



C T S 2 0 0 0  
\*\*\*\*\*

INSTRUCTION MANUAL

## INTRODUCTION

The CTS 2000 is a programmable digital synthesizer with a dynamic keyboard that is part of a family of professional synthesizers and pianos.

This instrument takes its name from a new sound acquisition and reproduction technology called CTS (Cross Table Sampled).

CTS technology allows sounds to be recorded with special sampling techniques, analysed and processed with specific mathematical algorithms to be reproduced.

using an extremely small amount of memory.

All this makes it possible to have as many sounds as possible in Line and therefore immediately recallable, without losing the timbre quality typical of the sampled sound.

## FEATURES

- 333 sampled digital waveforms that can be mixed together to create basic tones.
- Possibility of modifying the basic timbres with analogue Li control (via 6 slider potentiometers that can be addressed Li per parametric family).
- 8 voci polyphony with dual generation.
- Politimbricity 5 (separately programmable octave-zone timbres).
- 48 user-programmable polytomic presets.
- Cartridge ROM and RAM expansion.
- Professional 61-key weighted keyboard with dynamics control.
- Midi and stereo pan-pot functions programmable for each preset (with the possibility of single-octave differentials).

## Tables of content



## CTS (cross table sampled) technology

In general, the new CTS synthesis method is capable of reproducing sounds of comparable quality to those reproduced by digital samplers, which, by contrast, require more memory capacity.

After years of research and experimentation on the data of sounds computed through the use of CDS computers (computer sound designed). Our laboratories, using special mathematical algorithms, have succeeded in dissecting the original sounds and obtaining the most significant elementary portions called Tables (Table Sampled).

These tables, appropriately coupled and mixed together, (Cross) reproduce the original sound with very high fidelity, allowing a significant reduction in the memory used.

This technology allows, for example, the sound of an acoustic piano note to be reproduced using only 384 bytes of memory compared to the 200,000 bytes required for standard sampling.

All this has made it possible to equip the CTS 2000 with a considerable number of in-line sampled sounds that can be used immediately by the musician.

In addition to all this, there are incredible creative possibilities, since the musician can not only permanently modify the sounds supplied by the company, but also create new and absolutely original ones by mixing together tables of different timbres and then treating them with analogue controls.

## CTS 2000 ARCHITECTURE

### **Tables**

Most of the 333 tables in the CTS 2000 are derived from acoustic instruments (Piano, Guitar, Vibraphone etc.) but others were sampled from FM technology instruments (FM Piano etc.) and analogue synthesizers (Square Wave, Sine Wave, Sawtooth etc.).

The tables stored in the instrument cannot be modified, as they constitute the database from which the sounds are generated.

### **Sounds**

The synthesizer is equipped with 2 voice generators (8-voice polyphony). Each generator can read and play, independently of the other, up to 3 different tables in a sequential manner and with programmable times and modes.

The 6 tables used in this way constitute the basic L sound of a Zone (octavia) keyboard.

Each individual sound can be manipulated with a wide range of analogue controls such as ADBSSR for DCA and DCF, LFO, dynamic coefficients for DCA and DCF etc.

It can also be complemented with specific Midi functions and specific Pan-Pot Stereo.

### **Presets**

Each sound thus created can be played within its own Zone (Octave).

It is therefore necessary to create 5 sounds (which may also be different in timbre) in order to have a keyboard preset.

You can have a preset with 5 octaves of Acoustic Piano (using the specific octave tables for each keyboard zone). A preset with 2 octaves of Acoustic Bass and 3 octaves of Vibraphone, or even a preset with 5 completely different sounds.

## USE OF THE INSTRUMENT WARNINGS

### **Power supply**

Only use the mains voltage indicated on the rating plate on the bottom of the instrument.

Do not use the same socket to which motorised electrical appliances or variable and/or neon lighting systems have been connected.

Before switching on the instrument via the power switch, make sure that all units connected to the instrument are switched off.

If your instrument does not operate correctly due to noise or the like, switch it off and then on again after waiting for a few seconds.

Do not remove the power cable from the back of the instrument or from the mains plug without first switching off the unit using the power switch.

### **Location**

Avoid placing the instrument in the immediate vicinity of electric motors, neon lamps or fluorescent lamps, as these can cause interference.

In most cases it is usually sufficient to change the exposure angle or the position of the instrument to eliminate interference.

### **Cleaning**

To clean the body of the instrument, use a cloth or sponge lightly moistened with water and, in the case of particularly persistent dirt, a neutral detergent. Avoid using solvents and/or alcohol.

## LINKS

### **Network**

Connect the power cable to the socket on the rear panel and to the mains socket.

### **Amplification**

There are two ways of connecting to the sound system:

### **STEREO**

In stereo mode, the CTS 2000 sends voice-related signals in two separate audio channels (Left and Right) in a programmable way for each preset by defining for each Zone (octave) of the keyboard the relative Pan-Pot level.

## **MONO**

Selecting this mode sends the sound to a single audio output.

Once you have chosen the type of connection to be made, proceed as follows:

Set the volume of the instrument and amplification or audio mixer to zero and proceed to one of the following connections :

### **Stereo**

Connect, via two ¼ jack-jack cables, the Right and Left outputs to two inputs of the amplifier or mixer respectively.

### **Mono**

Connect the mono output to an amplifier or mixer input via two ¼ jack cables.

## **Midi**

Use the three available MIDI sockets to make the desired type of connection with other MIDI-compatible devices or instruments (see MIDI section on page 59).

## **Accessories**

Connect the Release pedal (supplied) to the Release pedal socket on the rear panel.

Connect, if necessary, a stereo headphone with 1/4" jack to the corresponding socket on the rear panel. Connect the Expansion Cartridge (optional).

## **IGNITION**

Once you have made the necessary connections, switch on your instrument first, followed by all the other instruments connected to it via MIDI, and lastly the amplification.

## **BALANCING OF VOLUMES**

Set the Volume control to about 3/4 of the way up and then adjust the amplification volumes to the desired level.

In special cases, adjust the volume level of the instrument to vary the sensitivity of the input signal in the amplifier.

## **ACCORDING**

Your instrument is delivered already tuned to the frequency of 440hz and therefore does not need tuning. In some special cases, especially when playing together with acoustic instruments, it may be necessary to retune your instrument.

In this case, turn the TUNE potentiometer on the rear panel as follows:

Clockwise ..... increases frequency (higher sound)

Counterclockwise ..... decreases Frequency (lower sound)

## CONTROL PANEL

The control panel of your instrument has been designed for maximum ease of use and therefore most of the controls are associated with a single function, the only dual-function buttons are those on the right-hand side of the panel. They are used both for preset selection and for special programming functions, which we will see later.

The CTS 2000 is also equipped with a 2-line by 16-character LCD display that will show the type and number of presets enabled, information needed to edit presets or help messages.

A special memory bank constantly updates the status of the control panel. Thanks to this function, when you switch off the instrument, the panel situation immediately preceding the switch-off will be stored.

The same applies in the event of a sudden power failure.

When you switch on your instrument, it will automatically switch back to the way it was when it was switched off, recalling all the controls activated before switching off.

## WAYS OF USING THE INSTRUMENT

Your instrument is supplied with 48 pre-programmed internal presets divided into two banks (A and B) of 24 presets each.

In addition, there are expansion cartridges (optional) on which you can record a further 48 presets.

The cartridge supplied with the instrument contains a copy of the internal presets provided by the manufacturer.

The CTS 2000 basically has three operating modes, namely Standard Mode, Edit Mode and Record Mode.

### **STANDARD mode**

This is the instrument's normal operating mode. You can recall both internal and cartridge presets and enable the main functions.

### **EDIT mode**

In this way you can temporarily edit all presets or create new ones using the parameters shown in the graphic matrix to the right of the control panel above the preset selectors.

### **RECORD mode**

It allows you to record, and thus make permanent, changes made to a preset.

## STANDARD MODE

The Standard mode is automatically selected at power-on regardless of the mode the instrument was in at the time of power-off.

### **Presets (Selection of presets)**

## **Interiors**

Pressing the INTERNAL button in the PRESETS section will enable the instrument's internal presets.

In this way the display will show, in the upper row, the type, number and bank of the selected preset while the lower row will repeat the norm that has been assigned by the manufacturer or user to that preset, for example:

INT PRESET 1A

XXXXXXXXXX

In this case you will have called up Internal Preset No. 1, Bank A, named XXXXXXXXX.

The internal memory capacity of the instrument is 48 presets divided into two banks (A and B) of 24 presets each;

To recall any internal preset, select the memory bank (using the BANK A/B bank selector button) and then the button corresponding to the desired item number (1 to 24) or vice versa.

## **Cartridge**

Two types of cartridge (ROM Cartridge and RAM Cartridge) are available, allowing you to increase the number of online presets on the instrument.

The ROM cartridge (supplied) is a read-only cartridge. It contains a copy of the instrument's internal presets and therefore has a memory capacity of 48 presets divided into two banks (A and B) of 24 presets each, which can be selected using the BANK A/B button in the Presets section.

The optional RAM cartridge is a cartridge that allows both writing (recording) and reading.

Its memory capacity is 96 presets divided into two banks (1 and 2) of 48 presets each.

bank 1 or bank 2 are selected with a switch on the cartridge itself.

Each bank, in turn, contains two banks (A and B) of 24 presets each that can be selected using the BANK A/B button in the preset section.

The RAM cartridge also has a second ON-W.OFF switch to protect (in W.OFF position) the cartridge from unintentional recording.

## **ATTENTION**

Remember to insert and remove the cartridge in the cartridge holder with the instrument switched off.

To access the cartridge presets, simply press the CARTRIDGE button in the PRESETS section.

Obviously, a cartridge must be inserted into the cartridge slot above the control display.

If you press the cartridge button without having previously inserted the cartridge, the display will show :

CARTRIDGE

NOT PRESENT

If you press the button when the cartridge is inserted, the message appears:

CRT PRESET 1A

XXXXXXXX

In this case you will have recalled cartridge preset no.1, Bank A, named XXXXXXXX.

Once you press the Cartridge button to recall any cartridge preset, as with internal presets, select the Memory Bank (using the BANK A/B button to select Bank) and then press the button corresponding to the desired voice number (1 to 24) or vice versa.

To return to the internal presets, simply press the Internal button.

In conclusion, to recall any internal or cartridge preset, you must select the memory source with the internal or cartridge buttons, press the BANK A/B button (bank selector) and then the button corresponding to the desired item number (1 to 24).

A different way to change presets is to press the UP and DOWN buttons in the FINE CONTROL section. In this case you can sequentially enable all 48 internal or cartridge presets.

CAUTION: Since the current preset is loaded into the synthesizer's memory, it is possible to use a cartridge preset, turn the instrument off, remove the cartridge, then turn the instrument back on and still have the cartridge preset in memory.

If you now try to recall a preset without selecting the internal memory (INTERNAL), the display will show:

CARTRIDGE

NOT PRESENT

However, the previous cartridge preset is still in memory.

To recall other presets, press the INTERNAL button and, if necessary, a button from 1 to 24.

### **Pitch**

This wheel allows you to temporarily vary the pitch of the instrument within a programmable range of values for each preset.

### **Modulation**

This wheel allows you to vary the amount of modulation of the preset from a minimum programmable value for each preset.

### **Midi**

Using these two buttons, you can manage the Midi functions immediately, enabling or disabling the transmission and reception of signals and selecting the mode of transmission and/or reception of Program Change messages.

**On/off** Enables or disables Midi transmit and receive mode.

### Midi Local/Remote

By pressing one or more times this button next to the Control Display, you can select the transmission and/or reception mode of programme changes as follows:

If **LOCAL** mode is selected, the instrument will not transmit or receive program changes via MIDI, but will only be able to change its own internal presets.

Selecting the **REMOTE** mode will allow the instrument to transmit and receive program changes via MIDI, but it will not be able to change its internal presets.

Selecting the **LOCAL & REMOTE** mode will enable the instrument to transmit and receive program changes via MIDI, and will also enable it to change its internal presets.

Both the Midi On mode and the Local, Remote and Local & Remote functions are indicated by two special symbols (\* = enabled, 0 = disabled ) placed on the right-hand side of the display in correspondence with the relative labels:

Midi Off INT PRESET 1A __ Local	
	PIANO __ Remote
Midi On INT PRESET 1A * __ Local	
Local	PIANOPHONE 0 __ Remote
Midi On	INT PRESET 1A 0 __ Local
Remote	PIANO * __ Remote
Midi On	INT PRESET 1A * __ Local
Local & Remote	PIANOFORTE * __ Remote

### Release Pedal

The CTS 2000 comes with a footswitch to control the RELEASE function.

This function allows the sound to be maintained and decayed slowly, even after the keys have been released, with a different programmable decay for each preset.

The Release Pedal is only active when the pedal is pressed.

## **EDIT MODE**

As we have already said, this mode allows you to MODIFY TEMPORARILY all the parameters indicated in the graphic matrix on the right of the control panel above the preset selectors.

For the complete list and explanations of the functions of each parameter, see the PARAMETERS LIST section on page 22.

In EDIT mode the changes made will be lost when changing or recalling a preset, to make the changes permanent it is necessary to use the RECORD function (see paragraph RECORD MODE).

To enter EDIT mode, after selecting the preset to be edited, press the PRESETS/PARAMETERS button.

This button allows you to simply switch between Standard (Presets) and Edit (Parameters) modes, and vice versa.

### **IMPORTANT**

In Edit mode, the buttons 1 to 24 previously used to select presets will become selectors of their associated PARAMETRIC FAMILIES.

As soon as you select the Edit (Parameters) mode by pressing the Preset/Parameters button, the display will show:

SELECT ZONE

PARAMETERS

This message indicates that the instrument is ready to modify the parameters relative to a Zone (octave) of the keyboard.

Then press the ZONE/GLOBAL button to display :

SELECT GLOBAL

PARAMETERS

This message indicates that the instrument is ready to modify the parameters of all 5 keyboard Zones (Octaves) simultaneously.

Pressing the ZONE/GLOBAL button again will return the display to show:

SELECT ZONE

PARAMETERS

To exit the Edit (Parameters) mode at any time, either GLOBAL or ZONE, simply press the PRESETS/PARAMETERS button again.

A different way to return to Standard mode is to press the INTERNAL or CARTRIDGE button in the Presets section.

The display will return to the type, number, bank and name of the preset, indicating that you have returned to Standard (Preset) mode.

### **Choice of parametric family**

The individual parameters are grouped into PARAMETRIC FAMILIES with a maximum of 6 parameters per family.

Once the EDIT (Parameters) mode has been selected and the ZONE or GLOBAL function has been selected, the selection of the Parametric Family to be edited is made by simply pressing the corresponding Family button.

For example, pressing the 8 button associated with the DCA Family 1 (which is part of the DCA & DCF ENVELOPE GENERATORS section) at this point will show the display:

DCA1 ENVELOPE  
GENERATOR

The instrument will then be prepared to modify the individual parameters of this Family.

To switch to another Family, simply press the button corresponding to the desired Family.

To exit the Edit (Parameters) mode at any time, simply press the PRESETS/PARAMETERS button or the INTERNAL or CARTRIDGE button in the Presets section.

The display will return to the type, number, bank and name of the preset, indicating that you have returned to Standard (Preset) mode.

### **Selecting and changing the parameter in ZONE mode**

Once a Family has been selected, e.g. DCA 1, the 6 slider potentiometers located on the left of the control panel in the DATA ENTRY section and identified by the letters A, B, C, D, E and F will be automatically associated with the 6 corresponding parameters that make up the Family itself.

For example, in the case of family DCA 1, the following correspondence will be made:

Potentiometer	A = ATTACK
Potentiometer	B = DECAY
Potentiometer	C = BREAK POINT
Potentiometer	D = SLOPE
Potentiometer	E = SUSTAIN
Potentiometer	F = RELEASE / PED.

Changing the Family will change the correspondence of the potentiometers. If a family consists of fewer than 6 parameters, the potentiometers associated with the missing parameters will not be enabled.

In ZONE mode, as soon as one of the 6 potentiometers is moved slightly, the display will show, on the top line, the name of the single enabled parameter and a number written in negative (from 0 to 4) indicating the zone (octave) enabled for modification.

The bottom line will show the value in memory for that parameter (OLD) and next to it the new value assigned to that parameter (NEW).

If, for example, potentiometer A is moved slightly, the display will show:

ATTACK TIME 1 z

OLD xx NEW yy

(z) = Zone number (octave) of keyboard

xx = memory value of the parameter for that Zone

yy = new value assigned to the parameter for that Zone

If you now move the potentiometer more widely, you will see the value "yy" change.

Using the UP and DOWN buttons in the FINE CONTROL section you can also perform a "fine" check of the parameter value.

#### IMPORTANT

Remember that a change made in Zone mode only applies to the Zone (octave) indicated by the number (z) at the top right of the display. The individual (octave) Zones are identified as follows:

ZONE0	DO 0	SI 0
ZONE1	DO 1	SI 1
ZONE2	C 2	B 2
ZONE3	C 3	B 3
ZONE4	C 4	B 5

To access another intervention zone, simply press any key on the musical keyboard within the desired zone (octave). You can then, for the same parameter selected, access Zones 0,1,2,3,4 for the 5 octaves of your keyboard by entering, if you wish, 5 different values.

To change the value of a parameter in all 5 Zones (octaves) at the same time, you must use the GLOBAL Edit mode.

To exit the Edit (Parameters) mode at any time, simply press the PRESETS/PARAMETERS button or the INTERNAL or CARTRIDGE button in the Presets section.

The display will return to the Standard ( Presets) type, number, bank and name.

A flashing rectangular |\_| symbol on the display (next to the bank letter A or B) indicates that the preset has been changed.

Remember that Edit mode allows for TEMPORARY CHANGES, so changes made will be lost when changing presets.

Recalling the preset itself will recall the one contained in the memory and not the one you have modified. To make changes permanent, it is therefore necessary to use the RECORD function before changing presets (see RECORD MODE section).

### **Selection and modification of the parameter in GLOBAL mode.**

Once a Family has been selected, e.g. DCA 1, the 6 slider potentiometers located on the left of the control panel in the DATA ENTRY section and identified by the letters A, B, C, D, E and F will be automatically associated with the 6 corresponding parameters that make up the Family itself.

For example, in the case of family DCA 1, the following correspondence will be made:

Potentiometer	A = ATTACK
Potentiometer	B = DECAY
Potentiometer	C = BREAK POINT
Potentiometer	D = SLOPE
Potentiometer	E = SUSTAIN
Potentiometer	F = RELEASE / PED.

Changing the Family will change the correspondence of the potentiometers. If a family consists of less than 6 parameters, the potentiometers associated with the missing parameters will not be enabled.

In GLOBAL mode, as soon as one of the 6 potentiometers is moved slightly, the display will show the name of the individual enabled parameter in the top line.

GLOBAL = 0 appears on the bottom line.

If, for example, potentiometer A is moved slightly, the display will show:

ATTACK TIME 1

GLOBAL = 0

If you now move the potentiometer more widely, you will see the value 0 change to positive or negative.

A different way to change the 0 value of the global parameter is to use the UP and DOWN buttons in the END CONTROL section.

### **IMPORTANT**

Remember that while the value assigned to a parameter in Zone mode has an absolute value, i.e. that parameter actually has the displayed value, in GLOBAL mode the value you select has a relative meaning as it will sum or subtract equally with all 5 Zone values in memory.

For example, if the Attack Time 1 parameter had the following values:

Zone 0 = 10

Zone 1 = 3

Zone 2 = 1

Zone 3 = 20

Zone 4 = 8

By editing in Edit GLOBAL mode and changing the value from 0 to +5, the Attack Time values for each individual Zone will become:

Zone 0 = 15

Zone 1 = 8

Zone 2 = 6

Zone 3 = 25

Zone 4 = 13

It is of course not possible to increase or decrease the parameters beyond their lower and upper limits.

Adding or subtracting a value larger than these limits will set the parameter to the maximum or minimum.

To change the value of a parameter in only one Zone (octave), you must use the Zone Edit mode.

To exit the Edit (Parameters) mode at any time, simply press the PRESETS/PARAMETERS button or the INTERNAL or CARTRIDGE button in the Presets section.

The display will return to the Standard ( Presets) type, number, bank and name.

A flashing rectangular symbol ( ) on the display (next to the bank letter A or B) indicates that the preset has been changed.

Remember that Edit mode allows for TEMPORARY CHANGES, so changes made will be lost when changing presets.

Recalling the preset itself will recall the one contained in the memory and not the one you have modified. To make changes permanent, it is therefore necessary to use the RECORD function before changing presets (see RECORD MODE section).

## Initialising and creating a preset

If you wish to create a new preset that is not derived from editing an existing one, you can use the INITIALIZE PRESET function. This is an initialization function, which sets up the synthesizer parameters in an elementary way to facilitate the creation of a new tone.

The main parameters are, for example, set as follows :

- Both oscillators (1 and 2) are set up to generate an elementary waveform (sawtooth).
- The tuning between the two oscillators is set to Slight Beat.
- The Oscillator level is set to maximum.
- The envelopes of DCA 1-2 are set with immediate Attack and Sustain at maximum.
- The filter is set with Cutoff at maximum. Resonance at minimum,. E.G Level at minimum and KYBD Tracking at 0.
- Etc..

To initialize a preset, you must exit Edit mode. Press the INITIALIZE PRESET button, and the display will show the following message:

PRESS ENTER

TO INITIALISE

If you wish to abort the initialisation procedure before confirming with the Enter button, press the Initialize Preset button or any of the 24 preset selection buttons again.

Pressing the Enter button confirms that you wish to carry out the initialisation procedure and in this case the display will show the message :

THIS PRESET HAS

BEEN INITIALIZED

This inscription will then be replaced by the words:

INT PRESET 1A ( )

A flashing rectangular symbol ( ) on the display (next to the bank letter A or B) indicates that the preset has been changed.

You will also notice that the preset name does not appear in the bottom line of the display, because you can assign any name to that preset.

ATTENTION

Remember that this operation temporarily modifies the content of the original preset, which you can recall at any time by pressing the preset number button.

If, after the initialisation procedure, you wish to continue creating a preset, enter EDIT mode (by pressing the Preset / Parameters button) and edit all the necessary parameters, starting with the selection of the / and table / and to be used.

For a complete list and explanations of the functions of each parameter, see the PARAMETERS LIST section on page 22.

To exit the Edit (Parameters) mode at any time, simply press the PRESETS/PARAMETERS button or the INTERNAL or CARTRIDGE button in the Presets section.

The display will return to show the type, number, bank, and name of the preset, indicating that you have returned to Standard (Preset) mode.

A flashing rectangular symbol ( ) on the display (next to the bank letter A or B) indicates that the preset has been changed.

Remember that Edit mode allows for TEMPORARY CHANGES, so changes made will be lost when changing presets.

Recalling the preset itself will recall the one contained in the memory and not the one you have modified. To make changes permanent, it is therefore necessary to use the RECORD function before changing presets (see RECORD MODE section).

### **RECORD MODE**

As we have already mentioned, Record mode allows you to record, and thus make definitive, changes made to a preset.

#### **ATTENTION**

When you record to a preset, you will lose its previous contents. Therefore, before making a recording, compare the new preset to be stored with the preset in the memory to be erased.

This operation is carried out using Parametric Family No. 24 EDIT/COMPARE.

It is possible, however, to reload all or part of the 48 presets provided by the instrument using the Cartridge supplied with the instrument, which contains a copy of the original presets.

### **Enabling registration**

#### **IMPORTANT**

When switched on, the instrument is not enabled for preset recording as it is equipped with a special software protection.

If you attempt a Write, Global Back-up, Copy or Zone Copy operation without removing the software protection, the display will show the following message for a few seconds:

WRITE DISABLE

SELECT PARAM.21

To enable the instrument for recording, proceed as follows :

- Enter Edit Mode by pressing the Preset/Parameter button,
- Select the WRITE & C. Parametric Family. By pressing the n21. key, the display will show :

WRITE /COPY

- Slightly move potentiometer A associated with the ENABLE /DISABLE parameter, the display will show the message:

WRITE

DISABLE

At this point the instrument is enabled to record new programmes and will remain so until it is switched off or deliberately returned (with the same operations) to the WRITE DISABLE position.

- Then exit the Edit mode by pressing the PRESETS/PARAMETERS button or the INTERNAL or CARTRIDGE button in the Presets section.

The display will return to the type, number, bank, and name of the preset, indicating that you have returned to Standard mode.

### **Recording a preset**

ATTENTION

Presets can only be recorded in the same Bank (A or B both Internal and Cartridge) from which they were created.

All recording operations are performed with the instrument in Standard mode.

When you have recalled and edited a preset, exit Edit mode and return to Standard mode, and press the WRITE button to store the preset in memory:

WRITE INT PRESET opurre WRITE CRT PRESET

Xxx IN INT ( ) yyyy xxx IN CRT ( ) yyyy

Depending on whether the preset you select belongs to the Internal or Cartridge presets.

xxx = number and bank of the preset you called up

yyy = number and bank of the preset to which you intend to record by deleting its previous content

( ) = flashing rectangular symbol

xxx and yyyy have the same value because normally the modified preset is recorded instead of the original one.

If you wish to record the preset to another memory, simply select the preset number you wish to record to using buttons 1-24 (this will change the yyyy value) and the location (INTERNAL or CARTRIDGE) using the Internal or Cartridge buttons.

After selecting the number and location of the preset to be recorded, proceed with the recording operation as follows:

- Press the ENTER button or WRITE button once.  
The display will show the message:

ENTER TO RECORD

WRITE TO ESCAPE

At this point :

- By pressing the ENTER button, you can definitively confirm the recording and the display will show the message for a few seconds:

#### WRITE COMPLETED

The instrument will then automatically exit the recording mode and return to the Standard mode by clicking the new registered preset.

- Pressing the WRITE button will allow you to exit the recording phase without having completed it and the display will show the message for a few moments:

#### WRITE ABORTED

The instrument will then automatically return to the Standard mode of operation, showing the starting preset.

#### **Global recording of all instrument presets**

This operation (GLOBAL BACKUP) allows you to record and transfer, in a single operation, all the contents of the instrument's internal memory to an external cartridge (RAM Cartridge only) to the internal memory.

All recording operations are performed with the instrument in Standard mode.

#### IMPORTANT

When switched on, the instrument is not enabled for preset recording as it is equipped with a special software protection.

If you attempt a Write, Global Back-up, Copy or Zone Copy operation without removing the software protection, the display will show the following message for a few seconds:

WRITE DISABLE is

SELECT PARAM.21

#### **Global Backup from Internal Memory to Cartridge**

- Insert a RAM Cartridge into the RAM Cartridge slot.
- Use the first switch on the cartridge to select the deck (1 or 2) on which you want to record. WARNING, each recording operation deletes the previous content.
- Enable the cartridge for recording by setting the second switch to the ON position.
- Check that the synthesiser has also been enabled for recording (See paragraph Enabling recording page 18).
- Press and hold the ZONE GLOBAL button in the Presets section.
- Press and hold down the INTERNAL button in the Presets section, the display will then show :

#### GLOBAL BACK-UP

#### PRESS WRITE

- While holding down the Zone Global and Internal buttons, press the WRITE button. The display will show the following message:

FROM INT TO CRT

PRESS ENTER

- Release all the buttons and then press the ENTER button to confirm the recording. The display will briefly show :

GLOBAL BACK UPCOMPLETED

It will then exit the registration phase and return to Standard mode.

ATTENTION

If you want to exit recording without completing it, press the WRITE button or any of the 24 preset buttons before pressing the Enter button.

After registering on the cartridge, remember to set the protective switch to the W.OFF position.

The following error messages may appear during the Global Backup operation from Internal Memory to Cartridge:

INSERT CARTRIDGE

WITH WRITE ON

indicates two types of error :

a cartridge has not been inserted into the cartridge holder or the second cartridge switch is in the WRITE OFF position.

ERROR

Read Only Memory

Indicates that you have inserted a ROM card (which can only be read) instead of a RAM card.

### **Global Backup from Cartridge to Internal Memory**

- Insert a RAM or ROM cartridge in the appropriate location.
- Check that the synthesiser has been enabled for recording (See paragraph Enabling recording page 18).
- Press and hold the ZONE GLOBAL button in the Presets section.
- Press and hold down the Cartridge button in the Presets section, and the display will show :

GLOBAL BACK-UP

PRESS WRITE

- While holding down the Zone Global and Cartridge buttons, press the WRITE button. The display will show the message:

FROM CRT TO INT

PRESS ENTER

- Release all the buttons and then press the ENTER button to confirm the recording. The display will briefly show the message:

GLOBAL BACK-UP

COMPLETED

It will then exit the registration phase and return to Standard mode.

ATTENTION

If you want to exit recording without completing it, press the WRITE button or any of the 24 preset buttons before pressing the Enter button.

The following error message may be displayed during the Global Backup from Cartridge to Internal Memory operation:

CARTRIDGE

NOT PRESENT

a Cartridge has not been inserted into the appropriate slot.

LIST OF PARAMETERS

(z) = Zone (octave) of keyboard

OLD xx = Value of parameter prior to change

NEW yy = Modified parameter value

ATTENTION

Remember that for all parameters where the display shows a negative number (z) indicating the current keyboard zone, the change made to the parameter itself has value ONLY FOR THE CURRENT ZONE (z) and identified by the number ( z).

The individual Zones (octaves) are identified as follows :

Zone 0 DO 0 SI 0

Zone 1 DO 1 SI 1

Zone 2 DO 2 SI 2

Zone 3 DO 3 SI 3

Zone 4 DO 4 SI 5

To access another intervention zone, simply press any key on the musical keyboard within the desired zone (octave). You can then, for the same parameter selected, access Zones 0,1,2,3,4 for the 5 octaves of your keyboard by entering, if you wish, 5 different values.

The following parameters are described in relation to the Zone EDIT mode (ZONE) which allows editing of the current Zone only.

To change the value of a parameter in all 5 Zones (octaves) at the same time, you must use the GLOBAL Edit mode.

---

**Family no.1 : CROSS WAVE 1 Display Fam. : OSCILLATOR 1**

**Group : DIGITAL OSCILLATOR 1 CROSS WAVE 1**

---

*Parameter* : OCTAVE

*Power meter* : A

*Display Par.* OSC1 OCTAVE ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 5

*Function* : Selects the sound pitch, in terms of musical octave, of the waveform

(table) selectable from Oscillator 1.

Eighth Frequency value

0 from C 32.7 Hz to B 61.6 Hz

1 from C 65.4 Hz to B 123.5 Hz

2 from C 130.8 Hz to B 246.9 Hz

3 from C 261.6 Hz to B 493.8 Hz

4 from C 523.2 Hz to B 987.7 Hz

5 from C 1046.0 Hz to B 1975.0 Hz

Note that there are 6 selectable octaves; this will allow you to choose the most suitable octaves for each keyboard zone.

#### ATTENTION

The tables (waveforms) have been created respecting the natural range of the sampled timbre and therefore the 6 octaves are only available for those timbres that actually have them; for example the Acoustic Bass timbre only has octaves 0 and 1 while the Acoustic Piano timbre has all 6.

*Parameter* : FROM 1st WAVE

*Power meter* : B

*Display Par.* FROM 1st WAVE ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 61

*Function* : Selects the FIRST waveform (table) to be read and from which the CROSS begins.

(mixing). For the list of available Waveforms (Tables) see annex

WAVEFORMS\_TABLES

*Parameter* : DELAY

*Power meter* : C

*Display Par.* DELAY TIME ( z )

OLD xx NEW yy

*Value xx/yy* : 1 to 15 + inf.

*Function* : Selects for how long the FIRST waveform (table) is to be read, and

then determines the delay time at which Cross (mixing) starts between the FIRST and SECOND waveforms.

If the Delay value is set to 1, the first waveform (table) will be alone.

Volts before moving on to the mixing stage, if inverted is placed at inf. The mixing does not take place and therefore the Oscillator always reads the First waveform

without ever moving on to the next.

*Parameter* : TIME 1

*Power meter* : D

*Display Par.* TIME 1 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time it takes for the Oscillator to switch from reading the FIRST to reading the LAST.

Waveform (table) to the SECOND waveform by mixing them together. If the value of Time 1

Set to 1 the transition from the First to the Second waveform is immediate.

With values greater than 1, the changeover is gradual and proportional to the value entered.

*Parameter* : BREAK POINT

*Power meter* : E

*Display Par.* BREAK POINT ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the point (Break Point) at which mixing is to be stopped (set by the

Parameter Time 1 ) between the First and Second waveforms. From the Break Point

Thereafter, mixing will continue with the time set by the Time 2 parameter.

If the Break Point value is set to 1, the Time 2 parameter will have no effect.

If the Break Point value is set to 16, the Time 1 parameter will have no effect.

*Parameter* : TIME 2

*Power meter* : F

*Display Par.* TIME 2 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time it takes for the Oscillator, after the Break Point, to pass through the Break Point.

from reading the FIRST waveform (table) to the SECOND waveform by mixing them together.

If the value of Time 1 is set to 1 the transition from the First to the Second form wave is immediate.

With values greater than 1, the changeover is gradual and proportional to the value entered.

---

**Family no. 2 : CROSS WAVE 2 Display Fam. : OSCILLATOR 1**

**Group : DIGITAL OSCILLATOR 1 CROSS WAVE 2**

---

*Parameter* : TO 2nd WAVE

*Power meter* : A

*Display Par.* TO 2nd WAVE ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 0 to 61

*Function* : Selects the SECOND waveform (table) to be read and on which the CROSS ends.  
                  (mixing). between the FIRST and SECOND waveforms. For the list of Forms  
                  Waveforms (Tables) available see annex WAVE SHAPES-TABLES

*Parameter* : TO 3rd WAVE

*Power meter* : B

*Display Par.* TO 3rd WAVE ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 0 to 61

*Function* : Selects the THIRD waveform (table) to be read and on which the CROSS ends  
                  (mixing) between the SECOND and THIRD waveforms. For the list of Forms  
                  Waveforms (Tables) available see annex WAVE SHAPES-TABLES

*Parameter* : DELAY

*Power meter* : C

*Display Par.* DELAY TIME ( z )  
                  OLD xx NEW yy

*Value xx/yy* : 1 to 15 + inf.

*Function* : Selects for how long the SECOND waveform (table) is to be read, and  
                  then determines the delay time at which Cross (mixing) starts  
                  between the SECOND and THIRD waveforms.  
                  If the Delay value is set to 1, the second waveform (table) will be read out.  
                  one time before moving on to the mixing phase, if inverted it is placed to  
                  inf. mixing does not take place and therefore the Oscillator always reads Second

waveform without ever moving on to the next one.

*Parameter* : TIME 1

*Power meter* : D

*Display Par.* TIME 1 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time it takes for the Oscillator to switch from reading the SECOND to reading the first.

Time 1 waveform (table) to the THIRD waveform by mixing them together. If the value of

Set to 1 the transition from the Second to the Third waveform is immediate.

With values greater than 1, the changeover is gradual and proportional to the value entered.

*Parameter* : BREAK POINT

*Power meter* : E

*Display Par.* BREAK POINT ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the point (Break Point) at which mixing is to be stopped (set by the

Parameter Time 1 ) between the Second and Third waveforms. From the Break Point

Thereafter, mixing will continue with the time set by the Time 2 parameter.

If the Break Point value is set to 1, the Time 2 parameter will have no effect.

If the Break Point value is set to 16, the Time 1 parameter will have no effect.

*Parameter* : TIME 2

*Power meter* : F

*Display Par.* TIME 2 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time it takes for the Oscillator, after the Break Point, to pass through the Break Point.

from reading the SECOND waveform (table) to the THIRD waveform by mixing them together.

If the value of Time 1 is set to 1 the transition from the Second to the Third form wave is immediate.

With values greater than 1, the changeover is gradual and proportional to the value entered.

---

**Family no. 3 : CROSS WAVE 1 Display Fam. : OSCILLATOR 2**

**Group : DIGITAL OSCILLATOR 2 CROSS WAVE 1**

---

*Parameter* : OCTAVE

*Power meter* : A

*Display Par.* OSC2 OCTAVE ( z )  
OLD xx NEW yy

*Value xx/yy* : from 0 to 5

*Function* : Selects the sound pitch, in terms of musical octave, of the waveform  
(table) selectable from Oscillator 2.

Eighth Frequency value

0 from C 32.7 Hz to B 61.6 Hz

1 from C 65.4 Hz to B 123.5 Hz

2 from C 130.8 Hz to B 246.9 Hz

3 from C 261.6 Hz to B 493.8 Hz

4 from C 523.2 Hz to B 987.7 Hz

5 from C 1046.0 Hz to B 1975.0 Hz

Please note that there are 6 selectable octaves; this will allow you to choose the most suitable octaves for each keyboard zone.

**ATTENTION**

The tables (waveforms) have been created respecting the natural range of the sampled timbre and therefore the 6 octaves are only available for those timbres that actually have them; for example the Acoustic Bass timbre only has octaves 0 and 1 while the Acoustic Piano timbre has all 6.

*Parameter* : FROM 1st WAVE

*Power meter* : B

*Display Par.* FROM 1st WAVE ( z )  
OLD xx NEW yy

*Value xx/yy* : from 0 to 61

*Function* : Selects the FIRST waveform (table) to be read and from which the CROSS begins.

(mixing). For a list of available Waveforms (Tables) see annex

WAVEFORMS\_TABLES

*Parameter* : DELAY

*Power meter* : C

*Display Par.* DELAY TIME ( z )

OLD xx NEW yy

*Value xx/yy* : 1 to 15 + inf.

*Function* : Selects for how long the FIRST waveform (table) is to be read, and

then determines the delay time at which the Cross (mixing) starts

between the FIRST and SECOND waveforms.

If the Delay value is set to 1, the first waveform (table) will be alone.

time before moving on to the mixing phase, if inverse is placed at inf. the

mixing does not take place and therefore the Oscillator always reads the First waveform

without ever moving on to the next.

*Parameter* : TIME 1

*Power meter* : D

*Display Par.* TIME 1 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time it takes for the Oscillator to switch from reading the FIRST to reading the LAST.

Waveform (table) to the SECOND waveform by mixing them together. If the value of Time 1

is set to 1 the transition from the First to the Second waveform is immediate.

With values greater than 1 the changeover is gradual and proportional to the value entered.

*Parameter* : BREAK POINT

*Power meter* : E

*Display Par.* BREAK POINT ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the point (Break Point) at which mixing is to be stopped (set by the Parameter Time 1 ) between the First and Second waveforms. From the Break Point Thereafter, mixing will continue with the time set by the Time 2 parameter. If the Break Point value is set to 1, the Time 2 parameter will have no effect. If the Break Point value is set to 16, the Time 1 parameter will have no effect.

*Parameter* : TIME 2

*Power meter* : F

*Display Par.* TIME 2 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time it takes for the Oscillator, after the Break Point, to pass through the Break Point.

from reading the FIRST waveform (table) to the SECOND waveform by mixing them together.

If the value of Time 1 is set to 1 the transition from the First to the Second form wave is immediate.

With values greater than 1 the changeover is gradual and proportional to the value entered.

---

**Family no. 4 : CROSS WAVE 2 Display Fam. : OSCILLATOR 2**

**Group : DIGITAL OSCILLATOR 2 CROSS WAVE 2**

---

*Parameter* : TO 2nd WAVE

*Power meter* : A

*Display Par.* TO 2nd WAVE ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 0 to 61

*Function* : Selects the SECOND waveform (table) to be read and on which the CROSS ends.  
                  (mixing). between the FIRST and SECOND waveforms. For the list of Forms  
                  Waveforms (Tables) available see annex WAVE SHAPES-TABLES

*Parameter* : TO 3rd WAVE

*Power meter* : B

*Display Par.* TO 3rd WAVE ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 0 to 61

*Function* : Selects the THIRD waveform (table) to be read and on which the CROSS ends  
                  (mixing) between the SECOND and THIRD waveforms. For the list of Forms  
                  Waveforms (Tables) available see annex WAVE SHAPES-TABLES

*Parameter* : DELAY

*Power meter* : C

*Display Par.* DELAY TIME ( z )  
                  OLD xx NEW yy

*Value xx/yy* : 1 to 15 + inf.

*Function* : Selects for how long the SECOND waveform (table) is to be read, and  
                  then determines the delay time at which Cross (mixing) starts  
                  between the SECOND and THIRD waveforms.  
                  If the Delay value is set to 1, the second waveform (table) will be read out.  
                  one time before moving on to the mixing phase, if inverted it is placed to  
                  inf. mixing does not take place and therefore the Oscillator always reads Second

waveform without ever moving on to the next one.

*Parameter* : TIME 1

*Power meter* : D

*Display Par.* TIME 1 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time it takes for the Oscillator to switch from reading the SECOND to reading the first.

Time 1 waveform (table) to the THIRD waveform by mixing them together. If the value of

Set to 1 the transition from the Second to the Third waveform is immediate.

With values greater than 1, the changeover is gradual and proportional to the value entered.

*Parameter* : BREAK POINT

*Power meter* : E

*Display Par.* BREAK POINT ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the point (Break Point) at which mixing is to be stopped (set by the

Parameter Time 1 ) between the Second and Third waveforms. From the Break Point

Thereafter, mixing will continue with the time set by the Time 2 parameter.

If the Break Point value is set to 1, the Time 2 parameter will have no effect.

If the Break Point value is set to 16, the Time 1 parameter will have no effect.

*Parameter* : TIME 2

*Power meter* : F

*Display Par.* TIME 2 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time it takes for the Oscillator, after the Break Point, to pass through the Break Point.

from reading the SECOND waveform (table) to the THIRD waveform by mixing them together.

If the value of Time 1 is set to 1 the transition from the Second to the Third form wave is immediate.

With values greater than 1, the changeover is gradual and proportional to the value entered.

---

**Family No. 5 : OSC. 1 Display Fam. : OSCILLATOR 1**

**Group : TUNE & FREQUENCY E.G TUNE - FREQ EG**

---

*Parameter* : SEMITON

*Power meter* : A

*Display Par.*    OSC 1 SEMITON ( z )  
                          OLD xx NEW yy

*Value xx/yy* : from - 5 to + 5

*Function* : Selects the tuning, in semitones, of the First Oscillator with respect to the tuning  
                          General (Tune) of the instrument.

*Parameter* : FINE TUNE

*Power meter* : B

*Display Par.*    OSC1 FINE TUNE ( z )  
                          OLD xx NEW yy

*Value xx/yy* : -7 to +7

*Function* : Selects the fine tuning of the First Oscillator with respect to tuning  
                          General (Tune) of the instrument.

*Parameter* : E.G LEVEL

*Power meter* : C

*Display Par.*    FREQ EG LEVEL ( z )  
                          OLD xx NEW yy

*Value xx/yy* : from - 15 to + 15

*Function* : Sets the frequency to which the first oscillator should tend via its envelope.  
                          frequency, adjusted by the subsequent Attack and Decay parameters.

*Parameter* : ATTACK

*Power meter* : D

*Display Par.*    ATTACK TIME 1 ( z )  
                          OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time by which the frequency of Oscillator 1 tends to the set frequency.

From E.G. Level.

*Parameter* : DECA Y

*Power meter* : E

*Display Par.* DECA Y TIME 1 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time by which the frequency of Oscillator 1 will return from the value reached

After the Attack time, to the normal tuning value.

---

**Family No. 6 : OSC. 2 Display Fam. : OSCILLATOR 2**

**Group : TUNE & FREQUENCY E.G TUNE - FREQ EG**

---

*Parameter* : SEMITON

*Power meter* : A

*Display Par.* OSC 2 SEMITON ( z )  
OLD xx NEW yy

*Value xx/yy* : from - 5 to + 5

*Function* : Selects the tuning, in semitones, of the Second Oscillator with respect to tuning  
General (Tune) of the instrument.

*Parameter* : FINE TUNE

*Power meter* : B

*Display Par.* OSC2 FINE TUNE ( z )  
OLD xx NEW yy

*Value xx/yy* : -7 to +7

*Function* : Selects the fine tuning of the Second Oscillator with respect to tuning  
General (Tune) of the instrument.

*Parameter* : E.G LEVEL

*Power meter* : C

*Display Par.* FREQ EG LEVEL ( z )  
OLD xx NEW yy

*Value xx/yy* : from - 15 to + 15

*Function* : Sets the frequency to which the Second Oscillator should tend by its  
Frequency envelope, adjusted by the subsequent Attack and Decay parameters.

*Parameter* : ATTACK

*Power meter* : D

*Display Par.* ATTACK TIME 2 ( z )  
OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time by which the frequency of Oscillator 2 tends to the set frequency.

From E.G. Level.

*Parameter* : DECAF

*Power meter* : E

*Display Par.* DECAF TIME 2 ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the time by which the frequency of Oscillator 2 will return from the value reached  
After the Attack time, to the normal tuning value.

---

**Family No. 7 : OSC. LEVELS Display Fam. : OSCILLATORS**

**Group : OSC. LEVELS LEVELS**

---

*Parameter* : OSC 1

*Power meter* : A

*Display Par.* OSC 1 LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 3

*Function*: Selects the volume level of Oscillator 1.

*Parameter* : OSC 2

*Power meter* : B

*Display Par.* OSC 2 LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 3

*Function* : Selects the volume level of Oscillator 2 .

---

**Family No. 8 : DCA 1 Display Fam. DCA 1 ENVELOPE**

**Group : DCA & DCF ENVELOPE GENERATORS**

---

*Parameter* : ATTACK

*Power meter* : A

*Display Par.*    ATTACK TIME 1 ( z )  
                    OLD xx NEW yy

*Value xx/yy* : from 1 to 32

*Function* : Determines the time that the amplifier of each Oscillator 1 item takes to  
                    Reach a maximum level from a level of 0 (from the moment of pressing the  
                    key).

*Parameter* : DECAY

*Power meter* : B

*Display Par.*    DECAY TIME 1 ( z )  
                    OLD xx NEW yy

*Value xx/yy* : 0 to 31 + inf.

*Function* : Determines the time that the amplifier of each Oscillator 1 item takes to  
                    return from a maximum level, obtained at the end of the Attack            phase, to a  
level  
                    lower, determined by the Break Point parameter. If the Break Point value  
will be at 1 (minimum value) the Decay will set the amplifier level to 0, vice versa  
if the Break Point value is 64 (maximum value) the Decay function will be  
non-existent. If the Decay value is set to inf. (infinity) the level of the  
amplifier will remain at maximum until the button is released and the  
Break Point, Slope and Sustain functions.

*Parameter* : BREAK POINT

*Power meter* : C

*Display Par.*    BREAK POINT 1 ( z )  
                    OLD xx NEW yy

*Value xx/yy* : from 1 to 64

*Function* : Determines the level at which the decay function of the amplifier of each voice Oscillator 1 must stop. The Break Point is a level adjustment and not a time such as Attack, Decay and Release.

*Parameter* : SLOPE

*Power meter* : D

*Display Par.* SLOPE TIME 1 ( z )  
OLD xx NEW yy

*Value xx/yy* : 1 to 31 + inf.

*Function* : Determines the time that the amplifier of each Oscillator 1 item takes to from the level established by the Break Point parameter to the level established by the Sustain parameter. If the value of the Sustain parameter is greater than that of Break Point with the Slope we can determine the time of a second Attack. If the value of the Sustain parameter is less than the Break Point with the Slope we can determine the time of a second Decay. If the value of Slope is set to inf. (infinity) ) the level of the amplifier will remain the one determined by the Break Point parameter and will be held until the key is released and will not be Sustain function enabled.

*Parameter* : SUSTAIN

*Power meter* : E

*Display Par.* SUSTAIN LEVEL ( z )  
OLD xx NEW yy

*Value xx/yy* : from 1 to 64

*Function* : Determines the level to which the amplifier of each Oscillator 1 voice should rise. from the previous Break Point level in the time set by the Slope parameter. If the Sustain value is equal to the Break Point value, the Slope function will be ineffective.

*Parameter* : RELEASE/PED

*Power meter* : F

*Display Par.* RELEASE T ( z )

OLD xx NEW yy

*Value xx/yy* : 1 to 31 + inf.

*Function* : Determines the time that the amplifier of each Oscillator 1 item takes to

return, from the level determined by the Sustain parameter, to 0 after release of the key, the Release time also applies if the key is released before you have Complete the Attack, Decay and Slope phases.

If the Sustain level is set to 1 (minimum value) and the Attack , Decay and Slope phases

have been completed, the Release function will be non-existent.

If the Release value is set to inf. (infinity) the amplifier level will remain that to which the amplifier has arrived when the button is released.

ATTENTION : With this parameter you can also set a second time of release, other than the keyboard release, which will be activated by pressing the RELEASE PEDAL.

The Pedal Release value is selected by holding down the Pedal during the value setting phase.

As soon as the pedal is pressed, the display will show :

RELEASE TIME 1p (z)

OLD xx NEW yy

The lower case p next to the word Time 1 indicates that you are selecting the value of Pedal Release (NEW) while the OLD value will be the one previously assigned to the pedal itself.

Normally, a value greater than that determined for the pedal is selected. for the keyboard.

---

**Family No. 9 : DCA 2 Display Fam. DCA 2 ENVELOPE**

**Group : DCA & DCF ENVELOPE GENERATORS**

---

*Parameter* : ATTACK

*Power meter* : A

*Display Par.*    ATTACK TIME 2 ( z )  
                    OLD xx NEW yy

*Value xx/yy* : from 1 to 32

*Function* : Determines the time that the amplifier of each Oscillator 2 voice takes to reach a maximum level from a level of 0 (from the moment of pressing the key).

*Parameter* : DECAY

*Power meter* : B

*Display Par.*    DECAY TIME 2 ( z )  
                    OLD xx NEW yy

*Value xx/yy* : 0 to 31 + inf.

*Function* : Determines the time that the amplifier of each Oscillator 2 voice takes to return from a maximum level, obtained at the end of the Attack phase, to a level

lower, determined by the Break Point parameter. If the Break Point value will be at 1 (minimum value) the Decay will set the amplifier level to 0, vice versa if the Break Point value is 64 (maximum value) the Decay function will be non-existent. If the Decay value is set to inf. (infinity) the level of the amplifier will remain at maximum until the button is released and the Break Point, Slope and Sustain functions.

*Parameter* : BREAK POINT

*Power meter* : C

*Display Par.*    BREAK POINT 2 ( z )  
                    OLD xx NEW yy

*Value xx/yy* : from 1 to 64

*Function* : Determines the level at which the decay function of the amplifier of each voice  
Oscillator 2 must stop. The Break Point is a level adjustment and not a  
time such as Attack, Decay and Release.

*Parameter* : SLOPE

*Power meter* : D

*Display Par.* SLOPE TIME 2 ( z )  
OLD xx NEW yy

*Value xx/yy* : 1 to 31 + inf.

*Function* : Determines the time that the amplifier of each Oscillator 2 item takes to  
from the level established by the Break Point parameter to the level established by the  
the  
Sustain parameter. If the value of the Sustain parameter is greater than the value of  
Break Point with the Slope we can determine the time of a second Attack.  
If the value of the Sustain parameter is less than the Break Point with the Slope  
we can determine the time of a second Decay. If the value of Slope  
is set to inf. (infinity) ) the level of the amplifier will remain the one determined  
by the Break Point parameter and will be held until the key is released and will not be  
Sustain function enabled.

*Parameter* : SUSTAIN

*Power meter* : E

*Display Par.* SUSTAIN LEVEL ( z )  
OLD xx NEW yy

*Value xx/yy* : from 1 to 64

*Function* : Determines the level to which the amplifier of each Oscillator 2 voice should rise.  
from the previous Break Point level in the time set by the Slope parameter.  
If the Sustain value is equal to the Break Point value, the Slope function will be  
ineffective.

*Parameter* : RELEASE/PED

*Power meter* : F

*Display Par.* RELEASE TIME 2 ( z )

OLD xx NEW yy

Value xx/yy : 1 to 31 + inf.

*Function* : Determines the time that the amplifier of each Oscillator 2 voice takes to

return, from the level determined by the Sustain parameter, to 0 after release of the key, the Release time also applies if the key is released before you have Complete the Attack, Decay and Slope phases.

If the Sustain level is set to 1 (minimum value) and the Attack , Decay and Slope phases

have been completed, the Release function will be non-existent.

If the Release value is set to inf. (infinity) the amplifier level will remain that to which the amplifier has arrived when the button is released.

ATTENTION : With this parameter you can also set a second time of

Release, different from the keyboard release, which will be activated by pressing the RELEASE PEDAL.

The Pedal Release value is selected by holding down the Pedal during the value setting phase.

As soon as the pedal is pressed, the display will show :

RELEASE TIME 2p (z)

OLD xx NEW yy

The lower case p next to Time 2 indicates that you are selecting the value of Pedal Release (NEW) while the OLD value will be the one previously assigned to the pedal itself.

Normally, a value greater than that determined for the pedal is selected. for the keyboard.

---

**Family No. 10 : DCF Display Fam. DCF ENVELOPE**

**Group : DCA & DCF ENVELOPE GENERATORS**

---

ATTENTION : the functions of the DCF ENVELOPE GENERATOR family are closely linked to the CUTOFF and E.G. LEVEL parameters of the FILTER family , in fact :

if CUTOFF = 120 and/or E.G. LEVEL greater than 0

or CUTOFF = 0 and/or E.G. LEVEL less than 0

or only E.G. LEVEL = 0

the functions of the DCF ENVELOPE GENERATOR family will have no effect.

*Parameter* : ATTACK

*Power meter* : A

*Display Par.*    ATTACK TIME F ( z )

                  OLD xx NEW yy

*Value xx/yy* : from 1 to 32

*Function* : Determines the time it takes for the filter of each item to reach the frequency of  
                  determined by the E.G.LEVEL parameter, by an initial cut-off frequency  
                  determined by the Cut-Off parameter (from the moment the button is pressed).

*Parameter* : DECAY

*Power meter* : B

*Display Par.*    DECAY TIME F ( z )

                  OLD xx NEW yy

*Value xx/yy* : 0 to 31 + inf.

*Function* : Determines the time it takes the filter of each item to return from a frequency of  
                  obtained at the end of the Attachment phase, at a cut-off frequency, determined by  
                  by the Break Point parameter. If the Break Point value is 1 (minimum value) the  
Decay will bring the filter cut-off frequency to the value set by the Cut-Off,  
Conversely, if the Break Point value is 64 (maximum value) the Decay function  
will be non-existent.

If the Decay value is set to inf. (infinity) the cut-off frequency of the filter  
will remain at the value set by the E.G.LEVEL parameter until the key is released, and  
not

Break Point, Slope and Sustain functions will be enabled.

*Parameter* : BREAK POINT

*Power meter* : C

*Display Par.* BREAK POINT F ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 64

*Function* : Determines the cutoff frequency at which the filter decay function of each item must stop. The Break Point is an adjustment of the cut-off frequency value and not of time such as Attack, Decay and Release.

*Parameter* : SLOPE

*Power meter* : D

*Display Par.* SLOPE TIME F ( z )

OLD xx NEW yy

*Value xx/yy* : 1 to 31 + inf.

*Function* : Determines the time it takes for the filter of each item to move from the frequency of the breakpoint parameter to that established by the breakpoint parameter.  
Sustain.

If the value of the Sustain parameter is greater than the Break Point with the Slope we can determine the time of a second attack.

If the value of the Sustain parameter is less than the Break Point with the Slope we can determine the time of a second Decay.

If the Slope value is set to inf. (infinity) ) the filter cut-off frequency will remain the one determined by the Break Point parameter and will be held until the release of the

key and the Sustain function will not be enabled.

*Parameter* : SUSTAIN

*Power meter* : E

*Display Par.* SUSTAIN LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 64

*Function* : Determines the cutoff frequency at which the filter of each item is to be brought up from the

previous Break Point cut-off frequency value in the time set by the Slope parameter.

If the Sustain value is equal to the Break Point value, the slope function will be ineffective.

*Parameter* : RELEASE/PED

*Power meter* : F

*Display Par.*    RELEASE TIME F ( z )  
                  OLD xx NEW yy

*Value xx/yy* : 1 to 31 + inf.

*Function* : Determines the time it takes for the filter of each item to return from the frequency the shear rate determined by the Sustain parameter, to that determined by the Cut-Off after key release, the Release time applies even if the key is released. released before the Attack, Decay and Slope phases have been completed. If the Sustain cut-off frequency is set to 1 (minimum value) and the Attack , Decay and Slope have been completed, the Release function will be non-existent. If the Release value is set to inf. (infinity) the cut-off frequency of the filter will remain at the level at which the filter has reached when the button is released.

ATTENTION : With this parameter you can also set a second time of Release, different from the keyboard release, which will be activated by pressing the RELEASE PEDAL.

The Pedal Release value is selected by holding down the Pedal during the value setting phase.

As soon as the pedal is pressed, the display will show :

RELEASE TIME Fp (z)  
OLD xx NEW yy

The lower case p next to Time 2 indicates that you are selecting the value of Pedal Release (NEW) while the OLD value will be the one previously assigned to the pedal itself.

Normally, a value greater than that determined for the pedal is selected.  
for the keyboard.

---

**Family no. 11 : FILTER Display Fam. : FILTER**

**Group : FILTER**

---

ATTENTION: : The functions of the DCF ENVELOPE GENERATOR family are closely linked to the CUTOFF and E.G. LEVEL parameters of the FILTER family, in fact :

if CUTOFF = 128 and E.G.LEVEL greater than 0

or CUTOFF = 0 and E.G.LEVEL less than 0

or only E.G.LEVEL = 0

the functions of the DCF ENVELOPE GENERATOR family will have no effect.

*Parameter* : CUTOFF

*Power meter* : A

*Display Par.* CUTOFF FREQ ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 128

*Function* :Adjusts the DCF cut-off frequency.

Your instrument is equipped with 4-pole, low-pass filters at 24dB per octave. These filters

attenuated the high components and, depending on their position, let the unaltered low frequencies that make up the audio signal.

When the filter cutoff approaches the fundamental frequency of the audio signal, almost all harmonics are attenuated and the signal begins to approximate to a sine wave (pure wave without harmonic content).

If the filters are positioned too low (below the fundamental frequency of the note being played) you can even shut off the sound emission completely.

*Parameter* : RESONANCE

*Power meter* : B

*Display Par.* RESONANCE ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 128

*Function* : Resonance control (also called "emphasis", "Regeneration" or "Q") raises the frequency region around the cut-off point selected with the

Cutoff, thus raising the harmonic content.

The higher the resonance value, the more 'nasal' the sound becomes.

*Parameter* : E.G. LEVEL

*Power meter* : C

*Display Par.* ENVELOPE LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : -63 to +63

*Function* : Sets the frequency cutoff at which the filter should tend with the envelope defined by the

Parameters of the DCF ENVELOPE GENERATOR Family.

*Parameter* : KYBD TRACKING

*Power meter* : D

*Display Par.* KYBD TRACKING ( z )

OLD xx NEW yy

*Value xx/yy* : -24 to +24

*Function* : Links the filter cutoff frequency (Cutoff) to the position of the button pressed on the

keyboard, changing the Cutoff value depending on where you play.

Depending on the value of KYBD Tracking you will have for example:

- 24. every 12 semitones the filter will open 2 octaves (4 times).
- 12. every 12 semitones the filter will open 1 octave (2 times), this value respects the well-tempered scale.
- 0. the value will always remain as set by the Cutoff parameter.
- 12. Every 12 semitones the filter will close by 1 octave (2 times).
- 24. every 12 semitones the filter will close by 2 octaves (4 times).

---

**Family No. 12 : PAN POT & LEVEL Display Fam. : MASTERS**

**Group : MASTERS PANPOT-LEVEL**

---

*Parameter* : STEREO PAN POT

*Power meter* : A

*Display Par.* STEREO PAN POT ( z )

OLD xx NEW yy

*Value xx/yy* : 7L (Left) to 7R (Right)

*Function* : Adjusts the amount of audio signal to be sent to Left and Right outputs  
in the Stereo connection mode.

Depending on the value of the Stereo Pan Pot, for example:

7L . All audio signal to Left output.

0 . Meta audio signal on each Output.

7R . All audio signal to Right output.

*Parameter* : MASTER LEVEL

*Power meter* : B

*Display Par.* MASTER LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Adjusts the overall volume level of the keypad zone.

---

**Family no. 13 : LFO 1 to OSC.1 Display Fam. : LOW FREQUENCY**

**Group : LOW FREQUENCY OSCILLATORS OSCILLATOR 1**

---

*Parameter* : WAVE

*Power meter* : A

*Display Par.* LFO WAVE ( z )

OLD xx NEW yy

*Value xx/yy* : tri (triangular wave)

saw (saw tooth wave)

squ (square wave)

rnd (random wave)

*Function* : Selects the type of waveform with which to carry out frequency modulation of Oscillator 1.

*Parameter* : SPEED

*Power meter* : B

*Display Par.* LFO1 SPEED ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Adjusts the frequency modulation speed of Oscillator 1.

*Parameter* : INITIAL LEVEL

*Power meter* : C

*Display Par.* INITIAL LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 15

*Function* : Adjusts the initial modulation level, i.e. the level at which the modulation starts, not the level at which the modulation starts.

as soon as a key is pressed.

*Parameter* : FINAL LEVEL

*Power meter* : D

*Display Par.* FINAL LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 15

*Function* : Adjusts the final modulation level, i.e. the level to which the modulation, starting from the initial level, after a delay time set by the Delay parameter.

*Parameter* : DELAY

*Power meter* : E

*Display Par.* DELAY ( z )

OLD xx NEW yy

*Value xx/yy* : 0 to 15 + inf.

*Function* : Adjusts the delay time from the initial modulation level to the initial modulation level.  
final.

If the Delay value is 1, you will go directly to the final modulation level.

If the Delay value is lower, the modulation will always remain at the initial level. The modulation will always remain at the initial level.

---

**Family No. 14 : LFO 2 to OSC.2 Display Fam. : LOW FREQUENCY**

**Group : LOW FREQUENCY OSCILLATORS OSCILLATOR 2**

---

*Parameter* : WAVE

*Power meter* : A

*Display Par.* LFO 2 WAVE ( z )

OLD xx NEW yy

*Value xx/yy* : tri (triangular wave)

saw (saw tooth wave)

squ (square wave)

rnd (random wave)

*Function* : Selects the type of waveform with which to carry out frequency modulation of Oscillator 2.

*Parameter* : SPEED

*Power meter* : B

*Display Par.* LFO2 SPEED ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Adjusts the frequency modulation speed of Oscillator 2.

*Parameter* : INITIAL LEVEL

*Power meter* : C

*Display Par.* INITIAL LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 15

*Function* : Adjusts the initial modulation level, i.e. the level at which the modulation starts, not the level at which the modulation starts.

as soon as a key is pressed.

*Parameter* : FINAL LEVEL

*Power meter* : D

*Display Par.* FINAL LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 15

*Function* : Adjusts the final modulation level, i.e. the level to which the modulation, starting from the initial level, after a delay time set by the Delay parameter.

*Parameter* : DELAY

*Power meter* : E

*Display Par.* DELAY ( z )

OLD xx NEW yy

*Value xx/yy* : 0 to 15 + inf.

*Function* : Adjusts the delay time from the initial modulation level to the initial modulation level.  
final.

If the Delay value is 1, you will go directly to the final modulation level.

If the Delay value is lower, the modulation will always remain at the initial level. The modulation will always remain at the initial level.

---

**Family no. 15 : LFO 3 to DCA/DCF Display Fam. : LOW FREQUENCY**

**Group : LOW FREQUENCY OSCILLATORS OSCILLATOR 3**

---

*Parameter* : WAVE

*Power meter* : A

*Display Par.* LFO3 WAVE ( z )

OLD xx NEW yy

*Value xx/yy* : tri (triangular wave)

saw (saw tooth wave)

squ (square wave)

rnd (random wave)

*Function* : Selects the type of waveform with which to carry out frequency modulation  
of DCA or DCF or both.

*Parameter* : SPEED

*Power meter* : B

*Display Par.* LFO3 SPEED ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Adjusts the modulation speed.

*Parameter* : INITIAL LEVEL

*Power meter* : C

*Display Par.* INITIAL LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 15

*Function* : Adjusts the initial modulation level, i.e. the level at which the modulation starts, not the level at which the modulation starts.

as soon as a key is pressed.

*Parameter* : FINAL LEVEL

*Power meter* : D

*Display Par.* FINAL LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 0 to 15

*Function* : Adjusts the final modulation level, i.e. the level to which the modulation, starting from the initial level, after a delay time set by the Delay parameter.

*Parameter* : DELAY

*Power meter* : E

*Display Par.* DELAY ( z )

OLD xx NEW yy

*Value xx/yy* : 0 to 15 + inf.

*Function* : Adjusts the delay time from the initial modulation level to the final modulation level.

If the Delay value is 1, you will go directly to the final modulation level.

If the Delay value is lower, the modulation will always remain at the initial level. The modulation will always remain at the initial level.

*Parameter* : DESTINATION

*Power meter* : F

*Display Par.* : LFO3 DESTINAT. ( z )

OLD xx NEW yy

*Value xx/yy* : DCA -- A/F (DCA/DCF) -- DCF

*Function* : Addresses modulation to :

DCA -- Amplitude modulation of DCA 1 and DCA 2 amplifiers.

DCF -- DCF filter frequency modulation.

DCA + DCF -- Both modulations.

---

**Family No. 16 : WHEELS Display Fam. : WHEELS**

**Group : WHEELS PITCH- MODULATION**

---

*Parameter* : PITCH 1

*Power meter* : A

*Display Par.* OSC 1 PITCH WH. ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 1 to 3

*Function* : Adjusts the amount of PITCH wheel intervention on the frequency of the PITCH.

Oscillator 1 .

*Parameter* : PITCH 2

*Power meter* : B

*Display Par.* OSC 2 PITCH WH. ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 1 to 3

*Function* : Adjusts the amount of PITCH wheel intervention on the frequency of the PITCH.

Oscillator 2 .

*Parameter* : LFO 1

*Power meter* : C

*Display Par.* : LFO 1 MOD WH. ( z )  
                  OLD xx NEW yy

*Value xx/yy* : off -- on

*Function* : Enables the MODULATION wheel to increase the amount of modulation of LFO 1.

*Parameter* : LFO 2

*Power meter* : D

*Display Par.* : LFO 2 MOD WH. ( z )  
                  OLD xx NEW yy

*Value xx/yy* : off -- on

*Function* : Enables the MODULATION wheel to increase the amount of modulation of LFO 2.

*Parameter* : LFO 3

*Power meter* : E

*Display Par.* : LFO 3 MOD WH. ( z )

OLD xx NEW yy

*Value xx/yy* : off -- on

*Function* : Enables the MODULATION wheel to increase the amount of modulation of LFO 3.

---

**Family no. 17 : VELOCITY Display Fam. : KYBD VELOCITY**

**Group : VELOCITY RESPONSE**

---

*Parameter* : DCA 1 INIT. LEVEL

*Power meter* : A

*Display Par.*    DCA1 INIT. LEVEL ( z )  
                          OLD xx NEW yy

*Value xx/yy* : from 1 to 32

*Function* : Adjusts the amount of level of the DCA 1 amplifier playing at minimum dynamics.

Depending on the value of DCA 1 INIT.LEVEL we have for example:

1. If you play softly, the volume will be 1 and if you play loudly, the volume will be 32,

the maximum dynamic range of the keyboard will be available.

32. When playing softly, the volume will be 32, and when playing loudly, the volume will also be 32,

we will have a keyboard without dynamics.

*Parameter* : DCA 2 INIT. LEVEL

*Power meter* : B

*Display Par.*    DCA2 INIT. LEVEL ( z )  
                          OLD xx NEW yy

*Value xx/yy* : from 1 to 32

*Function* : Adjusts the amount of level of the DCA 2 amplifier playing at minimum dynamics.

Depending on the value of DCA 2 INIT.LEVEL we have for example:

1. If you play softly, the volume will be 1 and if you play loudly, the volume will be 32,

the maximum dynamic range of the keyboard will be available.

32. When playing softly, the volume will be 32, and when playing loudly, the volume will also be 32,

we will have a keyboard without dynamics.

*Parameter* : DCF INIT. LEVEL

*Power meter* : C

*Display Par.* DCF INIT. LEVEL ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 32

*Function* : Defines the value of the cutoff frequency of the Cutoff and the amount of E.G.Level a minimum dynamics.

Depending on the value of DCF INIT.LEVEL we have for example:

1.If you play softly, both the cut-off frequency and the amount of E.G.Level will be minimums, while playing loudly will be those set by the Cutoff and

E.G.Level. we will have at our disposal the maximum dynamic extension of the filter.

32. Both when playing softly and loudly the values of the cut-off frequency and E.G.Level

will always be those set by the relevant parameters, we will have at our disposal a keyboard without filter dynamics.

*Parameter* : DCA 1 TRHS OFF

*Power meter* : D

*Display Par.* DCA1 TRHS OFF ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 32

*Function* : Adjusts a level of dynamics beyond which DCA 1, and thus the entire generation sound of Oscillator 1 , is switched off.

Depending on the value of DCA1 TRHS OFF we will have, for example:

1. DCA 1 is never activated.

16. DCA 1 will be deactivated if you exceed, during execution, half a level of dynamics.

32. DCA 1 is never deactivated.

*Parameter* : DCA 2 TRHS ON

*Power meter* : E

*Display Par.* DCA2 TRHS ON ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 32

*Function* : Adjusts a level of dynamics beyond which DCA 2, and thus the entire generation

sound of Oscillator 2 , is activated.

Depending on the value of DCA2 TRHS ON we will have, for example:

1. DCA 2 is always active.
16. DCA 2 is triggered if you exceed, during execution, half a level of dynamics.
32. DCA 2 is never activated.

#### ATTENTION

The use of the two TRHS parameters allows the instrument to be set up so that it automatically switches from one timbre (created with the sound generation of Oscillator 1) to a completely different one (created with the sound generation of Oscillator 2) simply by pressing the keys on the keyboard harder or softer.

---

**Family no. 18 : K.MODE & PORT.**

**Display Fam. : KEYBOARD MODE**

**Group : K.M. & PORT.**

**PORTAMENTO**

---

*Parameter* : MONOPHONIC

*Power meter* : A

*Display Par.* MONOPHONIC MODE ( z )

OLD xx NEW yy

*Value xx/yy* : off -- on

*Function* : Disables Polyphony by selecting the Monophonic mode for the current Zone.

If the monaural mode is deactivated, the monaural parameter is switched off.

automatically set to OFF.

*Parameter* : MONO PORTAM.

*Power meter* : B

*Display Par.* MONO POWER ( z )

OLD xx NEW yy

*Value xx/yy* : off -- on

*Function*: Enables Monophonic Portamento in the current Zone if it has been previously

selected, for that Zone, the Monophonic mode, the Mono Portamento parameter

is automatically set to OFF.

*Parameter* : SEMINTONE MODE

*Power meter* : C

*Display Par.* SEMINTONE MODE ( z )

OLD xx NEW yy

*Value xx/yy* : off -- on

*Function*: Enables a non-linear portamento in musical semitones.

*Parameter* : SPEED

*Power meter* : D

*Display Par.* PORTAM. SPEED ( z )

OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Adjusts gait speed.

---

**Family No. 19 : MIDI Display Fam. : MIDI FUNCTIONS**

**Group : MIDI**

---

*Parameter* : OMNI ON/OFF

*Power meter* : A

*Display Par.* OMNI MODE ( z )  
                  OLD xx NEW yy

*Value xx/yy* : off -- on

*Function* : Enables OMNI mode for Midi reception.

*Parameter* : RECEIVE CH.

*Power meter* : B

*Display Par.* RECEIVE CH. ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the Midi channel (1 to 16) of Reception of the current Zone .

                  This parameter only has an effect if the Omni On/Off parameter is set to OFF.

                  ATTENTION

                  Program Change will only be received and executed on the channel

                  Midi assigned to Zone 0.

*Parameter* : TRANSMIT CH.

*Power meter* : C

*Display Par.* TRANSMIT CH. ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 1 to 16

*Function* : Selects the Midi channel (1 to 16) of Transmission of the current Zone .

*Parameter* : TX PRG. CHANGE

*Power meter* : D

*Display Par.* TX PRG. CHANGE ( z )  
                  OLD xx NEW yy

*Value xx/yy* : from 0 to 127

*Function* : Selects the number of programme changes to be sent via Midi, on the channel of

Transmit selected by the parameter Transmit Ch. whenever the preset.

ATTENTION

Program Change will only be received and executed if the following conditions are met

on the Midi channel assigned to Zone 0.

*Parameter* : TX TRANSPOSE

*Power meter* : E

*Display Par.* : TX - RX TRANS. ( z )

OLD xx NEW yy

*Value xx/yy* : -48 to +48

*Function* : Modifies the code number of the Midi note, whether received or transmitted, adding or subtracting up to 48 semitones.

---

**Family no. 20 : TR. & D. ALLOC Display Fam. : TRANSPOSE**

**Group : TR & D. ALL.**

**DYN. ALLOCATION**

---

*Parameter* : GLOBAL TRANSP.

*Power meter* : A

*Display Par.* : GLOBAL TRANSPOSE

OLD xx NEW yy

*Value xx/yy* : G (G) to F sharp

*Function*: Transposes the playing tone of the entire keyboard. C (C) = basic key.

*Parameter* : DYNAMIC ALLOC.

*Power meter* : B

*Display Par.* DYN. ALLOCATION

OLD xx NEW yy

*Value xx/yy* : off -- on

*Function* : Defines how the instrument should handle the 8 Polyphony voices.

Items that have not completed the Release phase are considered to be evolving.  
of envelopes (ADBSSR).

If the Dynamic Allocation parameter is set to ON, the instrument will  
Automatically delete evolving notes, i.e. even before the end of the term  
of the Release phase, for posters to generate new notes that exceed the  
polyphony.

If the Dynamic Allocation parameter is set to OFF, the instrument will maintain the  
following entries

evolving until the end of the relevant Release phases

For example, if you press a 5-note chord with a tone containing a Release  
long, the remaining polyphony will be 3 notes.

Beware, if you play 8 notes with Release lungo the instrument will not accept any  
more notes.

until the envelope band of the previous notes is finished.



*Parameter* : E.G. DCA1 < > 2

*Power meter* : C

*Display Par.* COPY: DCA1 EG ( z ) or COPY: DCA2 EG ( z )

TO DCA2 EG TO DCA1 EG

*Value xx/yy* : 1 to 2 or 2 to 1

*Function* : Allows you to select the function of complete copying of the parameters of the Families

OSC Parameters. LEVELS, DCA Envelope Generator and DCA Dynamics Parameter

INITIAL LEVEL from 1 to 2 and vice versa by defining the direction (from where to where) of the

copy.

Once the direction of copying has been defined (for the current Zone (z)) the operation must

be completed by pressing the ENTER button.

After pressing the Enter key, the display will show the following message for a few seconds:

DCA EG COPY

COMPLETED

and then display again:

WRITE/COPY

*Parameter* : E.G. FRQ.1 < > 2

*Power meter* : D

*Display Par.* COPY: FRQ1 EG ( z ) or COPY: FRQ2 EG ( z )

TO FRQ2 EG TO FRQ1 EG

*Value xx/yy* : 1 to 2 or 2 to 1

*Function* : Allows you to select the function of copying the group parameters in full.

TUNE & FREQ .

E.G. from one Oscillator to another by defining the direction (from where to where) of the

copy.

Once the copy direction has been defined (for the current Zone (z)) the operation must

be completed by pressing the ENTER button.

After pressing the Enter key, the display will show the following message for a few seconds:

FRQ EG COPY

COMPLETED

and then display again:

WRITE/COPY

*Parameter* : LFO 1 < > 2

*Power meter* : E

*Display Par.* COPY: LFO1 ( z ) or COPY: LFO2 ( z )

TO LFO2 TO LFO1

*Value xx/yy* : 1 to 2 or 2 to 1

*Function* : Allows you to select the function of complete copying of the parameters of the Families

Group LOW FREQUENCY OSCILLATORS from LFO1 to LFO2 and vice versa

defining the direction (from where to where) of the copy.

Once the copy direction has been defined (for the current Zone (z)) the operation must

be completed by pressing the ENTER button.

After pressing the Enter key, the display will show the following message for a few seconds:

LFO COPY

COMPLETED

and then display again:

WRITE/COPY

---

**Family no. 22 : ZONE COPY Display Fam. : ZONE COPY**

**Group : ZONE COPY**

---

This Parametric Family allows ALL PARAMETERS of a Keyboard Zone to be copied from a Preset in any other Zone of any Preset, within the same Bank (A or B).

**ATTENTION**

Unlike all other Parametric Families, copying the contents of one Zone to another behaves like a WRITE operation and therefore permanently modifies the Presets that have been copied.

Therefore, take special care when choosing the destination preset for the copy.

To perform the Zone Copy operation, it is necessary to :

-Select, in Standard mode, the starting preset (e.g. Internal Preset 20A) from which you wish to copy a Zone.

-Turn to Edit mode and select Parametric Family No. 22.

As soon as a potentiometer (A to E) is moved slightly after selecting the Parametric Family ZONE COPY , the display will show the message:

COPY: INT 20A ZN z

TO xxx nnA ZN y

-At this point, the individual potentiometers A, B, C and D will allow you to define:

Potentiometer A : Defines the Zone (z) of the Preset to be copied.

Potentiometer B : Defines the memory area (xxx) INTERNAL or CARTRIDGE on which the copy is to be made.

Potentiometer C : Defines the number (nn) of the preset to be copied.

Potentiometer D : Defines the Zone (y) of the destination preset to be copied to.

Once all the necessary parameters have been defined, the operation must be completed by pressing the ENTER button.

After pressing the Enter key, the display will show the following message for a few seconds:

COPY ZONES

COMPLETED

The instrument will then exit the EDIT mode and automatically select the STANDARD mode by recalling the preset on which the copy was made.

---

### Family No. 23 : NAME Display Fam. : EDIT

**Group : NAME**

**PRESET NAME**

---

This Parametric Family allows you to write a name (up to 10 characters) to associate with a current preset, or to modify an existing name.

As soon as potentiometer A is moved after selecting the Parametric Family NAME, the display will show the message:

\*PRESET NAME\*

\*X\_XXXXXX\*

-At this point, the individual potentiometers A and B will allow you to define:

Potentiometer A : Defines, by moving the cursor "\_", which letter to write modify.

Potentiometer B : Defines the character to be written at the position indicated by the cursor.

You have at your disposal:

- the 26 characters of the English alphabet,
- the numbers 0 to 9,
- signs . - /
- the empty space.

Please note that in addition to the potentiometers, the UP and DOWN buttons in the Fine Control section can be used to select the cursor position or character.

---

**Family No. 24 : EDIT/COMPARE Display Fam. : EDIT/COMPARE**

**Group : EDIT/COMPARE**

---

This Parametric Family allows you to compare the sound of the current preset with any other within the same bank (A or B).

As soon as potentiometer B is moved after selecting the EDIT/COMPARE parameter family, the display will show the message:

COMPARE WITH

OLD = yyyy

Moving potentiometer B further will select which preset to compare with the current one.

After making this choice, use potentiometer A to switch from the current preset :

NEW = xxx xxx

to the comparison preset :

OLD = yyyy

and vice versa, being able to listen to them and then compare them by playing the keyboard.

## **MIDI**

Your instrument has a universal interface system between musical instruments called MIDI (Musical Instrument Digital Interface).

### **IMPORTANT**

The information that follows does not concern a particular instrument or device but illustrates the possibilities that the Midi system makes available to individual manufacturers.

To find out which of these functions have been activated on your instrument, please refer to the instruction manual by reading the section on MIDI on your instrument.

### **What the Midi is for**

This interface system allows several Midi musical instruments (even if they are made by different manufacturers) to communicate with each other, also allowing the reception or transmission of control or synchronisation signals to other Midi devices such as Sequencers, Electronic Drums, Expanders, etc.

In the simplest case, it is possible to connect another synthesizer or expander (which takes on the function of slave) to a synthesizer (which is defined as Master).

In this case, all notes pressed on the Master keyboard will also be played in sync on the Slave keyboard.

It is also possible to change presets or transmit dynamics signals, pitch benders, etc.

A more complex type of connection is to create a chain of instruments or devices controlled by a Master unit.

We can connect, for example, an electronic drum kit (which becomes the main unit or "Master" of the system) to a sequencer and several musical instruments or expanders (which become peripheral units or "Slaves" of the main unit).

In this case, the electronic drum set becomes the control unit for the whole system and starts the sequencer in sync with the rhythm part, while the sequencer drives the rest of the peripheral devices, assigning to each one the musical part previously recorded and managing the various preset changes necessary for each individual unit.

## Midi presses

Each Midi-compatible instrument is usually equipped with 3 sockets:

OUT                    IN                    THRU

**OUT** This socket outputs the Midi signals generated by the instrument and should therefore be used when you want the instrument to become the controller (Master) of the system.

In this case, connect the Midi OUT socket to the Midi IN of the first instrument or device to be controlled.

**IN** This socket receives the Midi signals generated by the Master unit and should therefore be used when you want the instrument to be slave and therefore controlled by another unit.

If your instrument is the first Slave in the chain connect the Midi IN socket to the Midi OUT socket of the instrument or Master device.

If your instrument is being used as a second or nth Slave you must connect the Midi IN to the Midi THRU of the previous Slave.

**THRU** This socket transmits an exact copy of the signal input into the Midi IN socket (usually the signal generated by the Master unit) and should therefore be used when you wish to relay Midi signals from a slave unit to other keyboards or devices.

In this case, connect the Midi THRU socket of the first Slave unit to the Midi IN of the second and from this, again using the THRU socket, to the third and so on until the connection chain is complete.

On some instruments or devices there is a fourth socket called Midi **MERGE**.

This socket is used by a slave unit to mix and transmit MIDI data to other units.

coming from the Master unit with the Midi data generated by the Schiavo instrument itself.

## Midi Channels

The Midi System provides up to 16 channels of signal transmission on the same cable.

This is to allow several Slaves to be managed independently from a single Master unit.

on the other.

Let's imagine that we connect several Schiavi instruments to a multitrack sequencer.

In this case, it is possible to assign each track to a Slave by simply selecting on the sequencer a different Midi channel for each track (e.g. track 1 on Midi channel 1, track 2 on Midi channel 2 etc.).

It is then necessary to set up each individual Slave to receive MIDI signals only from its own channel.

intended and this is done by selecting the Midi channel on the Slave itself, assigning it, for example, Midi channel 1 to the first Slave, Midi channel 2 to the second and so on.

If several Slaves are assigned the same conversation channel (e.g. Midi channel 1) they will receive the same Midi signals and thus play what was recorded on track 1.

Another particularly significant example of the use of Midi channels concerns all those instruments whose keyboard can be divided into two or more parts.

In fact, it is possible to assign a different Midi channel to each portion of the keyboard and thus use the instrument as a Master keyboard for several instruments (as many as there are portions of the keyboard divided).

This also applies if the instrument is used as a peripheral.

In this case, by assigning a different Midi channel to each portion of the keyboard, we will be able to control

the individual octaves exactly as if they were different Slaves.

### **Midi messages**

The messages or information that the Midi system allows you to send and receive are divided into two groups

main :

Channel messages

System messages

### **CHANNEL MESSAGES**

As mentioned above, the Midi system allows 16 different transmission channels to be used and/or reception, channel messages are therefore all those messages that can be addressed on each single channel independently of each other and are:

#### **Note ON/**

#### **Note OFF**

It communicates when to start or stop playing a certain note.

If you have keyboards with dynamics, it also communicates the information about the speed of key pressure.

#### **Program Change**

Sends the information required for a programme or preset change.

#### **Pitch Bender**

It communicates information on the position of the lever or wheel of P.B.; thanks to this information all the

P.B. variations made on the Master keyboard will also be performed by the Slaves to whom it has been

sent this type of signal.

### **After Touch**

If your instrument has a keypad that allows you to detect a change in pressure of the key pressed (After Touch), the Midi system allows you to send all the information related to this function.

### **Control Change**

Many instruments have controls for functions such as Vibrato On/Off, Portamento, pedal of Release and other controls relating to particular effects.

The Midi system allows you to send signals for these controls.

### **SYSTEM MESSAGES**

Messages of this type do not concern individual Midi channels but are used to manage the entire system of instruments connected via Midi.

The system messages include those concerning the start and end of data transmission to the system, synchronisation signals, tuning signals, signals concerning the number and size of tracks to be played, etc., and system error messages.

System messages also include so-called 'exclusive system messages'.

The exclusive system messages are those particular messages that each individual manufacturer uses for particular purposes such as, for example, the possibility of programming a synthesizer via MIDI through another synthesizer built by the same company.

Each manufacturer of Midi-compatible equipment has its own number or code of the identification recognisable by their equipment.

This code is used as a prefix when data is to be communicated only and exclusively to instruments of the same company.

### **The modes of transmission and reception.**

So far we have seen the types of messages or information that instruments or devices can exchange with each other.

Let us now see the ways in which these messages can be managed.

The Midi system allows you to select three different ways of transmitting and/or receiving information, namely :

OMNI Mode ON/OFF POLY Mode MONO Mode

## **OMNI Mode**

### **ON/OFF**

This mode only has an effect on reception; in fact, all instruments or slave devices that use it will play all the MIDI information transmitted by the Master instrument or device, regardless of the channel number to which it may have been sent.

Obviously, the slave units will only perform the operations for which they have been enabled, so if you send dynamic signals, they will only be performed by devices equipped with dynamics and this type of message will be ignored by the others.

Omni mode therefore does not allow slave units to be controlled separately using Midi channels.

This mode works polyphonically, i.e., pressing a chord on the master unit's keyboard will cause all connected polyphonic units to play the chord simultaneously.

## **POLY Mode**

In contrast to Omni mode, Poly mode allows the Schiave equipment to play only the information encoded according to the Midi channel number assigned to it and which it has been previously programmed to receive.

The Poly mode also sends polyphonic signals but in this case, for example when using a Master keyboard that can be divided into two parts, the chord pressed in the left part will only be recognised and performed by the Slave whose Midi channel code will be the same as that assigned to the left half-keyboard, while the second Slave will only play the notes or chords played on the right half-keyboard.

## **MONO Mode**

Allows you to send channelled monophonic Midi signals for each polyphonic "voice" available on the Master instrument.

For example, if we use an instrument with 4 polyphony as a master keyboard, we can assign a different Midi channel to each "voice" and assign it to four different slave units (which in this case can also be monophonic synths).

If we compose a C major seventh chord on the Master keyboard the first Schiava unit will play the C, the second the E, the third the G and the fourth the B flat.

Since each device can be assigned a different timbre, it follows that the individual notes that make up the chord can be played by a different timbre.

The above modes can be combined, but since choosing Poly mode automatically excludes Mono mode and vice versa, there are 4 possible combinations:

### **Omni On, Poly**

Messages will be acknowledged by all units regardless of transmission channel and are assigned in polyphony.

### **Omni On, Mono**

Messages will be acknowledged by all units regardless of transmission channel, but with control of a single monaural voice, all units will play the same monaural voice.

### **Omni Off, Poly**

Messages will only be acknowledged by slave units that have the same Midi channel number as the sent signal and are assigned in polyphony.

### **Omni Off, Mono**

Messages will only be acknowledged by slave units that have the same Midi channel number as the sent signal and are assigned in monaural.

### **The CTS 2000 MIDI**

Your instrument has been enabled to transmit and receive most of the possible signals of the Midi system, namely :

#### **In transmission**

Note ON / Note OFF with dynamics signal

Transposition of Note Values

Program Change 0 to 127

Control Change of Pedal Release

Pitch Bender

Modulation

#### **In reception**

Note ON / Note OFF and dynamics signal

Program Change from 1 to 96 on Midi RX channel of Zone 0

Control Change of Pedal Release

Pitch Bender

Modulation

The CTS 2000 has a 61-key keyboard and is therefore enabled to transmit and/or receive notes from C 0 to C 5.

If you wish your instrument to transmit and receive Midi notes from C 1 to C 6, you must switch on the CTS 2000 by pressing and holding down button 19 for the Midi family, this mode will remain enabled until the instrument is switched off.

**IMPORTANT**

Midi functions, transmit or receive mode, Midi channels and all other options can be preset independently for each preset and, within each preset, independently for each keyboard Zone (octave) using, in EDIT mode, the MIDI Parametric Family.

### **Midi mode selection**

The Reception Mode can be selected independently for each Zone (octave) of the keyboard using the OMNI ON/OFF parameter of the MIDI family.

### **Omni On (Poly)**

Messages will be accepted and acknowledged regardless of the reception channel selected in each individual Zone (octave) of the keypad and are received in polyphony.

### **Omni Off (Poly)**

Since the keyboard of your instrument is divided into 5 Zones (octave), it is possible, by selecting this mode, to assign to each Zone (octave) of the keyboard a different number of Midi transmission channel and a different Midi reception channel.

In transmission, each octave of the CTS 2000 can transmit MIDI signals to a different slave, while in reception you can use the five octaves of your instrument as five completely independent slave units.

### **Selecting the transmission or reception Midi channel**

The transmit or receive Midi channel is selected independently for each Zone (octave) of the keyboard using the TRANSMIT CH. and RECEIVE CH. parameters of the Midi family.

### **Selecting the number of Program Changes in transmission**

It is possible to associate each Zone (octave) of the keyboard with a different Program Change number from 0 to 127 to be sent via Midi.

The programme change number is selected via the TX PRG CHANGE parameter of the Midi family.

### **ATTENTION**

Program Change will only be received and executed on the Midi channel assigned to Zone 0.

### **Transposition of Note values in transmission**

It is possible to select a different Transmitted Note value for each Keyboard Zone (octave) than the one actually played.

The amount of transposition (-48 to +48 semitones from the original note) is selected via the TX TRANSPOSE parameter in the Midi section.

### **IMPORTANT**

Using the two MIDI buttons on the side of the display, you can manage the MIDI functions immediately, enabling or disabling the transmission and reception of signals and selecting the mode of transmission and/or reception of Program Change messages.

### **On/Off**

Enables or disables Midi transmit and receive mode.

### **Midi Local/Remote**

By pressing one or more times this button, located next to the Control Display, you can select the mode of transmission and/or reception of programme changes as follows:

If LOCAL mode is selected, the instrument will not transmit or receive program changes via MIDI, but will only be able to change its own internal presets.

Selecting the REMOTE mode will allow the instrument to transmit and receive program changes via MIDI, but it will not be able to change its own internal presets.

Selecting the LOCAL & REMOTE mode will enable the instrument to transmit and receive program changes via MIDI, and will also enable it to change its internal presets.

Both the Midi On mode and the Local, Remote and Local & Remote functions are highlighted by two special symbols (\* = enabled, 0 = disabled) placed on the right-hand side of the Display in correspondence with the relative labels:

Midi Off	INT PRESET 1 A	---	Local	
	PIANOFORTE	---	Remote	
Midi On	INT PRESET 1 A	*	---	Local
Local	PIANOFORTE	0	---	Remote
Midi On	INT PRESET 1 A	0	---	Local
Remote	PIANOFORTE	*	---	Remote
Midi On	INT PRESET 1 A	*	---	Local
Local & Remote	PIANOFORTE	*	---	Remote

For further information on the MIDI features of your instrument, please refer to the attached MIDI IMPLEMENTATION CHART.

#### Notes

\*= IF THE INSTRUMENT IS SWITCHED ON BY PRESSING BUTTON NO.19

THE TRANSMISSION AND RECEPTION RANGE BECOMES KKKKK = 24-84.

