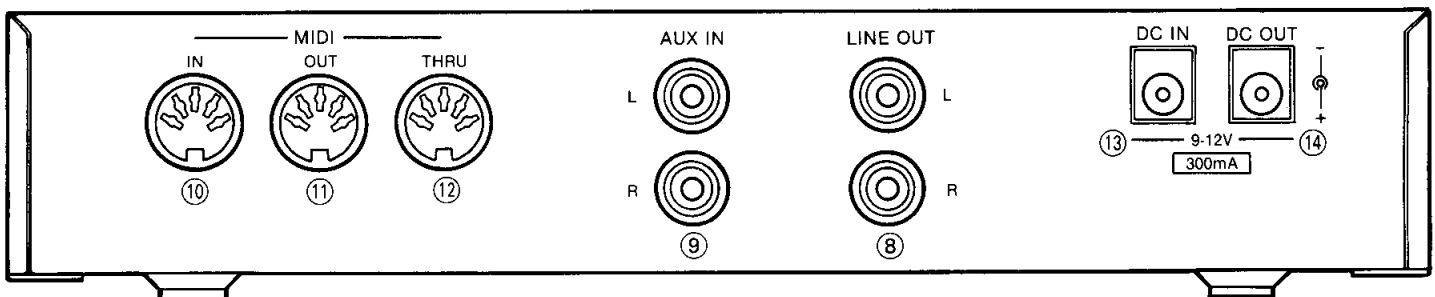
⑥ MIDI Button

The MIDI button provides access to a number of utility and MIDI control functions that add significantly to the versatility of the EMT-1.

⑦ POWER Switch

Press once to turn power ON, a second time to turn power OFF. The BRASS voice indicators will light when the power is initially turned ON.

Rear Panel



⑧ LINE OUT Jacks

These are the main outputs from the EMT-1. They should normally be connected to the inputs of your amplifier/speaker system or instrument.

⑨ AUX IN Jacks

A second instrument or line-level source can be connected to these jacks. Signals received at the AUX IN jacks are mixed with the EMT-1 voices and output via the LINE OUT jacks, but the front-panel VOLUME control setting does not affect the AUX IN signals.

⑩ MIDI IN Connector

MIDI data from the controlling keyboard's MIDI OUT connector is received via this connector. The received MIDI data "tells" the EMT-1 how to respond to actions performed on the keyboard.

⑪ MIDI OUT Connector

MIDI data generated by the EMT-1 itself is transmitted via this connector. If the MIDI OUT connector is connected to the keyboard's MIDI IN connector, for example, it is possible to select voices on the keyboard from the EMT-1's voice selectors.

⑫ MIDI THRU Connector

The MIDI THRU connector simply re-transmits any data received via the MIDI IN connector, allowing several MIDI devices like the EMT-1 to be "chained" together and controlled simultaneously.

⑬ DC IN Jack

The optional Yamaha PA-1/PA-4/PA-40/PA-5 Power Adaptor connects to this jack.

⑭ DC OUT Jack

Supplies power to another EM-series device via the supplied DC cord.

3 System Examples

The systems shown below represent only a few of the possibilities available with the EMT-1. With these examples, however, you should be able to apply the EMT-1 in just about any type of system.

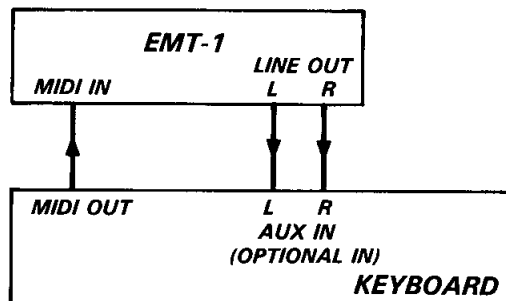
IMPORTANT NOTE!

The EMT-1 is a MIDI-controlled device and will ONLY function with a keyboard or other type of controller that has at least a MIDI OUT connector. Certain functions—such as MIDI program change transmission to the controlling keyboard—also require the keyboard you use to have a MIDI IN connector.

1. Keyboard with Internal Speakers + EMT-1

This type of system is the most simple and convenient since it allows you to use the EMT-1 without the need for an external amplifier/speaker system.

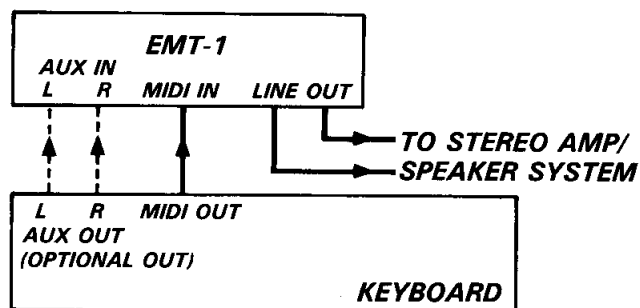
The MIDI OUT connector of the keyboard must be connected to the EMT-1 MIDI IN connector using the MIDI cable provided (the MIDI cable has a 5-pin connector on either end). If your keyboard has stereo LINE IN, AUX IN or OPTIONAL IN jacks, the EMT-1's LINE OUT jacks should be connected to these using the connecting cord provided. If your keyboard only has a single (mono) LINE IN or AUX IN jack, connect it to the EMT-1's LINE OUT L jack.



2. Keyboard + EMT-1 + External Sound System

This type of setup can be used with virtually any keyboard instrument, and provides the advantage of bigger, more dynamic sound thanks to external amplification.

The MIDI connections are made in the same way as described in system 1, above. The EMT-1 LINE OUT jacks are connected directly to an external amplification system and, if you want to send the keyboard sound to the external sound system as well, the keyboard AUX OUT jacks can be connected to the EMT-1 AUX IN jacks.

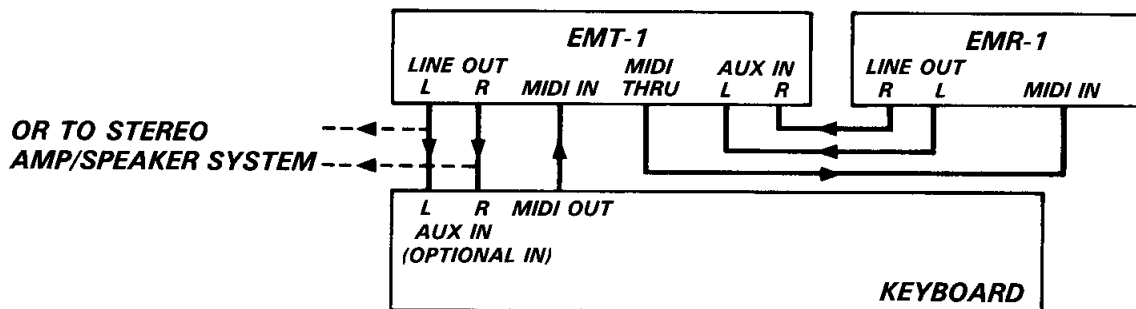


3. Keyboard with Internal Speakers + EMT-1 + EMR-1

In this system, the EMT-1 is used together with an EMR-1 Digital Drummer to provide a combination of outstanding voices and digital rhythm.

Since the EMR-1 also permits some MIDI control from the keyboard, it should be connected into the MIDI control chain as described below (refer to the EMR-1 User's Guide for details).

The MIDI connections between the keyboard and EMT-1 are made as described in the previous systems. The MIDI THRU connector of the EMT-1 is then connected to the MIDI IN connector of the EMR-1 so that MIDI signals transmitted by the keyboard are received by both the EMT-1 and EMR-1. The LINE OUT jacks of the EMR-1 are connected to the AUX IN jacks of the EMT-1, and the LINE OUT jacks of the EMT-1 are connected to the LINE IN, AUX IN or OPTIONAL IN jacks on the keyboard.



4 Operation

Preliminary Notes

The EMT-1 is a MIDI device, and its MIDI receive and send channel numbers must be set to the same channel numbers on which the controlling keyboard is sending and receiving for proper operation. When the EMT-1 is initially turned ON, however, it is automatically set to the OMNI receive mode allowing reception on all MIDI channels. The send channel is automatically set to channel 1. This means that if you don't have any specific MIDI-related requirements you can simply turn ON and play.

If your system includes several devices that will be operating on different MIDI channels, you may need to set the EMT-1 MIDI channels accordingly. Refer to the "Setting the MIDI Send and Receive Channels" and "Setting the MIDI Mode" sections on page 11 of this User's Guide for details.

When properly set up, the EMT-1 will respond to all note data as well as sustain/damper pedal, sostenuto pedal, soft pedal, modulation and pitch bend data from the controlling keyboard.

The EMT-1 can also be set to receive volume control data from your keyboard. Refer to "Volume Control Reception" on page 12.

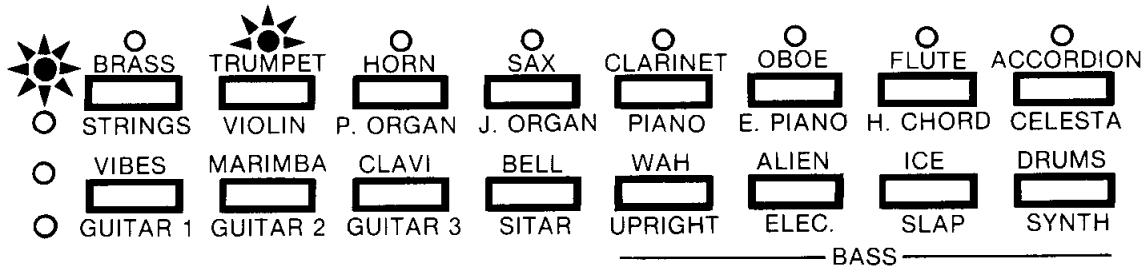
The Volume Control

Begin by setting the VOLUME control to a position about three-quarters of the way toward the "MAX" end of the scale. Then, when you actually begin playing the EMT-1, you can set the best VOLUME control level "by ear."



Selecting Voices

The EMT-1's 32 voices are selected using 16 voice selectors. Note that each voice selector has a label above and below it. The voices indicated by the upper and lower labels are selected alternately each time the corresponding selector is pressed. For example, if the TRUMPET voice is selected and you press the same selector a second time, the VIOLIN voice will be selected. Each press on the TRUMPET/VIOLIN selector alternately selects the TRUMPET and VIOLIN voices. The two LEDs to the left of each row of voice selectors indicate whether an upper or lower voice is selected. The LEDs above the selectors indicate which selector is currently active.



In this example the indicator LEDs show that the TRUMPET voice is selected.

- The BRASS voice is automatically selected when the power is initially turned ON.
- A maximum of 8 notes can be played simultaneously.

■ Selecting Voices from the Controlling Keyboard

Many MIDI keyboards send MIDI program change numbers when one of their voice selectors is pressed, or have a special program change number transmission feature. This capability allows EMT-1 voices to be selected directly from the controlling keyboard by simply pressing the appropriate voice selector on the keyboard or sending the appropriate MIDI program change number. The following chart shows which EMT-1 voices are selected according to received MIDI program change numbers.

VOICE	VOICE SELECTOR (PROGRAM CHANGE NO.)	VOICE	VOICE SELECTOR (PROGRAM CHANGE NO.)	VOICE	VOICE SELECTOR (PROGRAM CHANGE NO.)
BRASS	0	J. ORGAN	11	ICE	22
TRUMPET	1	PIANO	12	DRUMS	23
HORN	2	E. PIANO	13	GUITAR 1	24
SAX	3	H. CHORD	14	GUITAR 2	25
CLARINET	4	CELESTA	15	GUITAR 3	26
OBOE	5	VIBES	16	SITAR	27
FLUTE	6	MARIMBA	17	UPRIGHT BASS	28
ACCORDION	7	CLAVI	18	ELEC. BASS	29
STRINGS	8	BELL	19	SLAP BASS	30
VIOLIN	9	WAH	20	SYNTH BASS	31
P. ORGAN	10	ALIEN	21		

The EMT-1 also sends the above program change numbers whenever a voice is selected using the front-panel voice selectors. If your keyboard is set up to receive program change numbers, keyboard voices can also be selected using the EMT-1 voice selectors. To do this, the MIDI OUT connector of the EMT-1 must be connected to the MIDI IN connector of your keyboard.

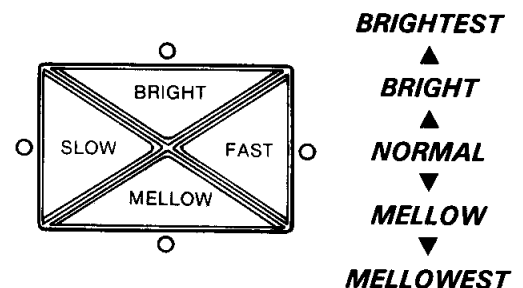
- If your keyboard only has, for example, 5 voices and thus 5 voice selectors, only the first 5 EMT-1 voices can be selected from the keyboard.

Modifying the Selected Voice

The EMT-1 MELLOW, BRIGHT, SLOW and FAST Voice Variator makes it possible to alter the sound of each voice in a number of ways to ideally match your mood and music. The MELLOW and BRIGHT controls permit tonal variation in five stages, while the SLOW and FAST controls offer five stages of attack speed variation. The result is a total of 800 voice variations that can be created with the EMT-1's 32 voices.

■ BRIGHT/MELLOW (Tone) Variation

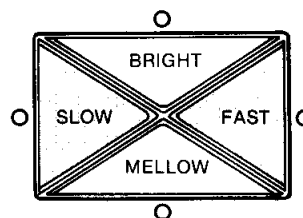
The large BRIGHT and MELLOW buttons located to the right of the panel can be used to modify the tone of the selected voice in 5 steps:



When neither the MELLOW or BRIGHT LEDs are lit, which is the case immediately after the POWER switch has been turned ON, the tone is set to NORMAL. Pressing the BRIGHT button once causes the BRIGHT LED to light and sets the tone to BRIGHT. Pressing the BRIGHT button a second time sets the tone to BRIGHTEST. The same type of operation applies to the MELLOW button. The NORMAL setting can be restored from any other setting by pressing both the MELLOW and BRIGHT buttons simultaneously.

■ SLOW/FAST (Attack) Variation

The large SLOW and FAST buttons located to the right of the panel can be used to modify the attack of the selected voice—i.e. whether the notes begin sharply or smoothly—in 5 step:



SLOWEST ◀ SLOW ◀ NORMAL ▶ FAST ▶ FASTEST

When neither the SLOW or FAST LEDs are lit, which is the case immediately after the POWER switch has been turned ON, the attack is set to NORMAL. Pressing the SLOW button once causes the SLOW LED to light and sets the attack to SLOW. Pressing the SLOW button a second time sets the attack to SLOWEST. The same type of operation applies to the FAST button. The NORMAL setting can be restored from any other setting by pressing both the SLOW and FAST buttons simultaneously.

Varying Pitch

When the POWER switch is initially turned ON, the EMT-1 is set to standard pitch: A3 = 440 Hz. The PITCH buttons can be used to “tune” the EMT-1 to match the pitch of other instruments. Each time you press the PITCH ▶ or ◀ button, the pitch is increased or decreased by approximately 1.5 cents (a cent is 100th of a semitone). You can also hold down either of the pitch buttons for continuous pitch change in the specified direction. The maximum amount of pitch variation is ±50 cents, allowing you to tune the EMT-1 over approximately a semitone range. Standard pitch can be restored by pressing both the ◀ and ▶ PITCH buttons simultaneously.

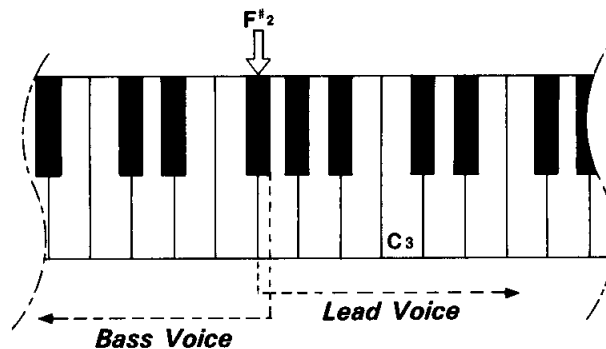
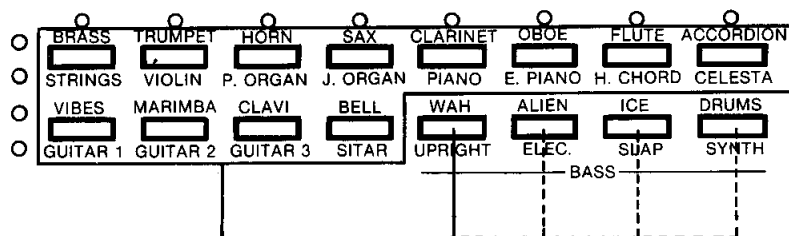


Using the Split Mode

Normally, any voice you select can be played over the entire range of the controlling keyboard you use. The EMT-1 SPLIT mode, however, allows you to play a bass voice on the left side of the keyboard and any other voice on the right-hand section.

To activate the SPLIT mode, hold down one of the bass voice selectors (marked with the “—BASS—” label), and, while holding the bass voice selector, select any other non-bass voice in the normal way. The selected bass voice can now be played on the lower (left-hand) section of the keyboard and the second “lead” voice selected can be played on the upper (right-hand) section. The LED indicators will show the selected “lead” voice.

The SPLIT mode can be exited by selecting any voice in the normal way.



- In the SPLIT mode, a maximum of 2 notes can be played on the bass section of the keyboard and a maximum of 6 notes can be played on the right-hand section.
- When the EMT-1 receives a MIDI program change number from the controlling keyboard while in the SPLIT mode (i.e. when you press a voice selector on your keyboard), program change numbers 0 through 27 will change the upper voice while program change numbers 28 through 31 will change the bass voice.

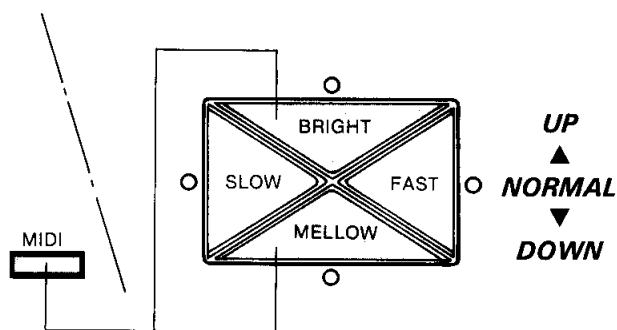
Transposition

This function allows you to shift (transpose) the pitch of the entire keyboard up or down in semitone (100-cent) increments over a range of $\pm 1/2$ octave.

To transpose up, hold down the MIDI button and press the BRIGHT button. This causes the current transpose status to be displayed on the MELLOW and BRIGHT LEDs. Each subsequent press on the BRIGHT button while holding the MIDI button increases pitch by 1 semitone up to a maximum of 6 semitones. The BRIGHT LED will light as long as the MIDI button is held to indicate upward transposition.

To transpose down, hold down the MIDI button and press the MELLOW button. This causes the current transpose status to be displayed on the MELLOW and BRIGHT LEDs. Each press on the MELLOW button while holding the MIDI button decreases pitch by 1 semitone up to a maximum of 6 semitones. The MELLOW LED will light as long as the MIDI button is held to indicate downward transposition.

Press both the MELLOW and BRIGHT buttons simultaneously to restore normal pitch.



Press while holding down the MIDI button.

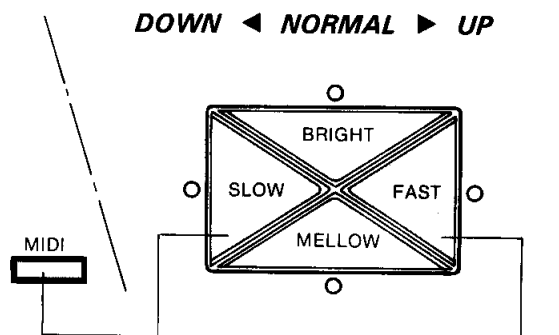
Octave Shift

The OCTAVE SHIFT function allows you to shift the pitch of the entire keyboard up or down in 1-octave increments over a range of ± 2 octaves.

To shift up, hold down the MIDI button and press the FAST button. This causes the current octave shift status to be displayed on the SLOW and FAST LEDs. Each subsequent press on the FAST button while holding the MIDI button increases pitch by 1 octave up to a maximum of 2 octaves. The FAST LED will light as long as the MIDI button is held to indicate upward octave shift.

To shift down, hold down the MIDI button and press the SLOW button. Each press on the SLOW button while holding the MIDI button decreases pitch by 1 octave up to a maximum of 2 octaves. The SLOW LED will light as long as the MIDI button is held to indicate downward octave shift.

Press both the SLOW and FAST buttons simultaneously to restore normal pitch.



Press while holding down the MIDI button.

Shifting Bass Voices Down an Octave

When you play a bass voice on a small keyboard or in the SPLIT mode, the bass voice may sound more natural if its pitch is shifted down one octave. This function shifts the pitch of only the bass voices down one octave, leaving the other voices at their normal pitch.

1. While holding the MIDI button down, press the ICE/SLAP voice selector once. This will display the current pitch of the bass voices:
 - If the MELLOW LED is lit, the bass voices are at normal pitch.
 - If the BRIGHT LED is lit, the bass voices are shifted down one octave.
2. To change the current setting, press the ICE/SLAP voice selector a second time (while still holding the MIDI button). Each time you press the ICE/SLAP selector the bass pitch will alternate between normal and shifted.
3. Release the MIDI button.

Changing the Velocity Mode

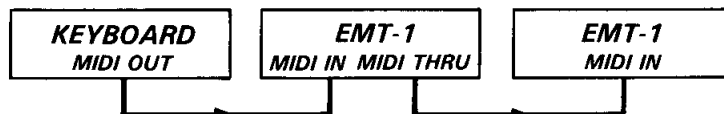
Depending on the keyboard you use, the dynamics of the EMT-1 voice may not properly match those of the keyboard voices. For example, if you play a mezzo-forte (mf = moderately loud) note on the keyboard, the EMT-1 voice might sound too loud in relation to the keyboard voice. This situation can be easily remedied by changing the EMT-1 VELOCITY MODE.

1. While holding the MIDI button down, press the DRUMS/SYNTH voice selector once. This will display the current velocity mode:
 - If the MELLOW LED is lit, the velocity mode is normal (the EMT-1 produces mf volume when it receives a MIDI velocity value of 64).
 - If the BRIGHT LED is lit, the EMT-1 produces mf volume when it receives a MIDI velocity value of 96—i.e. you have to play the keyboard harder to produce mf volume.
2. To change the current setting, press the DRUMS/SYNTH voice selector a second time (while still holding the MIDI button). Each time you press the DRUMS/SYNTH selector the velocity mode will alternate between mf = 64 and mf = 96.
3. Release the MIDI button.

The Odd and Even Note Modes

Although a single EMT-1 can produce a maximum of 8 notes simultaneously, two EMT-1 units can be used together to provide 16-note polyphony if one is set to respond only to even-numbered MIDI note numbers and the other is set to respond only to odd-numbered notes.

1. While holding the MIDI button down, press the ALIEN/ELEC. voice selector once. This will display the current note mode:
 - If both the MELLOW and BRIGHT LEDs are lit, the EMT-1 is in the normal note mode, and will respond to all received MIDI note numbers.
 - If the MELLOW LED is lit, the note mode is EVEN, and the EMT-1 will respond only to even MIDI note numbers.
 - If the BRIGHT LED is lit, the note mode is ODD and the EMT-1 will respond only to odd MIDI note numbers.
2. To change the current setting, press the ALIEN/ELEC. voice selector a second time (while still holding the MIDI button). Each time you press the ALIEN/ELEC. selector the note mode will alternate between normal, odd and even.
3. Release the MIDI button.



Alternate Tunings

In addition to the standard “equal temperament” keyboard tuning, the EMT-1 can be set to provide three other tunings:

1. EQUAL TEMPERAMENT

Developed toward the end of the 19th century, this tuning features perfectly equal 1/2-tone intervals permitting complete freedom in transposition and key changes.

2. PIANO CURVE

This type of tuning is frequently employed in acoustic pianos, and may sound best when the EMT-1 is used with a Yamaha keyboard that features this type of tuning—such as the piano voices on a Yamaha Clavinova.

3. WERCKMEISTER

4. KIRNBERGER

Both these tunings were favored from the days of Bach, Beethoven and Chopin right up to the age of the romantics.

1. While holding the MIDI button down, press the WAH/UPRIGHT voice selector once. This will display the current tuning mode:
 - If the MELLOW LED is lit, the current tuning is EQUAL TEMPERAMENT.
 - If the SLOW LED is lit, the current tuning is PIANO CURVE.
 - If the BRIGHT LED is lit, the current tuning is WERCKMEISTER.
 - If the FAST LED is lit, the current tuning is KIRNBERGER.
2. To change the current setting, press the WAH/UPRIGHT voice selector a second time (while still holding the MIDI button). Each time you press the WAH/UPRIGHT selector the note mode will alternate between EQUAL TEMPERAMENT, PIANO CURVE, WERCKMEISTER and KIRNBERGER.
3. Release the MIDI button.

The Multi Timbre Mode

Note: The MULTI TIMBRE mode can only be used in conjunction with a MIDI sequencer or a Disk Recorder like the Yamaha EMQ-1. If you don't have access to this type of equipment, this section can be skipped.

In addition to the normal single-voice and split modes, the EMT-1 also features four special MULTI TIMBRE modes in which four different voices can be controlled from a MIDI sequencer or Disk Recorder such as the EMQ-1 on four different MIDI channels.

Caution: In the MULTI TIMBRE mode, each voice permits a maximum of 2 notes to be played simultaneously ($2 \times 4 = 8$). If you attempt to play the EMT-1 from your keyboard while one of the MULTI TIMBRE modes is selected, only two notes can be played simultaneously.

Press the MULTI button to activate the MULTI TIMBRE mode. Each time the MULTI button is pressed, one of the four LED indicators located to the left of the voice selectors will light, indicating which of the four available MULTI TIMBRE modes is selected. The MULTI TIMBRE modes, their voices and MIDI channel assignments are as follows:

MULTI



• **Top LED lit = MULTI TIMBRE Mode 1**

Voices	MIDI channel
VIOLIN	Basic Channel
FLUTE	Basic Channel + 1
OBOE	Basic Channel + 2
H. CHORD	Basic Channel + 3

• **2nd LED from top lit = MULTI TIMBRE Mode 2**

Voices	MIDI channel
E. PIANO	Basic Channel
GUITAR 2	Basic Channel + 1
BRASS	Basic Channel + 2
E. BASS	Basic Channel + 3

• **3rd LED from top lit = MULTI TIMBRE Mode 3**

Voices	MIDI channel
TRUMPET	Basic Channel
SAX	Basic Channel + 1
BRASS	Basic Channel + 2
U. BASS	Basic Channel + 3

• **4th LED from top lit = MULTI TIMBRE Mode 4**

Voices	MIDI channel
VIOLIN	Basic Channel
STRINGS	Basic Channel + 1
BRASS	Basic Channel + 2
U. BASS	Basic Channel + 3

In the above charts the term "Basic Channel" refers to the MIDI receive channel set according to the instructions given in the "Setting the MIDI Send and Receive Channels" section on page 11 of this User's Guide. When the EMT-1 is initially turned ON, the send channel and receive channels are automatically set to 1. If the EMT-1 MIDI receive channel is set to 1, for example, then the "Basic Channel" is 1, the "Basic Channel + 1" is channel 2, etc. In this case the four voices provided in each MULTI TIMBRE mode can be controlled on MIDI channels 1, 2, 3 and 4.

If you will be using the EMQ-1 Disk Recorder to control the four voices in the MULTI TIMBRE mode, refer to the EMQ-1 User's Guide for instructions on recording and playing back performance data on the appropriate channels. The data for each of the four parts must be recorded from the controlling keyboard on the appropriate MIDI channels.

- The MULTI TIMBRE mode can be exited by pressing any of the EMT-1's voice selectors.

5 MIDI Control

Power-on MIDI Settings

When the EMT-1 is initially turned ON, the MIDI channels and modes are automatically set as follows:

Receive Channel	Channel 1
Send Channel	Channel 1
OMNI Mode	ON (Receive only)
Program Change	ON
Control Change	ON

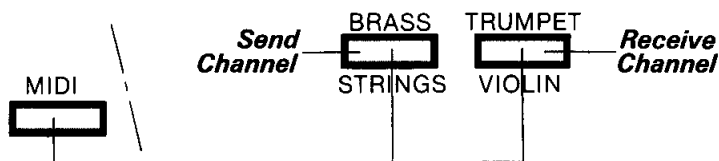
If the MIDI switch is held while the power switch is turned ON, the MIDI channels are set to match Yamaha EM-series expander modules:

Receive Channel	Channel 8
Send Channel	Channel 8
OMNI Mode	OFF

Setting the MIDI Send and Receive Channels

If you need to set the EMT-1 MIDI send and receive channels to any other channel than channel 1, follow the instructions given below.

- While holding the MIDI button, press the BRASS/STRINGS voice selector once to set the send channel, or the TRUMPET/VIOLIN voice selector once to set the receive channel. This will cause the currently set MIDI send or receive channel to be displayed on the BRIGHT, MELLOW, SLOW and FAST LED indicators.



Press while holding down the MIDI button.

The channel display works as follows:

LED	Added Value
BRIGHT LED	1
FAST LED	2
MELLOW LED	4
SLOW LED	8

The channel number is derived by adding together the values of the lit LEDs. If, for example, only the BRIGHT LED is lit, the current channel is 1. If the SLOW and FAST LEDs are lit, the current channel is 10 (8 + 2). This system allows display of the full range of 16 MIDI channels. If no LEDs are lit, then the MIDI channel is set to 16.

For easy reference, here's a chart showing all the possible LED combinations and the corresponding MIDI channel numbers.

LED/Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BRIGHT	•		•		•		•		•		•		•		•	
FAST		•	•			•	•			•	•			•	•	
MELLOW				•	•	•	•					•	•	•	•	
SLOW								•	•	•	•	•	•	•	•	•

- To change the MIDI channel, press the BRASS/STRINGS (for transmit channel) or TRUMPET/VIOLIN (for receive channel) voice selector again (while still holding the MIDI button). Each time you press the BRASS/STRINGS or TRUMPET/VIOLIN voice selector, the MIDI channel will be incremented (increased) by one, and the result displayed on the indicator LEDs. The MIDI channel is set to 16 when all LEDs are off. Press the voice selector again to return to channel 1.
- Release the MIDI button when the desired MIDI channel has been set.

Automatic Receive Channel Setting

Here's a quick, easy way to match the EMT-1 MIDI receive channel to that of the controlling keyboard.

- While holding the MIDI button, press and hold the TRUMPET/VIOLIN voice selector. Then press any key on the controlling keyboard. This automatically sets the EMT-1 MIDI receive channel to the keyboard's transmit channel.
- Release the MIDI button and the TRUMPET/VIOLIN voice selector.

Setting the MIDI Mode

In addition to MIDI send and receive channel selection, the EMT-1 makes it possible to set three other MIDI modes:

■ OMNI ON/OFF

When the OMNI mode is ON, the EMT-1 will receive on all MIDI channels regardless of the MIDI receive channel currently selected. When the OMNI mode is OFF, the EMT-1 will receive only on the currently selected MIDI channel. The OMNI mode is automatically turned ON whenever the EMT-1 POWER switch is turned ON.

1. While holding the MIDI button down, press the HORN/P. ORGAN voice selector once. This will display the current OMNI status:
 - If the MELLOW LED is lit, the OMNI mode is ON.
 - If the BRIGHT LED is lit, the OMNI mode is OFF.
2. To change the current setting, press the HORN/P. ORGAN voice selector a second time (while still holding the MIDI button). Each time you press the HORN/P. ORGAN selector the OMNI mode will alternate between ON and OFF.
3. Release the MIDI button.

■ Program Change ON/OFF

Normally the EMT-1 will respond to MIDI program change numbers received from the controlling keyboard, causing the correspondingly numbered EMT-1 voice to be selected whenever a voice selector is pressed on the keyboard. The EMT-1 will normally also send a MIDI program change number whenever one of its voices is selected, causing the correspondingly numbered voice to be selected on the keyboard if the keyboard is set up to receive program change numbers. This function makes it possible to cancel program change number reception and transmission so that voice can be independently selected on the controlling keyboard and EMT-1.

1. While holding the MIDI button down, press the SAX/J. ORGAN voice selector once. This will display the current program change status:
 - If the MELLOW LED is lit, program change is ON.
 - If the BRIGHT LED is lit, program change is OFF.
2. To change the current setting, press the SAX/J. ORGAN voice selector a second time (while still holding the MIDI button). Each time you press the SAX/J. ORGAN selector the program change status will alternate between ON and OFF.
3. Release the MIDI button.

■ Control Change ON/OFF

Normally the EMT-1 will respond to MIDI control change data received from the controlling keyboard, causing the selected EMT-1 voice to be affected by pitch bend, modulation and other "control" settings on the controlling keyboard. This function makes it possible to cancel control change data reception if you do not want the EMT-1 voices to be affected by the keyboard's controller settings.

1. While holding the MIDI button down, press the CLARINET/PIANO voice selector once. This will display the current control change status:
 - If the MELLOW LED is lit, control change is ON.
 - If the BRIGHT LED is lit, control change is OFF.
2. To change the current setting, press the CLARINET/PIANO voice selector a second time (while still holding the MIDI button). Each time you press the CLARINET/PIANO selector the control change status will alternate between ON and OFF.
3. Release the MIDI button.

Volume Control Reception

The EMT-1 can be made to receive volume control data from the keyboard as follows.

1. While holding the MIDI button down, press the BELL/SITAR voice selector once. This will display the current control change status:
 - If the MELLOW LED is lit, volume reception is OFF.
 - If the BRIGHT LED is lit, volume reception is ON.
2. To change the current setting, press the BELL/SITAR voice selector a second time (while still holding the MIDI button). Each time you press the BELL/SITAR selector the volume reception status will alternate between ON and OFF.
3. Release the MIDI button.

Note: Volume reception will only function with keyboards that transmit volume data.

Transmitting the EMT-1 Settings

This function causes all the current EMT-1 settings—selected voice, pitch, transpose, octave shift, etc.—to be transmitted via the MIDI OUT terminal. This is particularly useful if you will be recording performances on the EMQ-1 Disk Recorder which will be used to control the EMT-1 on playback. By transmitting the EMT-1 settings and recording them on the EMQ-1 prior to the actual performance data, the EMT-1 will be automatically restored to the same settings when the performance recorded on the EMQ-1 is played back. Refer to the EMQ-1 User's Guide for operational details.

1. While holding the MIDI button, press the OBOE/E. PIANO voice selector. This causes all the current EMT-1 settings to be transmitted via the MIDI OUT terminals.
2. Release the MIDI button.

6 Troubleshooting

If the EMT-1 does not seem to be functioning properly, please check the following points before assuming that the EMT-1 is faulty.

Symptom	Possible Cause
No sound.	<ul style="list-style-type: none"> • MIDI connections between keyboard and EMT-1 not properly made. Check all connections carefully. • The OMNI mode is OFF and the EMT-1 MIDI receive channel is not set to match the send channel of the keyboard. Check MIDI channel settings. • EMT-1 LINE-OUT jacks not connected to amplifier or keyboard inputs. Check all connections carefully. • External amplifier power not on or volume turned down. • EMT-1 power not on or VOLUME control is turned down.
Only 2 output notes.	<ul style="list-style-type: none"> • Is the EMT-1 in the MULTI TIMBRE mode? Try pressing any of the voice selectors.

7 MIDI System Exclusive Message

If you're already very familiar with MIDI, or are using a computer to control your music hardware with computer-generated MIDI messages, the data provided in this section can help you to control the EMT-1.

1. EXCLUSIVE MESSAGE FORMAT

F0H, 43H, 73H, 14H, xxH, nnH, F7H

Values for xxH and nnH in the above data string are given below.

2. MIDI Send Channel Number

xxH = 00H

nnH = 00H—0FH = MIDI channel numbers 1 through 16.

3. MIDI Receive Channel Number

xxH = 01H

nnH = 00H—0FH = MIDI channel numbers 1 through 16.

4. Voice Variation Control Settings

xxH = 11H

nnH = BRIGHT ——— NORMAL ——— MELLOW
 06H 07H 08H 09H 0AH

nnH = FAST ——— NORMAL ——— SLOW
 16H 17H 18H 19H 1AH

5. Velocity Mode

xxH = 11H

mf = 64: nnH = 20H

mf = 96: nnH = 21H

6. Bass Voice Octave Down

xxH = 11H

NORMAL: nnH = 30H

OCTAVE DOWN: nnH = 31H

7. MIDI Odd/Even Note Receive

xxH = 11H

NORMAL: nnH = 40H

ODD: nnH = 41H

EVEN: nnH = 42H

8. Alternate Tunings

xxH = 11H

EQUAL TEMPERAMENT: nnH = 50H

PIANO CURVE: nnH = 51H

WERKMEISTER: nnH = 52H

KIRNBERGER: nnH = 53H

9. Volume Control Reception

xxH = 11H

DISABLE: nnH = 60H

ENABLE: nnH = 61H

10. Pitch Control

xxH = 20H

Cents = 50 -3 -1.5 ±0 +1.5 +3 +50

nnH = 60H 61H 7EH 7FH 00H 01H 02H 1FH

11. Transpose Data

xxH = 21H

Semitones = -6 -5 -2 -1 ±0 +1 +3

nnH = 7AH 7BH 7EH 7FH 00H 01H 02H 05H

12. Octave Shift Data

xxH = 22H

Octave= -2 -1 ±0 +1 +2
nnH= 7EH 7FH 00H 01H 02H

13. Assign Mode

xxH = 30H

NORMAL MODE: nnH = 00H
SPLIT MODE: nnH = 01H
MULTI TIMBRE MODE: nnH = 02H
8-VOICE MODE* nnH = 03H

* The 8-voice mode is a special mode, available ONLY via MIDI control, in which 8 mono voices can be independently controlled.

14. Multi Timbre Mode Select

xxH = 31H

nnH = 00H—03H = MULTI TIMBRE modes 1 through 4

15. 8-Voice Mode Variation Controls

xxH = 40H—47H

0—7 are the channels for 8-voice reception.

nnH =	BRIGHT	06H	07H	NORMAL	08H	09H	0AH	MELLOW
nnH =	FAST	16H	17H	NORMAL	18H	19H	1AH	SLOW

16. LFO Waveform

xxH = 50H

SAWTOOTH:

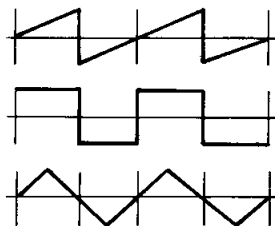
nnH = 00H [Diagram]

RECTANGULAR:

nnH = 01H [Diagram]

TRIANGULAR:

nnH = 02H [Diagram]



SAMPLE & HOLD: nnH = 03H Random levels output

17. LFO Speed

xxH = 51H

SLOW: nnH = 00

FAST: nnH = 7FH

18. PMD (Pitch Modulation Depth) and AMD (Amplitude Modulation Depth)

PMD: xxH = 52H

AMD: xxH = 53H

MODULATION: nnH = 00H—7FH

19. PMS (Pitch Modulation Sensitivity) and AMS (Amplitude Modulation Sensitivity)

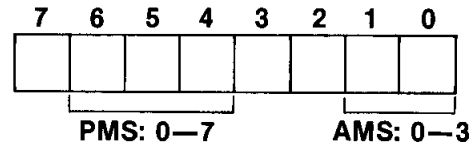
xxH = 60H—67H

0—7 are the receive channels.

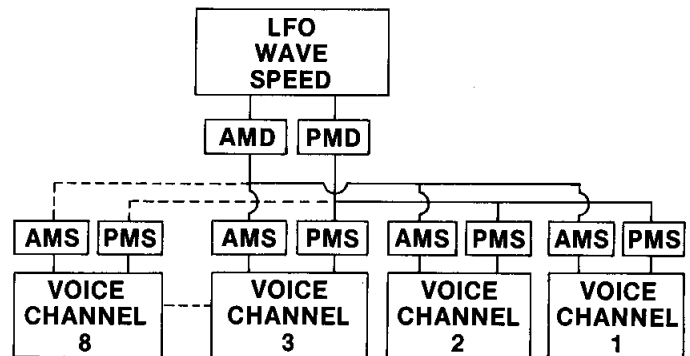
nnH = 00H—73H

Bits 6 through 4 (left most value, above) hold PMS value: 0—7

Bits 1 and 0 (right most value, above) hold AMS value: 0—3



Please note that AMS and PMS can be applied individually to each of the 8 voices, AMD and PMD apply to all voices simultaneously.



20. 8-voice Mode MIDI Channels

xxH = 70H—77H

0 through 7 are the voice channels

nnH = 00H—0FH

0 through FH are the MIDI channels (1—16)

8 Specifications

- **Voices** : BRASS, TRUMPET, HORN, SAX, CLARINET, OBOE, FLUTE, ACCORDION, STRINGS, VIOLIN, P. ORGAN (Pipe Organ), J. ORGAN (Jazz Organ), PIANO, E. PIANO (Electric Piano), H. CHORD (Harpsichord), CELESTA, VIBES, MARIMBA, CLAVI, BELL, WAH, ALIEN, ICE, DRUMS, GUITAR 1, GUITAR 2, GUITAR 3, SITAR, UPRIGHT BASS, ELEC. BASS, SLAP BASS, SYNTH BASS
- **Voice Modes** : Normal: 1 voice × 8 notes.
Split: 1 voice × 2 notes (bass),
1 voice × 6 notes (right hand).
Multi: 4 voices × 2 notes.
- **Controls** : VOLUME, Effect Selectors, PITCH ◀ & ▶, BRIGHT/MELLOW, SLOW/FAST, MIDI, MULTI, Power Switch
- **Connectors** : LINE OUT (L, R), AUX IN (L, R), MIDI IN/THRU/OUT, DC IN (9—12V), DC OUT (9—12V)
- **Nominal Output Level** : +4 dBm or 3V p-p max.
- **AUX IN/LINE OUT Gain** : 0dB ± 2 dB
- **Power Supply** : Optional Yamaha PA-1 (300 mA), PA-4/PA-40 (1 A) or PA-5 (2 A) Power adaptor
- **Power Consumption** : 300 mA max.
- **Dimensions (W × H × D)** : 218 × 44 × 215 mm (8-4/7" × 1-5/7" × 8-4/9")
- **Weight** : 1.1 kg (2.4 lbs)
- **Accessories** : DC Cord × 1, MIDI cable × 1, Connecting Cord × 1, Holder × 2, Mounting Plate × 2.

• Specifications are subject to change without notice.

Function	Transmitted	Recongnized	Remarks
Basic Default	: 1	: 1	:
Channel Changed	: 1-16	: 1-16	:
Mode Default	: 3	: 1	:
Mode Messages	: X	: OMNIon,OMNIoff	:
Mode Altered	: *****	: X	:
Note Number : True voice	: X *****	: 0-127 21-108	:
Velocity Note on	: X	: 0 v=1-127	:
Velocity Note off	: X	: X	:
After Key's	: X	: X	:
Touch Ch's	: X	: X	:
Pitch Bender	: X	: 0 0-12 semi	:
Control Change	01 : X 07 : X 64 : X 66 : X 67 : X	: 0 : 0 : 0 : 0 : 0	: Modulation : Volume : Sustain : Sostenuto : Soft Pedal
Program Change : True #	: 0 0-31 : *****	: 0 0-31 : 0-31	:
System Exclusive	: 0	: 0	:
System : Song Pos	: X	: X	:
System : Song Sel	: X	: X	:
Common : Tune	: X	: X	:
System : Clock	: X	: X	:
Real Time:Commands	: X	: X	:
Aux : Local ON/OFF	: X	: X	:
Aux : All Notes OFF	: X	: 0 (123,124,125)	:
Mes- : Active Sense	: 0	: 0	:
sages:Reset	: X	: X	:
Notes	:	:	:

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO 0 : Yes
 Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO X : No

FCC INFORMATION

Attention users in the U.S.A.

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

Reorient the receiver antenna

Relocate the equipment with respect to the receiver

Move the equipment away from the receiver

Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402. Stock No. 004-000-00345-4.

- This applies only to products distributed by YAMAHA CORPORATION OF AMERICA.

Wichtiger Hinweis für die Benutzung in der Bundesrepublik Deutschland.

Bescheinigung des Importeurs

Hiermit wird bescheinigt, daß der/die/des

FM Sound Expander Typ: EMT-1

(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

VERFÜGUNG 1046/84

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Yamaha Europa GmbH

Name des Importeurs

- Dies bezieht sich nur auf die von der YAMAHA EUROPA GmbH vertriebenen Produkte.

YAMAHA
YAMAHA CORPORATION
PO Box 1, Hamamatsu, Japan