

CUBASE

VST

Interactive
Phrase Synthesizer



Steinberg

Documentation by Ernst Nathorst-Böös, Ludvig Carlson, Anders Nordmark, Roger Wiklander
Additional assistance: Cecilia Lilja
Quality Control: Cristina Bachmann, Sabine Pfeifer, Claudia Schomburg

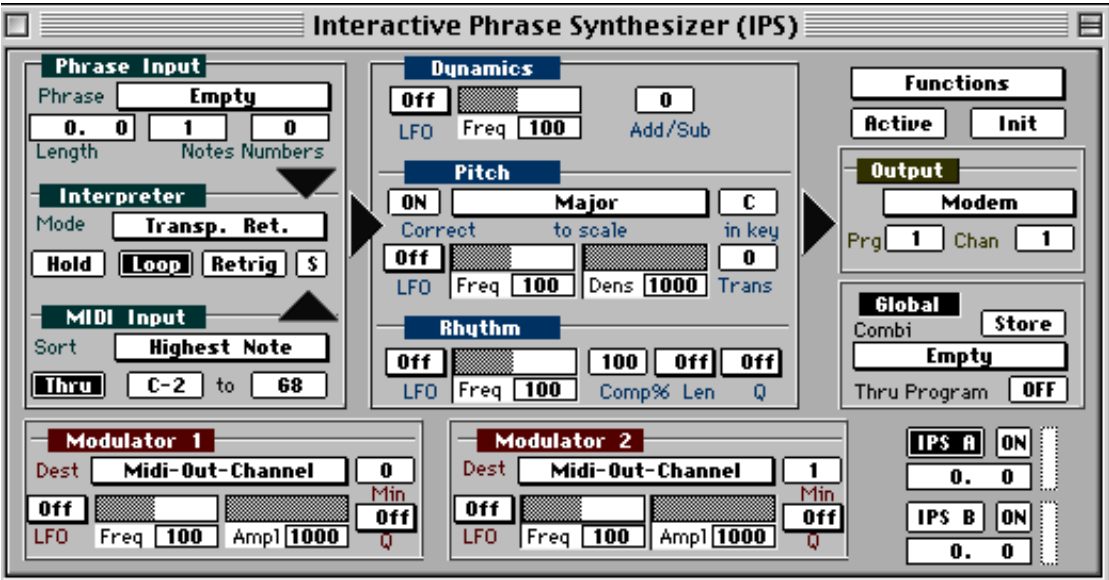
The information in this document is subject to change without notice and does not represent a commitment on the part of Steinberg Soft- und Hardware GmbH. The software described by this document is subject to a License Agreement and may not be copied to other media except as specifically allowed in the License Agreement. No part of this publication may be copied, reproduced or otherwise transmitted or recorded, for any purpose, without prior written permission by Steinberg Soft- und Hardware GmbH.

All product and company names are TM or [©] trademarks of their respective owners. Apple, the Apple logo, Macintosh, and Power Macintosh are trademarks of Apple Computer, Inc.

© Steinberg Soft- und Hardware GmbH, 2000.
All rights reserved.

Interactive Phrase Synthesizer

Introduction



The Interactive Phrase Synthesizer (hereafter abbreviated “IPS”) is not a sound synth, instead each of the two available IPS “synths” (A and B) allows you to model new *music* from existing, create one finger accompaniments, generate complicated arpeggios and more.

The IPS is a lot of things, as you will find out when using it. Let us just mention what it *isn't*! It is primarily *not* a random music generator, instead, it relies heavily on your real time input. In fact, you play it like an instrument. The IPS creates its magic out of *coincidence* rather than randomness, and there's a big difference.

The IPS works in real-time (as everything else in Cubase VST), so you can use it for live playing. But you can also of course route its output to one or more Tracks so that it gets recorded as any other playing. Any parameter changes you make are immediately effective on output, so you can “twist the knobs” during playback as when playing on an old-fashioned synthesizer.

About the Window

The Phrase Synth window, which is opened from the Panels menu, contains all the controls for the Interactive Phrase Synthesizer (IPS), or actually for one of them at a time, because there are two IPS “synths”, A and B.

Examples

Let us show you some of the features of the IPS by going through a couple of examples that are contained in an "IPS" folder on one of your Cubase VST disks (copy the examples to your hard disk before using them).

Let us show you some of the features of the IPS by going through a couple of examples that are contained in the IPS directory in your Cubase directory.

1. **Set your synths so that you have a piano sound on MIDI Channel 1, a bass sound (preferably synth type) on MIDI Channel 2 and some string or pad sound on the same MIDI Channel as the Active Track is sending out on.**

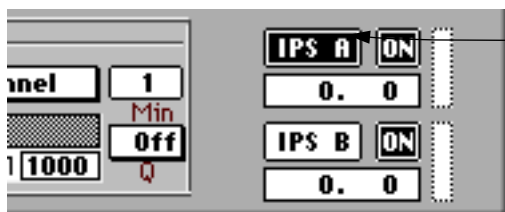
This last sound is just used to directly play the notes you are pressing on your keyboard (or whatever playing device you use).

2. **If you haven't already done so, select Phrase Synth from the Panels menu.**
3. **Press the mouse over the word Functions at the top right corner of the window, and a pop-up menu appears. From this, select Load All Combis.**
4. **A file selector appears. Open the folder IPS and select "Manual Examples" and click on OK.**
5. **Turn on the whole IPS by clicking on the Active button so that it turns dark.**



The IPS activated

6. **Make sure you see the settings of IPS A, by clicking on the IPS A button so that it too turns dark. Also make sure that the two On buttons beside the IPS A and IPS B buttons are active.**



The IPS A settings are shown.

Example 1

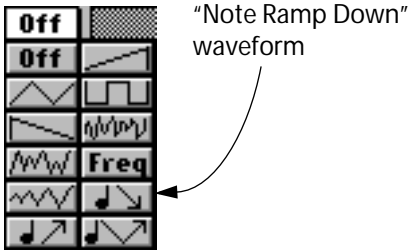
1. **Position the Pointer over the Pop-up menu to the left of the word Combi in the Global module. Press the mouse and select "Example1" from the pop-up menu.**
2. **Activate Play on the Transport Bar.**
3. **Press one key on your keyboard. The string sound plays the note you press.**
The piano sound plays a short riff, over and over again.

The interesting thing here is the bass part. It is actually also the riff, but the IPS modulates it so that it is turned into a new part, a part that is slightly different on each new lap! If you release the key and press a new one, the music will be transposed to the new key when the Phrase reaches the end of the lap.

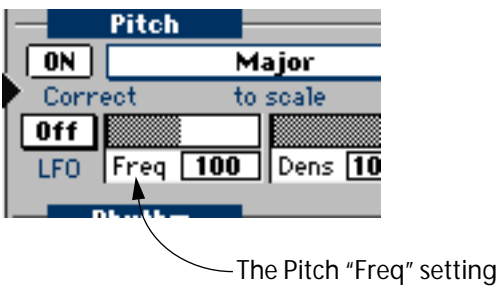
4. **Turn off the music by stopping Cubase VST (using [0] or [space bar]).**

Example 2

1. Select "Example2" from the Combi pop-up menu.
2. Click on the "IPS A" button so that it turns dark.
3. Activate Playback.
4. Play a key, you will hear the same piano part, but without the bass.
5. If you select the Note Ramp Down icon in the LFO box in the Pitch module, the order of the Pitches in the Phrase will change.



6. By clicking on the Freq field in the Pitch module you can set new frequency values for the "pitch order" LFO, and thereby change the output.
Values above 100 will make certain notes/chords repeat.



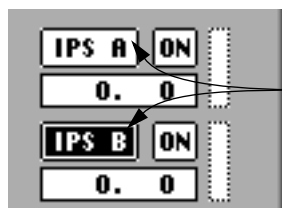
7. You have now re-arranged the order of the pitches in the original Phrase. To also rearrange the rhythm, select an LFO-type in the Rhythm module.
Experiment with different LFO types and Frequency values.
8. If you want the original settings back, just select "Example2" from the Combi menu.
9. Select different values in the Density (Dens) field in the Pitch module.
Any value below 1000 (actually 100.0%) will make the IPS skip some notes altogether.
10. Switch off the Hold button in the Interpreter module.
You can now play the Phrase momentarily by playing and releasing a key, but if you hold the key, the music will keep repeating (Loop is still On). If you hold one key, and press another, this *last* key will be used to instantly transpose the Phrase (since the sortmode is Last Note, see an explanation of this later in the text).
11. Set the right key value in the MIDI Input module to C4.
Now, keys below C4 are used to control the IPS and keys above C4 are just sent through (Thru is On), so that you can add a solo to the IPS music.

Example 3

1. Select "Example3" from the Combi pop-up menu.
2. Activate Play on the Transport bar.
3. Play a key, you will hear a Schumann piece.
4. Adjust the tempo on the Transport bar if you like.
5. Stop the music by stopping Cubase VST, whenever you wish.
6. **Select the Note Ramp DownLFO icon in the Pitch Module (see Example 1).**
The Freq setting of the Pitch LFO is 150% and this creates an interesting 3/4 feeling to the music by repeating some notes without actually changing the rhythm of the piece. The same goes if you set the Freq value to 75 (%) but then the effect is achieved by skipping some pitches.
7. **Activate Scale correction by clicking on the Pitch button in the Pitch Module until ON is activated.**
Now all notes are corrected to a blues scale in C, by transposing notes downwards to the closest note in that scale. Experiment by selecting different scale types from the pop-up menu and try different keys by setting the value in the box beside this.

The Window and the Modules

When you select Phrase Synth from the Panels menu the Phrase Synth window appears. This has a number of “synth” modules in it. The window can only be moved and closed. It displays one of the synths at a time, and you select which by clicking on the IPS A or IPS B button in the lower right part of the window. You will see how all the settings change when you do this.



These buttons are used to select which IPS to display – A or B.

To the left you have three modules above each other, Phrase Input, MIDI Input and Interpreter.

Phrases

The *Phrase* is the raw material, the clay that the notes are modelled from. Phrases are created by copying a recording, or a Part of a recording, in an Arrange window or an editor, into a Phrase location by selecting Convert to IPS Phrase from the Functions menu.

MIDI Input

You model the Phrase by playing something, and this playing comes in via the *MIDI Input* module.

Interpreter

How the Phrase and the MIDI Input interact is decided by the settings in the *Interpreter* module.

Rhythm, Pitch and Dynamics

So, you have a Phrase and a MIDI Input which interact via the Interpreter, and new notes are created. The notes at the output of the Interpreter are split up into the three components that all music is made up of, *Rhythm*, *Pitch* and *Dynamics*. The thing about the IPS is that it is able to pick the music apart and handle these three entities separately, and this is reflected in the fact that they are represented by one module each on the screen. Each component may be exposed to more or less dramatic changes by settings made in each module.

Output

The output from the Dynamics, Pitch and Rhythm modules are summed together and sent out via the *Output* module.

Modulators

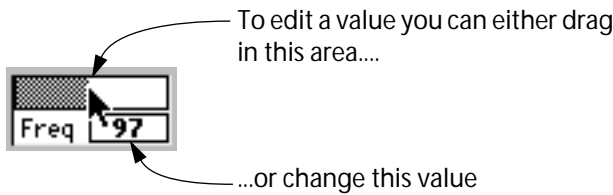
Many of the parameter settings can be changed automatically, on the fly, by the two *Modulators* (1 and 2) in the lower part of the window.

Global Settings and Functions menu

And finally, you have a number of *Global* settings (like the Active button which turns both IPS's on and off) and above the Active and Init buttons a pop up *Functions* menu.

Editing Parameters

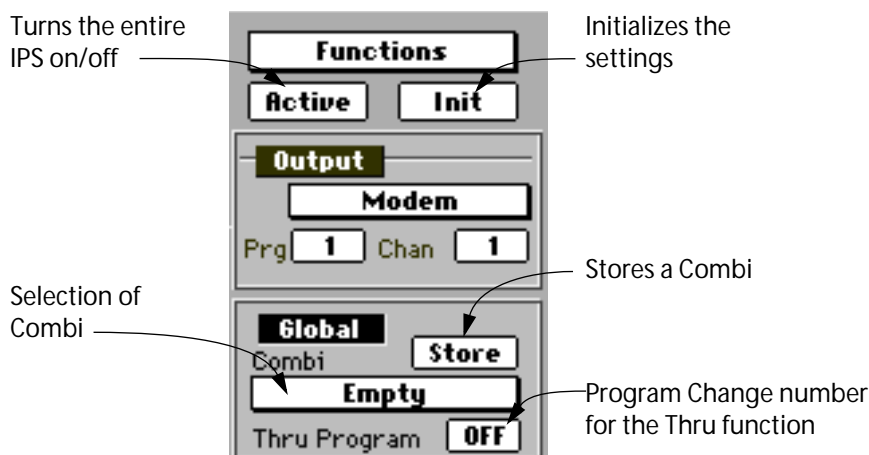
As in the rest of Cubase VST, you can use the mouse to change any value in a value field or double click to enter it from the keyboard. But the IPS has some special fields whose values are indicated graphically like this:



Here you can click and drag directly in the graphics to set a value. You can also set the value as usual (using the mouse or keyboard) in the small value field shown below the graphics.

If you hold down [Option] you are changing the selected parameter in both IPS A and IPS B.

Active, Init and Global Controls



Active

This is the major On/Off button for the both “synths” (IPS A and B). The button is dark with white text when the IPS is On. If you have created an endless loop of music (using the Hold and Loop buttons) you turn it off by clicking on Active twice (turn the IPS Off and On) or by stopping Cubase VST (using [0] or [space bar]).

- ❑ Remember that the IPS remains Active even if you close its window.

Init

By clicking the Init button you set both synths to some default settings, with almost all functions turned off. This is good if you want to start making up a Combi from scratch.

- ❑ The Output and MIDI Channel settings are not changed by the Initialization.

Combi

You can select from one of 32 “programs” from the pop-up Combi menu in the Global module. When you do this, both IPS A and B are loaded with completely new settings. These “programs” are called *Combis*, and sets of 32 Combis can be saved to and loaded from disk. You can also copy Combis between the 32 memory locations, by using the pop-up Functions menu. If you want to change the name of a Combi, double click on its current name in the global module.

Store

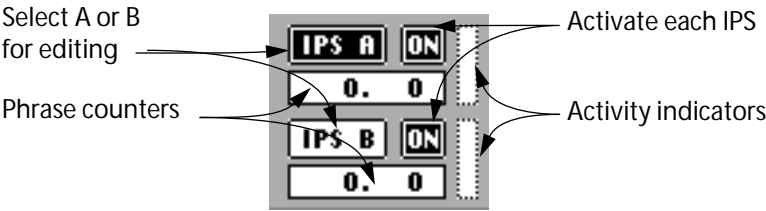
Whenever you have made any changes to a Combi, you can store those changes in the Combi by clicking on the Store button. This saves the changes to RAM, so that they are still there when you select another Combi.

- ❑ You have to Store your settings before selecting another Combi, or the settings will be reset to the last stored version. The Store button does not save settings to disk, you need to use the Functions menu for that.

Thru Program

This feature is described with the Thru function on [page 14](#).

On, Off and Selecting A or B for Editing



Select A/B

Below the Global section you have two buttons called IPS A and B. The IPS is actually two completely independent “synths” and you use these buttons to select which one you want displayed in the window.

On

Beside *each* select button you have an On button, that is similar to Active in the Global Module above, but turns each IPS (A and B) On/Off separately. You don’t have to select “synth” A or B to turn it On/Off.

Activity Display

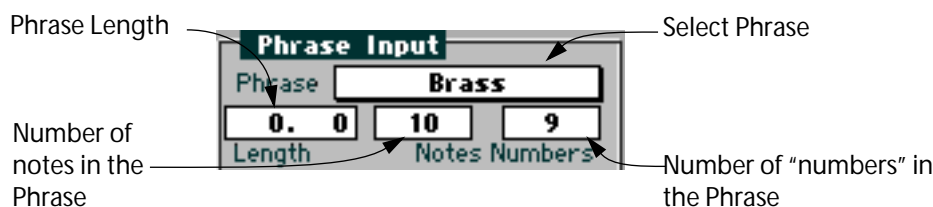
To the right of the ON buttons you have two thin rectangles which indicate output activity for each of the two “synths”. If they blink, MIDI data is definitely being sent out from the IPS. If you still don’t hear anything, you may be sending on the wrong MIDI Channel or to the wrong Output.

Phrase Counters

Below the A/B select buttons are the two Phrase counters. In these you can see “where” in each Phrase you are.

-
- ❑ **Note that the Position is shown in bars and ticks, the quarter notes are omitted in this display. There is a list of what different tick values represent in Getting Started.**
-

The Phrases



You can have up to 32 Phrases in the IPS at the same time. Phrases can be any type of music, chords, lines or drums, short or long, with an upper limit of 1000 notes.

There are several ways to get Phrases into the IPS:

- You can copy the contents of *one* Part in an Arrange window into a Phrase.
- You can copy a set of notes from inside an editor.
- You can load and save Phrases to disk, using the pop-up Functions menu in the IPS.

Creating a Phrase

From the Arrange window

1. **If you have a Part that you want to use as a Phrase, select it in the Arrange window.**
The Playback parameters (see Getting Started) are not used by the IPS, so make e.g. any Transposition permanent if you need it.
2. **Select “Convert to IPS Phrase” from the Functions menu.**
A dialog box appears. In the middle of this you will find a pop-up menu containing the names of all the Phrases in the IPS at this moment.
3. **Select a Phrase from the menu to replace with the Phrase you are now creating.**
The Phrase gets the name of the Part, but you can later rename it in the IPS window.

From an Editor

1. **If you have notes in an editor that you want to use as a Phrase, use the “To” menu in combination with selected notes, the Loop and the Cycle to set up criteria that include some or all of the notes edited.**
 2. **Select Convert to IPS Phrase from the Functions menu.**
A dialog box appears. In the middle of this you will find a pop-up menu containing the names of all the Phrases in the IPS at this moment.
 3. **Select a Phrase from the menu to replace with the Phrase you are now creating.**
-
- ☐ **The notes in the Part/editor are copied to the Phrase, not linked to it (as with Groups). Nothing happens to the Phrase if you change the Part later.**
-

Selecting and Renaming the Phrase

1. **Open the Phrase Synth window. The Phrase appears on the pop-up menu in the Phrase Input Module.**
To use the Phrase, select it.
2. **To rename the Phrase, double click on it and change the name.**

Phrase Info

In the Phrase Input Module you will find some information about the selected Phrase:

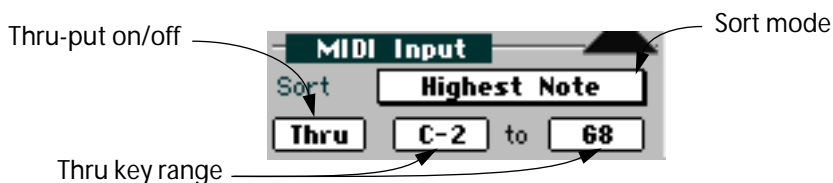
- The Length field initially shows the total length of the Phrase as bars and ticks (just as the Phrase counters, see [page 11](#)). You can use this field to shorten the Phrase so that only a section of it is used. But this change is not destructive, you can always change the length back to the full Phrase or some value in between.

If you change the Quantize (Q) or Compression (Comp%) values in the Rhythm module, the Length will also change.

- The two fields beside Length show the number of notes and the “number of numbers” in the Phrase. These are only display values and you will find more information about what they really mean on [page 16](#) and onwards.

-
- ❑ **Your music should in most cases be Quantized before it is copied into a Phrase. This is definitely true if the Phrase contains chords and if you plan to do any rhythmic modulation.**
-

MIDI Input



This module is used for the notes that you actually *play* while using the IPS. They are combined with the Phrase in the Interpreter using different Sort and Play modes as described below. For now we will only describe the lower fields of the MIDI Input Module.

Thru

This button turns thru-put of your playing on and off. If it is turned off, your playing is used just to control the IPS. If it is turned on, your playing *is also* sent out as usual, via the Active Track. This means that thru-put is routed to the MIDI Channel of that Track, and also affected by the Real-time Thru settings, see Getting Started.

-
- ❑ **If the Key Ranges (see below) overlap on the keyboard, you must have Thru activated on both IPS A and B to get anything sent through in the overlapping zone. Notes outside the Key range(s) are always thru-put.**
-

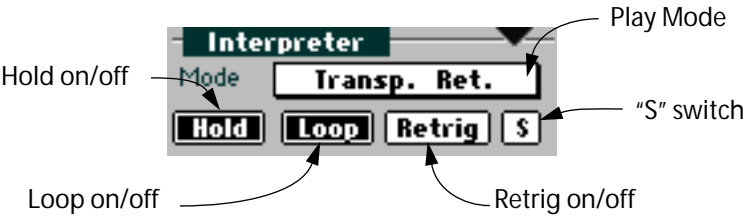
Key Range

You don't have to use the whole keyboard to control the IPS, you can use the two fields to the right of Thru to set a range, so that keys outside that range are ignored. This can be used so that a section of the keyboard can be used for thru-put only, or so that IPS A is controlled from one key range and IPS B from another.

Thru Program

In the Global Module, you have an option of defining a Thru Program number. This is a Program change number that will be sent out via the Active Track each time the value is changed or this Combi is selected, so that you can decide in advance which sound will be used for the Thru-put. This can *not* be set individually for IPS A and B.

Interpreter and Play Modes



This is the least intuitive part of the IPS, so be prepared to do some reading. The Interpreter reads the notes of the Phrase *and* the notes that you play (MIDI Input) and uses rules and algorithms to combine the two into new music at its output. Let us explain its function by yet another example.

Setting Up for the Example

1. If you have followed the examples at the beginning of this chapter, just select "Example4" from the Combi Menu in the Global module.
This is a preset made up just for this example.
2. Make sure that IPS A is selected, by clicking on the "IPS A" button in the Global section.
3. Make sure that the IPS is turned On ("Active" button shown in inverse video).

How the IPS is set up in the Example

You now have a Combi in the IPS which only uses Synth A (IPS B turned off). It is based on a simple one bar Phrase ("1BarArpeg").

- MIDI Input can happen over the whole Key range, and thru-put is turned off. The Dynamics, Pitch and Rhythm modules do absolutely nothing, and output happens on MIDI Channel 1. If you wish, you can change this to use another Output or Channel. Select a sharp, tonal sound.
- When you press a key on the keyboard, the Phrase is played back. Use different keys to Transpose it. This Phrase begins with the note C4, so you hear the original Pitch of all notes when you press C4 (no transposition).
- If you want playback to always go on until the End of the Phrase, activate the Hold button in the Interpreter module. If you want it to go on forever, activate the Loop button also. You can always stop the IPS by stopping Cubase VST. Note that when Hold is activated, transposing only happens at the end of the Phrase.

About the Example Phrase

The Phrase is a straight eighth note pattern with these notes:

C4 F4 G4 C4 C5 C4 G4 F4

Or as it would have been displayed in Score Edit:



Now you can try out the different Play Modes in the Interpreter Module.

Transpose Retrig

This first of the two *Transpose* modes (the fourth item on the menu) plays the Phrase, beginning when you press a key. The key you press is simply used to transpose the Phrase. To try this out, press one key at a time, and the key will be used to decide how much the Phrase should be transposed.

If you want to get fancy, you can press several keys but *only one of them* will actually decide how Transposition will be done. Which one? Well, it might be the first key you pressed, the one with the lowest velocity, or the one with lowest pitch, etc, it all depends on the Sort Mode in the Input Module, but more on this later.

So, hold down one key, and in the middle of the Phrase, press another one (without releasing the first). If the Sort Mode is the right one and Hold is Off, the Phrase is instantly transposed to the pitch of the new key.

In Transpose Retrig mode (as opposed to Transpose Continue, see below), the Phrase starts over when you release *all* keys and press a new one. What actually happens when you release keys and press new ones also depends on the Hold, Loop and Retrig buttons as explained on [page 19](#).

Since the Output of the Interpreter is basically just the Phrase as you played it, this mode comes into its own with Phrases that you modulate using the Rhythm, Pitch and Dynamics modules.

Transpose Continue

This is just as Transpose Retrig, but when you release all keys, the Phrase just stops and then it continues from that point when you press a new key (or new keys). Again, the Hold and Retrigger buttons also affect what actually happens when you release and press keys. The Loop button has no effect in Transpose Continue mode.

Sort Normal

This mode relies on the fact that the Phrase Input module always sorts the notes in the Phrase and gives them numbers. This list of numbers is stored and used with the three different Sort play modes (Sort Normal, Sort Replace and Sort Skip).

Sorting the Phrase

If you have ever seen a guitar book for beginners you might have noticed one way to write an arpeggio. You first draw a picture of the chord as it appears on the fret-board and then write the number of the strings in the order they should be played, for example: 1, 4, 5, 6, 5, 4, 5, 6. The sort done in the Phrase Input module is similar:

In our example Phrase, the first *pitch* that the Phrase Input encounters when it reads the Phrase is C4, so this is given the number 1. After this comes the Pitch F4, so that would be 2 and the third pitch (G4) would be number 3. Then we have a C4 again so this is 1 again, then a C5 which is the fourth pitch found in the Phrase and therefore given number 4. In this way of notating our Phrase we would get:

1 2 3 1 4 1 3 2

Which is an adequate way of describing the Phrase, only that we don't know what Pitches or what rhythm (phrasing) to use. Do you understand the method? If you compare the notes and the numbers, you see that all C4s are number 1, all F4s are number 2 and so on, like this:

C4 F4 G4 C4 C5 C4 G4 F4
1 2 3 1 4 1 3 2

And this is where the MIDI Input comes in:

In Sort Normal mode, the notes in the Phrase are *replaced* by the notes you play.

Sorting the MIDI Input

The Input notes are sorted, just as the notes in the Phrase. As the IPS is set now, they are sorted *from the lowest note up*, as you can see in the Input Module.

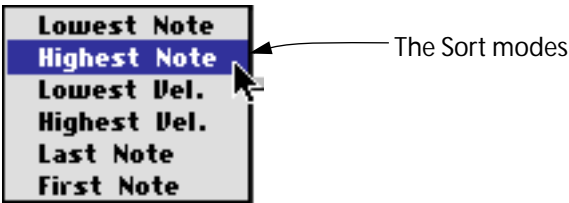
Try this: select Sort Normal from the pop-up menu in the Interpreter Module and press any four notes on the keyboard, and they will be played back in the order of the Phrase. You will recognize the order of the notes from the Phrase, but you will also hear that *you* decide the pitches with your playing.

If you wish, activate Hold and Loop, so that playback continues until you press [0] or [space bar] (note that when these two buttons are activated, you only get a new set of pitches at the end of the Phrase).

What the Interpreter does in Sort Normal mode

Sort Mode "Lowest Note" in the MIDI Input means that the notes you press at any given moment are numbered so that the one with the lowest pitch is given number 1, the next higher is given number 2 and so on.

Each pair of numbers in the two lists, the Phrase list and the MIDI Input list, are compared, and if they match, the note in the Phrase is played, but with the pitch from the MIDI Input. This means that if you press three keys only, there is no number 4 in the Input list, so no note is played when the Phrase encounters this number in the list.



You can now try out the different *sort modes in the MIDI Input list* (Lowest Note, Highest Note, Lowest Vel. and so on), we will explain them in detail later, but you will hopefully understand a little bit of what they do from their names.

Chords and Rhythm

In the example we used a rhythmically even Phrase to keep things clear, but this is of course not necessary (or maybe not even desirable). The Phrase can be any type of music, with any phrasing.

If you have quantized chords in the Phrase, it is not easy to say how the notes in each chord will be numbered, and this might make the Sort play modes unpredictable. But the Modulation functions in the Pitch, Rhythm and Dynamics modules (see later in this text) work on the whole chord at a time, so that the notes in the chord are not separated.

Sort Replace

As you noted if you followed the example above, the “number of numbers” in the Phrase and the “number of numbers” in the Input have to match in Sort Normal mode, if you don’t want rhythmic “holes” in the created arpeggio.

Sort Replace works differently from Sort Normal in that it tries to remedy this problem, by replacing any non-matched number in the Phrase with the first note (number 1) in the MIDI Input list. If sort mode is Lowest Note the first note is often the root note, so this in many cases creates a harmonically pleasing arpeggio.

Sort Skip

This works as Sort Replace, but uses another method for avoiding “holes”. If no matching number is found, this number in the Phrase is just skipped, and the IPS jumps to the next number in the Phrase and checks if there is an Input note matching that. The effect is similar to old arpeggios on synths, where the “rhythm” changed depending on how many keys you pressed.

Mute Play

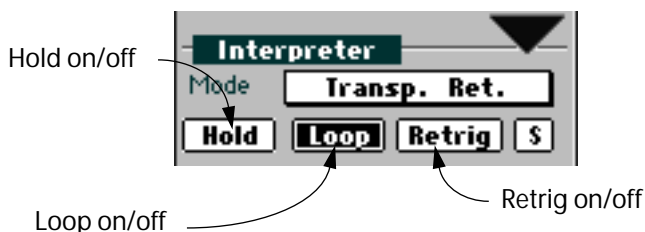
This mode is different from the Sort and Transpose modes. The *Pitches* of the Phrase and the MIDI Input are compared and only Pitches that match are played. In other words, when the Phrase comes to a certain note, it plays the note if the same key is currently pressed (found in the MIDI Input buffer). If it doesn’t find that Pitch, the note is not played (a pause). Here are two examples of the use for Mute Play:

- Drums. Make up a busy drum pattern as a Phrase, and use the IPS to bring the different instruments in and out at will, by just pressing the right keys.
- Dubbing. You might have a line that you want to augment, by dubbing certain notes with another sound. Make the line a Phrase and use Mute Play to decide which notes should be doubled by the second sound.

Repeat

This is simple, but effective. It just uses the rhythm (phrasing), of the Phrase to play all keys that are currently pressed. It can be used for things like bass lines or chords with a repeating rhythmic figure. Try using drums as a Phrase!

Hold, Loop and Retrig



Hold

When this function is activated, the Phrase always plays to its end even if you release the keys "mid-Phrase". There is one exception though: In Transpose Continue mode, the Phrase always stops immediately when you release the keys, even if Hold is turned on.

When Hold is activated, the Phrase will not Transpose or change in any other way (like when you use Repeat, Sort or Mute Play) until its end is reached. This is because when Hold is activated, the MIDI Input doesn't change until the end of the Phrase is reached.

You can also activate a temporary Hold, by pressing a Sustain (Hold) pedal attached to your MIDI Input.

Loop

This button only has any function when Hold is on and Retrig is off. When activated, the Phrase keeps repeating over and over, until you stop it by stopping Cubase VST or by turning the IPS off.

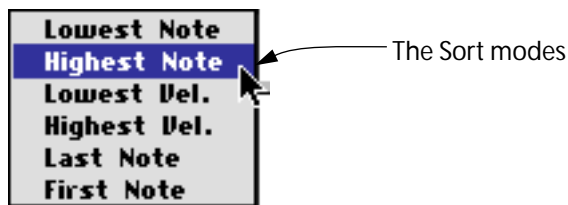
Since Looping only happens in Hold mode, the MIDI Input is only changed at the end/beginning of the Loop, so you can press (and release) the keys you want for the "next lap" at any time during the Phrase.

-
- ❑ **Looping doesn't work in Transpose Continue mode.**
-

Retrig

When this function is activated, the Phrase always starts over from the beginning when any key is pressed, even if other keys are still down.

The MIDI Input Sort Modes



The notes that you play are put into a MIDI Input buffer, and *this is always sorted*, using one of the six sort Modes on the pop-menu in the MIDI Input module. The list is resorted each time you press or release a key.

The six sort modes are:

Sort Mode	Description:
Lowest Note	The note with the <i>lowest</i> Pitch is the first one in the list, the note with the next higher pitch is the next one in the list and so on.
Highest Note	The note with the <i>highest</i> Pitch is the first one in the list, the note with the next lower pitch is the next and so on.
Lowest Velocity	The note with the <i>lowest</i> velocity value is the first one in the list, the note with the next higher velocity is the next one in the list and so on.
Highest Velocity	The note with the <i>highest</i> velocity is the first one in the list, the note with the next lower velocity is the next and so on.
Last Note	The <i>last pressed</i> note is the lowest in the list, the one pressed before that is the next in the list and so on.
First Note	The <i>first pressed</i> note is the lowest in the list, the one pressed after that is the next in the list and so on.

And again, this list is resorted each time you press or release a key, so if you for example have First or Last Note selected, you can change the list completely by just releasing a key and immediately pressing it again.

The Sort Modes and the Play Modes

Transpose Play modes

When you have one of the Transpose modes selected, it is obvious how the notes get transposed when you only have one key pressed. But what if you play a chord? Then the Sort Mode applies again. It is only the first note in the *list* that is used to decide how much the Phrase should be Transposed. And which note in the chord is first in the list? That depends on the sort mode. It might be the one with the lowest pitch (Lowest Note) the highest pitch (Highest Note) the lowest velocity (Lowest Velo) and so on.

Sort Play Modes

When you use one of the Sort play modes, the interaction with the Input list is as described earlier, but here is a short recapitulation.

The Notes currently pressed (the MIDI Input notes) are sorted and numbered in a manner that depends on the sort mode selected. This list of numbers is then compared with the list of numbers in the Phrase Input, and the Interpreter decides accordingly which Pitches to play.

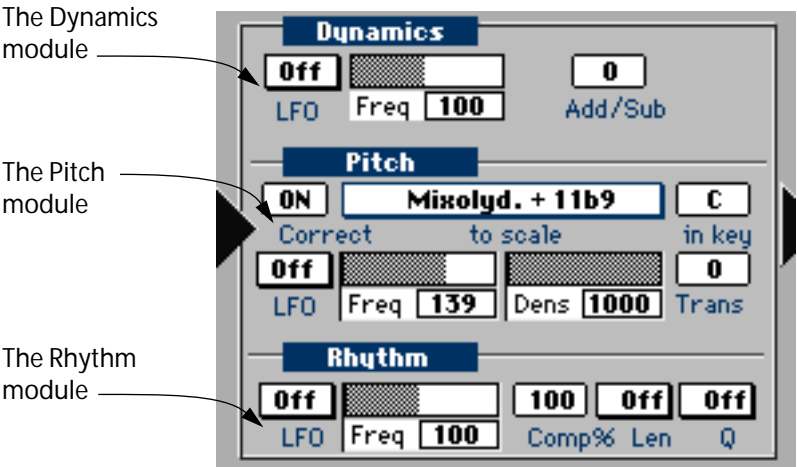
The “S” Switch

So far the explanation has assumed that the “S” switch in the Interpreter module has been turned off. This means that the Phrase is sorted the way it is played, time-wise, as you would expect. But if you click on the “S” switch in the Interpreter module so that it is activated, the Phrase is instead sorted by Pitch, as with MIDI Input when it is set to Lowest Note. This is only useful in the Sort Play Modes, and mainly with drum and percussion Phrases.

Mute Play and Repeat

These Play modes don’t use the MIDI Input Sort modes at all. They both just read the pitches of the currently pressed notes, as described above.

Rhythm, Pitch and Dynamics



General

The output of the Interpreter is split up into three parts, Rhythm, Pitch and Dynamics, and these three are treated independently in the three modules in the middle of the IPS window. What happens in these three modules doesn't really depend on the Interpreter and the MIDI Input settings at all, these Modules only act on the output of the Interpreter.

Setting Up the Example

While experimenting with these Modules we suggest that you select "Example5" from the "Manual Examples" file as described in the beginning of this chapter. This plays a section of a Bach prelude (albeit in a pretty stiff way).

- Only IPS A is turned on in this Combi, so make sure that it is selected for editing, by clicking on the "IPS A" button in the Global Module. We also suggest a piano sound and a tempo setting of around 80 to 90 BPM.
- The output from the IPS is MIDI Note messages. Each time a new note is to be output from the Output module, decisions are taken by the IPS as to what pitch it should be, what velocity, and what rhythmic distance it should have, compared to the last note played.
- These decisions are taken independently for each module. This means that you might e.g. get a note with the Pitch of the first note in the Phrase, the velocity of the seventeenth note in the same Phrase and a rhythmic distance from the preceding note that is 66% of the time between the fourth and fifth note in the Phrase.

The LFOs

In each of the modules you can make settings that determine the output. The parameters vary, but all three modules have an LFO each, that works identically on each one. As you may know, an LFO is a slowly varying oscillator in a synthesizer, used to modulate (change) parameters like a note's pitch, volume or timbre.

The LFOs in the IPS work a little bit differently from regular synthesizer LFOs, and this difference is important to understand. The Pitch LFO for example doesn't vary Pitch directly, it is used to decide *in which order the Pitches in the Phrase should be output*. You might decide to e.g. output every other pitch in the Phrase, forwards or backwards (from end to start), or you could start with the middle pitch and then alternate by going backwards and forwards among the pitches in the Phrase. You select a waveform, which decides the basic order of the notes, and a frequency which is used to set how fast the Phrase should be scanned. But more about this later.

The Pitch Module

In this module you have a number of parameters used for setting what should happen with the pitches that come in from the Interpreter.


The LFO

The LFO has two settings, Waveform and Frequency. Please note again that the LFO does not change the actual pitch of any note, it determines how the pitches are read from the Phrase. The LFO can't "invent" a pitch of its own, it only selects pitches that are already in the list.

-
- ❑ **LFO Modulation to Pitch only has any relevance in the Transpose and Sort Play Modes.**
-









Frequency

The Frequency parameter determines how fast the Phrase is read by the LFO. The frequency number is a percentage value of the Phrase's length, so 100 would mean that the Phrase LFO runs at the same "speed" as the Phrase.

Let's say that you have selected a Note Ramp Up waveform (), and Frequency 100. This would be the same as playing back the pitches just as they are in the phrase, because Note Ramp Up just reads the list from start to end, and Frequency 100 is the same as the Phrase's "normal speed". If you set Frequency to 50, and keep the Waveform set to Note Ramp Up, the LFO runs through the Phrase at double speed, so it can only pick up every other pitch value. If Frequency is set to 200 (max) the LFO will read out each pitch twice from the list (if you use Note Ramp Up). Other values create a more unusual order of pitches, like 20 (%) and a Note Ramp Up waveform which would read out every fifth pitch.





Please note that most waveforms start over again when the Phrase starts over. Short Phrases and low Frequency values might only give you the same one or two pitches over and over again.

Rhythm Dependant Waveforms

Name	Icon	Description:
Off		No Modulation at all.
Ramp Up		This scans the list of Pitches in the Phrase from start to End, just as with normal playback. The Frequency is of course important to determine which notes will be heard, see above.
Ramp Down		This reads the list of Pitches from end to start, otherwise same as Ramp Up.
Triangle		This reads the list, first from start to end and then from end to start. Since one complete cycle therefore has to go through the whole Phrase twice, each half goes twice as fast as Ramp Up and Ramp down.
Square		This normally just switches between two pitches; with high Frequency values maybe just one pitch and with low maybe more than two. It reads and holds the Pitch at the beginning of the Phrase, then it waits for the part of the Phrase set with the Frequency parameter, then it reads and holds the pitch at that position and so on. Therefore, this Waveform is most useful with low Frequency values and probably more appropriate for Rhythmic modulation and for Modulator 1 and 2, than for Pitch.
Random		Random selection from the Pitches in the Phrase.
Mirror		Starts by playing back the beginning of the Phrase, jumps to the End, moves backwards to the middle, then to the beginning and so on.
Pendulum		Plays the middle note's pitch, goes one step forward in the Phrase, then jumps to the note before the middle one, then to the note after the second one played, then the one before the third and so on, like a pendulum that starts by hanging still in the middle, and then swings more and more towards the end and beginning of the Phrase.

All the Waveforms described above are “rhythm dependent”, and may not exactly match up with the number of notes in the Phrase. That is, if you for example select Ramp Up and 50% speed, you will not get *exactly* every other note. These waveforms also always “start over” when the Phrase starts over. You will get the same (or at least similar) note orders in each loop of the Phrase.

Note Dependant Waveforms

Name	Icon	Description:
Ramp Up Continuous		This is a Ramp Up as above, but this waveform differs in that it doesn't start over at the beginning of the Phrase. No matter what the frequency or the length of the Phrase is, this waveform keeps going at its own speed (unless the "Loop:LFO Reset" option is activated on the pop-up Functions menu).
Note Ramp Up		This is the same as Ramp Up, but it works on the number of notes in the Phrase so that precise note orders are possible to achieve. It also differs from the normal Ramp Up in that it doesn't start over at the beginning of the Phrase, rather it works as the Ramp Up Continuous Waveform described above.
Note Ramp Down		This is a Ramp Down Waveform, but it differs from the regular Ramp Down, just as the <i>Note</i> Ramp Up differs from the regular Ramp Up.
Note Triangle		This is a Triangle Waveform, but it differs from the regular Triangle, just as <i>Note</i> Ramp Up differs from regular Ramp Up.

Transpose

This field allows you to set a fixed transposition to all notes.

Scale Correction

This function has three parameters, the ON button for the whole function, the Scale select pop-up menu and the "in Key" field. When you turn Scale Correction ON (click on the button so that it gets activated), select a scale and a key, all pitches coming out from the IPS are corrected to notes inside that scale. If you wonder what notes belong to a certain key in a certain scale, select Scale Info from the pop-up Functions menu and a list of the notes in the selected scale and set Key Signature appears in a dialog box.

Scale correction always transposes downwards when it decides to change pitch, so a major is normally perfectly turned into a minor. Correcting the other way might give more unpredictable results.

- ☐ **Scale correction happens after Transposition, so that the Transposed notes are corrected to the set Key Signature. Scale correction applies in all Play Modes.**

Density

This parameter allows you to just skip some notes at the output. When we say skip we mean the whole note, not just that pitch. The value is set between 1 and 1000 but is actually a percentage value with one decimal. With even values you will note a repeating effect if you play the same Phrase back many times, so if this is undesirable select some prime (non-divisible) number.

- ☐ **This parameter works in all Play Modes, but only when the Pitch LFO is on (not set to Waveform Off).**

Dynamics

This module allows you to alter the dynamics of the output, by working on the velocity values of each note.

LFO

This allows you to modulate which velocity values are selected from the list, just as with Pitches.

-
- ❑ **These functions only have any relevance in the Transpose Play Modes, and they work on the velocities recorded in the Phrase.**
-

Add/Sub

This is a fixed value used to increase or decrease overall velocity values. The Range is from -127 to 127.

-
- ❑ **This function does not work in Mute Play mode.**
-

Rhythm

These functions work on the phrasing. They apply in all Play Modes and always work on the rhythmic distances between the notes and chords in the Phrase.

LFO

This allows you to change the order of the phrasing around, just as with the Pitches. Please note again that this has nothing to do with the order of the Pitches you hear. For example, it is possible to generate interesting counterpoint by playing back the same Phrase from both IPSes, with the same Pitch order, but with different Rhythm modulation.

Len

With this parameter, which is a pop-up menu like the Len value in the drum Map, you can make all notes that come out from the IPS have identical lengths.

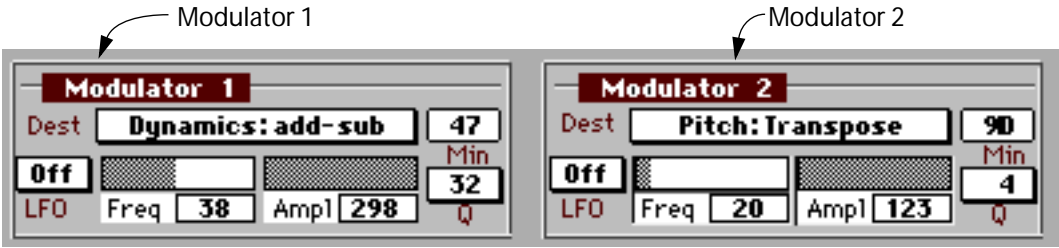
Q

This does not work as regular Quantizing. Instead it puts out all notes/chords at an even pace, with the spacing set using the Q value. In other words, all rhythmic phrasing and all pauses are lost.

Comp%

When this is set to 100%, the IPS plays at the same tempo as the rest of Cubase VST. When you raise the value it goes faster, and when you lower it, it goes slower. Compression is the last of the Rhythm functions, so Quantization happens before Compression.

Modulator 1 and 2



These two Modules at the lower part of the screen allow you to use an LFO to modulate (change) a number of parameters in the other Modules. It is just as if you yourself had changed the parameters, using the mouse while “playing” the IPS (which you of course can do).

You have two Modulators, which are identical. We said earlier that the IPS primarily doesn’t deal with randomness, but by using the Modulators you can make almost anything happen. For example, by Modulating Transposition and Rhythm Compression with a random waveform you’re generating true random music.

Setting up an LFO

1. **Use the pop-up menu to decide which parameter you want to modulate.**
Please note that since there are more possibilities than fits on a regular Classic, Plus, SE or SE/30 monitor, the menu scrolls. Also note that you can Modulate the Modulators, and thereby even change what is being Modulated.
2. **Select a waveform and a frequency just as with all other LFOs.**

Amplitude and Minimum

The Amplitude (Ampl, range 1 to 1000) and Minimum (Min, range 1 to 200) values might need a more detailed explanation. These two decide the range of values in the destination parameter, and take into account the range of the parameter being modulated.

If you for instance modulate MIDI Channel (range 1 to 16), and wish to make sure that the MIDI Channel value never is lower than 2, you must take into account that this Min parameter has a range of 200, and therefore set it to 13 (approx. $200/16$). If it should never be lower than 3 set it to 26, never lower than 4, set it to 40 and so on.

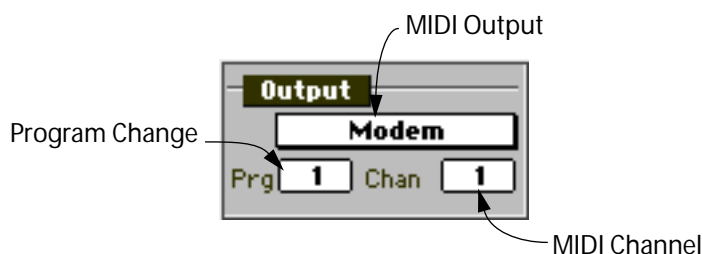
The same goes for the Ampl parameter. An Ampl setting of 500 (half the range) and a Min setting of 1 (lowest possible, would make it possible to have the MIDI Channel value vary between 1 and 8). If you raised the Min value it might be 2 to 9 or 3 to 10 and so on.

Quantize

And finally you may decide to Quantize the output from the Modulators, so that the changes happen on some even rhythmic values. This is done by selecting a Q value in the Modulator Module you are working with.

- ❑ You can see on the screen when a parameter is being modulated, the values also change in the window.

Output



MIDI Output

With the pop-up menu in this module you decide where output should go, to any MIDI port, or to MROS. This last option is for recording the Output of the IPS onto a Track in Cubase VST. Note that even this parameter is separate for the two IPS synths A and B. More about recording into Cubase VST on [page 32](#).

For technical reasons you can't route the Output of the IPS to the Input of the MIDI Processor (you can make the settings but nothing will happen). If you want to use the MIDI Processor on IPS material, record it on a Track and route that Track to the input of the MIDI Processor (see the MIDI Processor chapter for details).

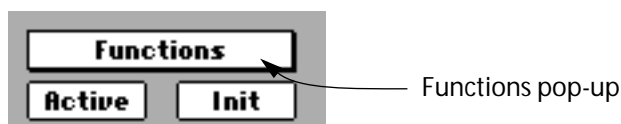
Chan

This is the MIDI Channel Output for the selected IPS synth (A or B). If the Out parameter is set to MROS, so that the output of the IPS goes via the Active Track in Cubase VST, this parameter is of no importance, unless you set the Track to output on MIDI Channel "Any".

Prg

You can make the IPS Output a certain Program Change number each time a new Combi is selected, and which number it should send is set using this parameter, which can also be set to OFF (no Program Change sent out from this Combi). If you want to disable the Output of Program Change numbers *altogether* you should deactivate (no tick) the "Send Prg Change" item on the Functions pop-up menu.

The Functions pop-up menu



On the Functions pop-up menu, you find a number of Functions and some settings that are valid for all Combis in both IPS A and B.

Load and Save All Combis

This allows you to save and load all 32 Combis to disk. The files are of the type "Combi". Saving and loading is done as with Arrangements, Setups or any other files in Cubase VST. If you want something to start with, there are several Combi files on one of your Cubase VST disks, in the IPS folder.

A "Combi" file contains all 32 Combis *and all Phrases*.

-
- ❑ **Songs do not include Combis! Instead, if you save a Combi file called exactly "IPS Combinations" on the same level as Cubase VST (in the same folder) it will be automatically loaded when you start the program.**
-

Load and Save Phrase Bank

You may also save the Phrases separately from the Combis. The Phrases are actually stored in two Banks of 16, but on the pop-up Phrase menu you have a list of all 32, first the 16 of Bank A and then the 16 of Bank B.

When you select Save Phrase Bank from the functions menu, a dialog box appears where you enter or select a file name as usual. When you click Save or press [Return] a new dialog box asks you if it is the first 16 Phrases (Bank A) or the last 16 (Bank B) that you want to Save.

When you select Load Phrase Bank from the Functions pop-up menu and select a file and click Open, a similar dialog box asks you if you want the file to replace the first 16 Phrases (Bank A) or the last 16 (Bank B).

These two functions in combination with "Copy Phrase to" (see below) make it possible to re-arrange Phrases in memory and on disk so that you can compile a Phrase Bank (or two) from existing Phrases.

Scale Info

This displays a dialog box that shows you which notes belong to the selected Scale and Key Signature selected in the Pitch Module.

Send Prg.change

In the Output Module of the IPS you can set a Program Change number that is sent out each time that Combi is selected from the Combi menu in the Global Module. The Send Prg.Change switch on the Functions pop-up menu is used to enable (tick) or disable (no tick) this function altogether.

-
- ❑ **This function is not stored with the Combi file, it is stored with the Song.**
-

Ext. Prg.change

This allows you to select Combis via MIDI. If this is turned on, and the IPS receives a Program Change number on any MIDI Channel it switches to another Combi. Make sure your current Combi is stored before you select another one via MIDI.

-
- ❑ **This function is not stored with the Combi file, it is stored with the Song.**
-

Copy Combi to

This allows you to Copy one Combi from one memory location to another, so that you can make variations on that Combi.

Select the Combi you want to Copy, from the Combi menu in the Global Module. Then select Copy Combi To from the Functions pop-up menu, and a dialog box appears where you can select the Combi that you want to replace, from a pop-up menu. Click OK or press [Return] and the Copying is done.

Delete Combi

This brings up a dialog box with two options. "Yes" deletes the selected Combi, and "No" aborts the operation.

Copy Phrase to

This is identical to "Copy Combi to", but it Copies Phrases between the 32 memory locations.

Delete Phrase

This brings up a dialog box where you can delete the selected Phrase (Yes), or abort the operation (No).

Sync A-B

This allows you to "soft sync" the IPSes to each other. If this item is ticked, they will lock up rhythmically to each other after the first note. They will not necessarily start at the same time, you can decide the rhythmical offset between them, by starting them at different times (using two different key ranges for them).

Reset LFO On Loop

If this function is turned on (ticked) the LFOs always "start over" (begin their cycle as they do the first time a key is pressed) at the beginning of the Loop of the Phrase, regardless of which LFO Waveform you have chosen.

Wait for Play

When this is activated, the IPS does not start until you start Cubase VST. This allows you to hard sync the IPS to some previously recorded music. To use this function, make sure it is ticked on the Functions pop-up menu, press the keys you want to start with and then start playback of Cubase VST.

-
- ❑ **This feature is intended primarily for recording the output of the IPS into Cubase VST. If you forget to turn it off, you will not be able to use the IPS without starting playback! Erase All Data**
-

This simply erases all Phrases and all Combis.

MROS Input

If this option is ticked, the MIDI Input to the IPS may come from M.ROS. This means that if you have a Track set to output to MROS in the Track list, this will be used as MIDI Input to the IPS. This allows you to automate the action of the IPS completely.

Recording into Cubase VST

You may want to record the IPS onto a Track (or several) in Cubase VST.

1. **First select MROS as an Output in the Output Module in the IPS. This is done separately for the two Synths IPS A and B.**

You may record both "synths" on one Track or use Multi Recording to record them on one Track each.

2. **Now select MIDI Setup from the Options menu, and select "System" from the submenu that appears. Make sure the MROS option is ticked on the "Input From" pop-up menu, so that the Output of the IPS gets recorded.**

You may or may not disable other recording Inputs. If you have Thru activated on the IPS, and your playing Input activated for recording, you will record both your actual playing and the output of the IPS.

When you select MROS as an output for the IPS and use MROS as a recording input for Cubase VST, you are routing the output of the IPS via Cubase VST's active Track. This means that output from the IPS will now effectively happen on the MIDI Channel of the Active Track, not on the Channel set in the IPS output module, if the Track is not set to MIDI Channel "Any", of course.

3. **If you want to record the two IPS "synths" on one Track each, Select Multi Recording from the Options menu and enable Channel Split mode from the submenu.**
4. **Set the IPS A and B to output on the right MIDI Channels, so that you route the output to the Tracks you want.**

If you for example select MIDI Channel 1 for IPS A, it will be recorded on the Track set to Channel 1 in the Record column of the Track List, and if you set IPS B to MIDI Channel 2, it will be recorded on the Track set to Channel 2 in the Record column of the Track List.

5. **Close the IPS window.**
6. **If you record on one Track only, select it and set it to output on the right MIDI Channel.** If you set it to "Any", make sure that the MIDI Channel setting in the IPS is valid. This is very important if you plan to change the MIDI Channel in the IPS during the recording, either manually or via Modulator 1 or 2.
7. **If you use Multi recording, set each Track to receive on the right MIDI channel.** To avoid confusion it might be a good idea to set both Tracks to output to MIDI Channel "Any" for reasons described above.
8. **If you wish, select Phrase Synth from the Panels menu again. Or, if the IPS is set up as it should be and activated, just proceed with recording.**
9. **Start recording as usual in Cubase VST. When ready for it, play your keyboard (or whatever you use) to activate and "play" the IPS.**

Remember that it is possible to change any parameter at any time, even during recording.

-
- ❑ **In Cycle mode, often a lot of notes are put at the Cycle Start position, which in most cases isn't really what you want. However, recording in Cycle mode may make up beautiful textures, so you could always Quantize your recording and use Delete Doubles to erase any doubled notes, and of course continue editing in an editor. Or why not make your new recording a Phrase?**
-

Tips and Tricks

- Music that you make into a Phrase should in most cases be Quantized.
- When using Sort play modes, try all three (Normal, Replace and Skip).
- When experimenting with a Phrase, activate Hold or press an attached hold pedal, release the keys and try out different settings in the Pitch, Rhythm and Dynamics Modules.
- If you use pitch-selection modulation via an LFO in the Pitch module, you may also modulate that LFO's frequency using Modulator 1 or 2. This will give you endless variations on the Phrase.
- Try making a drum part a Phrase, and use it with one of the Sort Play modes or Repeat.
- Record into Cubase VST, make the new Recording a Phrase and continue to work on it in the IPS.