# The Wersi Sound Factory Master Classes

Master Class 9 : Summer 2015 : The Matrix – Part 4 : Source/Modifier Components – B

In this MasterClass we shall be starting from Sound Controls, so here is a reminder about them. This first screenshot is the Sound Factory "Landing Page" which Ian refers to later. The same list is also found in **Selectors>Sound Controls**, though there the sequence of parameters is reversed.

The sequence of Sound Controls parameters shown here is the same as appears in the original Sound Editor, though there the values are on a 0-127 scale whereas Sound Factory uses percentage values
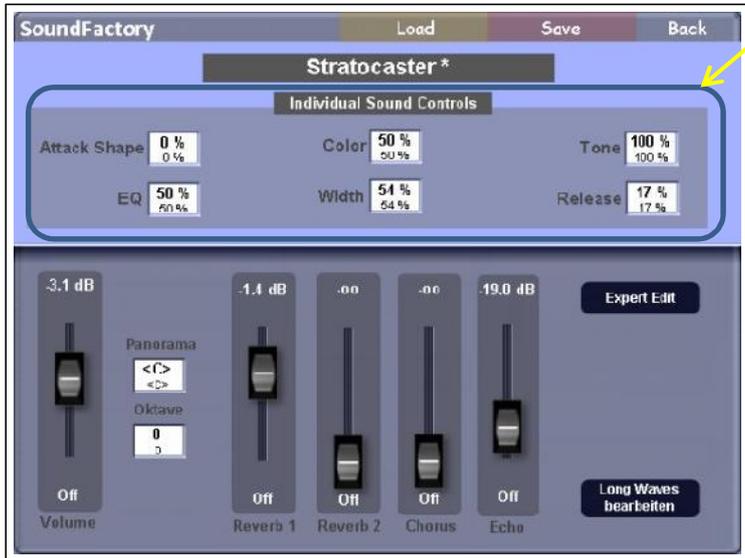
These are the Individual Sound Controls as shown in the initial Sound Factory screen.

*In **Selectors > Sound Controls** the list of the parameters shown in the screenshot on the left would be:*

Release
Width
EQ
Tone
Color
Attack Shape

Ie, the opposite sequence.

The Source/Modifier List for MC9

Knobs 1 to 6

In this MasterClass we shall be looking at the parameters called "Knob 1, Knob 2, …., Knob 6". It's not at all intuitive as to what these refer to so let's start by revealing that. In Sound Controls there are six parameters available per sound for the user to adjust as a form of sound editing. The six "Knobs" available within the Sound Factory Matrix under "Source" and "Modifier" refer to these six Sound Controls parameters.

Therefore let's begin by revising exactly what "Sound Controls" is all about, as that's vital to an understanding of this MasterClass. You may also wish to read again the 2008-2009 series of articles on the WersiClub International website about Sound Controls. These articles can be found by following the pathway:

Sound Controls Revision

OAS > Sounds

where the articles can be downloaded from the yellow box, at the bottom of that page, headed:

"A Series of Articles about using Sound Controls"

Sound Controls is a feature first introduced within OAS-7. It provides six parameters about each sound and a factory set ("Inst") value for each parameter. Each of those values can be adjusted by the user as a way of editing each sound. The six parameters occur in the Sound Editing software, whether the original editor or Sound Factory, accessed by touching "Edit Long Waves" under "Change Sounds" on the

"Settings" page. Changing any value there requires the new sound to be saved within the User Sound bank.

The really useful feature is that the set of six Sound Controls for each sound is also provided within each Selector of each Total Preset. Changing any Sound Control value there applies only to that Total Preset and a new sound does not have to be saved.

If you're already very familiar with using Sound Controls, you have possibly come up with the same questions as I have.

1. Where do all the many parameters come from?
2. Why is there a limit of six parameters per sound?
3. The choice of parameters per sound always seems appropriate but sometimes, for a particular sound, other parameters, experienced from other sounds, could also be useful. Why isn't there a way of making that happen?
4. Why do some parameters seem not to produce any change in the sound at all?

An appendix to this MasterClass contains a list of all the Sound Controls parameters, though it would appear that the same parameter is occasionally given a different name resulting in duplication. I've included the range of values Wersi has used for each, plus some sounds containing the particular parameter within its Sound Controls list of six.

Answers to the first two questions above probably relate to the original Wersi programming. This MasterClass will help to answer questions 3 and 4, so it's over to Ian Terry to guide us through how we can use Knobs 1 - 6 within Sound Factory.

Ian's Introduction to Sound Controls	First of all, load into the upper manual **Strings 1 Soft *** 090-000-006, **Vibraphone 1*** 090-000-001 and **Jazzflute 1*** 075-000-020. Make sure that all three Selectors are 'On' and that you can hear all three sounds playing together on the upper manual. Adjust the volume controls to be sure. If a Selector is left 'Off', OAS will not publish its parameters that can be 'tweaked' and we will not be able to access these until that state changes. So with all three Selectors active, from the top tabs in your **Main** display screen, touch **Selectors**, and then from the next row down select **Sound Controls**. Once inside this menu, most of this area in divided into different colours: blue for 'Pedals', red for the 'Lower Manual' and an off-yellowish colour for the 'Upper Manual'. In each of these areas is a selection of boxes, six for each activated sound on any keyboard including pedals. Each box has a title above it (if activated), indicating which parameter can be accessed by highlighting the box in question and then, using our Tempo/Data wheel as well as the '<<' and '>>' switches of the Transposer just below, we can change the value. It's here we can adjust and create variations to any of the sounds and then save the result into a Total Preset.

The only time a list will not be published is when (as far as I know):-
a) A Selector is not active.
b) Using the Drawbars via OX7. This does its own editing on its own dedicated page.

The thing to note here is that the published list can change by different amounts for most sounds. Some sounds will have no differences, if you choose identical sounds for two or more selectors. For example, a Piano that plays in 'octaves' from a single key. If two identical sounds are used and selected, then two identical parameter lists will appear.

If we look at the selection of three sounds I previously gave you to put in, you can see that some parameters appear to be shared between all selected sounds whilst others are unique. For example, 'Attack' and 'Release' are available in all three sounds. Adjusting the first Selector's 'Release' will change how long the **Strings** will take to fade away after we release the keys played. This can be long, short or somewhere in-between. This affects only the sound in that Selector, i.e. only the Strings here. Further down the lists differences appear between the sounds selected.

The **Jazzflute**, for example, is the only sound selected out of the three that can be switched from 'Polyphonic' playing (more than one note sounding) to 'Monophonic' playing (a single note sounding with a high note priority).

At this stage it's worth pointing out that while a Polyphonic setting means one thing - all played keys will sound - a Monophonic setting means that only one played key will sound when playing a chord, but which key that is can also be set. It could be as stated at the end of the previous paragraph - a high note priority - or it could be the first note played, or last note played etc. The particular setting in Sound Controls is dependent upon the sound selected. If a different setting is required, Sound Factory is able to provide that. For example, the Sound Controls Mono setting for Clarinet is first note played so if the highest note played is required then Sound Factory is needed to adjust that.

"Warmth" Explanation of this in the Vibraphone 1* sound	There are other possible variations as well; control of effects can be found in other sounds. Look at the **Vibraphone 1*** list and locate the parameter 'Warmth'. By changing this value we can change the 'Chorus' mix depth: a' value of '0' and the instrument sounds 'Dry'; '127' sounds fully 'Wet'. This can be set to taste and saved in the Total Preset when wanted. **Strings Soft 1*** also accesses an effect from this list: an 'EQ' for its 'Treble' and 'Bass' controls.
"Balance" Explanation of this in the Vibraphone 1* sound	Sometimes the programming goes even further: back to the **Vibraphone 1*** again. At the bottom of the list is a parameter called 'Balance'. Play with this and you will hear a change in the volume between the mallet 'Tine' sound and the Sine wave 'Body' (a value of '127' is the Sine wave only). We can set this to taste and save as well.
	This is all very well, and you don't need Sound Factory to use this function…
Different Sound Controls numbering system in Sound Editing and in Total Presets Selectors tab	However, what Sound Factory does is allow us to use and subvert the original WERSI programming to modify our own sounds. Now in order to do that we need to understand that it would be helpful to know what the 'Selector' list will publish once that sound is active for editing in Sound Factory. So with 'Selector 1' active only, go into Sound Factory. After the editor has been loaded, the first page that we land on shows us exactly which are the 'Selector' list parameters and what their settings are for each value. These are called *Individual Sound Controls* and there are six of them. Because of the different layout it can be confusing as to which refers to which in the 'Selectors' sub-menu. However, it is simple to sort out. In Sound Factory we number them from left to right '1, 2 and 3' and in the second row '4, 5 and 6'. This then ties up with the 'Selectors' sub-display reading from the bottom upwards to the top, with '1' at the bottom and '6' at the top (ie the order is reversed between the 'Selectors' list and the 'Sound Editing' list, as shown at the beginning of this MasterClass).
Example 1 Giving the Oboe sound a Mono/Poly switch in Sound Controls, so it can be adjusted within a Total Preset	Here is an example of using the existing WERSI programming on a different sound. Go out of Sound Factory to the 'Main' page and in Selector 1 put **Jazzflute 1*** 075-000-018. In Selector 2 place **Oboe*** 090-000-020. Then look at the published parameter list in the 'Selectors' sub-menu again. Make sure that both Selectors are switched 'On' to see both lists. Now, although both these sounds are from the same instrument family, they publish slightly different parameter lists. The Jazzflute has a 'Mono/Poly' switch in box 1 which isn't available for the Oboe in any of its boxes. This would be a nice addition as most Oboes I know play only a single note at a time, so I would like to be able to replicate this. Moreover the Jazzflute 1* sound is designed with a highest note priority setting for its Mono mode which is what is required here.

As it turns out, this is a simple fix in Sound Factory. With the **Jazzflute 1*** selected, go into Sound Factory. Once again the landing page shows the parameter assignments for the six 'virtual' knobs. Box 1 is the 'Mono/Poly' control. The Flute plays polyphonically only when this value is '0-50%' and monophonically when it is '51%' or above. Test this out by changing the value in the 'Mono/Poly' box to 51%.

Now go into the *Expert Edit/Sample Page* and delete layer two. Then change the 'Sample Bank' in layer one to WERSI 2, and from the sample list find **Oboe**. Then go

into *Filter-Map/Velocity Switch/High-Vel*; it's currently showing the value '119' so change this to '127'. This removes any dynamic restriction on the note sounding – with the original value, playing the key too strongly would result in silence.

Let's do a quick test before we decide to save this. Press 'Back' in the top right-hand corner. This takes us back to the original landing page in Sound Factory. We can then, by selecting the first box [Mono / Poly] (it will change its back ground colour to Red to show it is active), try the different values which activate the switch between Mono and Poly playing. Remember Poly is '0-50%' and Mono is '51-100%'. So now we have an Oboe sound which can be switched when required. We can change and set/re-set all the 'Default' ['Inst'] published values in the 'Selectors' sub-menu for any sound we edit/create in Sound Factory here.

Save this into a Sound Factory memory and name it so you can find it again easily. Once saved, leave Sound Factory and load our revised Oboe sound into Selector 1. You should still have Selector 2 with the original Oboe in it and active. Now go back into *Selectors/Sound Controls* to see the different parameter lists published. The Box at the bottom of the list for Selector 1 (your new monophonic Oboe sound) is the Mono/Poly box. If you saved this in Mono mode (check this with just the Selector 1 volume at full and all others at zero) it should play monophonically on loading. Change the 'Inst' value to '0' and it will flip the mode to poly playing.

So, I've used the original WERSI programming to change a 'function' to a sound that wasn't available before. You may have also noticed that all the Sound Controls for your new Oboe sound are those of the Jazzflute 1* sound originally loaded into Sound Factory. Here's the comparison between the two as set up by Wersi (using the parameter sequence displayed in Sound Factory):

Jazzflute 1* [& New Oboe Sound]		Oboe	
Mono Poly	0% (>50% = Mono)	Attack Shape	0%
Attack Shape	0%	Color	50%
Tone	100%	Tone	100%
Color	50%	Warmth	0%
Attack	0%	Attack	0%
Release	19%	Release	30%

In this instance only two differences occur: the new Oboe sound has a lower Release value than the Wersi Oboe sound and Warmth has been replaced by Mono Poly. As Warmth has a value of zero in the original Wersi Oboe, its loss is no loss, so to speak. However, it's always important to carry out such comparisons whenever changing a sound within Sound Factory. If it all sounds satisfactory then no further change may be needed. However, if the sound seems wrong, it may be necessary to adjust the new values back to the original values, or nearby, in order to preserve the correct sound timbre as far as possible. Changing a sample layer within Sound Factory gives the new sample all the values of the original, so always check whether these are appropriate.

Jeff's Mono/Poly Switch Demo

Jeff has provided this demonstration of how the Mono/Poly switch parameter could be applied to a musical arrangement. It uses the same coding techniques that are described in the previous example.

Choir and Clarinet Combination

In this first section of 'The Hymn To The Fallen' by John Williams from the film 'Saving Private Ryan', the orchestration calls for a Choir and Clarinet combination. To achieve this we will use the **Vocals Ooh Woman** (**093-000-084**) sound for the choir and a modified **Clarinet** (**090-000-017**) sound for the clarinet. The modified clarinet is programmed in the Sound Factory exactly as described in the previous example, but we use the **Clarinet** sample from the WERSI 2 sample list instead of the modified **Oboe**. The clarinet thus acquires a Mono/Poly parameter that can play monophonically with a highest note priority.

To perform this piece we load the **Vocals Ooh Woman** sound into Selector 1 and the modified **Clarinet** sound into Selector 2. If we play with both hands in the standard SATB (Soprano/Alto/Tenor/Bass) four-part harmony style, the choir will play polyphonically but the clarinet will play only the top note of the chords, which is the melody.

An audio demonstration of this arrangement is available on the Sound Factory page of the WersiClub International website.

Now back to Ian.

It can be a lot more complicated if the sound you want requires more complex programming with several layers to produce what you are after.

So that was programming without using the Matrix. Here's a more complex example now using it.

Here is a reminder of the **LFO/Matrix tab**.

The LFO/Matrix screen

Example 2 Generating a Church Organ sound where the mix of stops can be controlled by changing Sound Controls parameters.

Here's the plan: in this example I want a 'Church Organ', but I want to be able to control the fundamental tone (mix of 'Stops') using the 'Knob' control system. This will set the overall tone of the sound. I can then add other forms of colour as we did before by using the MW for performance as well as switching Selectors on and off.

Essentially this will enable us to construct a pipe organ registration consisting of three distinct stops: a Principal 8', a Rohrfloete 8' and a Quint 2 2/3'.

So I've got the basic idea, and I'm going to be looking for a sound that gives me control over the 'Volume' of different sample layers: that's important. I'm thinking of two, maybe three basic layers that I want to be able to set using the virtual knob controls. Now it depends on which sound offers me the best 'selector parameter' choices that suit my requirements; the one that does is the choice to try first.

After a small amount of time searching through various 'Ensemble' sounds (ensembles are generally several sample layers playing together, so don't bother looking at solo instruments!), a couple of candidates appear as possible choices to start with. **Classical Small Strings** 093-000-096 looks good. On inspection in the Selector sub-menu we find that it has three volume controls assigned within, one each for the Violins, Cellos and Contrabass. It also has a basic Treble and Bass EQ available which might help to 'spice' things up when needed. The final parameter (Release) I don't think I'll need that much but it might come in handy at some point.

Load the **Classical Small Strings** 093-000-096 sound into 'Selector 1'. Go into *Sound Factory/Expert Edit*. Select the first sample layer (**Classic Bass**) and go to the Matrix Page. There is no reference to any 'Knob' routings on this layer or any other. In this

case it isn't important because I'll set those routings up using the Matrix for each new layer in turn.

Select the first layer on the 'Sample Page', and at the bottom are some options. Touch 'Free to Clipboard' (ensure that label goes dark to show it's actually been selected), and then touch 'Paste Before'. All the existing layers will move down a position making room for the newly inserted layer, which is called 'Empty Layer' and provides a default Trumpet sound. This is easier and quicker than editing all the existing layers into what we want. Once that is done delete layers Two, Three and Four leaving our new layer and the factory effect layer ('Shelf EQ') only. It will play a Trumpet at this point so leave the 'Sample Bank' with 'WERSI 2' selected and go to the 'Sample Select' which says 'Trumpet Mezzoforte'. Change this to **Church Prinzipal**. This will provide the Principal 8' stop. Some other adjustments are needed for what I have in mind. Set the 'Octave' to read '-1'. Then go to the Matrix Page. Replace what's currently in the first row with this code:-

Key : Off : 0% : Wave : -60%

This helps sort out a problem that occurs at the left end of the keyboard. The notes play very 'sluggishly' so I've cut into the sample to help speed things up here. Play bottom 'C' for example and try different values for the Wave Depth to hear what this is doing.

Once you've put that code in and tried it, you should have noticed another problem: the sample now has a 'thump' as it starts. We can correct that in the Envelope page, but first we also need to put in our code to activate the virtual knob. In any spare row add this:-

Knob 1 : Off : 0% : Amp : +60%

That has now connected 'Knob 1' to the 'Amp' volume control for this layer only. Go to the Envelope page and change the following:-

Attack = 90ms
Sustain = 90 %

The Attack setting 'cures' the thump from being audible. The slight Sustain change just allows new notes to be more obvious as they are added to dense chords. (That's my taste and not a requirement).

Also down towards the bottom of this page change both 'Velocity to Attack' = 0%. 'Velocity to Volume' = 0%.

It's worth pointing out at this stage that any sound can be sampled at any footage. To retrieve that footage, a value of zero is inserted into any footage parameter, be that in Sound Factory or Selectors. So if a pipe organ sound/sample layer has been sampled at 16', selecting '0' in Sound Factory will provide a 16' sound while selecting '+1' would provide an 8' sound, etc.

This layer is now complete, so copy it to the 'Layer to Clipboard' and select 'Paste Before'. This should now move our two layers down with the new one occupying the first slot, three in total (the top two each called 'Empty Layer').

In our new layer one, go into the 'Sample Page' and change the sample to **Church Rohrfloete**. *This will provide the Rohrfloete 8' stop.* Turn its Volume down to read '-0.2dB'. Set its 'Octave' to '-1'. Move to the Matrix Page.

Leave the first line of code; this will solve the same problem as before. The Envelope is already set because we copied the first layer's corrections.

Change 'Knob1' to read 'Knob 2' instead. It should look like this…

Knob 2 : Off : 0% : Amp : +60%

Copy this layer to the clipboard and again 'Paste Before'. Everything should move down again making room for our new copied layer.

Go to the 'Sample Page' and with layer one make the following adjustments:-

Volume = +0.0%
Octave = 0
Semi (Semitone) = +7

Go to the Matrix Page and change the code in the row containing 'Knob 2' to this:-

Knob 3 : Off : 0% : Amp : +80%

This will provide the Quint stop.

Now go to the **General Page**. We haven't looked at this yet in this MasterClass series, but change 'Max.Voices' to read '64' which appears to be the maximum available to a single sound in SF.

Press the 'Back' button to take us back to the Sound Factory landing page and try different values for the Violins, Cellos and Contrabass parameters. These now control the different sample layers' volumes. Don't forget we left the EQ option in the programming as well, so try some variations with those controls (Bass and Treble). Once you're happy with a 'balance' of some sort, save and name it. Then load this into a Total Preset to try. Use different settings again and save into different TPs but all in the same bank. Switch between each TP when needed. You can also add the original 'Church Organ' programming we did using the MW to increase the performance value of each TP.

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Jeff's Ensemble Demo

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Jeff has provided this demonstration of a church organ registration that can produce a number of different variants by changing its Sound Control Ensemble parameters. It uses the same construction and coding techniques that are described in the previous example.

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Combination Church Organ Registration

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In this extract from 'Panis Angelicus' by Cesar Franck we use this registration in three different variants. The values in the Ensemble parameters control the volume of each of the three constituent stops in the sound, namely Prinzipal, Rohrfloete and the Quint. So for each variant we adjust these values according to which stops we wish to sound.

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For the first section solo stop we use the Rohrfloete and the Quint.
For the second section solo stop we use only the Prinzipal.
For the final ensemble section we use the Prinzipal, Rohrfloete and the Quint.
For all the accompaniments we use just the Prinzipal.

The specification of these variants can either be done by constructing three individual Total Presets, with their appropriate Sound Control Ensemble values, or as is the case in this demonstration, by splitting both the Upper and Lower Manuals in one Total Preset and setting the Sound Control Ensemble values appropriately for each section of the split.

An audio demonstration of these variants is available on the Sound Factory page of the WersiClub International website. I trust Monsieur Franck would approve!!

Back to Ian.

Now for question 4 on page 2: "Why do some parameters seem not to produce any change in the sound at all?" The reason is it requires a change of either another knob or any of the following:- MW, PitchBend, AfterTouch, Dynamics, FootSwitch, Mono/Poly change and so on. I've found that they all do something, although sometimes it can be difficult to pin down exactly what.

I think of all this as an example of how to make your Sound Factory sounds go further. The other thing is that I've picked just one example of an 'ensemble' sound; there are lots of others that benefit from this approach.

Ian Terry
Jeff Ormerod
Colin Moore

July 2015

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Next Time, in MasterClass 10
As we've talked here about the Mono/Poly parameter in Sound Controls, it's time we followed up on our promise to return to the section called 'Play-Mode', added to the 'Sample' page of Sound Factory in OAS-7 R46. So that's what we'll do next time in August. We'll return to the Matrix in MasterClass 11 in January 2016.

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APPENDIX : The Full Set of Sound Controls Parameters

Parameter	'Inst' Value Range	Comments and Example Sounds exhibiting the Parameter
5th Switch	0	
Add 5th	0	
Add Strings	57	
Age	36, 63	El Organs, Pianos
Amp Select(or)	84, 0	
Anti Detune	127	
Atmos	63	
Attack	72, 0	
Attack Shape	0, 69	
Attack Speed	51, 35	
Auto Bend	0, 127	
Auto Sweep	127, 63	
Auto Wah	0	
Balance	82, 35	
Bass	0, 90	
Bell Color	65, 0	Low notes sound individually in "Arctic Circle".
Bells	62	
Bells Level	128	
Belly Level	64	
Bend Amount	26, 57	
Bend Speed	64	
Bend Time	66, 63	
Bigger	127	
Body	77, 127	
Body Amount	67	
Body Tone	63	
Body Wave	0	
Brass Volume	87	
Brighter	67, 0	
Brighter Layer	127	
Bubbles	64	
Buzz Speed	128	Tech Siren
Change Hit	63	
Chaos	63	Tension
Chiff Level	127	
Choir Tone	66	
Choir Wave	0	
Chord Level	64, 62	
Chorus	96, 0	
Chorus Depth	83, 26	
Chorus FX	0	Rave Synth Lead
Chorus Rate	63	
Church Size	42	Sacral
Cluster Mix	0	
Color	0, 127	
Crash Level	59	
Crush	63	
Cutoff	77	
Darkness	0	
Dave	64	Worried Dave Pad
Decay	37, 102	
Decay Release	18, 39	Perc Chime Arpeggio, Pypa Arpeggio
Delay	65, 0	
Delay Depth	69, 54	
Delay Mix	63, 13	
Delay Speed	62, 85	
Detune	127, 0	
Didj Tone	64	Outback
Dirt	0, 127	
Distance	27	Sacral
Distortion	0, 26	
Drive	124, 0	
Drone Level	63	
Drum Level	72, 76	
Dynamik	127	
Early Reflect	63, 49	
Echo	128, 0	

Parameter	'Inst' Value Range	Comments and Example Sounds exhibiting the Parameter
Echo Depth	90	
Echo Speed	122	
Echoes	64, 13	
Edit 1	0, 51	
Edit 2	67, 42	
Enhancer	127, 63	
EQ	85, 60	
EQ Bass	63, 120	Used in Hits
EQ Hi	63	Used in Hits
Fade Out Pad	0	
Fatness	0, 127	
Fatter	0, 75	
Feedback	0	
Filt Decay	51	
Filt Env	64	
Filter Amount	62, 102	
Filter Attack	0	Space Phase
Filter Morph	0	
Filter Select	20	
Filter Spread	0	
Filter Type	0	
Flange	65	
Flanger	0	
FM Drive	64, 0	
Formants	10	
Fret Noise	25, 102	Also labelled wrongly under Finger Bass, Picked Bass, Fretless Bass, Slap Bass 1, 2, Synth Bass 1, 2
Frets Amount	29, 63	
Frets Level	63, 49	
Fright Time	26	The Swarm
Fuzz	0, 63	
FX	63, 0	CD-Fairlight
FX Vary	63	Vangelis Pad
Gater Level	127	Reso Gater
Gating Speed	83	
Girth	63	
Glide	0	
Glide Time	63, 25	
Goblins Level	56	
Grit	63	
Grunge	0	
Gurgle Factor	127	Fuzzy Gurgler
Hall Size	61	
Hammer Level	69	CD-Cembalo
Hammer Noise	0, 87	Pianos, El Organs
Hardness	63	
Hi Level	0	Sacral
Hi Velo Select	0	
High Attack	0	Accordions
High EQ	63	Russian Accordion
High Register	0	Accordions
High Waveform	115	
HiHats Level	47, 32	
Hit Type	0	
Interval	26, 39	
Key Click	63, 127	
Kicks Level	55, 46	
Knob 1 Wave	0	
Knob 2 Wave	0	
Length	64, 36	
Less Attack	26	
Less Bend	0	
Less Thump	0	Thuer Bass
LFO Speed	0	
Loop Speed	63	Urban Pad
Loop Volume	77	Urban Pad
Low Attack	0	Accordions
Low EQ	63	Russian Accordion
Low Register	0	Accordions
Low Waveform	13	
Major Minor	127	

Parameter	'Inst' Value Range	Comments and Example Sounds exhibiting the Parameter
Melody Level	64	
Metallic	103	
Mid Level	0	Sacral
Mono Poly	127, 0	
More Attack	0, 63	
More Chime	0	Perc Chime Arpeggio
More Death	94, 41	
More Metallic	17	Sub Metal Arpeggio
More Noise	59	
More Osc	0	
More Perc	7, 41	
More Pulsing	83	
More Steam	109, 127	
More Stick	66	
Morph	63	
Movement	13, 127	
Muckify	88	
Mute Balance	0	
Nasty	0	El Organs
Noise	0, 64	
Noise 5th	0	
Noise Select	0	Wind Atmos
Noise Speed	0	
Noise Sub	0	
Note Off Level	80, 63	
Octave	0, 63	
Octave Shift	63	
Octave Switch	0	Russian Accordion
Off Beats Level	63	
On Beats Level	63	
Osc 2	31, 0	
Osc Select	127	
Osc Start	127, 0	
Osc Sync	0	
Overdrive	84, 53	
Pad Color	25	
Pad Level	63, 127	
Pan Amount	65, 25	Soft Ambi Sweeps
Part Pitch	0	
Pattern Speed	64	Wave Pattern Pad
Perc Factor	51	
Perc Key Range	51	Orchestras
Perc Length	63, 25	
Perc Level	64, 66	Orchestras, Strings + Horns
Percify	128	
Percuss Octave	0	
Phaser	0, 63	
Phaser Amount	63	
Phaser Depth	76, 0	
Phaser Speed	64, 26	
Piano Tone	63, 99	
Pick Level	107	
Pitch	0	
Pitch Bender	0	
Pitch On/Off	127	
Pitch Shiver	0	
Pitch Tracking	96	
Pluck Level	128	
Pluck Sequence	128	
Pulsating	64	
Pulse Speed	0	
Pulse Width	0, 48	
Punch Amount	36	
Punch Speed	0	
Pwm Amount	127, 64	
Pwm Speed	64	
Release	108, 0	
Repeat Depth	64	Repeat Bass
Repeat Type	51	Repeat Bass
Reso	121, 0	
Rhythm Level	64	Outback

Parameter	'Inst' Value Range	Comments and Example Sounds exhibiting the Parameter
Richness	63	Soft Rotor Sparkle Pad, SteelString + AtmoPad
Riff Level	77	
Rotary Speed	0	
S&H Speed	82	S&H Noise
Sample Select	127	
Sample Start	0	Effect-Sounds only?
Saw Square	0	
Scare Balance	127	Slave Camp Pad
Scare Factor	63	Slave Camp Pad
Select Hit	0	
Semitone	63	
Skin Level	64	Used in Timpani
Slap Time	101	
Slide Changer	127, 0	
Smaller	0	Hit
Snares Level	5, 61	
Softer	0	
Softer Attack	0	Thuy Stud Bass
Sparkles	127	Rising Star Pad
Speed	76	Rhythmic Pad
Spread	29, 0	
Stab Length	6	Velo Stabs
Stereo	95, 0	
Stereo Detune	90, 39	
Sticks Level	69, 57	Used in Timpani
String Noises	44	
String Volume	127	
Strings Select	0	
Stutter	95	Stutter Pad
Sub	83, 0	
Sub + Noise	0	
Sub Bass	0, 127	
Sub Level	0	Sacral
Sub Noise	49, 0	
Sub Osc	127, 0	
Swamp	10	Yeah Yeah Frog
Sweep Amount	127, 0	
Sweep Depth	63	
Sweep Speed	128, 17	
Sweep Time	17, 64	
Swirl	77	Swirling Sync Keys
Swoosh	43, 68	
Swoosh Amount	64	
Sync	0, 128	CD-Fairlight, Disco Bass, Proph 2
Sync Amount	64	
Sync Sweep	112	
Thicker	39, 64	
Thickness	38, 16	
Thump	0, 65	
Timpani Level	63	
Tine Select	63	
Tines Level	68, 24	
Tinkles	101	
Tinkles Level	127	
Toms Level	60, 41	
Tone	127, 0	
Tone Plus	0	
TR Speed	100	TH Barton Full
Treble	64	
Tremolo	0, 63	
Tremolo Depth	0, 44	
Tremolo Fade	0	
Tremolo Init	40	Vibes Tremolo
Tremolo Rate	94	
Tremolo Select	0	
Tune In	0	Rave Synth Lead
Tweet Length	36	"Birds"
Unison Detune	64, 0	
Vary 1	0	Hit
Vary 2	63	Hit
Velocity Amp	114, 0	

Parameter	'Inst' Value Range	Comments and Example Sounds exhibiting the Parameter
Velocity Attack	0, 127	
Velocity Level	0, 127	
Velocity Tone	3, 94	
Vibrato	60, 0	
Vibrato Amount	32, 26	
Vibrato Speed	67, 103	
Vintage Filter	0	
Vocal Select	127	
Vocal Shape	24	
Vol Bassdrum	64	Theatre Drums
Vol Block	64	Theatre Drums
Vol Crash 1	64	Theatre Drums
Vol Crash 2	64	Theatre Drums
Vol Tambo	64	Theatre Drums
Vowel	63	Yeah Yeah Frog
Wah Mode	77, 127	
Wah Pedal	112, 0	
Warmth	13, 128	
Water Level	12, 63	
Wave	65, 0	
Wave Bend	127	TV Mystery
Wave Depth	108	Rich Wave Bells Pad
Wave Select	103	Roundabout
Wave Speed	0	Rich Wave Bells Pad
Wave Start	0	
Wave Sync	0	
Waveform	0, 64	
Weird	0	Effect-Sounds only?
Weirder	64	
Wetness	56, 63	
Wetter	61	Vowelscapes
Whales	0	
Widen	0, 80	
Width	0, 127	
Wind Intensity	0	Wind Atmos
Wow Amount	36, 64	
Wow Depth	63, 44	
Wow Speed	63, 37	