

Roland



AX-7

MIDI KEYBOARD CONTROLLER

Owner's Manual

Thank you, and congratulations on your choice of the Roland AX-7 MIDI Keyboard Controller. The AX-7 is a powerful, easy-to-operate, dedicated shoulder keyboard for MIDI sound modules (whether or not they are GM2/GM/GS compatible). Please take the time to read through this Owner's Manual. That way, you can feel assured that you understand every feature the AX-7 offers, and will enjoy many years of trouble-free operation.

The Roland AX-7 is a MIDI keyboard controller. It does not contain any sound-generating circuitry. It is designed to transmit note messages, program changes, bank select messages as well as a variety of other MIDI messages (such as Reverb and Chorus Send levels) to an external sound module.

To avoid confusion, let's agree to...

- ...use the word "button" for all keys on the front panel, and only use "key" when referring to the AX-7's keyboard.
- ...say "sequencer" when referring to both hardware sequencers (like the Roland MC-80) and computers with sequencer software.
- ...talk about "MIDI instruments" to signify both isolated ("monotimbral") instruments and parts/timbres/voices/multi channels of a multitimbral module or synth.

The contents of the illustrations appearing in this manual may differ slightly from what you see when you start using your instrument.

Before using this instrument, carefully read the sections entitled "Using the unit safely" and "Important notes". These sections provide important information concerning the proper operation of the AX-7. Be sure to keep this manual in a safe place for future reference.

USING THE UNIT SAFELY

INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

About ⚠ WARNING and ⚠ CAUTION Notices

 WARNING	Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.
 CAUTION	Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly. * Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.

About the Symbols

	The ⚠ symbol alerts the user to important instructions or warnings. The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.
	The ⊘ symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled.
	The ● symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet.

ALWAYS OBSERVE THE FOLLOWING

WARNING

- Before using this instrument, make sure to read the instructions below, and the Owner's Manual. 
- Do not open (or modify in any way) the instrument, and avoid damaging an optional adaptor. 
- Do not attempt to repair the instrument, or replace parts within it. Refer all servicing to your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page. 
- Never use or store the AX-7 in places that are:
 - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are 
 - Damp (e.g., baths, washrooms, on wet floors); or are 
 - Humid; or are
 - Exposed to rain; or are
 - Dusty; or are
 - Subject to high levels of vibration.
- When using an optional adaptor, make sure the line voltage at the installation location matches the input voltage specified on the name plate. 

- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the instrument. 

- Immediately turn the power off, disconnect the adaptor from the outlet, and request servicing by your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page when:
 - Objects have fallen into, or liquid has been spilled onto the instrument; or 
 - The instrument has been exposed to rain (or otherwise has become wet); or
 - The instrument does not appear to operate normally or exhibits a marked change in performance.

WARNING

- In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit. 
- Protect the instrument from strong impact. Do not drop it! 
- When using an optional adaptor, do not force it to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through. 
- Before using the instrument in a foreign country, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page. 

CAUTION

- The instrument and the optional adaptor should be located so their position does not interfere with their proper ventilation. 
- Whenever the instrument is to remain unused for an extended period of time, disconnect the optional adaptor if you have one. 
- Try to prevent cords and cables from becoming entangled. Also, all cords and cables should be placed so they are out of the reach of children. 
- Never climb on top of, nor place heavy objects on the instrument. 
- Never handle the batteries or optional adaptor with wet hands when plugging into, or unplugging from, an outlet or the AX-7. 
- Before cleaning the AX-7, turn off the power and unplug the optional adaptor from the outlet. 

Important notes

In addition to the items listed under "USING THE UNIT SAFELY" (page 2), please read and observe the following:

Power supply

- The AX-7 can be operated using batteries or an optional adaptor. Be careful to insert the batteries the right way around. If you prefer to use an adaptor, be sure to purchase a Roland ACA model.
- Before connecting the AX-7 to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to other devices.

Placement

- Using the AX-7 near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this instrument; or move it farther away from the source of interference.
- This instrument may interfere with radio and television reception. Do not use it in the vicinity of such receivers.
- Do not expose the AX-7 to direct sunlight, place it near devices that radiate heat, leave it inside an enclosed vehicle, or otherwise subject it to temperature extremes. Excessive heat can deform or discolor the instrument.

Maintenance

- For everyday cleaning wipe the AX-7 with a soft, dry cloth or one that has been slightly dampened with water. To remove stubborn dirt, use a mild, non-abrasive detergent. Afterwards, be sure to wipe the instrument thoroughly with a soft, dry cloth.
- Never use benzene, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

Repairs and data

- Please be aware that all data contained in the instrument's memory may be lost when it is sent for repairs. Important data should always be backed up via MIDI (see p. 15). In certain cases (such as when circuitry related to memory itself is out of order), we regret that it may not be possible to restore the data. Roland assumes no liability concerning such loss of data.

Additional precautions

- Please be aware that the memory contents can be irretrievably lost as a result of a malfunction, or the improper operation of the instrument. To protect yourself against the risk of losing important data, we recommend that you periodically save a backup copy of important data in the instrument's memory.
- Use a reasonable amount of care when using the instrument's buttons, other controls, and jacks/connectors. Rough handling can lead to malfunctions.
- Never strike or apply strong pressure to the display.
- When connecting/disconnecting MIDI cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.
- A small amount of heat will radiate from the instrument during normal operation. This is perfectly normal.
- When you need to transport the instrument, package it in the box (including padding) that it came in. Otherwise, you will need to use equivalent packaging materials, or a flightcase.

Contents

1. The AX-7 in a nutshell	4	7. Reference	109
2. Panel descriptions.	5	MIDI implementation chart	109
'Neck' (control) section.	5	Factory settings (based on the GM Tone Map)	110
Bottom panel.	6	Blank Chart	111
Connection panel (rear)	6	Control Change list	112
3. The basics.	7		
Inserting or replacing the batteries	7		
Connecting the AX-7	8		
Powering up	8		
4. Keyboard modes	9		
5. Configuring the AX-7.	10		
Selecting the parameter to be edited	10		
CONTROL parameters.	11		
DATA parameters.	14		
PRG CHG parameters.	16		
6. Miscellaneous	17		
Transpose	17		
About MIDI Merge.	17		
Working with Patches	17		
Restoring the factory settings	18		
Specifications.	18		

1. The AX-7 in a nutshell

Four keyboard modes

The AX-7's 45-note keyboard can be used in Layer, Split, and Whole modes.

Perfect control

The AX-7 puts you in control of all things MIDI in your keyboard rig. Velocity sensitivity, D Beam Controller, Expression Bar, and Touch Controller are built in – and can be set for the Upper and Lower sections independently. Then there is also a DATA ENTRY knob that can be assigned to any control change number between CC00 and CC119.

Of course, you can also transpose the Upper and Lower sections – either in octave or semitone steps. You can also set the tempo for an external sequencer and store that value in a Patch.

128 Patch memories

The AX-7 comes with 128 (2 x 64) Patch memories where you can save almost all settings, plus the MIDI channels for the Upper and Lower sections, and Bank Select/Program Change numbers to be transmitted on both section channels (where applicable) whenever you select the Patch in question.

Once you have used up all 128 internal Patch memories and need even more setups, you can archive your existing settings via MIDI (Bulk Dump function).

Supports Roland's GS Format

The GS Format is a standardized set of specifications for Roland's sound sources which defines the manner in which multitimbral sound modules will respond to MIDI messages. All devices compatible with the GS Format bear the GS logo. Every module or instrument bearing the GS logo will respond in the same way to the MIDI messages sent from the AX-7.

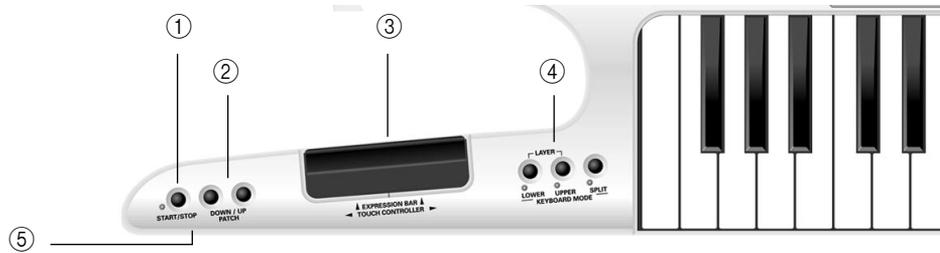
All Roland GS sound modules also fully support Level 1 of the General MIDI System. The AX-7 is also GM2-compatible.

Important note

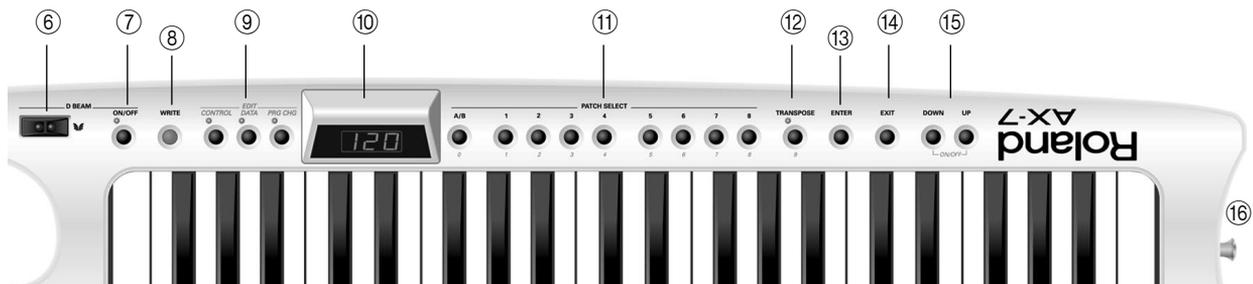
When using an AC adaptor, use only the specified device (Roland ACA series). Use of any other AC adaptor could result in damage, malfunction or electric shock.

2. Panel descriptions

'Neck' (control) section



- ① **START/STOP button**
This button allows you to transmit MIDI Start and Stop messages to start or halt playback of an external sequencer.
- ② **DOWN/UP PATCH buttons**
These buttons can be used for selecting the preceding (DOWN) or next (UP) Patch memory, EDIT parameters, or entering parameter values. In certain cases, pressing them simultaneously will switch the selected parameter on and off. In other cases, pressing them simultaneously recalls the default value of the selected parameter.
- ③ **EXPRESSION BAR/TOUCH CONTROLLER**
Press the Expression Bar to generate Modulation messages (CC01) and/or Aftertouch. Behind the Expression Bar (the "big switch"), you will find a ribbon strip. That is the Touch Controller. Slide your finger towards the left or right on this ribbon to transmit Pitch Bend messages.
- ④ **KEYBOARD MODE buttons**
Press one of these buttons to select a Whole mode, the Layer, or Split mode. See page 9.
- ⑤ **DATA ENTRY knob**
This knob (located behind the **START/STOP** button) can be used to transmit the assigned MIDI messages in realtime.

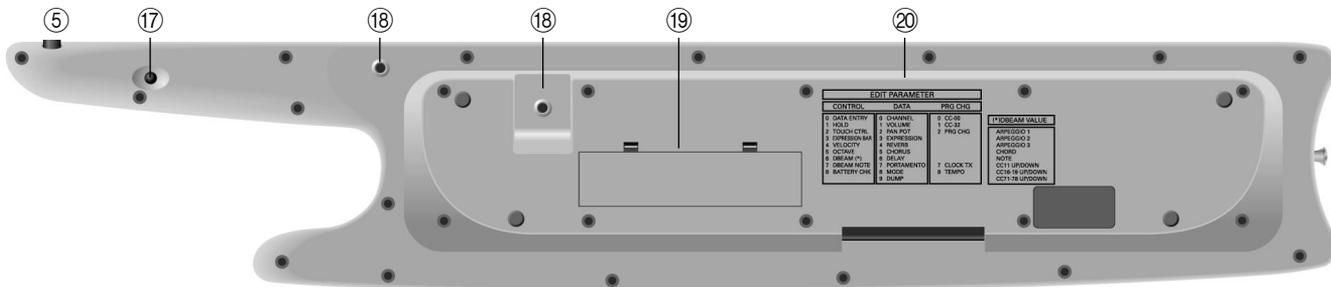


- ⑥ **D Beam sensors**
Move your hand over these two sensors to generate the assigned messages.
- ⑦ **D Beam ON/OFF switch**
Press this switch to activate (indicator lights) or switch off (indicator dark) the D Beam Controller.
Note: Be sure to select the OFF position whenever you are not using the D Beam Controller (to save battery life).
- ⑧ **EDIT buttons**
Press one of these buttons (**CONTROL**, **DATA**, or **PRG CHG**) to select the corresponding EDIT level. You can then use the numeric keypad to call up the parameter you wish to set.
- ⑨ **WRITE button**
Press this button to save the current settings to one of the AX-7's Patch memories. Writing a Patch also involves pressing other buttons (see p. 17).
- ⑩ **Display**
This three-character display keeps you posted about the selected Patch memory, the tempo, or the parameter value you set.
- ⑪ **PATCH SELECT buttons**
If none of the EDIT buttons lights, the buttons **A/B** and **1**~**8** allow you to enter the number of the desired Patch memory (two banks of 64 memories each). After pressing one of the EDIT buttons, the buttons **A/B**, **1**~**8** and **TRANSPOSE** (which then functions as **9**) can be used for selecting the desired parameter (see p. 10).
- ⑫ **TRANSPOSE button**
Usually, this button allows you to switch the AX-7's keyboard transposition on and off and to set the transposition interval. When **CONTROL**, **DATA**, or **PRG CHG** lights, however, this buttons can be used for selecting a parameter (in which case it functions as **9**).

- ⑬ **ENTER button**
Press this button to confirm a setting or a selection.
- ⑭ **EXIT button**
Press this button to leave the currently selected EDIT level, or to ignore the value you just set (thus returning to the previously set value).

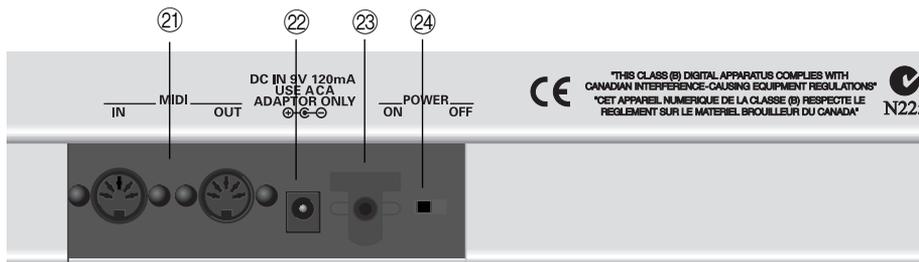
- ⑮ **DOWN/UP buttons**
These buttons duplicate the DOWN/UP PATCH buttons.
- ⑯ **Strap pin**
This is where you need to attach one end of the supplied strap. (The other end needs to be attached to one of the pins on the bottom panel.)

Bottom panel



- ⑰ **Sustain button**
This button has the same function as a Hold/Sustain pedal connected to a synthesizer or stage piano: press it to hold the notes you are playing.
- ⑱ **Battery compartment**
This is where you need to insert the supplied (or replacement) batteries.
- ⑲ **Strap pins**
This is where you need to attach the other end of the supplied strap.
- ⑳ **Function overview**
These lists provide at-a-glance information about the available Edit and D Beam functions.

Connection panel (rear)



- ⑳ **MIDI IN, OUT sockets**
Connect the MIDI IN socket to the device that should transmit MIDI messages to the AX-7. Connect the MIDI OUT socket to the MIDI instrument you wish to control with your AX-7.
The AX-7 is capable of merging the MIDI messages received via MIDI IN with the messages you generate by playing on the AX-7.
- ㉑ **DC IN socket**
This is where you can connect an optional ACA adaptor.
- ㉒ **Cord hook**
If you connect an optional ACA adaptor to the DC IN socket, be sure to wind the cable around this hook as a safeguard against accidental disconnection.
- ㉓ **POWER switch**
Set this switch to the ON position to switch the AX-7 on. Select the OFF position to power off your AX-7.

3. The basics

Inserting or replacing the batteries

The AX-7 can be powered either by batteries or an optional AC adaptor. For live use, batteries are by far more convenient, however.

Battery replacement

Six AA batteries are required to run the AX-7 on battery power. We recommend the use of alkaline batteries because they will provide a more stable, long-lasting source of power. With alkaline batteries, you can expect about 20 hours of continuous operation, although this depends on how the AX-7 is being used.

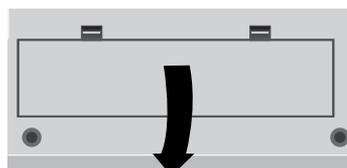
Note: Avoid using new batteries together with old ones. In addition, avoid mixing different types of batteries (e.g. regular carbon and alkaline batteries).

Note: When replacing batteries, be sure to insert them correctly (ensure correct polarity).

Note: Remove the batteries whenever the AX-7 is to remain unused for an extended period of time.

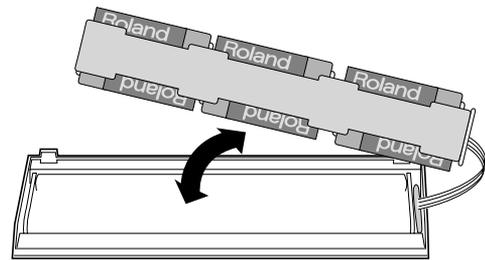
- (1) Switch off the AX-7.
- (2) Remove the battery cover located on the bottom of the instrument.

(a) Press the tabs forward.



(b) Lift up.

- (3) Take out the battery holder, then insert the six batteries supplied with the AX-7 (three on either side).



- (4) Insert the battery case and close the battery cover.

Connecting an optional AC adaptor

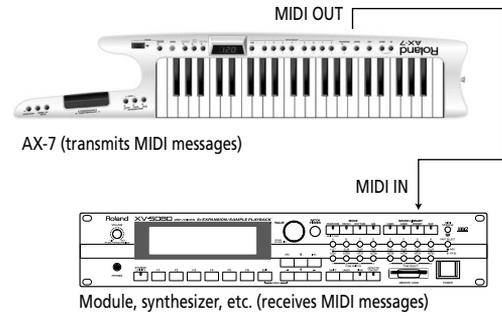
Be sure to use only the specified AC adaptor (Roland ACA series). Using any other type may cause malfunction or electric shock.

Note: If the AX-7 is to remain unused for an extended period of time, unplug the adaptor.

- (1) Switch off the AX-7.
- (2) First connect the AC adaptor to the AX-7's DC IN socket, then connect the large plug to a power outlet.

Connecting the AX-7

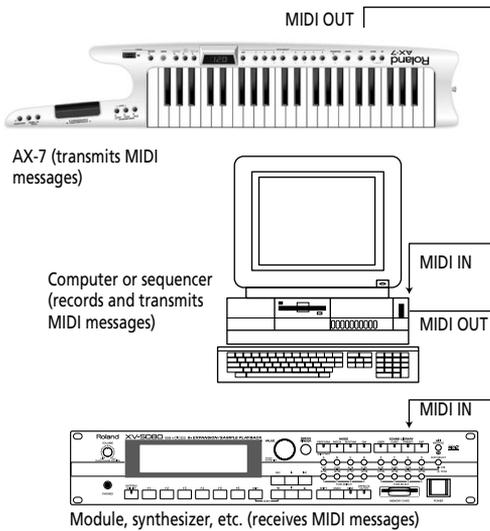
Note: Switch off both the AX-7 and the external instrument(s) before establishing or breaking the MIDI connections. The AX-7 is a MIDI controller. It contains no sound-generating circuits of its own. You need to connect it to at least one external MIDI instrument in order to hear what you are playing. See right for the basic connections.



Note: Do not forget to connect the module, synthesizer, etc., to an amplifier. See its manual for details.

Working with a computer or sequencer

If you want to use the AX-7 as Master keyboard for recording applications that involve a computer with sequencing software, or a hardware sequencer (like the Roland MC-80), here is the most useful connection system:



This setup only works as expected if the following conditions are met:

- The computer (if that is what you use) must be equipped with a MIDI interface.
- You need to switch on the sequencer's MIDI Soft Thru/MIDI Echo function. Otherwise you won't hear what you are playing. (See the sequencer's/software's manual for details.)

Note: The MIDI channel you set on the AX-7 (see p. 14) may be changed to another number by the sequencer. If that is not the case, be sure to set at least one of the AX-7's zones to the MIDI channel the module (not the sequencer) is receiving on.

Note: Yet other configurations are possible, but the above usually cover most of your MIDI needs. You could connect the MIDI IN socket of a second module to the a MIDI THRU socket of the module pictured above for an even larger system.

Or you could establish the following connection:

[Sequencer] MIDI OUT → [AX-7] MIDI IN

[AX-7] MIDI OUT → [Module] MIDI IN

(See also "About MIDI Merge" (p. 17)).

Powering up

Power to the various devices should be turned on in the appropriate order. First, switch on the units that transmit MIDI messages (computer, AX-7). Next, switch on the sound module(s)/synthesizers, then the amplification system.

Set the AX-7's power switch (rear panel) to the ON position.

Power off your system in the reverse order.

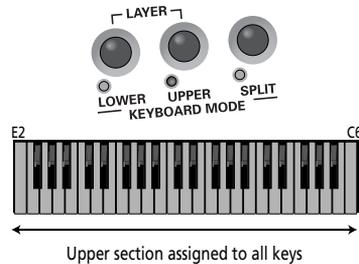
Note: The AX-7 is equipped with a circuitry protection feature. At power-up, a brief interval is required before it will operate normally.

Note: If the AX-7 is powered using batteries, be sure to switch it off whenever you are not planning to use it for a while (5 minutes or more). But before doing so, you may wish to save the current settings to a Patch memory (see p. 17).

4. Keyboard modes

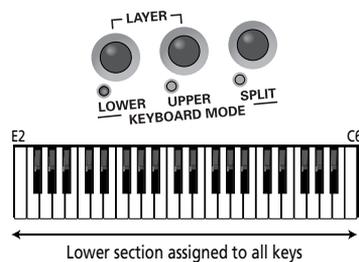
Your AX-7 has three buttons that allow you to select one of four Keyboard modes. The KEYBOARD MODE determines how many zones and/or MIDI channels can be used simultaneously.

Whole Upper



This mode means that the Upper section is assigned to the entire keyboard. All messages generated on the AX-7 are therefore transmitted on the Upper channel. Press the **UPPER** button to select this mode.

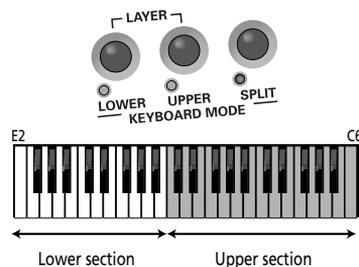
Whole Lower



This mode means that the Lower section is assigned to the entire keyboard. All messages generated on the AX-7 are therefore transmitted on the Lower channel. Press the **LOWER** button to select this mode.

Alternately pressing **UPPER** and **LOWER** allows you to control different MIDI instruments as and when needed. Example: you could use the Lower section for controlling an organ sound of one module (or part), and the Upper section for playing a lead synthesizer part using a different MIDI instrument.

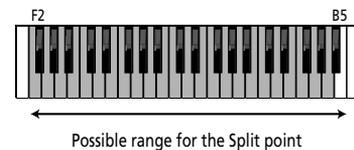
Split



In Split mode, the Lower section is assigned to the left half of the keyboard, while the Upper section is assigned to the right. This allows you to control two

different MIDI instruments via separate channels (Lower and Upper). Press the **SPLIT** button to select this mode.

At first, the Split point of the factory Patches is located at the "C" key slightly left off center. This key is called the **C4**. Here's how to select another split point between the "F2" and the "B5" (see the following illustration):

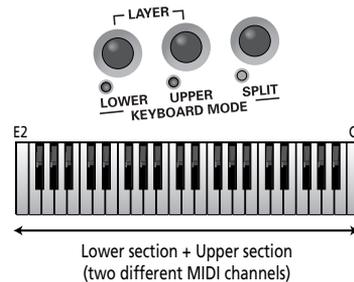


- (1) Press and hold the **SPLIT** button.
- (2) While still holding that button, press the key that should become the lowest note of the Upper section.
You can also use the **DOWN**/**UP** buttons on the AX-7's body or 'neck'.
- (3) Release both the **SPLIT** button and the key you pressed.

Note: This setting can be saved to a Patch. Your KEYBOARD MODE selection is also saved.

Note: To select the default setting (C5), simultaneously press **DOWN**/**UP**.

Layer (Lower + Upper)



In Layer mode, the AX-7 transmits on two MIDI channels simultaneously (assigned to Lower and Upper). Every action on the AX-7 is thus translated into two MIDI message strings. Hold down **LOWER** while pressing **UPPER** to select this mode.

To leave it, press **LOWER**, **UPPER**, or **SPLIT**.

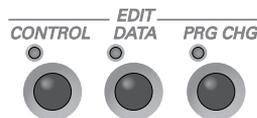
5. Configuring the AX-7

Your AX-7 comes with a great many MIDI parameters, or message types, that can be transmitted so as to control your MIDI rig to your liking. Most of the following parameters can be set for the Upper and Lower sections independently – and most of them can be saved to a Patch memory (see p. 17).

Note: The available EDIT parameters will be presented in the order they can be selected. See page 14 if all you want to do for the time is being is assign different MIDI channels to the Upper and/or Lower sections. You will also find a list of the available parameters on the AX-7's bottom panel.

Selecting the parameter to be edited

The AX-7's Edit parameters can be accessed via three buttons:



Button	Function
CONTROL	Provides access to all parameters related to the available performance functions, like Expression Bar, Touch Controller, Data Entry, etc.
DATA	Provides access to more specific and static MIDI parameters: transmit channel, volume, etc., but also the Dump function.
PRG CHG	Allows you to set and transmit memory selection clusters (Bank Select, Program Change) and to set the MIDI tempo.

When none of the above buttons lights, you are in "play mode" (i.e. where you cannot change the above parameters). That also means that the PATCH SELECT keypad (**A/B**, **1**~**8**) can be used for selecting Patch memories.

After pressing **CONTROL**, **DATA**, or **PRG CHG**, however, the buttons **0** (**A/B**), **1**~**8** and **9** (**TRANSPOSE**) allow you to select the desired parameter. These numbers appear below the buttons and are printed in grey

Here is how to select the desired parameter:

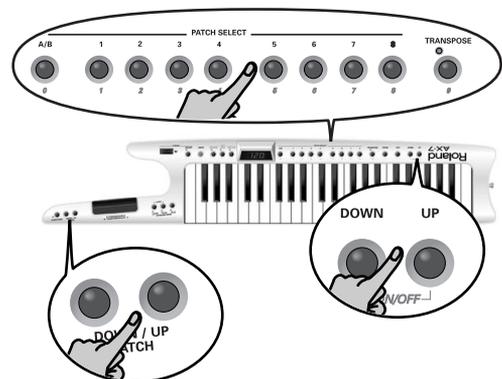
- Look at the list on the bottom panel to find out which EDIT button you need to press.

EDIT PARAMETER		
CONTROL	DATA	PRG CHG
0 DATA ENTRY	0 CHANNEL	0 CC-00
1 HOLD	1 VOLUME	1 CC-32
2 TOUCH CTRL	2 PAN POT	2 PRG CHG
3 EXPRESSION BAR	3 EXPRESSION	
4 VELOCITY	4 REVERB	
5 OCTAVE	5 CHORUS	
6 DBEAM (*)	6 DELAY	
7 DBEAM NOTE	7 PORTAMENTO	7 CLOCK TX
8 BATTERY CHK	8 MODE	8 TEMPO
	9 DUMP	



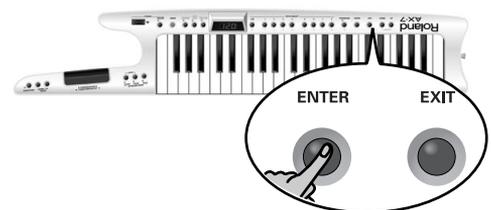
- Press **CONTROL**, **DATA**, or **PRG CHG**, depending on the column that contains the desired parameter.
The number of the first parameter now flashes in the display.

- Use the **0**~**9** buttons or **DOWN**/**UP** to select a parameter.



After about three seconds, the display shows the value currently set for the selected parameter.

- Press **LOWER** or **UPPER** to select the keyboard section whose settings you wish to change.
Note: It is now no longer possible to select a different KEYBOARD MODE. You need to leave the EDIT mode altogether before being able to do that.
- Use **0**~**9** or **DOWN**/**UP** to make the desired setting.
Some parameters can be set to **OFF**. To do so, simultaneously press **UP** and **DOWN**.
- Press **ENTER** to confirm the value or setting.



Press **EXIT** to return to the previous value.

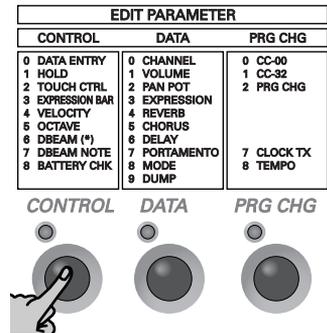
- Press **EXIT** if you want to select another parameter from the active EDIT group.
To select a parameter from a different group, press the corresponding EDIT button (**CONTROL**, **DATA**, **PRG CHG**), then return to step (3) above.

- (8) Press **[EXIT]** yet again to leave the EDIT mode. You will achieve the same result by pressing the lighting EDIT button (it then goes dark).

Note: See page 17 if you wish to save the settings you have just made as a Patch.

CONTROL parameters

As stated above, this is where you will find all parameters that are related to the AX-7's performance functions. This level also contains a parameter that allows you to check the state of the batteries.



0 dEn (Data Entry) Upper, Lower

This parameter allows you to assign a control change number (CC) to the AX-7's **[DATA ENTRY]** knob. The knob can then be used for realtime control of the related function. You can assign any number between CC00 and CC119. Given their dedicated use for memory bank selection (see p. 16), CC00 and CC32 are unlikely candidates for other assignments. Assigning them to the **[DATA ENTRY]** knob therefore makes little sense.

If you assign CC10 (Pan) to this knob, positions below the center correspond to the left side, while settings above the center correspond to the right.

Note: Certain MIDI instruments may not respond in realtime to CC10 changes, because they only implement Pan changes at the beginning of a new note (Note-on message).

It is also possible to select **OFF** (by simultaneously pressing **[DOWN]**/**[UP]**), which means that the **[DATA ENTRY]** knob performs no function at all.

Note: See the manual of the MIDI instrument to be controlled for the CC numbers it supports for realtime control.

Note: The CC assignment can be different for the Upper and Lower sections. This allows you, for example, to control the Pan setting (CC10) via the Upper section, and the Delay Send Level (CC94) via the Lower section.

1 hLd (Hold) Upper, Lower

This parameter allows you to specify (for Upper and Lower separately) whether the selected section should (**On**) or should not (**OFF**) transmit Hold (CC64) messages when you press the Sustain button on the bottom panel.

2 tCh (Touch Control) Upper, Lower

This parameter allows you to specify whether the selected section should (**On**) or should not (**OFF**) transmit Pitch Bend messages when you use the AX-7's ribbon (TOUCH CONTROL strip).

3 bRr (Expression Bar) Upper, Lower

This parameter allows you to specify what kind of MIDI messages the selected section transmits when you press the EXPRESSION BAR. There are four possibilities:

Mod: The section in question transmits Modulation messages (CC01). CC01 messages can be used for creating vibrato, tremolo, or WahWah effects. This depends on how the receiving MIDI instrument uses these messages.

RFt: The section in question transmits Channel Aftertouch messages. Depending on the instrument you are controlling, Aftertouch messages can modify the volume, timbre (filter), pitch, or even other aspects.

RLl: The section in question transmits both Modulation and Aftertouch messages.

OFF: The section in question does not respond to the EXPRESSION BAR. The EXPRESSION BAR could then be used for "locking" the value generated by the D Beam controller (see also p. 12).

4 vEL (Velocity) Upper, Lower

This parameter allows you to assign a velocity curve to the selected section. The AX-7's keyboard is velocity sensitive and very responsive to nuances of your playing. You may, however, be controlling a MIDI instrument that does not interpret the velocity values in the desired way. Rather than reprogram the sound (if that is at all possible), you can simply select another curve on the AX-7 so that your striking force is translated in a different way and thus more usable for the part you wish to play.

Select **L** (light) if the section in question should send high velocity values even when you strike the keys with light-to-medium force. **M** (medium) is the default setting, which produces a natural response. **H** (heavy), is the way to go if the external MIDI instrument is too loud/bright when you play normally.

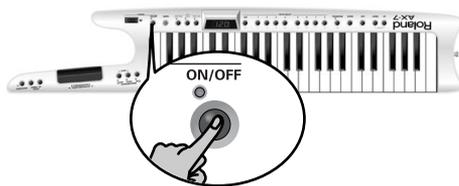
Select **LL** if all note messages of the section in question are to be transmitted with more or less the same velocity value. Extreme differences in dynamics (hitting very hard and very soft) will, however, allow you to trigger velocity switches if the receiving MIDI instrument supports that feature. This setting is thus not the same as "off" on other instruments – but it is very similar.

5 Oct (Octave) Upper, Lower
 This parameter is especially useful in Split mode (see p. 9), when you wish to use your left hand for a chord backing whose register is close to the part you play with your right hand. Of course, you can also transpose (or "shift") the Upper part in octave steps, which may be useful in Layer mode.

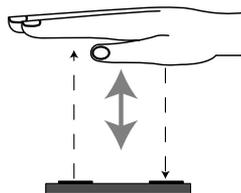
The setting range is -2, -1, 0, 1, 2 octaves (down or up). Note that the AX-7's keyboard can also be transposed in semitone steps. See page 17.

6 D Beam (D Beam) Upper, Lower
 The D Beam Controller allows you to control various aspects of your performance, or to add something to the music, by moving your hand, head, etc., in the air. You only need to make sure that you do so over the two "eyes" and within a 40cm (±16") range. Your movements are translated into musical expression.

- (1) Press the D BEAM [ON/OFF] button (indicator must light).



- (2) Move your hand towards and away from the D Beam's "eyes".



The active section now transmits the assigned messages. Here are the functions that can be assigned to the D Beam controller (after selecting the **D Beam** parameter):

Ar 1, Ar 2, Ar 3: The D Beam can be used for playing arpeggios on the external MIDI instrument. The number (1, 2, 3) refers to the number of octaves that are covered by the arpeggio function. See also "Getting the D Beam to play the notes you want" (p. 13). The tempo depends on the speed of your movements towards the D Beam.

Cr d: The D Beam can be used for playing chords (i.e. transmitting several note messages simultaneously). See also "Getting the D Beam to play the notes you want".

nE: The D Beam transmits one note-on message. See [7] on page 13 for how to specify the note number. This can be useful for triggering "noises" of an XV synthesizer or module, loops, hits, or other samples.

I I u / I I d: With these options, you assign the Control Change CC11 (Expression) to the D Beam controller (for the selected section). The **u** means that the D Beam can be used for transmitting values between "0" (volume effectively set to zero) and "127" (volume corresponding to the value set for CC07 on the receiving MIDI instrument), while **d** refers to the value range "127"~"0".

What's the difference? If you select **I I u**, the receiving MIDI instrument can be faded in – i.e. it is only audible when the D Beam senses your hand. **I I d** allows you to produce fade-outs. Assigning one to the Upper and the other to the Lower section after selecting Layer mode (see p. 9) thus allows you to produce cross-fades in Realtime.

I 6 u / I 6 d ~ I 9 u / I 9 d, 7 I u / 7 I d ~ 7 8 u / 7 8 d: With these options, you assign the corresponding Control Change number (CC16~19 or CC71~78) to the D Beam controller (again for the selected section). The **u** means that the D Beam allows you to transmit values between "64" and "127", while **d** refers to the value range "64"~"0". This is mainly intended for relative changes to value of the external MIDI instrument's parameter that responds to the CC number in question. CC71~78 are meaningful for GM2 compatible tone generators, though other MIDI instruments may receive them and control another parameter – which can be as interesting.

As long as the D Beam does not sense any movement, the value will be "64", which is the relative neutral position (no change to the parameter value). CC16~19 are "General Purpose" Control Changes, which is a learned way of saying that they have no standardized function yet and can thus be used at will by each manufacturer. If your MIDI instrument (usually a programmable synthesizer) allows you to use these messages for controlling certain parameters, the D Beam can perform the same function as an "assignable controller". (See your MIDI instrument's manual for details.)

Here are the official GM2 (General MIDI Level 2) functions of the remaining Control Changes:

Message	Function
CC71	Harmonic Content (Resonance)
CC72	Release Time
CC73	Attack Time
CC74	Brightness (Cutoff)
CC75	Decay Time
CC76	Vibrato Rate
CC77	Vibrato Depth
CC78	Vibrato Delay

'Freeze' function

If you set [3] bAR (see p. 11) to OFF and assign a [1] 10~78d option to the D Beam, the EXPRESSION BAR can be used for "locking" the last value generated by your movements over the D Beam Controller.

That would allow you, for example, to raise (or lower) the MIDI instrument's Cutoff setting via 74u (or 74d) and to keep using the new value almost indefinitely. To do so:

- Move your hand inside the D Beam's range.
- While doing so, press the EXPRESSION BAR, then release it and move your hand outside the D Beam's range.
- To generate a new value, move your hand again inside the D Beam's range.

Getting the D Beam to play the notes you want

The AR and CRd options mean that the D Beam controller transmits several note-on messages. Before showing you how to specify those notes, there is something else you need to know: a section (Upper or Lower) to which one of the above D Beam functions is assigned, cannot be triggered via the keyboard while the D BEAM [ON/OFF] indicator lights.

The D Beam thus acts as "trigger" for the note numbers to be assigned. If any combination of the AR~CRd options is assigned to both sections, you won't hear the notes you play on the AX-7's keyboard while the D BEAM [ON/OFF] button is on.

To **specify the notes** the D Beam should use for its chords or arpeggios, you need to proceed as follows:

- Select Split or Layer mode.
- Press the D BEAM [ON/OFF] button (indicator must light).
- Play the notes on the keyboard (using keys that are assigned to the section that is controlled by the D Beam).

- While holding those notes, press the Sustain button (on the bottom of the "neck" section). Release the keys (and possibly also the Sustain button).
- Move your hand within the D Beam's sensing range to cause the D Beam to first transform those notes (in the case of AR1~AR3) and then transmit the result.

[7] dbn (D Beam Note)

Upper, Lower

This parameter allows you to specify which note number should be transmitted whenever the D Beam senses your hand. This is only meaningful if you assign the nLE D Beam function to a section (see p. 12). The setting range is 0~127 (displayed as C~G9).

This function is useful for producing special effects, like triggering sampled grooves, certain noises that add to the realism of your performances, or sounds to impress your audience (orchestra hits, gongs, explosions, etc.)

[8] bch (Battery Check)

This parameter allows you to check the voltage of the batteries (0~100). The value "0" means that the batteries should be dead by now, while "100" represents the highest value. A flashing dot in the left part of the display means that the remaining battery power is less than 30%.

Note: This value is only meaningful if *no* adaptor is connected to the DC IN socket (if an adaptor is connected, the value will always be 100).

Note: For important occasions, it may be wiser to work with an optional ACA adaptor. That way, you can rest assured that you will not run into problems during the session or gig.

DATA parameters

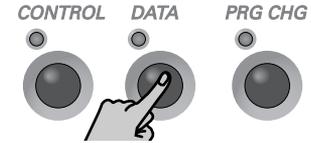
The **DATA** parameters represent MIDI messages you can use for configuring the receiving MIDI instrument up to a certain point by specifying things like its main and expression volume, its Reverb and/or Chorus depth, etc.

These are "static" settings that are transmitted whenever you select a Patch. With the exception of **CH**, **Vol**, and **dEL**, the corresponding control change numbers can also be assigned to the **DATA ENTRY** knob for continuous real-time control (see p. 11).

Note: Be sure to select **OFF** for any MIDI message that should not be transmitted.

Note: See page 10 for how to select and set these parameters.

EDIT PARAMETER		
CONTROL	DATA	PRG CHG
0 DATA ENTRY	0 CHANNEL	0 CC-00
1 HOLD	1 VOLUME	1 CC-32
2 TOUCH CTRL	2 PAN POT	2 PRG CHG
3 EXPRESSION BAR	3 EXPRESSION	
4 VELOCITY	4 REVERB	
5 OCTAVE	5 CHORUS	
6 DBEAM (*)	6 DELAY	
7 DBEAM NOTE	7 PORTAMENTO	7 CLOCK TX
8 BATTERY CHK	8 MODE	8 TEMPO
	9 DUMP	



0 CH (MIDI channel) Upper, Lower

This parameter allows you to assign the desired MIDI channel to the Upper or Lower section (1~16).

You can also select **OFF** (by simultaneously pressing **DOWN**/**UP**) to keep the section in question from sending any MIDI messages whatsoever.

1 Vol (Volume) Upper, Lower

This parameter allows you to specify the volume value (CC07) to be transmitted by the Upper and/or Lower section whenever you select the Patch that contains this setting. The setting range is 0~127, Off. Remember that selecting "0" will silence the receiving MIDI instrument.

Note: Even if you set this parameter to "127", you will hear nothing at all if you set **EHP** (see below) to "0".

2 PRn (PanPot) Upper, Lower

This parameter allows you to specify the Pan value (CC10) to be transmitted by the Upper and/or Lower section whenever you select the Patch that contains this setting. The setting range is 0~127, Off. The value "0" corresponds to hard left, "64" to the center, and "127" to hard right.

Note: Some MIDI instruments work the other way round (0=right/127=left). See the manual of the instrument you are controlling for details.

3 EHP (Expression) Upper, Lower

This parameter allows you to specify the expression value (CC11) to be transmitted by the Upper and/or Lower section whenever you select the Patch that contains this setting. The setting range is 0~127, Off. Selecting "0" will silence the receiving MIDI instrument. In most instances, you will probably select **OFF** or **127**.

Note: Even if you set this parameter to "127", you will hear nothing at all if you set **Vol** (see above) to "0".

4 rEU (Reverb Send Level) Upper, Lower

This parameter allows you to specify the Reverb Send Level value (CC91) to be transmitted by the Upper and/or Lower section whenever you select the Patch that contains this setting. The setting range is 0~127, Off.

Selecting "0" will set the receiving MIDI instrument to "dry" (no Reverb), while "127" represents the maximum Reverb Send level.

Note: If there is no audible change, you may have to check the Reverb effect settings on the receiving MIDI instrument.

Note: Not all MIDI instruments have a Reverb effect, and even if they do, they may not support this control change number (this is especially true of older instruments).

5 CHo (Chorus Send Level) Upper, Lower

This parameter allows you to specify the Chorus Send Level value (CC93) to be transmitted by the Upper and/or Lower section whenever you select the Patch that contains this setting. The setting range is 0~127, Off. Selecting "0" will set the receiving MIDI instrument to "dry" (no Chorus), while "127" represents the maximum Chorus Send level.

Note: If there is no audible change, you may have to check the Chorus effect settings on the receiving MIDI instrument.

Note: Not all MIDI instruments have a Chorus effect, and even if they do, they may not support this control change number (this is especially true of older instruments).

6 dEL (Delay Send Level) Upper, Lower

This parameter allows you to specify the Delay Send Level value (CC94) to be transmitted by the Upper and/or Lower section whenever you select the Patch that contains this setting. The setting range is 0~127, Off. Selecting "0" will set the receiving MIDI instrument to "dry" (no Delay), while "127" represents the maximum Delay Send level.

Note: If there is no audible change, you may have to check the Delay effect settings on the receiving MIDI instrument.

Note: Not all MIDI instruments have a Delay effect, and even if they do, they may not support this control change number.

7 Por (Portamento) Upper, Lower

This parameter allows you to set two parameters simultaneously: the Portamento switch (CC065) and the Portamento time (CC05). By selecting a value between "0" and "127", the Portamento switch is automatically set to "on" (127). If you set the **Por** parameter to **OFF**, however, the Portamento switch (CC65) is turned off (0).

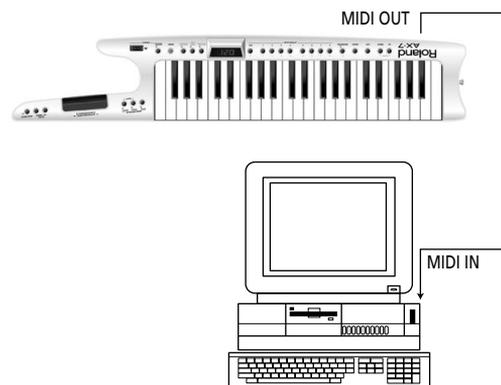
Portamento is an effect that produces gradual pitch changes between the notes you play. The higher the value, the longer it takes before the pitch of the newly played note is reached.

8 **MONO** (MIDI mode) Upper, Lower
This parameter allows you to select the monophonic (**MONO**) or polyphonic mode (**POLY**) on the receiving MIDI instrument. Mono (CC126= 0) can come in handy for solo lines based on special tricks (such as not releasing one key, while pressing others in succession to create a "fast" line with little effort). If the MIDI instrument should sound chords, however, be sure to select **POLY** (CC127= 0).

9 **DUMP** (Bulk Dump)
This is not really a parameter but a function that allows you to transmit the settings of the 128 Patches (see also page 17) to an external MIDI instrument as SysEx data chunks. In most instances, the recipient will be a sequencer.

Here is what you need to do in order to archive the AX-7's settings:

- (1) Switch off the AX-7 and the sequencer.
- (2) Connect the sequencer's MIDI IN socket to the AX-7's MIDI OUT socket.



- (3) Switch on the AX-7.
- (4) Boot the sequencer and select an empty song. Then activate its recording standby mode. If the sequencer's MIDI OUT socket is connected to the AX-7's MIDI IN socket: on some sequencers, you may have to temporarily defeat the Soft Thru/MIDI Echo function.
- (5) Select the **DUMP** parameter by pressing **[DATA]**, followed by **9**.
The display now shows **Ent** to signal that the AX-7 is ready to transmit the data.
- (6) Check whether the sequencer receives SysEx data (see its manual), then start recording.
- (7) Press the **[ENTER]** button on the AX-7.
The display now counts down from **128** to **1** (thus informing you about the Patch whose settings are being transmitted).

- (8) Wait until the **Ent** message reappears in the display, then stop the sequencer's recording function.
- (9) Save the "song" (with the Bulk data) to hard disk or floppy.
That file now contains your archive of the 128 Patch memory settings.

Here's how to retransmit such an archive from the sequencer to the AX-7 at a later stage:

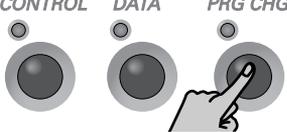
- (1) Switch off the AX-7 and the sequencer.
- (2) Connect the sequencer's MIDI OUT socket to the AX-7's MIDI IN socket. Switch on both devices.
- (3) On the sequencer, load the "song" file that contains the Bulk archive you wish to transmit to the AX-7.
Warning: with the following step, you will erase the 128 Patches in the AX-7's internal memory. If you think you may need them at a later stage, first archive them on the sequencer (see above).
- (4) Start playback on the sequencer.
As soon as the AX-7 receives the first Bulk data, the **rH** (RX) message appears.
- (5) Wait until the **rH** message disappears, then stop playback on the sequencer.
The AX-7 now once again contains the Patch settings contained in the archive.

PRG CHG parameters

As can be inferred from the assigned buttons [3]~[6] and [9] have no function), this EDIT level in fact consists of two groups: the first three parameters can be set for both zones independently, while the last two apply to the AX-7 as a whole. Nevertheless, even these parameters are saved along with the remaining settings (see p. 17).

See page 10 for how to select and set these parameters.

EDIT PARAMETER		
CONTROL	DATA	PRG CHG
0 DATA ENTRY	0 CHANNEL	0 CC-00
1 HOLD	1 VOLUME	1 CC-32
2 TOUCH CTRL	2 PAN POT	2 PRG CHG
3 EXPRESSION BAR	3 EXPRESSION	
4 VELOCITY	4 REVERB	
5 OCTAVE	5 CHORUS	
6 DBEAM (*)	6 DELAY	
7 DBEAM NOTE	7 PORTAMENTO	7 CLOCK TX
8 BATTERY CHK	8 MODE	8 TEMPO
	9 DUMP	



[0] $c00$, [1] $c32$ (Bank Select messages)

[2] Pc (Program Change) Upper, Lower

Nowadays, most MIDI instruments and effects devices contain a lot more than 128 sounds/memories. When the MIDI standard was developed, some 20 years ago, 128 memories seemed a lot, which is why it was decided to use a dedicated message type (Program Change) for selecting memories on an external device.

The entire MIDI standard evolves around the magical number "128". Given that there is no way of expanding that number, so-called Bank Select messages were later added to accommodate the growing number of memories (synthesizers with more than 2,000 sounds are quite common these days). At the time, neither CC00, nor CC32 had dedicated functions, and so these two control change messages were appointed Bank Select messages (by Roland, by the way, with the introduction of its GS Format).

Two bank addresses (MSB and LSB aka CC00 & CC32) with 128 possibilities each, plus 128 Program Change numbers provide 128 x 128 x 128 possibilities – a lot more than you can eat.

Mind you, nobody has even contemplated releasing instruments with over 2 million memories, but at least this system provides enough flexibility for many years to come.

On the AX-7, these three messages (CC00, CC32 and Program Change) are always sent as a set. Transmitting only Bank Select messages does nothing at all, while working only with Program Change messages means that you are stuck with 128 memories in the currently active memory bank.

That is why you need to transmit:

- A value for control change CC00 (MSB)
- A value for control number CC32 (LSB)
- A Program Change number

See the manual of the receiving MIDI instrument for the MSB and LSB values it supports.

As soon as you press **ENTER** to confirm the Program Change number (after first entering and confirming the CC00 and CC32 values), the selected section (Upper or Lower) immediately transmits the

memory selection cluster. If you save your settings to a Patch, these values will also be memorized and transmitted each time you select that Patch.

As you will notice, this procedure is very user-friendly indeed: after pressing [0] to select $c00$, and entering the desired value for CC00, pressing **ENTER** to confirm your setting will immediately take you to [1], where you can enter the value for CC32.

When you confirm that value by pressing **ENTER**, you can enter the Program Change number. (There is thus no real need to press [1] or [2] to select the $c32$ and Pc parameters).

As soon as you confirm the Pc value (by pressing **ENTER**), the memory selection cluster is transmitted to the MIDI OUT socket.

Note: While the setting range for CC00 and CC32 is 0~127, that of the Pc parameter is 1~128.

Note: You can also select **OFF** for these three parameters to prevent the section in question from sending that message.

Note: If Pc is set to **OFF**, the $c00$ and $c32$ are not transmitted (CC00/CC32 must always be followed by a Program Change number).

Note: These memory selection clusters can be programmed for the Upper and Lower sections individually.

[7] cLk (MIDI Clock on/off)

This parameter (and the following) allow you to set the tempo and control playback of an external sequencer.

With this parameter, you can specify whether (**On**) or not (**OFF**) the AX-7 should transmit the MIDI Clock messages set with the following parameter. Selecting **OFF** also means that the AX-7 transmits the MIDI Clock messages received via MIDI IN. This is not the case if you select **On**, because then, the AX-7 transmits its own MIDI Clock signal.

Note: The AX-7 is also capable of receiving MIDI Clock messages and of retransmitting them.

[8] LTP (Tempo/BPM)

Here, you can set the tempo (MIDI Clock) to be transmitted to an external sequencer. The setting range is 20~250 BPM. This value will be transmitted if cLk is set to **On**.

6. Miscellaneous

Transpose

Your AX-7 comes with a TRANSPOSE function you may want to use for playing songs in difficult keys.

To set the desired transposition interval:

- (1) Hold down the **TRANSPOSE** button and wait until the current transposition interval is displayed.
- (2) Keep holding the **TRANSPOSE** button while you press the key assigned to the note you wish to assign to every C key (-6~5 semi-tones, i.e. from Gb~F).

The **TRANSPOSE** indicator now lights steadily to indicate that the Transpose interval has been set and is being used.

You can also set the interval with the **DOWN**/**UP** buttons. Pressing them simultaneously recalls the default value (♯).

- (3) Once the desired interval has been set, you can switch it off by pressing the **TRANSPOSE** button. Press it again to switch the Transpose function back on.

The indicator lights to signal that the Transpose interval is being used.

Note: The Transpose on/off setting applies to both keyboard sections (Upper and Lower) and can be saved to a Patch memory.

About MIDI Merge

The AX-7 can also merge the MIDI messages received via its MIDI IN socket with the data generated on the AX-7 itself, and retransmit the lot via its MIDI OUT socket (Merge function).

Working with Patches

A "Patch" is a memory where you can store your own settings. The AX-7 provides 128 such memories (in 2 groups of 64 memories).

Like on many Roland instruments, only 8 buttons (**1**~**8**) are used for specifying the Patch numbers (11~88), so that numbers like "30" or "59" are impossible. That explains why the 11~88 range adds up to 64 possibilities (or memories). The bank can be selected using the **A/B** button.

Storing settings in a Patch memory

After setting all parameters to your liking, you can store them in one of the AX-7's Patch memories. If you spent a lot of time fine-tuning your settings, you should definitely store them before switching off the AX-7. It would also be a good idea to save all settings you are satisfied with, even though you may have to change them (or others) at a later stage. You could then simply overwrite the memory in question.

You can store everything in the AX-7's Patch memories except Dump (see p. 15) and Battery Check (see p. 13).

All entries marked "Upper, Lower" are saved in duplicate: one set for the Lower section, and a second for the Upper section.

- (1) Press and hold the **WRITE** button.



- (2) Enter the address of the desired Patch memory by pressing:

- **A/B** to select group **A** or **B** (example: **B--**).
- **1**~**8** to select a bank (example: **B5-**)
- **1**~**8** to select a memory within that bank (example: **B57**)
- Press **ENTER** to confirm your setting.

Note: You can release **WRITE** at any of these stages if you do not wish to save the Patch after all.

The display shows the number of the Patch memory that contains your new settings.

Note: The previous settings in the selected Patch memory will be overwritten.

Note: In case of a power failure while you are saving a Patch, the AX-7 may display a scrolling message to the effect of **PATCH R15 RECOVERED** (or another number). This means that the Patch memory in question (but only that one) has been reset to the factory settings for safety reasons. Your other Patches are fine, however.

Selecting Patches

- (1) If you haven't yet saved your current settings, do it now (see above).
- (2) Leave the currently selected EDIT mode by pressing [CONTROL], [DATA], or [PRG CHG] (depending on which of these buttons lights).
- (3) Use the [A/B] and [1]~[8] buttons to select the desired Patch memory.
You can also use [DOWN]/[UP]. If, after selecting Patch **b88**, you press [UP] yet again, you return to Patch **A11**. Conversely, if you press [DOWN] after selecting Patch **A11**, you will go to Patch **b88**.

Restoring the factory settings

You can reset the AX-7 to its factory settings, which means that your own Patches will be overwritten with the settings the AX-7 contained when you first got it. You may wish to archive your Patches before initializing the AX-7 (see p. 15).

Power on the AX-7 while holding down the [WRITE] button. The display will read **FACTORY SETUP** (scrolling message) as soon as the factory settings have been loaded.

See page 110 for a list of the AX-7's factory settings.

Specifications

Keyboard:	45 keys, velocity sensitive
Display:	3 x 7 segments
Realtime controllers:	Data Entry knob, Expression Bar/Touch Controller, D Beam Controller, Sustain button
Memories:	128 Patches
Connectors:	MIDI In, Out, DC IN (adaptor)
Compatibility:	GM/GM2/GS, all MIDI messages
Power supply:	Batteries, AC/DC adaptor (DC 9V)
Dimensions:	1010 (W) x 195 (D) x 102 (H) mm
Weight:	3 kg
Supplied accessories:	6 x dry batteries (AA type), MIDI cable, owner's manual, shoulder strap
Options:	Roland ACA adaptor (9V, 200mA)

Note: Specifications are subject to changes without prior notice.