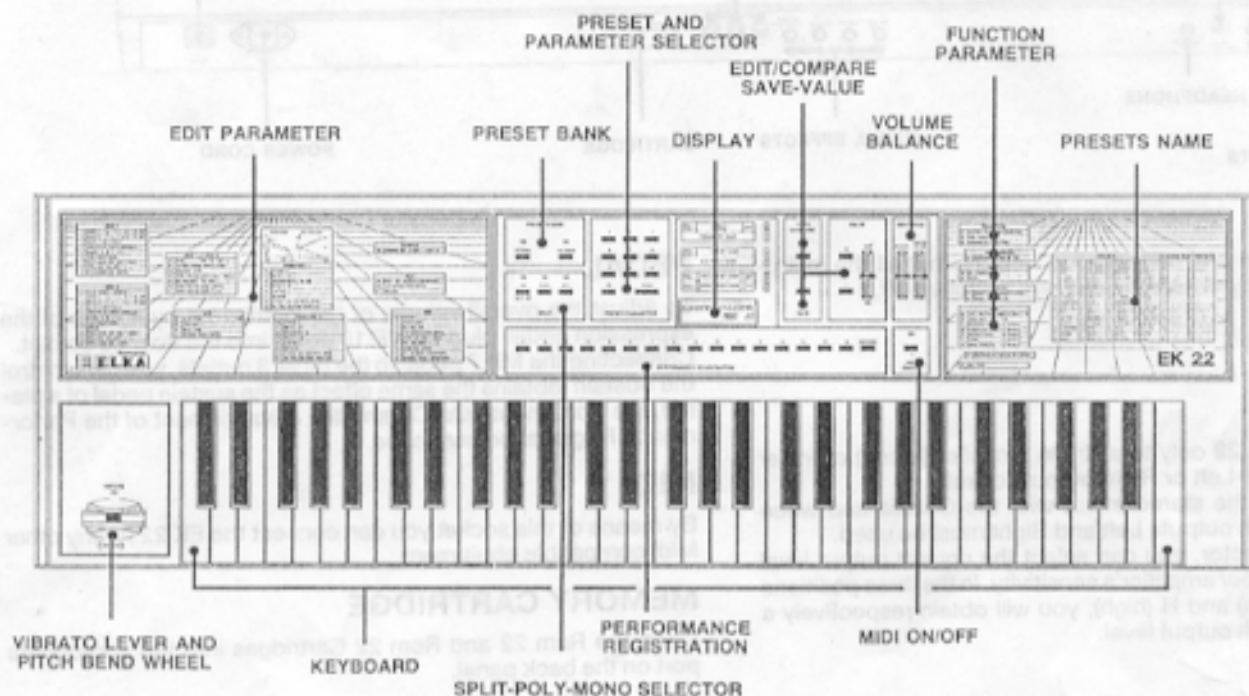# EK22 - EM22

ELKA would like to thank you and at the same time offer you their congratulations for having chosen the EK 22 synthesizer. This instrument has been designed to produce sounds of the highest quality and to guarantee a very high standard of reliability.
In order to obtain the maximum performance from this instrument, we advise you to follow this instruction manual with extreme attention.

VIBRATO LEVER AND PITCH BEND WHEEL · KEYBOARD · SPLIT-POLY-MONO SELECTOR · PERFORMANCE REGISTRATION · MIDI ON/OFF · EDIT PARAMETER · PRESET BANK · PRESET AND PARAMETER SELECTOR · DISPLAY · EDIT/COMPARE SAVE-VALUE · VOLUME BALANCE · FUNCTION PARAMETER · PRESETS NAME

SPECIFICATIONS

The ELKA EK 22 keyboard is a 6 voice programmable synthesizer with dynamic touch sensitivity and Second Touch (pressure control).

It has 96 presets of which 32 are programmable.

The memory contained in the Rom 22 cartridge expands the internal memory of the instrument by 64 Presets which are produced by ELKA and not modifiable, while another cartridge, Ram 22, gives the option of having an additional 64 programmable presets.

The name of the Preset or the Parameter to be modified appears on the liquid crystal display.

The Performance Registration section is of extreme importance in this instrument. The buttons of this section are used mainly during live performances because they allow the memorizing of the timbres as well as all the performance parameters (Wheel, Split, Portamento, Midi), and by means of the pedal MP 7, they can be recalled in programmed sequence.

By means of the Midi interface, the EK 22 can be connected to any other instrument or equipment which is Midi compatible.

All the functions described in this manual are also valid for the Master Module EM 22, with the exception of the outputs for Sustain, Portamento and Performance Registration Advance

Pedal and the Wheel, which are not available in the Master Module EM 22 but can all be controlled via Midi (except Portamento).
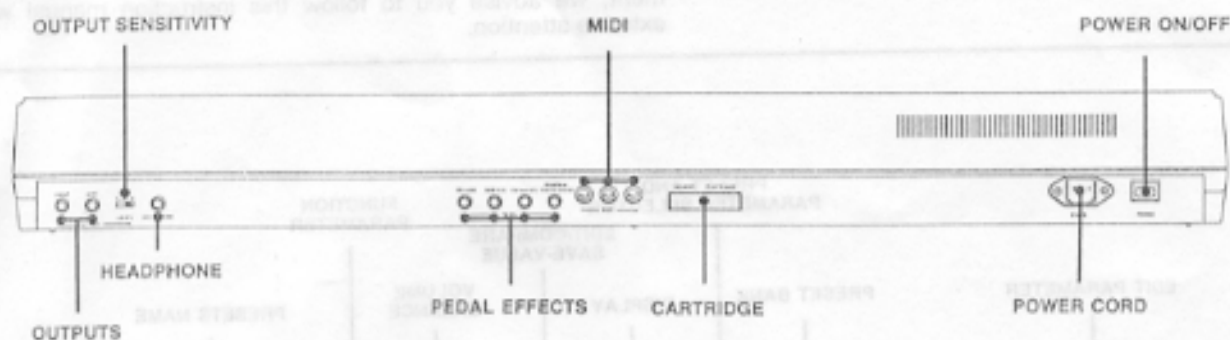
PRECAUTIONS

To avoid damage and defective working, do not use or leave the instrument for long periods exposed to direct sunlight, in extreme high or low temperature or humid surroundings, nor in dusty or sandy places.

Be sure to check that the AC power supply outlet provides the correct voltage for the instrument.

The instrument is provided with an internal Lithium battery which is used for memorizing the timbres and Performance Registrations, and for storing this information when the instrument is switched off. The duration of this battery depends a great deal on the surrounding conditions. However, the instrument's computer will give a warning on the display with the message, "Warning Battery Needs Replacing" when a new one is necessary. It is advisable to have the batteryc replaced by a qualified technician.

Use only a soft dry cloth to clean the external surfaces of the instrument. Never use petrol, alcohol or other solvents as these will damage the surface coatings and panel.

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CONNECTIONS

OUTPUT SENSITIVITY   MIDI   POWER ON/OFF

HEADPHONE

OUTPUTS   PEDAL EFFECTS   CARTRIDGE   POWER CORD

Before carrying out any connections, ensure that all the instruments (amplifiers, synthesizers, etc.) are switched off.

OUTPUT

To connect the EK 22 only to a single amplifier (Mono) or mixer input, use either the Left or Right output socket.
In order to obtain the stereo effect with the Chorus and when using the Split, both outputs Left and Right must be used.
With the Level selector, you can select the correct output level suitable to match your amplifier's sensitivity. In the three positions L (low), M (medium) and H (high), you will obtain respectively a low, medium or high output level.

HEADPHONE

Private listening can be achieved by plugging a pair of headphones (8-600 ohms) into the headphone socket.

PEDAL

To adjust the overall volume of the instrument by means of the expression pedal, plug the VP 10 pedal into the Volume socket. Connecting the MP 7 pedal to the other 3 outlets, you can control the Sustain (obtains the same effect as the sustain pedal of a piano), the Portamento On/Off and the advancement of the Performance Registration sequence.

MIDI

By means of this socket you can connect the EK 22 to any other Midi compatible equipment.

MEMORY CARTRIDGE

Insert the Ram 22 and Rom 22 Cartridges into the appropriate port on the back panel.

MAINS

Connect the power supply cord to an AC voltage outlet socket of the correct voltage. When connecting the amplifier, it is advisable that only a single piece of equipment is earthed so as to avoid annoying mains derived hums.

PRESET SELECTION

Before switching on the instrument, check that all connections have been carried out correctly then press the power switch located on the back panel to the "ON" position.
At this stage, after a few seconds, the following will appear on the display:

PRESET NUMBER	POLY PRESET NAME	PERF. REG.
PRESET NUMBER	MONO PRESET NAME	NUM.

A —
C —
E —
F —

A - Indicates the actual Preset number or the Preset number of the Poly section in the case when the keyboard is split.
B - Indicates the name of the actual Preset and that of the Poly section.
C - Indicates the Preset number of the Mono section if the keyboard is split.
D - Indicates the Preset name of the Mono section if the keyboard is split.
E - P.R. Stands for Performance Registrations.
F - Indicates the Performance Registration number.
It is now possible to select instantly one of the 96 Presets already programmed by means of the Preset/Parameter numeric keyboard.

Form the number, checking the numeric table of the Presets situated on the right of the front panel. The display will begin to flash and will stop only when the Enter button is pressed. The name of the new preset will appear every time, which will be ready to play immediately.

The Enter function is very useful when preparing a programme which is to be recalled successively. The preset change will take place only after releasing all the keys of the keyboard.

The overall volume of the instrument is controlled by the Master Volume knob of the "Controls" section.

Inserting the Cartridge into the appropriate port located on the back panel, the memory of the EK 22 can be expanded by another 64 presets as an alternative to the 64 permanent internal Presets (1-64).

The choice between one or the other group of Presets is made by means of the Internal or Cartridge buttons.

If the Cartridge button is inadvertently pressed when the cassette is not inserted, you will always obtain an internal Preset.

EDIT/COMPARE

This function is one of the most important ones of the Instrument. In fact, this function gives access to the parameters for modifying the Preset sounds as well as the performance functions of the instrument.

The Edit function is divided into two distinct sections. The Parameters from 1 to 60 are used to modify or create new sounds and are memorized in the Save function. The parameters from 61 to 77 are used to modify the performance functions of the instrument (Transpose, Portamento, Split, Wheel, Midi).

To modify the parameters, carry out the following procedure:

1 - Press the Edit/Compare button.

Display

```
┌─────────────────────────────┐
│                             │
│     WHICH PARAMETER?        │
│                             │
└─────────────────────────────┘
```

2 - Press the button "+" in the "Value" section if you intend to edit the last Preset which was previously modified.
3 - Press the button "−" if you intend to edit the Preset which is being played.

4 - Display

```
┌─────────────────────────────┐
│                             │
│     LAST EDIT (+)           │
│                             │
│     PRESET BANK (−)         │
│                             │
└─────────────────────────────┘
```

5 - Form the number of the parameter to be modified, having checked it on the appropriate table which appears on the panel, and then press the Enter button. Take for example, the case where you select N. 48.

6 - Display
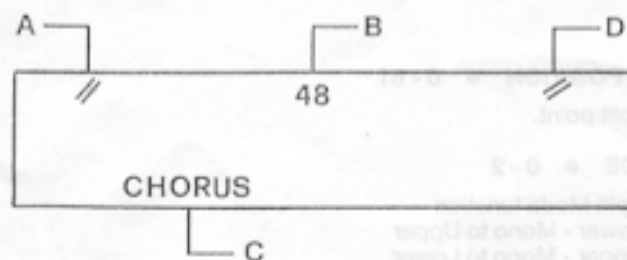
A - Indicates the number of the preset which you are editing (or the inscription "Old" if you previously pressed "+").
B - Indicates the number of the parameter.
C - Indicates the name of the parameter.
D - Indicates the Value of the parameter.

7 - With the slider control and the buttons "+" and "−" in the "Value" section, it is possible to vary the value of the parameter D. The slider control is used for large variations and buttons "+" and "−" are for fine variations of small entities at a time.

COMPARE

By pressing again the button Edit/Compare, after having modified the parameters relating to the sound (1-60), it is possible to compare the new sound with the one started off with. In fact, by pressing Edit/Compare, the led of the function will switch off and you will hear the starting sound. A flashing asterisk will appear on the display: this means that the Value is that of the starting sound. Pressing once again Edit/Compare, the modified sound will return.

IMPORTANT:

If you inadvertently escape from the Edit function accidentally (power failure etc.), you will not lose the edited Preset on the condition that you re-enter into the Edit function and press the "+" button (Last Edit).

The sound created at this point constitutes a temporary modification of the original programme and can be memorized by means of the Save procedure (only for the sound parameters).

To escape from the Edit function, the Internal or Cartridge button of the Presets Bank section must be pressed.

After this last operation, the sound parameters are momentarily cancelled, whilst the performance ones are activated and can be memorized in the Performance Registration. If the performance parameters are not memorized in the Performance Registration, they will be cancelled as soon as you press a Performance Registration button or switch off the instrument.

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PERFORMANCE REGISTRATION

Thanks to the sophisticated technology employed by ELKA for the design of the EK 22, it is possible to programme and memorize several important functions of the instrument in the 16 buttons of the Performance Registration section. These functions can then be recalled, even in a particular sequence, during a performance. In this way, you can change previously set registrations with perfect timing without losing continuity in the performance.
In the Performance Registration, you can memorize the Preset, or Presets in the case of a split, the split point on the keyboard, the setting of the Balance slider control, the Portamento, the Wheel and the Midi: in short, all the performance parameters from 64 to 75 except for System Exclusive.
To memorize a Performance Registration you must proceed in the following
manner:
1 - Enter into the Edit function.
2 - Recall the required parameters (64 to 75) and modify them based on the performance you wish to carry out.
3 - Escape from the Edit function by pressing either Internal or Cartridge.

4 - At this point, select the Preset or Presets and memorize everything by pressing simultaneously "Record" and one of the 16 Performance Registration buttons.
By means of the pedal MP 7 plugged into the "Performance Registration Advance" output, you can recall the Performance Registrations in programmed sequence.
For example, if you want to have a sequence such as P.R. 5, 3, 16, 8, 4, 2, 10 and 12, you must proceed as follows:
a - Enter into the Edit function and recall parameter 76 Program Sequence Recorder by means of the numeric keyboard, pressing 76 and Enter.
b - Now press the Performance Registration buttons in the order which you have chosen.
c - Escape from the Edit function.
At this point, as soon as you press the pedal, N. 5 of the Performance Registration will be automatically selected. Pressing again, you will find all the numbers of the recorded sequence.
At the end of the sequence, the Performance Registration returns once again to the starting number.

PERFORMANCE PARAMETERS

TRANSPOSE

61 ● MASTER TRANSPOSE ● − 7 + 7

Changes the tuning of the keyboard by a number of semitones equal to the value of the parameter.

62 ● FINE TUNING ● − 7 + 7

Changes the tuning of the keyboard by a single movement of a sixteenth of a semitone.

63 ● ARABIAN SCALE SETTING ● 0 - 2

0 = Chromatic scale
1 = Arabian scale (Edit Mode)
2 = Arabian scale (Fixed)

ARABIAN SCALE SETTING

Because of the sophisticated technology used in this instrument, it is possible to vary the tuning of each one of the 12 notes, thus forming every kind of Arabian scale.
Carry out the following procedure:
1 - Press Edit and select parameter 63.
2 - Take the value to position 1.
3 - Put into place the guide with the inscription "Arabian Scale Setting". At this point the first 12 buttons of the Performance Registration become selectors to change the 12 normal semitones into semitones for Arabian music.
For example, by pressing Performance Registration N. 4, Eᵇ is flattened by a 1/4 of a perfect tone. This flattening of the tuning can be further fine tuned by means of the last 3 buttons of the Performance Registration section (Arabian Notes Tuning). To sharpen or flatten the 1/4 tone, press button Record (Tuning) and the relative note Eᵇ on the keyboard simultaneously with Performance Registration button 16 (+) or Performance Registration button 15

(−). If you press Performance Registration N. 4 again, Eᵇ will return to normal. In this way it is possible to alter the tuning of all the notes in real time, losing however, the Performance Registration function. If you want a particular kind of scale, after having created it, you must take the value of parameter 63 to position 2 (which thus fixes the kind of scale chosen) and then escape from Edit. Doing this, the Performance Registration function returns into operation.
The parameter 63 in position O = Off will reinstate the chromatic scale.

PORTAMENTO

64 ● PORTAMENTO TIME ● 0 - 7

The Portamento "slides" the tuning from one note to another.
0 = Off
7 = Maximum shift time.

After plugging the MP7 pedal into the appropriate Portamento socket which is located on the back panel of the instrument, do not forget to press the pedal to obtain this effect (not operative in the case where the parameter is set at 0).

SPLIT

65 ● KEY POSITION ● 0 - 61

Selects the split point.

66 ● MODE ● 0 - 2

Selects the Split Mode function
0 = Poly to Lower - Mono to Upper
1 = Poly to Upper - Mono to Lower
2 = Poly + Mono

To divide the keyboard, you must press the Split On button. In the case in which you want to alter the split point, you must press the note where you want the division to take place simultaneously with the Split On button (the split point can also be changed by means of the parameter 63 Key Position).

To modify the sound of the monophonic part, you must press at first the Mono button and then insert the new Preset.

When the keyboard is not split, the Poly Preset is always operative for the entire keyboard.

There are 3 ways in which the Split operates:

Parameter 66 Mode   0 = Poly section to left and Mono section to right

                        1 = Mono section to left and Poly to right

                        2 = Poly and Mono superimposed

In the last case, when playing two or more notes simultaneously, you will have superimposed sounds only in the highest note, but there will no longer be a split of the keyboard.
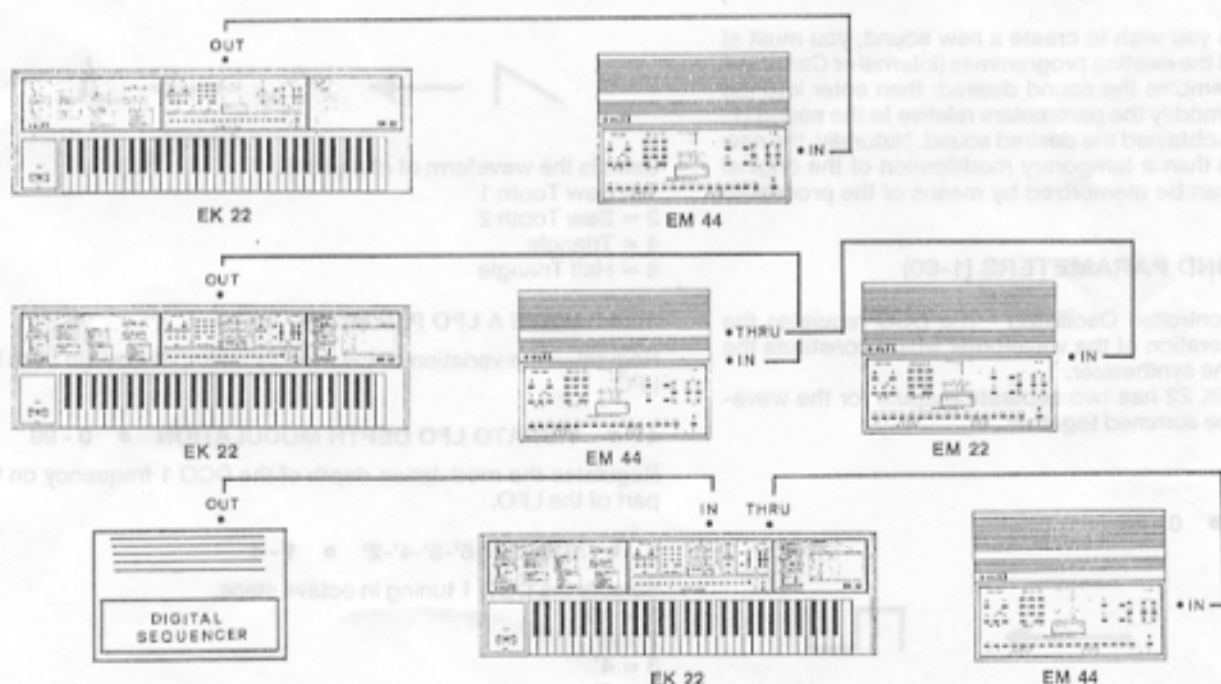
WHEEL

67 ● WHEEL LEVER VIBRATO DEPTH ● 0 - 99

Regulates the Vibrato Depth (LFO) after a forward displacement of the wheel. The Vibrato speed is always given by the parameter 29 Frequency LFO.

68 ● WHEEL PITCH DEPTH ● 0 - 12

Regulates the number of semitones of tuning transposition of the keyboard when the wheel is moved left or right.

MIDI

69 ● LEFT SPLIT/FULL ● 0 - 16

Selects the Midi channel of the instrument or its left hand section when the Split is inserted.

0 = Omni (receives on all channels)
1 - 16 = Poly Mode

70 ● RIGHT SPLIT ● 1 - 16

Selects the Midi channel of the right hand section when the Split is inserted.

71 ● PROGRAM CHANGE ● 0 - 1

0 = Off
1 = Abilitates the transmission of the Preset number.

72 ● SYSTEM EXCLUSIVE ● 0 - 1

0 = Off
1 = Abilitates the transmission of System Exclusive

73 ● SECOND TOUCH ● 0 - 1

0 = Off
1 = Abilitates the transmission of Second Touch.

74 ● WHEEL ● 0 - 1

0 = Off
1 = Abilitates the transmission of the Wheel.

75 ● PEDAL EFFECTS ● 0 - 1

0 = Off
1 = Abilitates the transmission of the Pedal Effects (Volume, Release).

MIDI CONNECTIONS

Remember the general rule that two keyboards can transmit or receive between one another only if you have selected the same Midi channel.

In the EK 22, with Parameters 69 and 70, you can assign two different Midi channels when the keyboard is split. If you want to assign the same channel number to the two sections Left and Right, the instruments computer will foresee to differentiate them by one number.

MIDI (Musical Instrument Digital Interface)

The EK 22 is provided with the universal Midi-In-Out-Thru interface. Via Midi-Out, you can command other keyboards and synthesizers, master modules and computers. With Midi-In it is possible to be controlled by a computer, a sequencer or another keyboard. The Midi-Thru is none other than an exact copy of Midi-In data.
In the EK 22, all the Midi specifications have been implimented, therefore no difficulties arise when interfacing with other Midi compatible instruments or equipment.
To connect two different instruments you must use the Midi DIN Standard connection cable.
By means of the Midi On/Off button located to the right of the Performance Registration section, you can disactivate the transmission or receival of all Midi data.
The EK 22 can transmit or receive the following kind of data on the Midi bus:

1 - Key data (On/Off)
2 - Key Velocity Sensitivity (Keyboard Dynamics)
3 - Second Touch (Pressure exerted on the keys)
4 - Program Change (Change of the Preset number)
5 - Wheel
6 - Pedal Effects (Volume, Release)
7 - System Exclusive

Signals 1 and 2 are always transmitted by the keyboard while signals 3-4-5-6-7 can be disactivated by means of the Midi parameters already described.

SYSTEM EXCLUSIVE

When the System Exclusive is activated, connecting two Elka keyboards or ELKA Master Modules, the number of the Performance Registration is also transmitted. Through System Exclusive it is possible to transmit and receive from a computer all information concerning the keyboard (Parameters, Split, Midi Channels, Performance Registration, etc.).

76 ● PROGRAM SEQUENCE RECORDER

Allows the recording of a sequence of Performance Registrations.
Maximum Sequence = 256 changes.

77 ● SELFTEST

Allows an automatic check of the instrument.
It is advisable to carry out this operation when the instrument is subjected to large temperature changes.

SOUND PARAMETERS

The possibility of creating new sounds is an important feature of the synthesizer.
In the case where you wish to create a new sound, you must at first choose one of the existing programmes (Internal or Cartridge) which closely resembles the sound desired: then enter into the Edit function and modify the parameters relative to the sound (1-60), until you have obtained the desired sound. Naturally, the new sound is no more than a temporary modification of the original programme and can be memorized by means of the procedure Save.
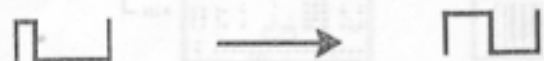
TABLE OF SOUND PARAMETERS (1-60)

DCO (Digitally Controlled Oscillator) - The DCO regulates the Pitch and the generation of the waveforms which constitute the sound source of the synthesizer.
The DCO of the EK 22 has two separate outputs for the waveforms which can be summed together.

DCO 1

1 ● WAVE A ● 0 - 32

Regulates the impulse width of the waveform of channel A and therefore its harmonic content.
0 = Off
32 = Exact square wave (50%)

2 ● WAVE B ● 0 - 8

Selects the waveform of channel B.
1 = Saw Tooth 1
2 = Saw Tooth 2
4 = Triangle
8 = Half Triangle

3 ● WAVE A LFO P.W.M. ● 0 - 16

Regulates the variation of the modulated impulse width from the LFO.

4 ● VIBRATO LFO DEPTH MODULATION ● 0 - 99

Regulates the modulation depth of the DCO 1 frequency on the part of the LFO.

5 ● RANGE 16'-8'-4'-2' ● 1 - 4

Selects the DCO 1 tuning in octave steps.
1 = 16'
2 = 8'
3 = 4'
4 = 2'

6 ● TUNE (Semitones) ● 0 - 12

Alters the DCO tuning by a number of semitones equal to the value of the parameter.

7 ● PITCH ENVELOPE: ENV. 1/ENV. 2 ● 1 - 2

Selects the envelope (1 or 2) which effects the modulation of the frequency at DCO 1

8 ● PITCH ENV. POLARITY ● − 1 ± 1

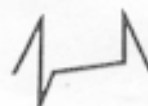Selects the envelope polarity of the frequency modulation.

+ 1 = positive

− 1 = negative

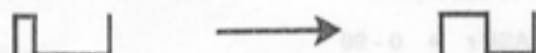± 1 = mixed polarity

9 ● PITCH ENV. DEPTH ● 0 - 99

Regulates the depth of the modulation of the envelope.

DCO 2

10 ● WAVE/NOISE 1/NOISE 2 ● 1 - 3

Selects the waveform of DCO 2
1 = Normal (Wave A and Wave B)
2 = Noise
3 = Coloured Noise

11 ● WAVE A ● 0 - 32

See Parameter 1 description

12 ● WAVE B ● 0 - 8

See Parameter 2 description

13 ● WAVE TO LFO P.W.M. ● 0 - 16

See Parameter 3 description

14 ● VIBRATO LFO DEPTH MODULATION ● 0 - 99

See Parameter 4 description

15 ● RANGE 16'-8'-4'-2' ● 1 - 4

See Parameter 5 description

16 ● TUNE (Semitones) ● 0 - 12

See Parameter 6 description

17 ● DETUNE ● 0 - 16

Alters the DCO 2 tuning with respect to the DCO 1 at intervals of one thirtysecondth of a semitone

18 ● PITCH ENVELOPE: ENV.1/ENV.2 ● 1 - 2

See parameter 7 description

19 ● PITCH ENVELOPE: POLARITY ● − 1 ± 1

See parameter 8 description

20 ● PITCH ENVELOPE: DEPTH ● 0 - 99

See parameter 9 description

NOTE N. 1 WAVEFORM SELECTION

WAVE A		WAVE B		
1		1	5	
↑		2	6	
		3	7	
32		4	8	

DCO 1 / DCO 2

Regulates the mixing between the two oscillators.

21 ● SYNC. ● 0 - 1

In position 1 the two oscillators are syncronized.

22 ● CUTOFF CROSS MODULATION ● 0 - 99

Regulates the modulation depth of the VHF cutoff frequency on behalf of DCO 1.

23 ● BALANCE LEVEL ● − 32 + 32

Regulates the balance between the volumes of DCO 1 and DCO 2
0 = Equal volumes
+ 32 = DCO 1   DCO 2
− 32 = DCO 2   DCO 1

24 ● ENVELOPE BALANCE: ENV.1/ENV.2 ● 1 - 2

Selects the envelope to apply to the Balance.

25 ● ENV. BALANCE: POLARITY ● − 1 + 1

Selects the envelope polarity.

− 1 =

+ 1 =

26 ● ENV. BALANCE: DEPTH ● 0 - 99

Regulates the envelope depth.

27 ● ENV. BALANCE: K.V.S. ● 0 - 7

Regulates the dynamic sensitivity of Parameter 26.

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LFO (Low Frequency Oscillator)

This low frequency oscillator produces modulation effects (Vibrato) of parameters: frequency of oscillators, full/empty of square waves (P.W.M.), VCF and VCA.

28 ● WAVEFORM ● 1 - 4

Selects the Vibrato waveform.
1 = Sinusoidal
2 = Saw Tooth
3 = Square Wave
4 = Random

29 ● FREQUENCY ● 0 - 99

Regulates the Vibrato frequency

30 ● DELAY TIME ● 0 - 99

Regulates the delay time in which you hear the effect after pressing the key.

31 ● SECOND TOUCH DEPTH ● 0 - 99

Regulates the Vibrato depth in reply to the Second Touch. If, with one or more keys depressed, you apply more pressure, you will obtain an increase in the Vibrato impedence proportional to the parameter value.

ENVELOPE GENERATOR

The envelope generator controls the DCO 1, DCO 2, DCO 1 / DCO 2, VCF and VCA altering the tuning, tone colours and the envelope of each note.

ENV. 1

32 ● ATTACK a ● 0 - 99

Controls the time necessary for the envelope profile to pass from 0 to its maximum value, after having pressed the key.

33 ● DECAY 1 d1 ● 0 - 99

Controls the time necessary for the envelope profile to pass from its maximum value to Breakpoint.

34 ● BREAKPOINT b (d1.d2) ● 0 - 99

Controls the breakpoint level. By means of this control and the Decay, it is possible to create more complex transients of Decay (pizzicato, etc.).
Breakpoint = 99 Decay 1 not active
Breakpoint = 0 Decay 2 not active

35 ● DECAY 2 d2 ● 0 - 99

Controls the time required for the envelope profile to pass from Breakpoint to Sustain level.

36 ● SUSTAIN s ● 0 - 99

Determines the constant envelope level at which the sound is maintained on completion of the Attack and Decay phases for the total time in which the key is kept depressed.

37 ● RELEASE r ● 0 - 99

Determines the time in which the envelope profile falls to zero after the key has been released.

38 ● ATTACK: KEY VELOCITY SENS. ● 0 - 7

In this case, the Attack is dynamically controlled. At maximum velocity of key depression, the Attack will be the same as that imposed by Parameter 32: as the Key Velocity decreases, the time of Attack increases.

39 ● KEY FOLLOW (Time Rescale) ● 1 - 4

This function alters the time required for the envelope to complete it's curve (Env. Time).
In position 1, the time will be constant along the whole keyboard. By increasing the value (2-3-4), the higher notes will have a greater envelope velocity.

ENV. 2

40 ● ATTACK a ● 0 - 99

See parameter 32 description

41 ● DECAY 1 d1 ● 0 - 99

See parameter 33 description

42 ● BREAKPOINT b1 (d1.d2) ● 0 - 99

See parameter 34 description

43 ● DECAY 2 d2 ● 0 - 99

See parameter 35 description

44 ● SUSTAIN s ● 0 - 99

See parameter 36 description

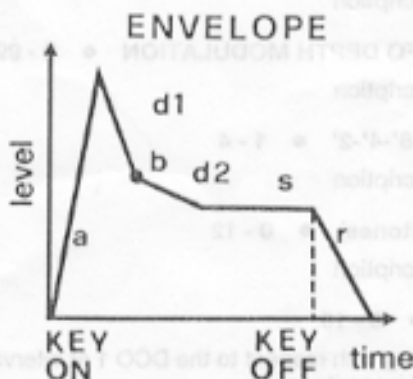**45 ● RELEASE r ● 0 - 99**

See parameter 37 description

46 ● ATTACK: KEY VELOCITY SENS. ● 0 - 7

See parameter 38 description

47 ● KEY FOLLOW (Time Rescale) ● 1 - 4

See parameter 39 description

ENVELOPE NOTE N. 2

ENVELOPE

CHORUS

48 ● CHORUS ● 0 - 2

The Chorus produces a warm and subtle effect which enriches
the sonority of the sound.
O = Off
1 = On 1
2 = On 2

VCA (Voltage Control Amplifier)

The VCA controls the sound volume and the envelope is always
given by ENV. 1

49 ● ENV. 1: KEY VELOCITY SENS. ● 0 - 7

Regulates the amount of dynamics (Key Velocity Sens.) which
acts on the volume.
O = Off
7 = Playing slowly the sound volume will be low. Pressing the
keys faster will increase the sound volume.

50 ● LFO MODULATION DEPTH ● 0 - 99

Regulates the depth of the amplitude modulation on the part of
the LFO.

51 ● VOLUME ● 0 - 16

By means of this Parameter, the Preset level can be regulated. At
a high value, the sound can be distorted.

VCF (Voltage Control Filter)

The voltage controlled filter (VCF) controls the quality of the tim-
bres varying their harmonic content. For lower cutoff frequency
values, the higher harmonics will be reduced.

52 ● CUTOFF ● 0 - 99

Regulates the VCF cutoff frequency. Lowering the value elimina-
tes an ever increasing number of harmonics, obtaining a "roun-
der" sound up to a sinusoidal wave (without harmonic contents).

53 ● RESONANCE ● 0 - 99

This control emphasises the cutoff frequencies, producing a more
nasal and electronic sound.

54 ● KEY FOLLOW ● 0 - 99

This Parameter controls the change in cutoff frequency across the
keyboard.
50 = Equal across the keyboard.
51-99 = Cutoff frequency increases on the higher notes.
49-0 = Cutoff frequency increases on the lower notes.
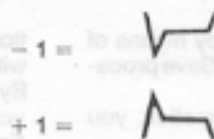See Note N. 3.

55 ● LFO (Modulation Depth) ● 0 - 99

Regulates the depth of the cutoff frequency modulation on the
part of the LFO.

56 ● ENVELOPE: ENV.1/ENV.2 ● 1 - 2

Selects the type of frequency which regulates the Cutoff.

57 ● ENV.: POLARITY ● −1 ± 1

Regulates the envelope polarity.

−1 =

+1 =

58 ● ENVELOPE LEVEL ● 0 - 99

Regulates the level of action of the envelope (ENV.) on the Cutoff
frequency. If the level is at zero, the envelope will not have any
effect on the VHF.
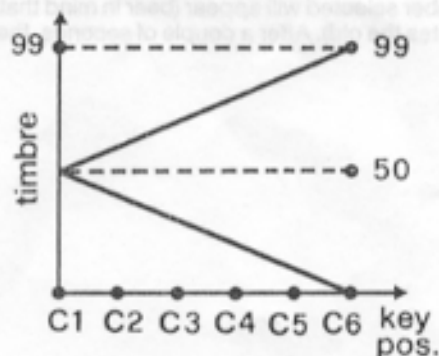
59 ● KEY VELOCITY SENSITIVITY ● 0 - 7

Regulates the level of dynamic sensitivity on Parameter 58.
0 = No effect.

60 ● SECOND TOUCH SENSITIVITY ● 0 - 16

Regulates the Cutoff sensitivity upon the action of Second Touch
(pressing hard on the keyboard after obtaining sound, there will
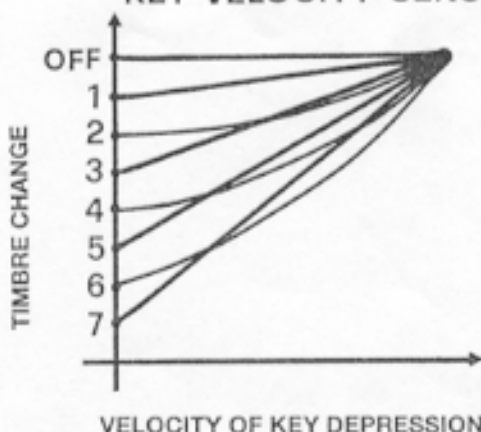be a change in the brightness of the timbre).

NOTE N. 3

KEY FOLLOW

NOTE N. 4

KEY VELOCITY SENS.

VELOCITY OF KEY DEPRESSION

Depending on the value of the sensitivity to the dynamics, the
tone colours change as shown in the graph.

21

SAVE

To render permanent a modified or created timbre by means of the sound Parameters, you can memorize it using the Save procedure.

Once you have modified the sound with the Edit function, you must press the Save button.

On the display will appear:

```
PR
SAVING PRESET
```

At this point, select the Preset number on which you want to save the edited sound, forming the number using the numeric keyboard and Enter.

If you select a number lower than 65, the sound will be memorized in the cartridge (provided that the Ram 22 cartridge is inserted, otherwise the display will show "No Cartridge" and the procedure will have to be repeated). If you form a number from 65 to 96, the sound will be memorized in the internal Ram of the instrument. After selecting the number, the display will show for an instant, "Internal Ram" or "Cartridge Mem" and immediately afterwards, the Preset number selected will appear (bear in mind that the new timbre substitutes the old). After a couple of seconds, the inscrip-

tion "Name" appears which gives the possibility of writing a name with a maximum of 10 letters.

By means of the Value slider control and the "+" and "−" buttons, you can select numbers or letters, setting them by pressing the Enter button for each letter or number selected. To put a space between two letters or two numbers, take the slider control Value to it's minimum position below zero and press button Enter.

As soon as you finish writing the name, the instrument is ready to memorize the new Preset by simply pressing the Internal or Cartridge button.
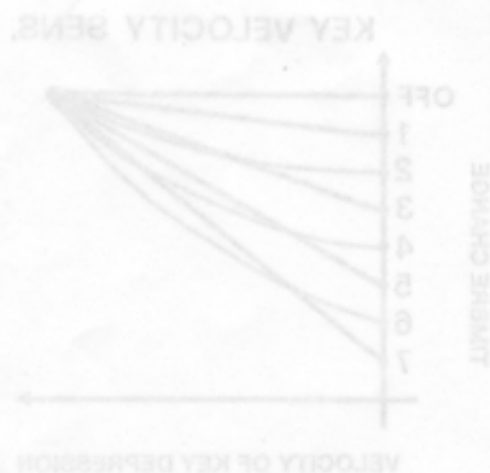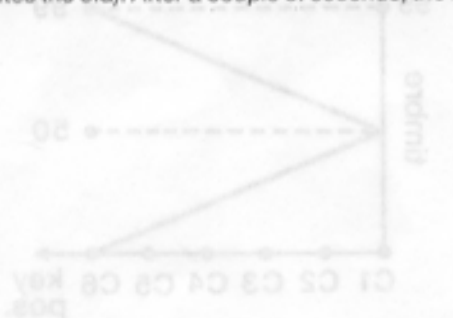
If you accidentally commit an error when writing a name and you do not want to erase the old programme, you can interrupt the Save procedure by repressing the Save button.

The display will now show:

```
LAST EDIT (+)
PRESET BANK (−)
```

N.B. By pressing the "+" button the edited sound will remain, while pressing the − button brings back the original preset.
At this point you can repeat the Save procedure, memorizing the Preset in another place.

22

EK22 / EM22 MIDI - IMPLEMENTATION

Functions

Transmission Data:

1001nnnn	Key ON/Channel Number (n=0..15;Channel=1..16)
0kkkkkkk	Key Number (k=36;C1 - k=96;C6)
0vvvvvvv	Velocity (v=0;Key OFF, v=1..127;ppp..fff)
1011nnnn	Control Change/Channel
0ccccccc	Control number
0vvvvvvv	Control value
c = 1	Modulation (v=0;OFF, v=127;ON)
c = 7	Pedal volume (v=0..127)
c = 64	Sustain foot switch (v=0;OFF, v=127;ON)
1100nnnn	Sound change/Channel
0ppppppp	Soundnumber (p=0..95;Sound=1..96)
1101nnnn	After touch/Channel
0vvvvvvv	Touch value (v=0..127)
1110nnnn	Pitch bender/Channel
0vvvvvvv	value LSB
0vvvvvvv	value MSB (v(LSB)=00;v(MSB)=64;centre)

Reception Data:

1000nnnn	Key OFF/Channel
0kkkkkkk	Key number
0vvvvvvv	Velocity (ignored)
1001nnnn	Key ON/Channel
0kkkkkkk	Key number
0vvvvvvv	Velocity (v=0;Key OFF, v=1..127;ppp..fff)
1011nnnn	Control change/Channel
0ccccccc	Control number
0vvvvvvv	Control value
c = 1	Modulation (v·16;OFF, v·=16;ON)
c = 7	Pedal volume (v=0..127)
c = 64	Sustain foot switch (v=0;OFF, v=127;ON)
1100nnnn	Sound & Performance change/Channel
0ppppppp	Sound number (p=0..95;Sound=1..96)
	Performance number (p=96..111;Performance=1..16)
1101nnnn	After touch/Channel
0vvvvvvv	Touch value (v=0..127)
1110nnnn	Pitch bender/Channel
0vvvvvvv	value LSB (Bits 0..5 ignored)
0vvvvvvv	value MSB (v(LSB)=00;v(MSB)=64;centre)

System exclusive Functions

FORMAT:

```
      11110000    STATUS
      0iiiiiii     Identification Number (ELKA=47)
      0fffnnnn    Function/Channel
      0ccccccc    Synthi-Code
      0ppppppp    Parameter or Parameter group
      0ddddddd    DATA      )
 ((     .                  ))
 ((     .                  ))
 ((    0sssssss    Checksum ))
      11110111    EOT (End of Transmission)
```

1)	Function	(–fff....) 4 = Sound Parameter group write
		5 = Sound Parameter group Dump-Request
		6 = Performance-register change
2)	Syst.excl. Channel	(–...nnnn) 0..15 = Channel of first Split
3)	Synthi-Code	(–ccccccc) 0..127 = ELKA-Synthi-Number
		6 = EK22 / EM22
4)	Parameter	(–ppppppp) 64..95 = Sound number (f=4)
		or 0..127 = Sound number (f=5)
		or 0..15 = Perf. register (f=6)
5)	Data	(–ddddddd) 0..127 = Value or ASCII
6)	Checksum	(–sssssss) 0..127 = Modulo 128 Sum of all Data-Bytes

System exclusive Functions cont.

Transmission Data:

```
      11110000    STATUS / Performance register change
      0iiiiiii     (i=47)
      0fffnnnn    (f=6, n=0)
      0ccccccc    (c=6)
      0ppppppp    (p=0..15; Performance register 1..16)
      11110111    EOT

      11110000    STATUS / Sound parameter dump
      0iiiiiii     (i=47)
      0fffnnnn    (f=4, n= see Syst.excl.FORMAT)
      0ccccccc    (c=6)
      0ppppppp    (p=0..95; Sound intern, p=96..127; Sound cartridge)
      0ddddddd    (d=0..127; Data)
        .
        .         Data bytes see Table I
        .
      0sssssss    (s= see Syst.excl.FORMAT)
      11110111    EOT
```

System exclusive Functions cont.

Reception Data:

```
11110000     STATUS / Performance register change
0iiiiiii     (i=47)
0fffnnnn     (f=6, n=ignored)
0ccccccc     (c=ignored)
0ppppppp     (p=0..15; Performance register 1..16)
11110111     EOT

11110000     STATUS / Sound parameter dump-request
0iiiiiii     (i=47)
0fffnnnn     (f=5, n= see Syst.excl.FORMAT)
0ccccccc     (c= see Syst.excl.FORMAT)
0ppppppp     (p=0..95; Sound intern, p=96..127; Sound cartridge)
11110111     EOT (Transmission begins after reception of EOT)
                 (Transmission format see syst. excl. transmission data)
```

Reception of the performance parameter dump and sound parameter dump is of the same format as transmission (see Syst. excl. transmission data)

(Sound parameter dump permitted only on p=64..95; Sound 65..96)

DATA BYTE N.	RANGE		PARAMETER
			TABLE 1 - Preset Parameters
1	0..63		DCO1 WF A SQ
2	0..15		DCO1 WF B SW
3	0..31		DCO1 WF A LFO PWM
4	0..127		DCO1 VIB LFO DEP
5	0..3		DCO1 RN 16 8 4 2
6	0..15		DCO1 TUNE S/TONE
7	0..1		DCO1 TUNE P. ENV: E1/E2
8	0..2		DCO1 P.ENV: POLTY
9	0..127		DCO1 P.ENV: DEPTH
10	0..3		DCO2 WAV/NS1/NS2
11	0..63		DCO2 WF A SQ
12	0..15		DCO2 WF B SQ
13	0..31		DCO2 WF A LFO PWM
14	0..127		DCO2 VIB LFO DEP
15	0..3		DCO2 RN 16 8 4 2
16	0..15		DCO2 TUNE S/TONE
17	0..31		DETUNE
18	0..1		DCO2 P.ENV: E1/E2
19	0..2		DCO2 P.ENV: POLTY
20	0..127		DCO2 P.ENV: DEPTH
21	0..1		DCO SYNC OFF=0
22	0..127		DCO XMOD CUTOFF
23	0..127		DCO BALANCE
24	0..1		DCO ENV BAL 1/2
25	0..1		DCO ENV BAL POL
26	0..127		DCO ENV BAL DEP
27	0..7		DCO ENV BAL KVS
28	0..3		LFO SI SW SQ RND
29	0..127		LFO FREQUENCY
30	0..127		LFO DELAY TIME
31	0..127		LFO 2nd TCH DEP
32	0..127		ENV1 ATTACK a
33	0..127		ENV1 DECAY 1 d1
34	0..127		ENV1 BREAKPNT
35	0..127		ENV1 DECAY 2 d2
36	0..127		ENV1 SUSTAIN s
37	0..127		ENV1 RELEASE r
38	0..7		ENV1 ATTACK KVS
39	0..3		ENV1 KEY FOL[TR]
40	0..127		ENV2 ATTACK a
41	0..127		ENV2 DECAY 1 d1
42	0..127		ENV2 BREAKPNT
43	0..127		ENV2 DECAY 2 d2
44	0..127		ENV2 SUSTAIN s
45	0..127		ENV2 RELEASE r
46	0..7		ENV2 ATTACK:KVS
47	0..3		ENV2 KEY FOL[TR]
48	0..3		CHORUS OFF/1/2
49	0..7		VCA ENV1: KVS
50	0..127		VCA LFO MOD DEP
51	0..31		VCA VOLUME
52	0..127		VCF CUTOFF
53	0..127		VCF RESONANCE
54	0..127		KEY VCF FOLLOW
55	0..127		VCF LFO MOD DEP
56	0..1		VCF ENV1/ENV2
57	0..1		VCF ENV: POLARITY
58	0..127		VCF ENV: LEVEL
59	0..7		VCF KEY VEL SENS
60	0..31		VCF 2nd TCH SENS
61	0		must be 0
62	0		must be 0
63	0		must be 0
64	0..9	A..Z	NAME 1" ch.
65	0..9	A..Z	NAME 2" ch.
66	0..9	A..Z	NAME 3" ch.
67	0..9	A..Z	NAME 4" ch.
68	0..9	A..Z	NAME 5" ch.
69	0..9	A..Z	NAME 6" ch.
70	0..9	A..Z	NAME 7" ch.
71	0..9	A..Z	NAME 8" ch.
72	0..9	A..Z	NAME 9" ch.
73	0..9	A..Z	NAME 10" ch.
74	0		must be 0

MODEL EK 22   EM22   MIDI Implementation Chart
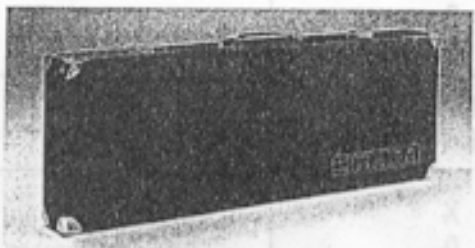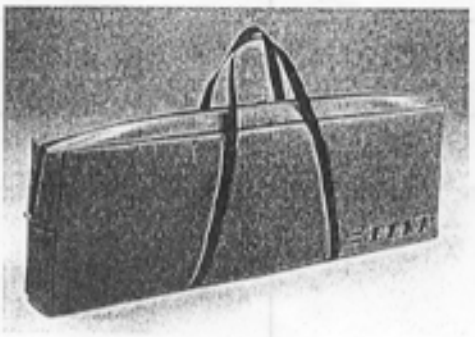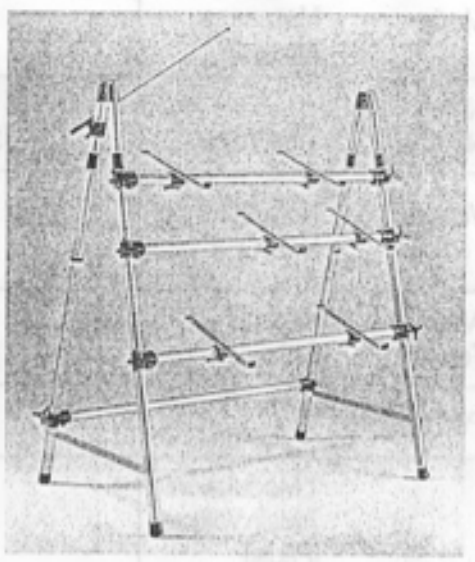
Function...		Transmitted	Recognized	Remarks
Basic Channel	Default Channel	1-16 1-16	1-16 1-16	Memorized
Mode	Default Messages Altered	3 0 0	0	Memorized in Performance Registration
Note Number	True Voice	36-96 36-108	36-108 36-108	
Velocity	Note ON Note OFF	X 0	X 0	
After Touch	Key's Ch's	X	X	
Pitch Bender		X	X	
Control Change	1 Modulation 7 Main Volume (Pedal) 64 Sustain Pedal	X X X	X X X	
Prog Change	True*	Ø....95	Ø....95	
System Exclusive		X	X	
System Common	:Song Pos :Song Sel :Tune	0 0 0	0 0 0	
System Real Time	:Clock :Commands	0	0	
Aux Mes-sages	:Local ON/OFF :All Notes Off :Active Sense :Reset	0 0 X 0	0 0 X 0	
Notes				

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

ACCESSORI - ACCESSORIES

ACCESSORI OPZIONALI:
Pedale Volume VP 10
Pedale MP7 per Portamento-Sustain-Program Advance
Rom 22 Cartridge
Ram 22 Cartridge
Borsa CB 22/44
Astuccio SC 22/44
Reggitastiere ST4 con supporto per microfono MST4

OPTIONAL ACCESSORIES:
Volume Pedal VP10
Pedal MP7 for Portamento-Sustain-Program Advance
Rom 22 Cartridge
Ram 22 Cartridge
Bag CB 22/44
Carrying Case SC 22/44
Multiple keyboard stand ST4
with Mike Boom Stand MST4