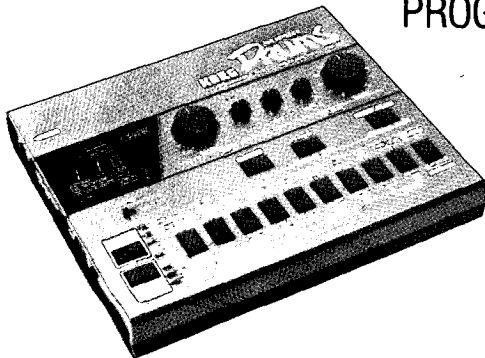
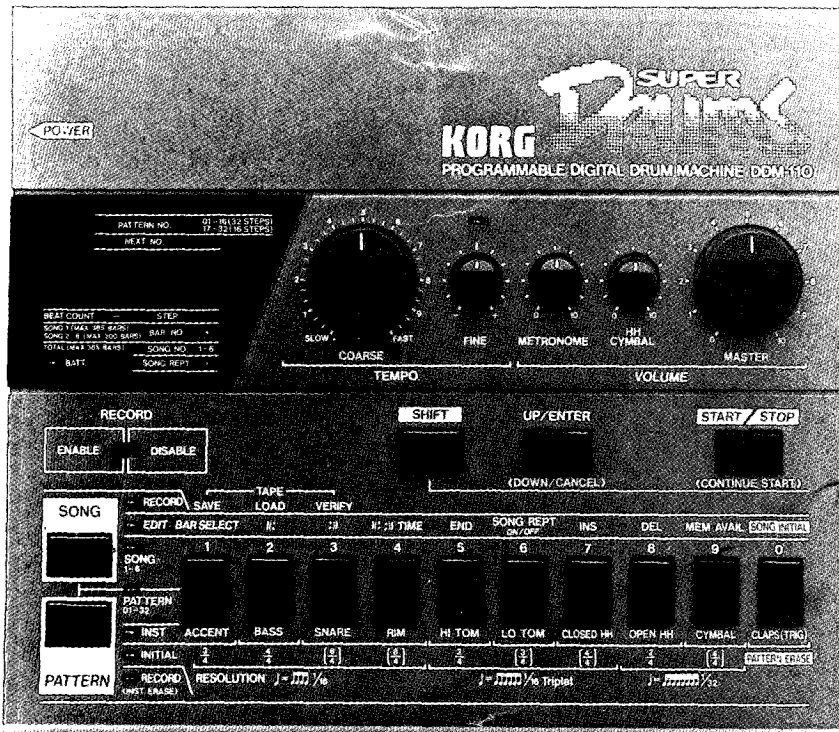


# **SUPER BOOK**

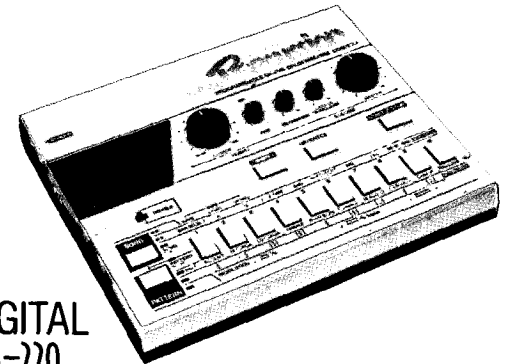
**FOR  
SUPER DRUMS  
SUPER PERCUSSION**

**KORG<sup>®</sup>**



# SUPER DRUMS

PROGRAMMABLE DIGITAL  
DRUM MACHINE  
DDM-110

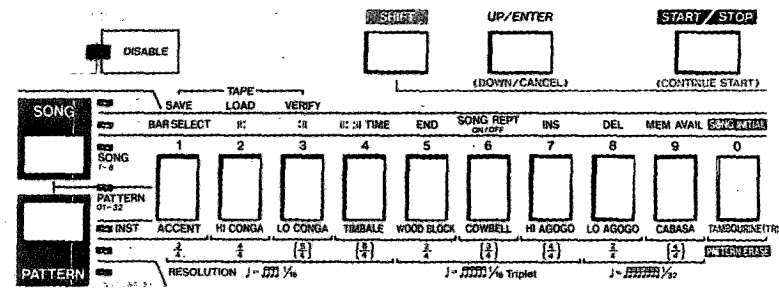
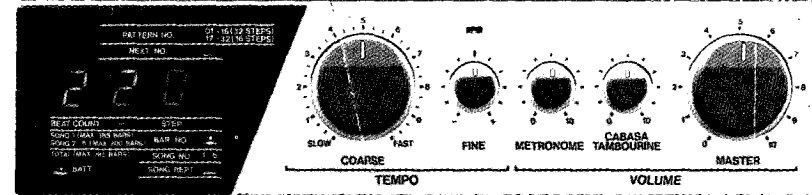


PROGRAMMABLE DIGITAL  
DRUM MACHINE DDM-220

# SUPER PERCUSSION

POWER

**Percussion**  
PROGRAMMABLE DIGITAL DRUM MACHINE DDM-220



# Making Music with the KORG DDM-110/220

The Korg DDM-110 and DDM-220 use digital recordings of real drum and percussion instruments as their sound sources. These sounds are stored as coded digital information in computer memory chips. To reproduce a sound, its data is read from memory and converted from digital to analog form. This same kind of technique is used in the Compact Disc, today's newest audio source. And it is the reason for the clarity, realism and power that you enjoy with these two new electronic musical instruments.

The DDM-110 and DDM-220 each have nine digital sounds. Drum sounds featured in the DDM-110 are bass, snare, rimshot, low tom, high tom, closed hi-hat, open hi-hat, cymbal, and handclaps. The DDM-220 has high conga, low conga, timbale, woodblock, cowbell, high agogo, low agogo, cabasa, and tambourine. These instruments are programmable. You can create up to 32 different rhythm patterns. Then you can connect these to make songs up to 390 bars long. Repeats can be added to play even longer songs.

There are two ways to create patterns. Either tap them out in real time, playing the keys as you would a drum kit, a method called "real time write." Or play them a step at a time without worrying about the metronome, a method called "step-time write."

You can also make changes in your patterns using either method.

A tape interface gives you virtually infinite pattern and song storage capacity. On the other hand, without storing anything you can still play the DDM-110 or DDM-220 in real time, using it in place of real drums or as additional percussion sound sources. Synchronization jacks let you hook up the DDM-110 and DDM-220 for synchronized performance. With the addition of the Korg KMS-30 it is also possible to synchronize operation with synthesizers, sequencers (MIDI or conventional), and multi-track tape decks.

In this book we will give you more details and ideas for making music with your DDM-110 and/or DDM-220 digital drums and percussion instruments.

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# Special Applications

## A For your music group

### SCENE 1

#### Where's the drummer?

When the drummer can't make it Everybody else has shown up for the practice. Where's the drummer? Finally you get a phone call—the drummer has

more pressing business, or maybe just forgot. Bring out the DDM-110 and you can still have a good rehearsal.

### SCENE 2

#### Play it again, Samantha

It's the tricky changes and breaks that need the most practice in a song. That's why it's nice to have a drum machine that can play exactly what you want

and play it over and over. Just program it once then play along till you have it down.

### SCENE 3

#### Add a little percussion

If you listen closely you'll hear percussion instruments being used in all kinds of music, not just Latin. Percussion can liven up a song and create a differ-

ent feel. With the DDM-220 you have nine different percussion sounds at your fingertips. Play it in real time or program it for automatic playback.

### SCENE 4

#### The sound of the future

Rhythm machines once were considered a poor substitute for real drums. That isn't true anymore. The DDM-110 and DDM-220 are so advanced that

you can use them instead of drums for today's latest sounds.

#### 1) Bands without drummers.

Not all groups need or want a drummer. The DDM-110 and DDM-220 can be programmed to play things that no real drummer would or could per-

form. See how fast a real drummer can play a continuous series of bass drum notes. Then turn up the tempo on the DDM-110.

#### 2) An extra dimension for a drummer.

With a drummer and the DDM-110 (and/or DDM-220) you can create a more unusual sound with a steadier beat. Program the DDM-110 for the drum-

mer to play along with. Or play the DDM-110 in real time along with the drummer.

# B For Multi-Track Recording

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## SCENE 5

### Percussion sweetening

If you are into multi-track recording then you probably use a drum machine—not only to play demo drum tracks, but also to put down a click track when playing with a human drummer. However, what happens if you want some percussion? With the DDM-220 you can easily get the up-to-the-minute conga, timbales, and other lively sounds to sweeten your productions. What's really handy is that you

can sync up the DDM-220 with the DDM-110 with just a single DIN cable. Synchronized operation is also possible with other drum machines. In some cases internal clock speed of the two units may differ. No problem, just use the Korg KMS-30 Midi Synchronizer to match the speeds (and add extra connection capabilities).

## SCENE 6

### Sync to tape with the KMS-30

If you're using a multi-track machine you usually record the rhythm machine first. What happens then if you want to add a second drum or percussion track? What happens if you want to change the drum track after overdubbing other instruments? You have to play it on real instruments or you can try the impossible—getting a drum machine to start on cue

and then keep time with itself. For a modest investment you can own the solution to this problem, the Korg KMS-30. This lets you record a special sync track on the tape. Then you can operate your DDM-110, DDM-220, and other units in perfect time, every time. You'll have more multi-track freedom and control than ever before.

# C For MIDI and Computer Compatibility

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## SCENE 7

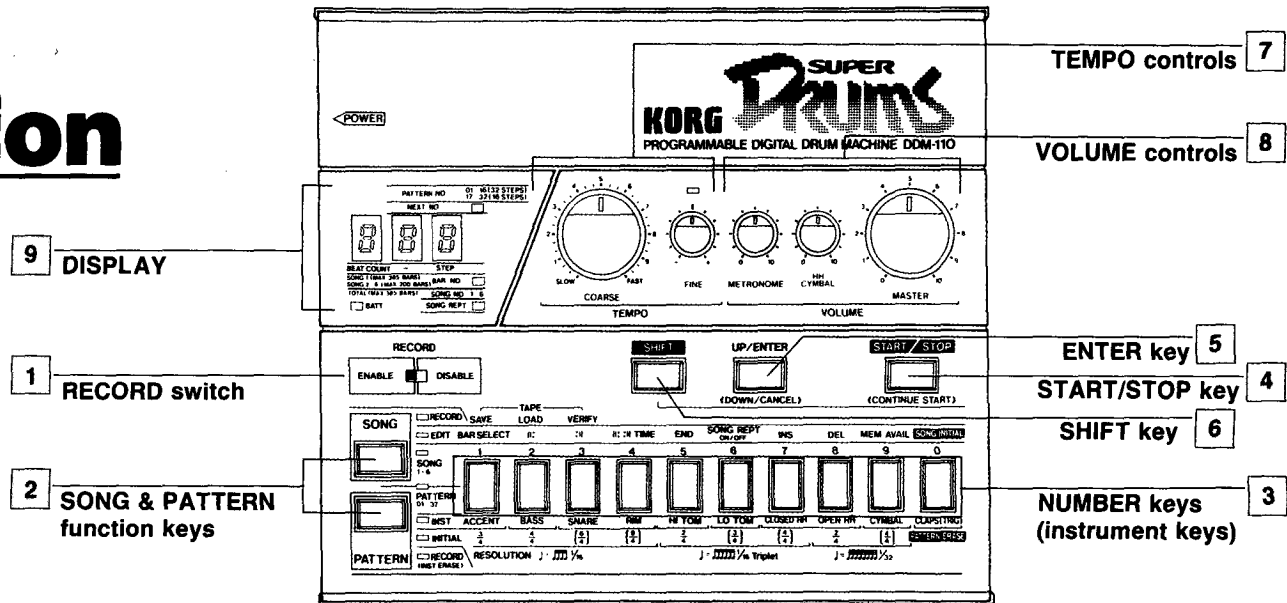
### Synchronized performance with all MIDI instruments

If you're in to synthesizers and computer music then you probably know about MIDI. This new interface standard for electronic instruments assures inter-connection compatibility between all MIDI equipment. Now you can also use non-MIDI instruments in your MIDI system. The key is the KMS-30. It con-

verts the MIDI clock data into an ordinary sync or tape sync signal. It can also do the opposite, converting sync to MIDI clock format. So you can use your DDM-110 and DDM-220 together with your MIDI synths, sequencers, and computer interface.

# Inside Information

## Front Panel



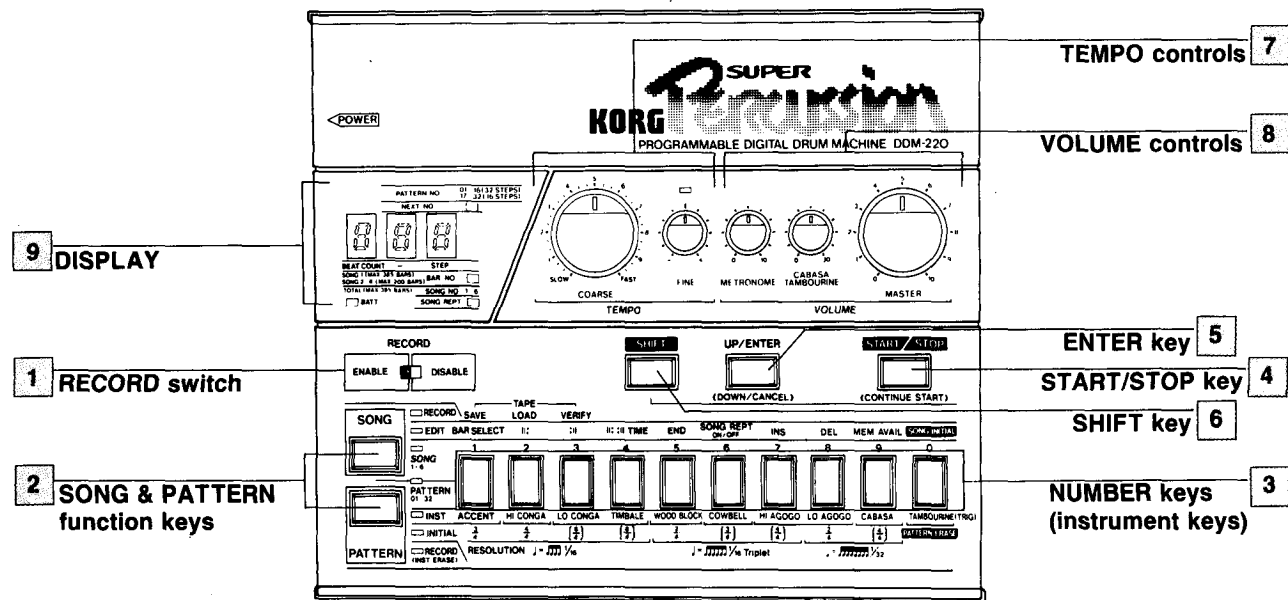
### 1 RECORD switch

This is set to **ENABLE** when you want to record (write) something in memory. Set to **DISABLE** when you are playing things back from memory or during other operations that do not affect the memory contents.

### 2 SONG & PATTERN function keys

These keys change what happens when you press the ten **NUMBER** (instrument) keys. Your selected function is indicated by the LEDs to the right of the **SONG & PATTERN** keys.

	Function indicated by LED	NUMBER key operation
	<b>EDIT</b>	Lets you make changes and add repeats to recorded songs. 
	<b>SONG</b>	In this mode the first six keys are used to select the <b>SONG NUMBER</b> which will be played or used for recording. 
	<b>PATTERN</b>	Here the keys are used to select the <b>PATTERN NUMBER</b> for writing patterns or playing them back 
	<b>INST</b>	Select this function when you want to use the keys to play the instruments (for recording or employment as a percussion instrument). 
	<b>INITIAL</b>	This is used when you select the resolution (the value of the shortest note that will be played) and the time signature before writing the drum pattern. 



### 3 NUMBER (instrument) keys

The effect of these keys depends on which function you have selected with the SONG & PATTERN keys.

### 4 START/STOP key

Press once to start playback of recorded patterns and songs. Press again to stop. (If you are not using the SYNC jack then the SYNC switch must be set to OUT in order to hear anything when the START/STOP key is pressed.)

### 5 ENTER (UP/DOWN/CANCEL) key

This key is used in the following situations:

- When setting resolution.
- When cancelling material that has been recorded (written to memory).
- When specifying repeat signs and number of repetitions.

- When making various kinds of corrections.
- When going forward or backward by steps (using the "step time" method of writing patterns).

### 6 SHIFT key

- Holding down this key and pressing the START/STOP key at the same time will cause playback to continue playing from the middle of a song (after stopping or specifying a bar number to start from).
- Holding down this key and pressing the ENTER key enables writing something again if you make a mistake during the writing procedure. Or, in the step time mode, it takes you back a step.

### 7 TEMPO controls

- COARSE: Used for rough adjustment of tempo.
- FINE: Used for fine adjustment of tempo after setting with the COARSE knob. Ordinarily this

- knob can be left in the center position.
- TEMPO indicator: This flashes with the beat according to the tempo set by the COARSE and FINE knobs.

### 8 VOLUME

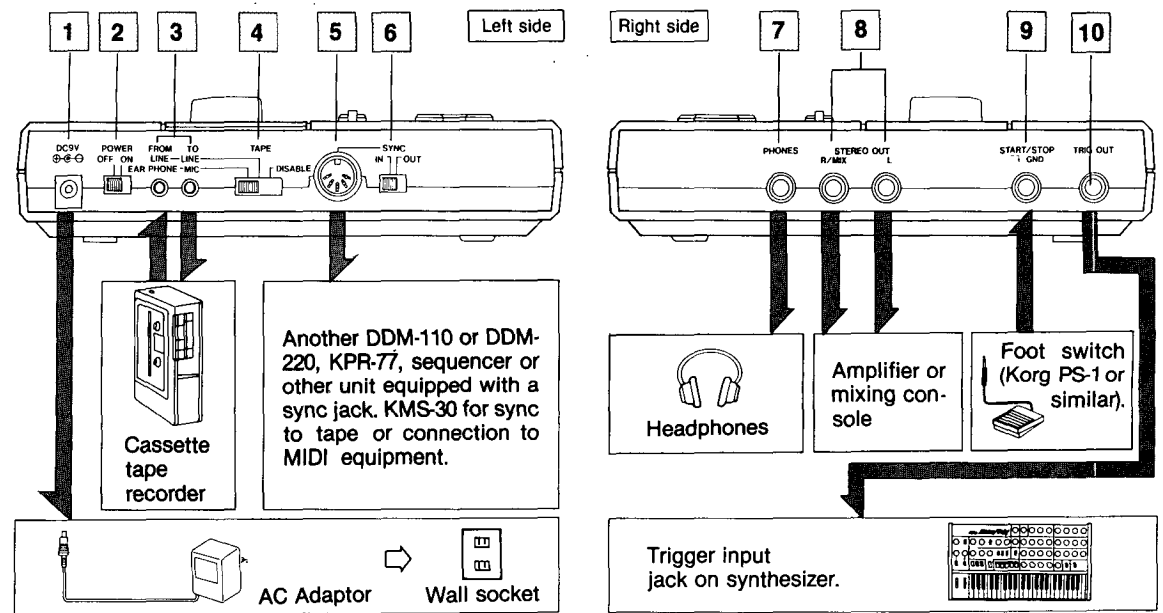
- MASTER: For overall volume adjustment.
- HH CYMBAL: For adjustment of hi-hat and cymbal volume.
- CABASA TAMBOURINE: For adjustment of cabasa and tambourine volume.
- METRONOME: This adjusts the volume of the metronome.

### 9 DISPLAY

Shows a variety of information to help you write patterns and check patterns. Also confirms tape interface functions.

# Inside Information

## Side Panels/Connections



\*Be sure to set the TAPE switch to the DISABLE position and set the SYNC switch to the OUT position during normal use. If not at these positions then you will not hear any sound.

### 1 DC 9V

For connection of the supplied AC adaptor.

### 2 POWER switch

### 3 TAPE input/output jacks (FROM/TO)

Connect a tape recorder to these jacks when you want to save data on tape or load data from tape to the DDM-110.

### 4 TAPE switch

Ordinarily this should be set to DISABLE. When using the tape interface, select "LINE-LINE" or "EARPHONE-MIC" depending on what kind of tape recorder you are using.

### 5 SYNC input/output jack

This DIN jack is for connection to a SYNC jack of the same kind on another DDM-110, DDM-220,

sequencer, or other unit. It enables synchronized operation.

### 6 SYNC switch

This must be set to the OUT position for ordinary use. You will not get any sound out of the DDM-110 if this is set to IN when not using the SYNC jack. See "Advanced Applications" for more details.

### 7 PHONES jack

For headphone connection.

### 8 STEREO output jacks (R/MIX, L)

Both jacks can be used for stereo connection to a mixing console, two instrument amplifiers, or a stereo amplifier. Use the R/MIX jack alone for connection to a mono amplifier or when only a single input is available on a mixing console.

### 9 START/STOP jack

Lets you use a foot switch (Korg PS-1, S-1, etc.) or other source of a trigger signal ( $\downarrow$  GND) for remote controlled starting and stopping of DDM-110 playback.

### 10 TRIGGER output jack

This puts out a trigger signal at every point that the CLAPS sound is programmed. This trigger signal ( $\downarrow$  GND) can be connected to the trigger input jack on a synthesizer or other device. Then you will hear the sound of that device instead of the handclaps.

If anything is plugged into this jack then you will not hear the CLAPS sound from the DDM-110 STEREO or PHONES outputs. (TAMBOURINE sound from the DDM-220)



# Super Ideas for Super Performance

## A tight rock rhythm

Let's start with something that can really get people out on the dance floor.

### •Example 1

Musical notation for Example 1, a 4/4 rock rhythm. The notation includes staves for CYMBAL, HH, SNARE, HI TOM, LO TOM, and BASS. Section A (bars 1-2) features a steady bass line and snare hits. Section B (bars 3-4) has a more active cymbal and hi-hat pattern. Section C (bars 5-6) is a final flourish with complex cymbal and snare patterns.

## Take it a bar at a time.

This music can be divided logically into three sections, with two bars in section A, four bars in section B, and two bars in section C. Each of these will use a different rhythm pattern.

### •Example 2

Musical notation for Example 2, showing the rhythm patterns for each section of Example 1. It is divided into sections A-1, B-1, B-2, B-3, B-4, C-1, and C-2 (最終小節). Each section shows the specific drum patterns for CYMBAL, HH, SNARE, HI TOM, LO TOM, and BASS.

# STEP 1

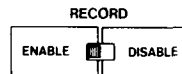
## Getting ready to write.

Rhythm patterns and step chart in the first bar

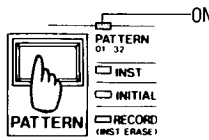
Example 1 The rhythm patterns of A-1 (Resolution) = 1/16 Time 4/4

Beat & step	1				2				3				4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ACCENT																
CYMBAL																
OPEN HH																
CLOSED HH																
SNARE																
HI TOM					●										●	
LO TOM					●										●	
BASS	●	●	●	●					●	●	●	●	●			
Beat	1				2				3				4			

**1** Set the RECORD switch to the ENABLE position whenever you want to write or change a pattern. When set to ENABLE, this switch lets you program and store new information.

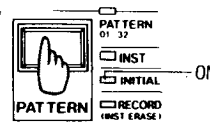


**2** Press the **PATTERN** key. You'll see the little LED light up above the word "PATTERN."



**3** When the PATTERN LED is on, you can choose a pattern memory number from 1 to 32. Press key number **0** followed by key number **1**. (For now, think of a pattern as being one bar long.)

**4** Press the **PATTERN** key again. This time the INITIAL LED will light up.



**5** Now press the number **0** key which is also marked **PATTERN ERASE**. Then press **ENTER**. This clears your chosen memory number so you won't be bothered by any previously stored pattern information.

**6** Find the shortest note (or rest) in the bar that you are going to write. This lets you decide "resolution." A 16th note is the shortest note in the first bar of our example. Our time signature is 4/4. Press the number **2** key since this is above the 4/4 and 1/16 markings. Then press the **ENTER** key. You are now ready to start writing.

## What is Resolution?

Resolution represents the shortest note in a pattern or how finely you want to break up the rhythm.

In the above example the shortest notes are the 16th notes played by the hi-hat and bass drum. Therefore, we choose 4/4 from among the time signatures in the RESOLUTION = 1/16 section.

If you look closely you'll see that we have a 32nd note here played by the bass drum in the 4th beat. Therefore, we choose 4/4 from among the time signatures in the RESOLUTION = 1/32 section.

On the DDM-110 you have three choices of resolution: 1/16, 1/16 TRIPLET, and 1/32.

1/16 is for typical 8-beat and 16-beat rhythms.

1/16 TRIPLET is for swing, shuffle, reggae and other rhythms with triplets.

1/32 is for 32-beat rhythms and any rhythm that has very fine rhythmic detail.

# STEP 2

## Writing the first bar of section A

### How to Write in Real Time

- 1 Press the **PATTERN** key so that the INST LED lights up.  

- 2 Press the **START/STOP** key to start the metronome. Adjust the TEMPO controls.
- 3 Play the rhythm by tapping the keys for a part at a time as written in our sample score. Start with the bass drum, then add low tom, and so on. Two or more sounds can be played at once, with practice.
- 4 If you hold down the **SHIFT** key, the instrument keys will erase sounds instead of recording them. This makes it easy to correct any mistakes.
- 5 Press the **START/STOP** key when you finish writing a pattern (or if you simply want to take a break).

There are two ways that you can use to write patterns on the DDM-110 and DDM-220.

#### 1. Real Time Write

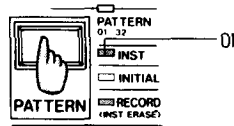
You play the keys along with a metronome as if you were playing drums. Sounds are recorded at the closest metronome position to which they were played.

#### 2. Step Time Write

Here you play whatever keys you like for each step before going on to the next step. At 1/16 resolution a step is a 1/16th note. With this method it is easier to write more complex patterns.

The method you choose is up to you and you can switch between the two methods at any time. Here we'll go ahead and write in real time.

### How to Write a Step at a Time

- 1 Press the **PATTERN** key to turn on the INST LED (as you did to enable writing in real time).  

- 2 (1st beat)  
Press **2/BASS** (the bass drum key) four times. (Only the bass drum plays in the first four steps, as shown in the chart.)
- 3 (2nd beat)  
1st Step: Here the high tom and low tom play a quarter note. Think of this as a 1/16th note followed by three 1/16th note rests. Hold down the **5/HI TOM** key and press the **6/LO TOM** key. (You can speed up the writing process by holding down a key and

then pressing any other keys that will be sounded on the same step.)

2nd-4th Steps: These are considered as rests. Simply press the **UP/ENTER** key three times.

- 4 (3rd beat)  
Press **2/BASS** four times.
- 5 (4th beat)  
1st Step: Hold down **5/HI TOM** and press **6/LO TOM**.  
2nd-4th Steps: Press **UP/ENTER** three times. This completes the first bar. Press **START/STOP** to here what you have written.

If it sounds like you made a mistake, you can correct it by using the **SHIFT** key with the appropriate instrument key. Or you can go back to STEP 1 and start over.

# STEP 3

## Writing the second bar of section A

### What's a Step?

- 1 A step is the smallest division of a pattern. If resolution is 1/16 then you can consider one 1/16 note to be one step. If you are in 4/4 time then you have sixteen steps to the bar. At 4/4 time, 1/16 resolution, you have 16 steps per bar and four steps per beat.



- 2 When writing a step at a time, you need to remind yourself that a quarter note is written as a 1/16th note followed by three 1/16th note rests (assuming 1/16 resolution and 4/4 time).

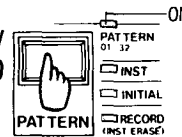
These examples are different ways of expressing the same thing.



The "step charts" used in this book make it easy to keep track of where each key should be played.

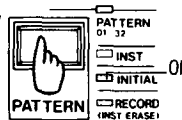
- 3 On the DDM-110/220 you can store up to 32 different patterns. Pattern (or memory) numbers 1-16 can be used for patterns of up to 32 steps. The remaining patterns 17-32 can only take a maximum of 16 steps. This means that pattern numbers 1-16 actually can hold two bars of 4/4 time, 1/16 resolution music apiece.

- 1 Press the **PATTERN** key so that the **PATTERN LED** lights up.



- 2 Select pattern number 2 by pressing the **0** key followed by the **2** key.

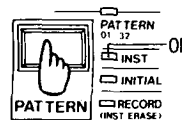
- 3 Press the **PATTERN** key so that the **INITIAL LED** lights up.



- 4 Press **0/PATTERN ERASE** then press **ENTER**.

- 5 Press key number **2** to select 4/4 time and 1/16 resolution. Then press **ENTER**.

- 6 Press the **PATTERN** key so that the **INST LED** lights up.



Rhythm patterns and step chart in the first bar

Example 1 The rhythm patterns of A -1 (Resolution = 1/16 Time = 4/4)

Sound	1				2				3				4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ACCENT																
CYMBAL																
OPEN HH																
CLOSED HH																
SNARE																
HI TOM																●
LO TOM																●
BASS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Beat	1				2				3				4			

If writing in real time...

- Press the **START/STOP** key to start the metronome.
- Tap the keys to play the rhythm.

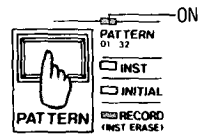
If writing a step at a time

- (1st beat)  
Press **2/BASS** four times.
- (2nd beat)  
Press **2/BASS** four times.
- (3rd beat)  
Press **2/BASS** four times.
- (4th beat)  
Hold down **5/HI TOM** and press **6/LO TOM**. Then press **UP/ENTER** three times.

# STEP 4

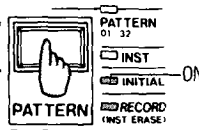
## Writing the first bar of section B

- Press the **PATTERN** key so that the **PATTERN LED** lights up.



- To store this pattern as number **3**, press **0** then **3**.

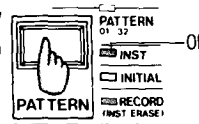
- Press the **PATTERN** key again so that the **INITIAL** key lights up.



- Press **0/PATTERN ERASE**, then press **ENTER**.

- Press key number **2** to select 1/16 resolution and 4/4 time.

- Press the **PATTERN** key so that the **INST LED** lights up.



To write in real time...

- Press the **START/STOP** key to start the metronome.

Rhythm patterns and step chart in the first bar

Example 1 The rhythm patterns of A -1 (Resolution = 1/16 Time = 4/4)

Sound	1				2				3				4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ACCENT																
CYMBAL		●														
OPEN HH																
CLOSED HH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SNARE						●										●
HI TOM																
LO TOM																
BASS	●					●	●									
Beat	1				2				3				4			

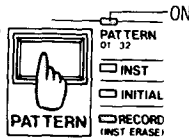
To write a step at a time

- (1st beat)  
Hold down **2/BASS** and press **7/CLOSED HH** then **9/CYMBAL**. Press **7/CLOSED HH** three times.
- (2nd beat)  
Hold down **3/SNARE** and press **7/CLOSED HH**. Press **7/CLOSED HH**. Hold down **2/BASS** and press **7/CLOSED HH**. Hold down **2/BASS** and press **7/CLOSED HH**.
- (3rd beat)  
Press **7/CLOSED HH** four times.
- (4th beat)  
Hold down **3/SNARE** and press **7/CLOSED HH**. Press **7/CLOSED HH** three times.

# STEP 5

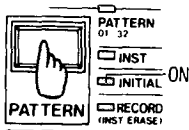
## Writing the second bar of section B

- 1 Press the **PATTERN** key so that the **PATTERN LED** lights up.



- 2 Press **0** then **4** to select the 04 pattern memory number.

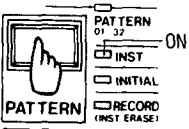
- 3 Press the **PATTERN** key so that the **INITIAL LED** lights up.



- 4 Press **0/PATTERN ERASE**, then **ENTER**.

- 5 Resolution is 1/16 and time is 4/4 so press **2**, then **ENTER**.

- 6 Press the **PATTERN** key so that the **INST LED** lights up.



### To write in real time

- 7 Press **START/STOP**. The metronome will start.
- 8 Tap the keys for the sounds to be played.

Rhythm patterns and step chart in the first bar

Example 1 The rhythm patterns of A-1 (Resolution) = 1/16 Time 4/4

Beat & step	1				2				3				4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ACCENT																
CYMBAL																
OPEN HH																
CLOSED HH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SNARE					●											●
HI TOM																
LO TOM																
BASS	●		●		●	●	●	●								
Beat	1				2				3				4			

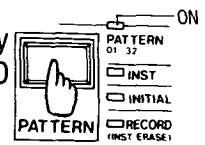
### To write a step at a time

- 7 (1st beat) Hold down **2/BASS** and press **7/CLOSED HH**. Press **7/CLOSED HH**. Hold down **2/BASS** and press **7/CLOSED HH**. Press **7/CLOSED HH**.
- 8 (2nd beat) Hold down **3/SNARE** and press **7/CLOSED HH**. Hold down **2/BASS** and press **7/CLOSED HH**. (Repeat this two more times.)
- 9 (3rd beat) Press **7/CLOSED HH** four times.
- 10 (4th beat) Hold down **3/SNARE** and press **7/CLOSED HH**. Press **7/CLOSED HH** three times.

# STEP 6

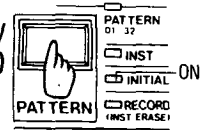
## Writing the third bar of section B

- 1 Press the **PATTERN** key so that the **PATTERN LED** lights up.



- 2 Press **0** then **5** to select the 05 pattern memory number.

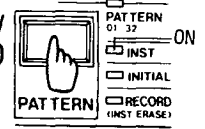
- 3 Press the **PATTERN** key so that the **INITIAL LED** lights up.



- 4 Press **0/PATTERN ERASE**, then **ENTER**.

- 5 Resolution is 1/16 and time is 4/4 so press **2**, then **ENTER**.

- 6 Press the **PATTERN** key so that the **INST LED** lights up.



### To write in real time

- 7 Press **START/STOP**. The metronome will start.
- 8 Tap the keys for the sounds to be played.

Rhythm patterns and step chart in the first bar

Example 1 The rhythm patterns of A-1 (Resolution  $J = \frac{1}{16}$  Time  $\frac{1}{4}$ )

Sound	1				2				3				4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ACCENT																
CYMBAL																
OPEN HH																
CLOSED HH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SNARE					●								●			
HI TOM																
LO TOM																
BASS	●					●	●									
Beat	1				2				3				4			

### To write a step at a time

#### 7 (1st beat)

Hold down **2/BASS** and press **7/CLOSED HH**. Press **7/CLOSED HH** three times.

#### 8 (2nd beat)

Hold down **3/SNARE** and press **7/CLOSED HH**. Press **7/CLOSED HH**. Hold down **2/BASS** and press **7/CLOSED HH**. (Repeat this once).

#### 9 (3rd beat)

Press **7/CLOSED HH** four times.

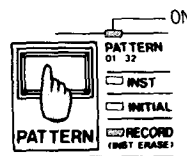
#### 10 (4th beat)

Hold down **3/SNARE** and press **7/CLOSED HH**. Press **7/CLOSED HH** three times.

# STEP 7

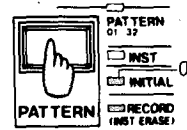
## Writing the fourth bar of section B

- Press the **PATTERN** key so that the **PATTERN LED** lights up.



- Press **0** then **6** to select the 06 pattern memory number.

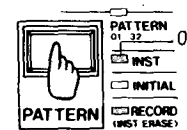
- Press the **PATTERN** key so that the **INITIAL LED** lights up.



- Press **0/PATTERN ERASE**, then **ENTER**.

- Resolution is 1/16 and time is 4/4 so press **2**, then **ENTER**.

- Press the **PATTERN** key so that the **INST LED** lights up.



### To write in real time

- Press **START/STOP**. The metronome will start.

- Tap the keys for the sounds to be played.

### To write a step at a time

#### 7 (1st beat)

Hold down **2/BASS** and press **7/CLOSED HH**.

Rhythm patterns and step chart in the first bar

Example 1 The rhythm patterns of A-1 (Resolution  $J = \frac{1}{16}$  Time  $\frac{1}{4}$ )

Sound	1				2				3				4			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ACCENT																
CYMBAL																
OPEN HH																
CLOSED HH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
SNARE						●								●	●	
HI TOM																
LO TOM																
BASS	●					●	●									
Beat	1				2				3				4			

Press **7/CLOSED HH**. Hold down **2/BASS** and press **7/CLOSED HH**. Press **7/CLOSED HH**.

#### 8 (2nd beat)

Hold down **3/SNARE** and press **7/CLOSED HH**. Hold down **2/BASS** and press **7/CLOSED HH**. (Repeat this two more times.)

#### 9 (3rd beat)

Play **7/CLOSED HH** four times.

#### 10 (4th beat)

Hold down **3/SNARE** and press **7/CLOSED HH**. (Repeat this two more times.) Press **7/CLOSED HH**.

# STEP 8

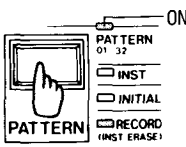
## Writing the first bar of section C

Rhythm patterns and step chart in the first bar

Example 1 The rhythm patterns of A-1 (Resolution = 1/16 Time 4/4)

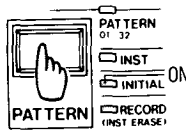
Sound	Beat & step			
	1	2	3	4
ACCENT			●	●
CYMBAL				
OPEN HH				
CLOSED HH				
SNARE	●	●	●	●
HI TOM			●	●
LO TOM				●
BASS				
Beat	1	2	3	4

1 Press the **[PATTERN]** key so that the **PATTERN LED** lights up.



2 Press **[0]** then **[7]** to select the 07 pattern memory number.

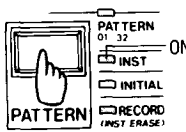
3 Press the **[PATTERN]** key so that the **INITIAL LED** lights up.



4 Press **[0/PATTERN ERASE]**, then **[ENTER]**.

5 Resolution is 1/16 and time is 4/4 so press **[2]**, then **[ENTER]**.

6 Press the **[PATTERN]** key so that the **INST LED** lights up.



### To write in real time

7 Press **[START/STOP]**.  
The metronome will start.

8 Tap the keys for the sounds to be played.

### To write a step at a time

7 (1st beat)  
Press **[3/SNARE]** four times.

8 (2nd beat)  
Hold down **[1/ACCENT]** and press **[3/SNARE]**. (Repeat three times.)

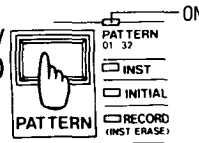
9 (3rd beat)  
Hold down **[1/ACCENT]** and press **[3/SNARE]** & **[5/Hi TOM]**. (Repeat three times.)

10 (4th beat)  
Hold down **[1/ACCENT]** and press **[3/SNARE]**, **[5/Hi TOM]**, & **[6/LO TOM]**. (Repeat three times.)

# STEP 9

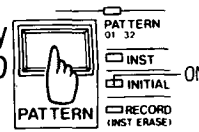
## Writing the last bar

1 Press the **[PATTERN]** key so that the **PATTERN LED** lights up.



2 Press **[0]** then **[8]** to select the 08 pattern memory number.

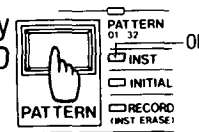
3 Press the **[PATTERN]** key so that the **INITIAL LED** lights up.



4 Press **[0/PATTERN ERASE]**, then **[ENTER]**.

5 Resolution is 1/16 and time is 4/4 so press **[2]**, then **[ENTER]**.

6 Press the **[PATTERN]** key so that the **INST LED** lights up.



### To write in real time

7 Press **[START/STOP]**.  
The metronome will start.

8 Tap the keys for the sounds to be played.



Rhythm patterns and step chart in the first bar

Example 1 The rhythm patterns of A-1 (Resolution = ♩ Time %)

Sound	Beat & step			
	1	2	3	4
ACCENT	●	●	●	●
CYMBAL				
OPEN HH				●
CLOSED HH				●
SNARE	●	●	●	●
HI TOM				
LO TOM	●	●	●	●
BASS	●	●	●	●
Beat	1	2	3	4

### To write a step at a time

#### 7 (1st beat)

Hold down **1/ACCENT** and press **2/BASS**, **3/SNARE**, & **6/LO TOM** (Repeat three times.)

#### 8 (2nd beat)

Repeat the above key combination four times.

#### 9 (3rd beat)

Press **2/BASS**. Hold down **1/ACCENT** and press **3/SNARE**. Press **UP/ENTER** two times.

#### 10 (4th beat)

Hold down **1/ACCENT** and press **2/BASS**, **3/SNARE**, & **8/OPEN HH**. Press **7/CLOSED HH**. Press **UP/ENTER** two times.

# Make a Whole Song by Linking Your Rhythm Patterns

Up to now we've been recording rhythm patterns. But the DDM-110 and DDM-220 also let you link these patterns together to make whole songs. So far, we have eight patterns stored in memory. The DDM-110 "knows" these as the numbers 01 through 08. To write a song, you tell the DDM-110 which pattern to play first, second, third, and so on.

Pattern number	01	02	03	04	05	06	07	08
Stored pattern	A-1	A-2	B-1	B-2	B-3	B-4	C-1	C-2

So, for our example, we would tell the DDM-110 to play our stored patterns in the order shown here.

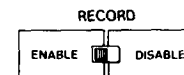
| 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 ||

Let's go ahead and try it.

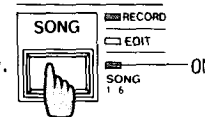
## STEP 10

### Getting Ready to Write a Song

- 1 Set the RECORD switch to the ENABLE position.



- 2 Press the **SONG** key so that the SONG LED lights up.



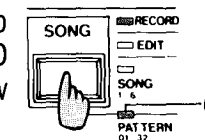
- 3 Let's assign this song the number "1". Press the 1 key. Six of these "song numbers" are available. (So you can store up to six songs "on board", without saving data on tape.)

- 4 Press the **SONG** key so that the EDIT LED lights up.



- 5 Press the **o/SONG INITIAL** key, then the **ENTER** key, to clear your selected song number's memory area.

- 6 Press the **SONG** key so that the PATTERN LED lights up. You are now ready to start "writing".



# STEP 11

## Writing Songs

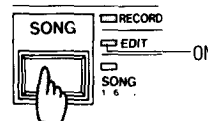
- 1 Press **0**, then **1**, then **ENTER**. This selects pattern number 01 which is where the first bar of section A (in our example) is stored.
- 2 Press **0**, then **2**, then **ENTER**. (Since the second bar of section A is stored as pattern number 02.)
- 3 Press **0**, then **3**, then **ENTER**. (To select pattern number 03 which holds the first bar of section B in our example.)  
Keep going in this way. Select your pattern number, then press ENTER for each bar.
- 4 Press **0**, **4** then **ENTER** (for the second bar of section B).
- 5 Press **0**, **5** then **ENTER** (for the third bar of section B).
- 6 Press **0**, **6** then **ENTER** (for the fourth bar of section B).
- 7 Press **0**, **7** then **ENTER** (for the first bar of section C).
- 8 Press **0**, **8** then **ENTER** (for the final bar).

# STEP 12

## Writing Repeats

Recall that section B is supposed to be repeated. How do we make the DDM-110 repeat these four bars?

- 1 Press the **SONG** key so that the EDIT LED lights up.



We want to repeat the third bar through the sixth bar. So we need to put a (begin) repeat sign at bar 3 and an (end) repeat sign after bar 6 (that is, at bar 7).

- 2 (Putting a begin repeat sign at bar 3.)  
Press the **1/BAR SELECT** key, then press the number **3** key.  
Press **ENTER**. (This selects the third bar.)  
Press the **2** (begin repeat) key.
- 3 (Putting an end repeat sign after bar 6.)  
Press **1/BAR SELECT**, then press **7**.  
Press **ENTER**. (This selects bar 7.)  
Press the **3** (end repeat) key.

Next, we need to tell the DDM-110 how many times to play the section between the repeat signs. After it plays those bars once, we want it to go back and play them again. That is, we want the section played two times.

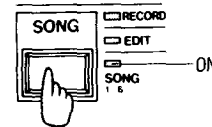
- 4 Press the **4/TIME** key.
- 5 Press the **2** key, then press **ENTER**.  
You have now finished writing the sample music and storing it as a "song". Easy, isn't it? To save your work, set the RECORD switch to the DIS-ABLE position.

# STEP 13

## Playing the Song

To play a song, you select its song number and press the START/STOP key. Here's how.

- 1 Press the **SONG** key so that the SONG LED lights up.
- 2 Press the number **1** key since this is the song number that you used when you wrote the song.
- 3 Press the **START/STOP** key to begin playback.



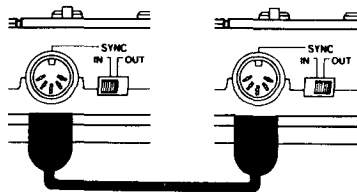
Then adjust the volume and tempo controls as you like.

# Ready-to-Run Rhythm Patterns

## Synchro-Play for Extra Power

You can play both the upper and lower parts of these patterns by connecting the DDM-110 to the DDM-220. Here's how:

- 1 First write the rhythm pattern into the DDM-110 and DDM-220.
- 2 Set the SYNC switch to IN on one unit and to OUT on the other. Connect the two with a 5-pin DIN cord.



The one with its SYNC switch set to out will be the "master," while the other will be the "slave." Press the START/STOP key on the master unit to start or stop play. Tempo will also be determined by the TEMPO control settings on the master unit.

## Soul-Jazz-Fusion 1

### Techno-Soul

A 16-beat pattern with unusual bass drum entry timing. Also check out the cabasa rhythm on the DDM-220, a seemingly minor addition that helps bring it all together. Since this pattern is one of the more complicated ones, it is easier to write a step at a time. Set resolution to 1/16. If you select a pattern number between 01 and 16 then you will be able to use it to store both bars in this example.

The musical notation shows a 16-beat pattern in 4/4 time. The staves are labeled HH, SNARE, CLPS, BASS, and CABASA. The pattern is divided into two 8-beat bars. The first bar has a resolution of 1/16 and a time signature of 4/4. The second bar has a resolution of 1/4 and a time signature of 4/4. The notation includes various rhythmic values and rests for each instrument.

DDM	Sound	Beat & step	1st bar (Resolution → $\frac{1}{16}$ Time → $\frac{4}{4}$ )				2nd bar (Resolution → $\frac{1}{4}$ Time → $\frac{4}{4}$ )			
			1	2	3	4	5	6	7	8
110	CLOSED HH		•	•	•	•	•	•	•	•
	SNARE			•			•			•
	CLPS			•			•			•
	BASS		•	•	•	•	•	•	•	•
220	CABASA		•	•	•	•	•	•	•	•
	Beat		1	2	3	4	5	6	7	8

# Soul-Jazz-Fusion 2

## Latin Soul

With its five percussion sounds this is a moving pattern that's hard to resist. Since resolution is 1/16, both bars can be stored as one pattern number if you choose a number from 01 to 16.

Musical notation for Latin Soul pattern, showing HH, SNARE, CLPS, BASS, CABASA, WOOD BLOCK, COW BELL, HI AGOGO, and LO AGOGO.

DDM	Beat & step	1st bar (Resolution → $\frac{1}{16}$ , Time → $\frac{1}{4}$ )				2nd bar (Resolution → $\frac{1}{16}$ , Time → $\frac{1}{4}$ )									
		1	2	3	4	5	6	7	8						
110	ACCENT	•		•		•		•		•		•		•	
	OPEN HH														
	CLOSED HH	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	SNARE														
	CLPS														
	BASS	•	•	•	•	•	•	•	•	•	•	•	•	•	•
220	ACCENT		•		•		•		•		•		•		•
	CABASA	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	WOOD BLOCK														
	COW BELL														
	HI AGOGO														
LO AGOGO	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
	Beat	1	2	3	4	5	6	7	8						

# Soul-Jazz-Fusion 3

## 4-Beat Shuffle

This blues-related shuffle pattern uses an interesting combination of rimshot and congas. Since this is technically a triplet pattern, resolution is "1/16 Triplet" (and 4/4 time). Here, each bar requires its own pattern number. Remember that  $\frac{1}{16}$  is programmed as  $\frac{1}{16}$ , as shown in the step chart.

Musical notation for 4-Beat Shuffle pattern, showing HH, RIM, BASS, CABASA, HI CONGA, and LO CONGA.

DDM	Beat & step	1st bar (Resolution → $\frac{1}{16}$ , Triplet Time → $\frac{1}{4}$ )				2nd bar (Resolution → $\frac{1}{16}$ , Triplet Time → $\frac{1}{4}$ )									
		1	2	3	4	1	2	3	4						
110	OPEN HH														
	CLOSED HH	•				•				•				•	
	RIM														
	BASS	•				•				•				•	
220	CABASA	•				•				•				•	
	HI CONGA														
	LO CONGA														
	Beat	1	2	3	4	1	2	3	4						

# Soul-Jazz-Fusion 4

## AOR Samba

The kick drum plays an orthodox samba pattern. The interplay of open and closed hi-hat is a bit different from the standard 16th notes. The snare at the end of each beat adds a distinctive feel.

Musical notation for AOR Samba. The score is in 4/4 time and consists of two bars. The instruments listed are HH (Hi-Hat), SNARE, BASS, CABASA, HI AGOGO, LO AGOGO, HI CONGA, and LO CONGA. The HH part shows a pattern of open and closed hi-hats. The SNARE part has a snare drum hit at the end of each beat. The BASS part has a steady eighth-note pattern. The CABASA part has a steady eighth-note pattern. The HI AGOGO and LO AGOGO parts have a steady eighth-note pattern. The HI CONGA and LO CONGA parts have a steady eighth-note pattern.

DDM	Beat & Sound	1st bar (Resolution → $\text{♩} = \frac{1}{16}$ Time → $\frac{1}{4}$ )				2nd bar (Resolution → $\text{♩} = \frac{1}{16}$ Time → $\frac{1}{4}$ )			
		1	2	3	4	1	2	3	4
110	OPEN HH	•	•	•	•	•	•	•	•
	CLOSED HH	•	•	•	•	•	•	•	•
	SNARA E								
	BASS	•	•	•	•	•	•	•	•
220	CABASA	•	•	•	•	•	•	•	•
	HI AGOGO		•				•		
	LO AGOGO		•				•		
	HI CONGA		•				•		
	LO CONGA	•		•		•		•	
	Beat	1	2	3	4	1	2	3	4

Musical notation for Latin Fusion 1. The score is in 4/4 time and consists of two bars. The instruments listed are HH (Hi-Hat), RIM, BASS, TAMBOURINE, COWBELL, HI AGOGO, LO AGOGO, HI CONGA, and LO CONGA. The HH part shows a pattern of open and closed hi-hats. The RIM part has a rimshot on the backbeat. The BASS part has a steady eighth-note pattern. The TAMBOURINE part has a steady eighth-note pattern. The COWBELL part has a steady eighth-note pattern. The HI AGOGO and LO AGOGO parts have a steady eighth-note pattern. The HI CONGA and LO CONGA parts have a steady eighth-note pattern.

DDM	Beat & Sound	1st bar (Resolution → $\text{♩} = \frac{1}{16}$ Time → $\frac{1}{4}$ )				2nd bar (Resolution → $\text{♩} = \frac{1}{32}$ Time → $\frac{1}{4}$ )															
		1	2	3	4	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
110	OPEN HH	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	CLOSED HH	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	RIM																				
	BASS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
220	TAMBOURINE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	COWBELL		•				•				•				•				•		
	HI AGOGO																				
	LO AGOGO																				
	HI CONGA		•				•				•				•				•		
	LO CONGA	•		•		•		•		•		•		•		•		•		•	
	Beat	1	2	3	4	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8

# Latin Fusion 1

## Reggae

The rimshot on the backbeat is a basic feature of this pattern. The bass drum rest at the start of the second bar is also interesting. Resolution is different between the first and second bars. For the first bar 1/16 is okay. In the second bar the tambourine requires 1/32 (eight steps to the beat) resolution.



# Pop & Rock 2

## Disco

A techno-pop disco sound. Note the high and low tom interplay and the accent on the fourth beat.

DDM	Beat & step	1st bar (Resolution → j = 1/16 Time → 1/4)				2nd bar (Resolution → j = 1/16 Time → 1/4)			
		1	2	3	4	5	6	7	8
110	ACCENT				•				•
	OPEN HH								
	CLOSED HH	•	•	•	•	•	•	•	•
	SNARE		•				•		
	CLPS				•				•
	HI TOM			•	•		•	•	•
	LO TOM				•	•			•
	BASS	•	•	•	•		•	•	•
Beat	1	2	3	4	5	6	7	8	

# Pop & Rock 3

## Compu-Pop

An electronic bossa nova pattern with 8th note snare instead of hi-hat. Note the accent. The 4th bar uses 32nd note timbale (a real standout) so this must be written at 1/32 resolution.

DDM	Beat & step	1st bar (Resolution → j = 1/16 Time → 1/4)				2nd bar (Resolution → j = 1/16 Time → 1/4)				3rd bar (Resolution → j = 1/16 Time → 1/4)				4th bar (Resolution → j = 1/32 Time → 1/2)															
		1	2	3	4	5	6	7	8	1	2	3	4	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
110	ACCENT				•				•				•				•				•				•				•
	SNARE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	BASS	•		•	•	•		•	•	•		•	•	•		•	•	•		•	•	•		•	•	•		•	•
220	TIMBALES		•		•		•		•		•		•		•		•		•		•		•		•		•		•
	HI CONGA																												
	LO CONGA																												
Beat	1	2	3	4	5	6	7	8	1	2	3	4	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	





# Some New Ones 1

## Voodoo

No hi-hat and an unusual cabasa pattern make for something strange. Definitely out of the ordinary.

Musical notation for 'Voodoo' in 4/4 time. The score includes parts for SNARE, BASS, CABASA, TIMBALES, HI CONGA, and LO CONGA. The tempo is marked with a quarter note equal to 110 BPM.

DDM	Beat & step	1st bar (Resolution → $\frac{1}{4}$ , Time → $\frac{3}{4}$ )				2nd bar (Resolution → $\frac{1}{4}$ , Time → $\frac{3}{4}$ )			
		1	2	3	4	5	6	7	8
110	SNARE								
110	BASS	•	•	•	•	•	•	•	•
220	CABASA	•	•	•	•	•	•	•	•
	TIMBALES		•	•	•		•	•	•
	HI CONGA		•	•	•		•	•	•
	LO CONGA	•	•	•	•	•	•	•	•
	Beat	1	2	3	4	5	6	7	8

# Some New Ones 2

## Reggae Disco

An irresistible combination of techno-pop disco and reggae, especially when accompanied by sequenced synthesizer (corresponding to the percussion part in this example).

Musical notation for 'Reggae Disco' in 4/4 time. The score includes parts for HH, SNARE, CLPS, BASS, CABASA, WOOD BLOCK, COW BELL, HI AGOGO, and LO AGOGO. The tempo is marked with a quarter note equal to 110 BPM.

DDM	Beat & step	1st bar (Resolution → $\frac{1}{4}$ , Time → $\frac{3}{4}$ )				2nd bar (Resolution → $\frac{1}{4}$ , Time → $\frac{3}{4}$ )			
		1	2	3	4	5	6	7	8
110	OPEN HH								
	CLOSED HH	•	•	•	•	•	•	•	•
	SNARE		•		•		•		•
	CLPS								
	BASS	•	•	•	•	•	•	•	•
220	CABASA	•	•	•	•	•	•	•	•
	WOOD BLOCK	•	•	•	•	•	•	•	•
	COWBELL	•	•	•	•	•	•	•	•
	HI AGOGO								
	LO AGOGO								
	Beat	1	2	3	4	5	6	7	8



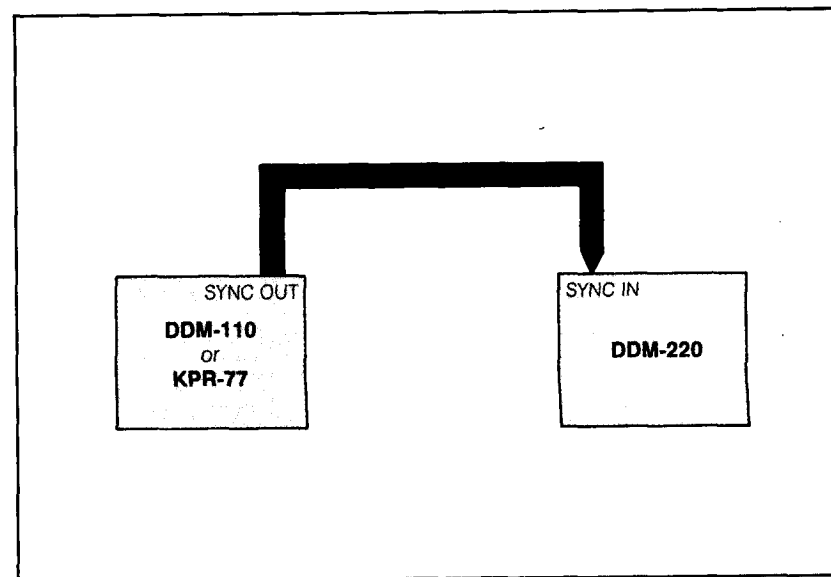
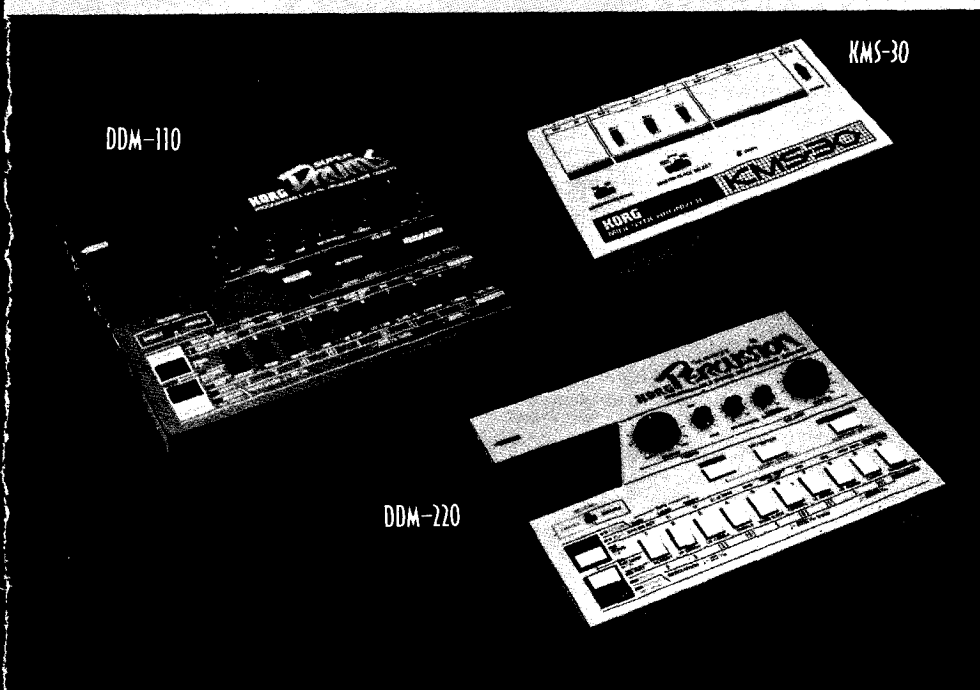
# More, Much More

What can you do with the  
DDM-110/220?

What can't you do  
with the DDM-110/220?

## 1 DDM-110 or KPR-77 plus DDM-220

All three of these rhythm machines have sync jacks for synchronized operation. Since they all use a clock pulse rate of 48 per beat (per quarter note) all you need for connection is a DIN cord. Set the master unit's sync switch to OUT; set the slave's to IN.



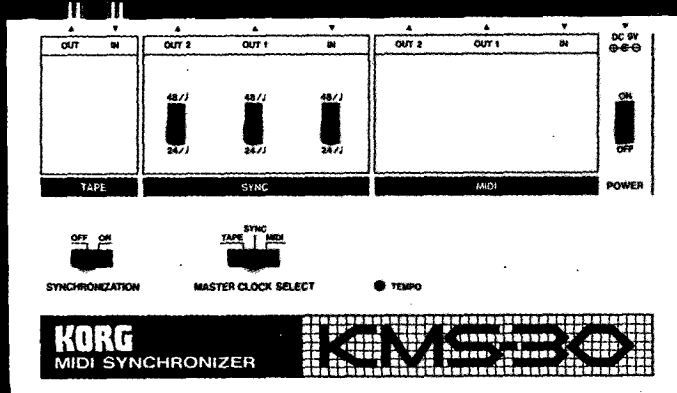
# Put It All Together with the KMS-30

## KMS-30 MIDI SYNCHRONIZER

The KMS-30 lets you put together all of your equipment — MIDI synths, sequencers, and rhythm machines, non-MIDI rhythm machines and sequencers, and multi-track tape machines. You select which to use as the "master," then let the KMS-30 convert that input into appropriate outputs for the other units. Even if your rhythm machines or sequencers use dif-

ferent clock rates, chances are that the KMS-30 can take care of it. The SYNC input and outputs all have switches to select 48 or 24 as the number of clock pulses per quarter note (per beat). For extra convenience you can leave equipment connected when playing normally (that is, without sync). Flip a switch when you want to go over to synchronized operation.

## KMS-30 MIDI SYNCHRONIZER

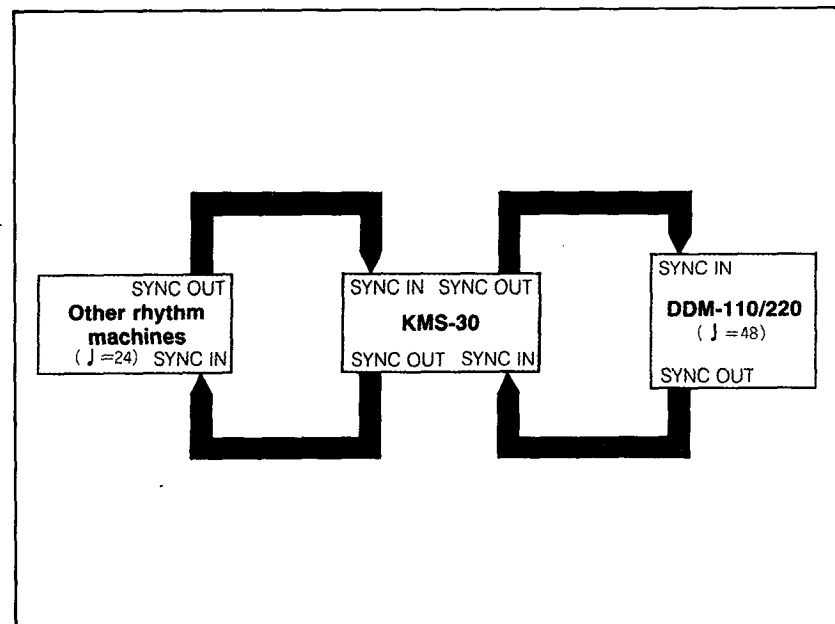


## 2 DDM-110 or KPR-77 Add the KMS-30

when you need extra compatibility with other rhythm machines

If you have other rhythm machines, the Korg KMS-30 can let you take advantage of their capabilities. Depending on which unit is used as the master, the other unit may run at double the controlling tempo. Most rhythm machines with sync connectors are built to run at either 24 or 48 clock pulses per beat (per quarter note). Korg units run at 48 so if you use a Korg machine to drive a 24-pulse unit it will run at

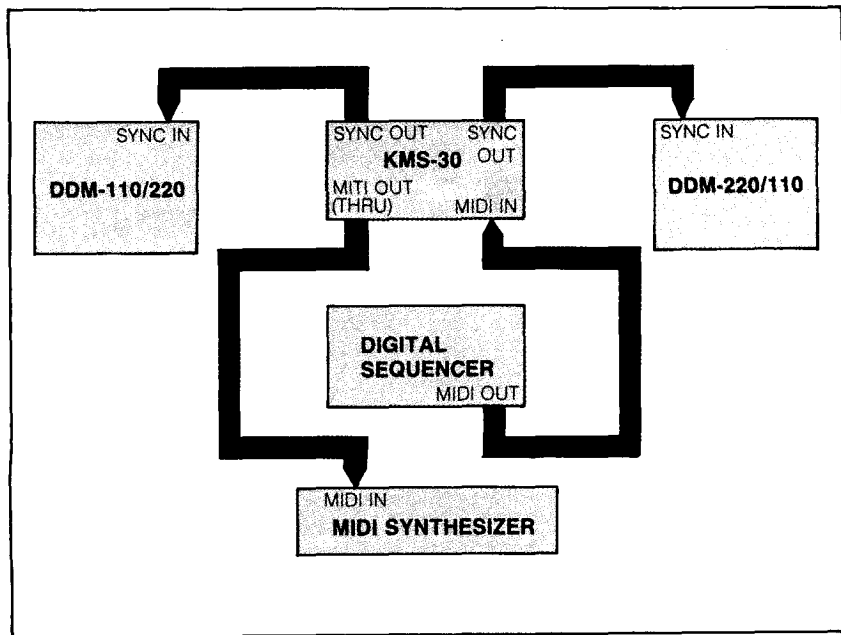
double what you might expect. The KMS-30 can take care of this difference by converting one clock pulse rate into the other (either way). So if you have a library of patterns on another machine, you can add a new dimension with the DDM-110 and/or DDM-220. Or you can operate the other way around and take full advantage of your new equipment.



### 3 MIDI Sequencer Control

Using a MIDI sequencer to control non-MIDI equipment is easy with the addition of the Korg KMS-30. The KMS-30 will convert the clock data of a MIDI signal into a standard clock pulse which can drive an ordinary rhythm machine (and vice versa). As you can see, the KMS-30 is the way to go for compatibility —

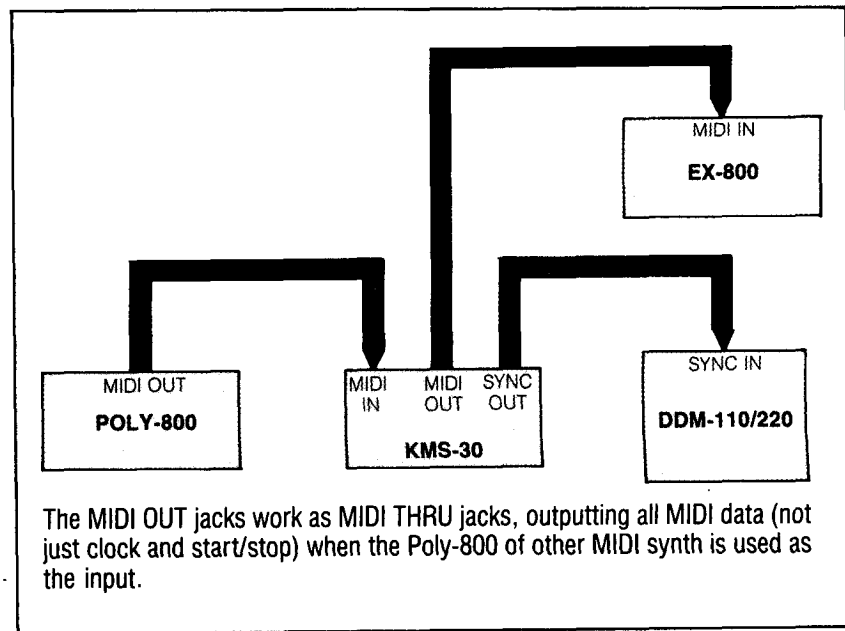
you can even add a MIDI synthesizer (or two since there are two MIDI outputs on the KMS-30) for special percussion effects, arpeggios, and so on. (If other MIDI equipment is connected then remember that the KMS-30 MIDI outputs work as MIDI THRU jacks.



### 4 Using the Poly-800 to Drive the DDM-110/220

Here's another idea for system development. Connect the EX-800 to one of the MIDI OUT jacks on the KMS-30. Or connect two EX-800s for even more additional voicing capabilities. Since you have one MIDI IN and two MIDI OUT (or MIDI THRU, depending on which way you use them) jacks, you can use

the KMS-30 as a MIDI extension box. Connect the DDM-110 and/or DDM-220 to one of the MIDI OUT jacks on the KMS-30. The KMS-30 will convert the MIDI timing data into conventional start/stop and clock signals for control of the DDM-110/220 or other synchronizable rhythm machine.



The MIDI OUT jacks work as MIDI THRU jacks, outputting all MIDI data (not just clock and start/stop) when the Poly-800 or other MIDI synth is used as the input.

## 5 Multi-Track Recording with Sync for Overdubs

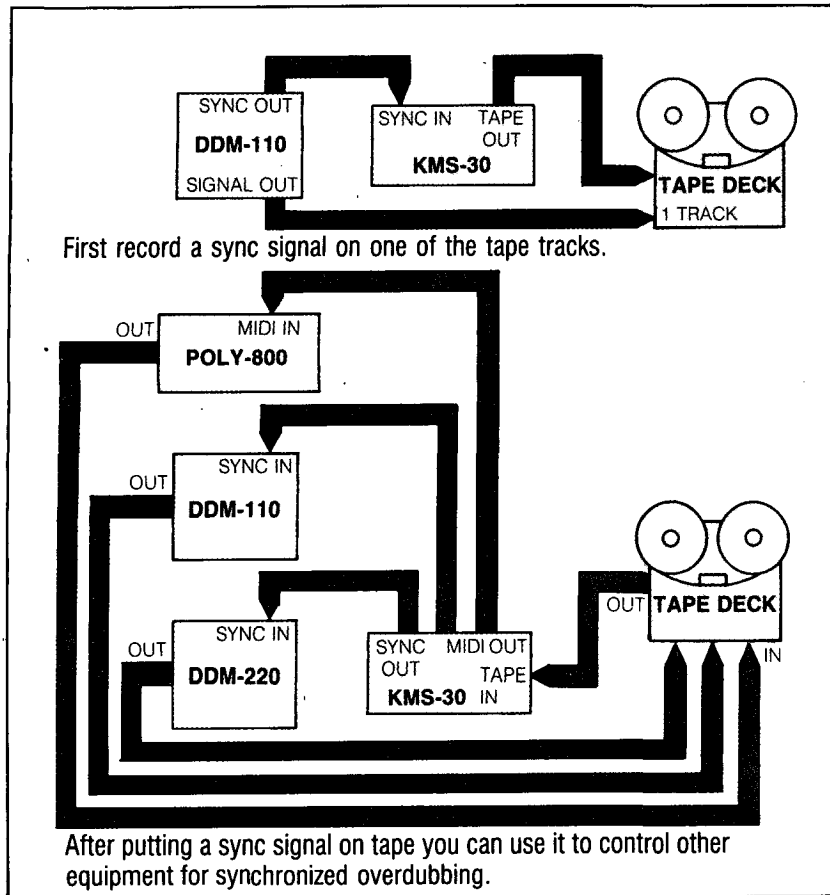
If you own a multi-track tape machine you'll really appreciate the tape sync capabilities of the KMS-30. Use the DDM-110 or DDM-220 as your input and set the KMS-30 MASTER CLOCK SELECT switch to the SYNC position. You can then record your rhythm pattern on one track and the sync on another track. After

recording, you can play back the taped sync track and use it to control your synths, sequencers, and rhythm machines as you record more tracks. You can even completely redo your basic drum rhythm (after guitar or other overdubs) and/or add more drums and percussion.

## 6 The High End — Using a Personal Computer with the DDM-110/220 and EX-800

With a suitable interface, most computers can control MIDI equipment such as the Korg EX-800 and (via the KMS-30) non-MIDI units such as the DDM-110/220. The interface takes the data from the computer and converts it to the standard MIDI signal format for control of any MIDI sequencer, synthesizer, or rhythm machine. [The KMS-30 converts MIDI timing data into conventional

(analog) sync signals.] The interface in this example also allows the Poly-800 to be used for inputting data to the computer, running appropriate software for this purpose. With the CRT's display capability and floppy disc storage and quick access, this kind of system can give you incredible freedom in musical composition and performance.



# SUPER DRUMS DDM-110/ SUPER PERCUSSION DDM-220

## SPECIFICATIONS

**■TONE GENERATORS**—DDM-110: Bass Drum, Snare Drum, Rimshot, High Tom, Low Tom, Closed High-hat, Open High-hat, Cymbal, Handclaps. **■TONE GENERATORS** DDM-220: Hi Conga, Lo Conga, Timbale, Woodblock, Cowbell, Hi Agogo, Lo Agogo, Cabasa, Tambourine. **■ACCENT**: All Instruments; ON/OFF, Stop. **■TEMPO CONTROL**: Coarse (SLOW ~ FAST); FINE (+ ~ -); Tempo indicator. **■VOLUME**: Master, Metronome, HH/Cymbal (DDM-110), Cabasa/Tambourine (DDM-220). **■PATTERN KEYS**: Pattern Mode, Instrument Mode, Initial Mode, Record Mode. **■SONG KEYS**: Song Mode, Pattern Mode, Edit Mode, Record Mode. **■NUMBER KEYS (SOUND SOURCE KEYS)**: Pattern Number Select, Song Number Select, Instrument Select, Initial Select, Pattern Erase, Song Initial Bar Select, Repeat, Repeat Time Select, Song Repeat (ON/OFF), Insert, Delete, End, Memory Avail, Tape Interface (Save, Load, Verify). **■RECORD SWITCH**: ENABLE/DISABLE **■START/STOP KEY**: START/STOP **■ENTER KEY**: Enter, Step Up/Down, Cancel. **■SHIFT KEY**: Enter Key Function Select; Continue Start; Instrument Erase. **■PATTERN MEMORY**: 32 Patterns (Maximum number of steps: 32 for pattern numbers 1 ~ 16; 16 for pattern numbers 17 ~ 32). **■SONG MEMORY**: 6 Songs; Maximum Memory Capacity: 385 ~ 390 bars. **■DISPLAY**: Pattern Number, Song Number, Bar Number, Step Number, Beat Count, Key Number, Memory Avail, Tape Interface Modes, Battery Check. **■SYNC**: 5-Pin DIN Jack IN/OUT Switch. **■TAPE INTERFACE**: Tape Switch (DISABLE/FROM/TO), FROM Jack, TO Jack. **■INPUTS**: DC 9V; Start/Stop (⏏ GND). **■OUTPUTS**: Stereo Out (R/MIX, L), Phones, Trigger Out (⏏ GND). **■POWER SUPPLY**: Six 1.5V "Penlight" AA size (SUM-3) batteries or AC adaptor (DC 9V, 300 mA), Power Switch. **■DIMENSIONS**: 226(W) × 196(D) × 49(H)mm **■WEIGHT**: 880g (including batteries) **■SUPPLIED ACCESSORIES**: Shielded Auto Cord (2.5m), Batteries (UM-3 × 6), AC adaptor.

## OPTIONAL ACCESSORIES

**■Pedal Switch/PS-1** **■Stereo Headphones/KH-1** **■Soft Case** **■5-Pin DIN Cord**

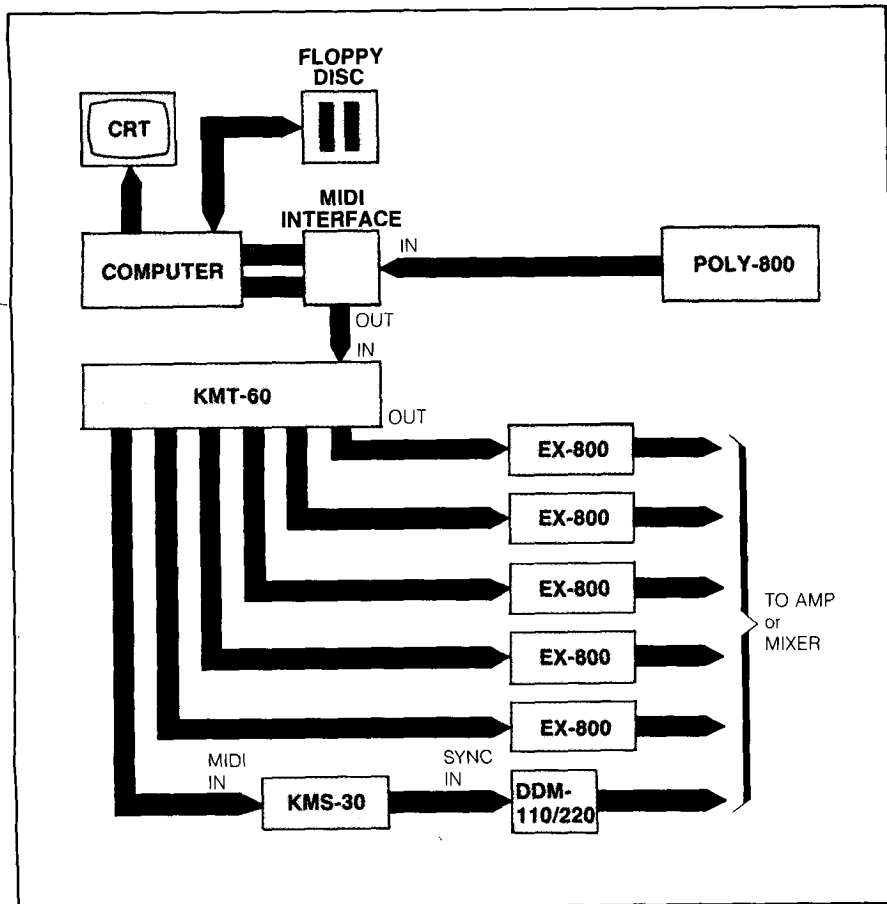
## KMS-30

### SPECIFICATIONS

**■MIDI SECTION**: MIDI IN × 1, MIDI OUT × 2, **■SYNC SECTION**: SYNC IN × 1, SYNC OUT × 2, 24/48, Clock Frequency Switches × 3 **■TAPE SECTION**: TAPE IN × 1, TAPE OUT × 1 **■SYNCHRONIZATION**: ON/OFF × 1 **■MASTER CLOCK SELECT**: MIDI/SYNC/TAPE Selector × 1 **■TEMPO**: LED Indicator × 1 **■POWER**: ON/OFF × 1 **■INPUT/OUTPUT JACKS**: MIDI IN × 1 (DIN Jack), MIDI OUT × 2 (DIN Jacks), SYNC IN × 1 (DIN Jack), SYNC OUT × 2 (DIN Jacks), TAPE IN × 1 (RCA Phono Jack) TAPE OUT × 1 (RCA Phono Jack), DC9V IN × 1 **■DIMENSIONS**: 232(W) × 35(H) × 131(D)mm **■WEIGHT**: 850g **■SUPPLIED ACCESSORIES**: AC Adaptor (9V) × 1

## OPTIONAL ACCESSORIE

**■MIDI Cable**



*\*Specifications and features are subject to change without notice for further improvement*

**KORG<sup>®</sup>**

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