

# Get all VST parameters to CSV in Reaper

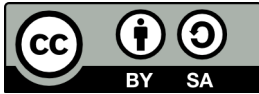
hoanglongplanner

2023.27.10

```
ParameterNames.csv VstPresetParameter.csv X
src > 20231014-reapervstpresetscv > VstPresetParameter.csv
1 VST3i: Surge XT (Surge Synth Team) (2->6ch)
2
3 ID,Name,Value Current,Value Middle,Value Min,Value Max,Context Current,Context Middle,Context Min,Context Max
4 000,M1: -,00.00,00.50,00.00,01.00,0.000000,0.000000,0.000000,0.000000
5 001,M2: -,00.00,00.50,00.00,01.00,0.000000,0.000000,0.000000,0.000000
6 002,M3: -,00.00,00.50,00.00,01.00,0.000000,0.000000,0.000000,0.000000
7 003,M4: -,00.00,00.50,00.00,01.00,0.000000,0.000000,0.000000,0.000000
8 004,M5: -,00.00,00.50,00.00,01.00,0.000000,0.000000,0.000000,0.000000
9 005,M6: -,00.00,00.50,00.00,01.00,0.000000,0.000000,0.000000,0.000000
10 006,M7: -,00.00,00.50,00.00,01.00,0.000000,0.000000,0.000000,0.000000
11 007,M8: -,00.00,00.50,00.00,01.00,0.000000,0.000000,0.000000,0.000000
12 008,Send FX 1 Return,01.00,00.50,00.00,01.00,0.00 dB,-18.00 dB,-inf dB,0.00 dB
13 009,Send FX 2 Return,01.00,00.50,00.00,01.00,0.00 dB,-18.00 dB,-inf dB,0.00 dB
14 010,Send FX 3 Return,01.00,00.50,00.00,01.00,0.00 dB,-18.00 dB,-inf dB,0.00 dB
15 011,Send FX 4 Return,01.00,00.50,00.00,01.00,0.00 dB,-18.00 dB,-inf dB,0.00 dB
16 012,Global Volume,01.00,00.50,00.00,01.00,0.00 dB,-24.00 dB,-48.00 dB,0.00 dB
17 013,Active Scene,00.00,00.50,00.00,01.00,0,1,0,1
18 014,Scene Mode,00.00,00.50,00.00,01.00,Single,Dual,Single,Channel split
19 015,Split Point,00.47,00.50,00.00,01.00,C4,E4,C-1,G9
20 016,FX Disable,00.00,00.50,00.00,01.00,-,-,-,-
21 017,Polyphony Limit,00.23,00.50,00.00,01.00,16,33,2,64
22 018,FX Chain Bypass,00.00,00.50,00.00,01.00,All FX,No Send and Global FX,All FX,All FX Off
23 019,FX A1 FX Type,00.00,00.50,00.00,01.00,Off,Airwindows,Off,Spring Reverb
24 020,FX A1 Param 1,00.00,00.50,00.00,01.00,-,-,-,-
25 021,FX A1 Param 2,00.00,00.50,00.00,01.00,-,-,-,-
26 022,FX A1 Param 3,00.00,00.50,00.00,01.00,-,-,-,-
27 023,FX A1 Param 4,00.00,00.50,00.00,01.00,-,-,-,-
28 024,FX A1 Param 5,00.00,00.50,00.00,01.00,-,-,-,-
29 025,FX A1 Param 6,00.00,00.50,00.00,01.00,-,-,-,-
30 026,FX A1 Param 7,00.00,00.50,00.00,01.00,-,-,-,-
31 027,FX A1 Param 8,00.00,00.50,00.00,01.00,-,-,-,-
32 028,FX A1 Param 9,00.00,00.50,00.00,01.00,-,-,-,-
33 029,FX A1 Param 10,00.00,00.50,00.00,01.00,-,-,-,-
34 030,FX A1 Param 11,00.00,00.50,00.00,01.00,-,-,-,-
35 031,FX A1 Param 12,00.00,00.50,00.00,01.00,-,-,-,-
36 032,FX A2 FX Type,00.00,00.50,00.00,01.00,Off,Airwindows,Off,Spring Reverb
37 033,FX A2 Param 1,00.00,00.50,00.00,01.00,-,-,-,-
38 034,FX A2 Param 2,00.00,00.50,00.00,01.00,-,-,-,-
39 035,FX A2 Param 3,00.00,00.50,00.00,01.00,-,-,-,-
40 036,FX A2 Param 4,00.00,00.50,00.00,01.00,-,-,-,-
41 037,FX A2 Param 5,00.00,00.50,00.00,01.00,-,-,-,-
42 038,FX A2 Param 6,00.00,00.50,00.00,01.00,-,-,-,-
43 039,FX A2 Param 7,00.00,00.50,00.00,01.00,-,-,-,-
44 040,FX A2 Param 8,00.00,00.50,00.00,01.00,-,-,-,-
45 041,FX A2 Param 9,00.00,00.50,00.00,01.00,-,-,-,-
46 042,FX A2 Param 10,00.00,00.50,00.00,01.00,-,-,-,-
47 043,FX A2 Param 11,00.00,00.50,00.00,01.00,-,-,-,-
```

Figure 1: Parameters of Surge VST to CSV

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## Links

- <https://github.com/hoanglongplanner/share-blog/tree/main/doc>
- <https://github.com/hoanglongplanner/share-blog/blob/main/doc/hoanglongplanner-ReaperVSTPresetCSV.pdf>
- <https://github.com/hoanglongplanner/share-blog/tree/main/src>
- <https://github.com/hoanglongplanner/share-blog/tree/main/src/hoanglongplanner-ReaperVSTPresetCSV>
- <https://youtu.be/ir-Vk7YBjHo?si=2MeEDHw0jYWVCrbS>

## References

- <https://www.cockos.com/EEL2/>
- <https://www.cockos.com/reaper/sdk/reascript/reascripthelp.html>
- <https://forum.cockos.com/showthread.php?t=180466>
- <https://forum.cockos.com/showthread.php?t=132627>
- <https://forum.cockos.com/showpost.php?p=2249924&postcount=447>

## Video Showcase

<https://youtu.be/ir-Vk7YBjHo?si=2MeEDHw0jYWVCrbS>

## Introduction

Tldr: Use Reaper to get all parameters of a VST in the 1st track and export those values to CSV and TXT.

This script was written as ELL2 format that Reaper support. More info can be found at <https://www.cockos.com/EEL2/> with ReaScript API <https://www.cockos.com/reaper/sdk/reascript/reascripthelp.html>

Use cases:

- Archival purpose, export VST parameters into raw readable format text
- For use in other audio software products (if possible)

This script able to export to following formats:

- CSV
- TXT
- From then on, you can use 3rd party libraries to convert to other formats (JSON, XML, etc..)

## Acknowledgement - Disclaimer - Limitation

This code was written by users, on Reaper forum post. I make changes to better suited for purposes stated above, the script test okay on Reaper 6.72 / Windows 11.

This script has limitations, since this is just a wrapper script that use Reaper API calls to get these values available publicly

- This is just a spreadsheet with all parameters listed
- In order to really get the real preset of specific plugin, it would have to be the native format is using however sometimes it will be encrypted with unreadable weird symbols and gibberish binary stuffs

Please note: This script will never be accurate, only the native format (XML, JSON, H2P, NMSV, FXP, FXB, etc..) that each audio instrument supports is

To illustrate this inaccuracy I'm talking about, here are some examples

- In H2P preset use for u-he synths, a long string full of numbers and letter, supposedly represent as sample wavetable, which this script cannot extract it from the internal engine of u-he audio instruments
- Some audio instruments will use values as Enum types, so you have to guess what the real context between 0 and 1

## Code Breakdown

### Get Values from Track

The code below will initialize and set the values by using provided Reaper API functions, in this case we only want to get parameter values from the 1st track only.

```

1 RV = TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_pv);
2 pval = TrackFX_GetParam(tr, 0, Pidx, minval, maxval);
3 pval_ex = TrackFX_GetParamEx(tr, 0, Pidx, minval_ex, maxval_ex, midval_ex);
4 pval_norm = TrackFX_GetParamNormalized(tr, 0, Pidx);
5 RV = TrackFX_GetParameterStepSizes(tr, 0, Pidx, step, smallstep
6 , largestep, istoggle);

```

### Parameter Values

The code below will get parameter values (different from context value), round and automatically append these values into #pv2 array

- parameterValue (current, min, max, middle)
- contextValue (current, min, max, middle)
- step (how much to increase and decrease knob, 0.1 0.01 0.001) (DISCARD)
- isToggle (in theory it should only be 0 or 1) (DISCARD)

Note: DISCARD meaning it won't be present in the new script, I discard these value because they are not helpful at all. (You could compare the old and new CSV files provided in Github repo).

```

1 // ! ORIGINAL VERSION
2 sprintf(#pv2,
3 "%05.2f, %05.2f, %05.2f, %05.2f, %05.2f, %05.2f, %05.2f,
4 %05.2f, %05.2f,%05.2f, %05.2f, %05.2f,\ ",
5 minval,
6 maxval,
7 minval_ex,
8 midval_ex,
9 maxval_ex,
10 step,
11 smallstep,
12 largestep,
13 istoggle,
14 pval,
15 pval_ex,
16 pval_norm
17 );

```

```
1 // ! NEW VERSION
2 sprintf(#pv2,
3     "%05.2f, %05.2f, %05.2f, %05.2f,\ ",
4     pval_norm,
5     midval_ex,
6     minval,
7     maxval
8 );
```

## Context Values

The code below will get context values.

These are just hacks to get highest/lowest/middle value by manipulating Reaper to set the 1st track of highest/lowest/middle possible value.

```
1 //Reaper Hack to get middle value
2 TrackFX_SetParam(tr, 0, Pidx, midval_ex);
3 TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_def);
4 #pv2 += ", ";
5 #pv2 += #form_def;
6
7 //Reaper Hack to get minimum value
8 TrackFX_SetParam(tr, 0, Pidx, minval_ex);
9 TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_min);
10 #pv2 += ", ";
11 #pv2 += #form_min;
12
13 //Reaper Hack to get maximum value
14 TrackFX_SetParam(tr, 0, Pidx, maxval_ex);
15 TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_max);
16 #pv2 += ", ";
17 #pv2 += #form_max;
```

## Append to array

All value items in #pv2 array will be appended to #pvalues

```
1 #pvalues += #pv2;
```

## Export to

The code below specify where Reaper should export those VST parameters to (CSV and TXT), please change this to suit your own need. By default, Reaper will export at the script folder.

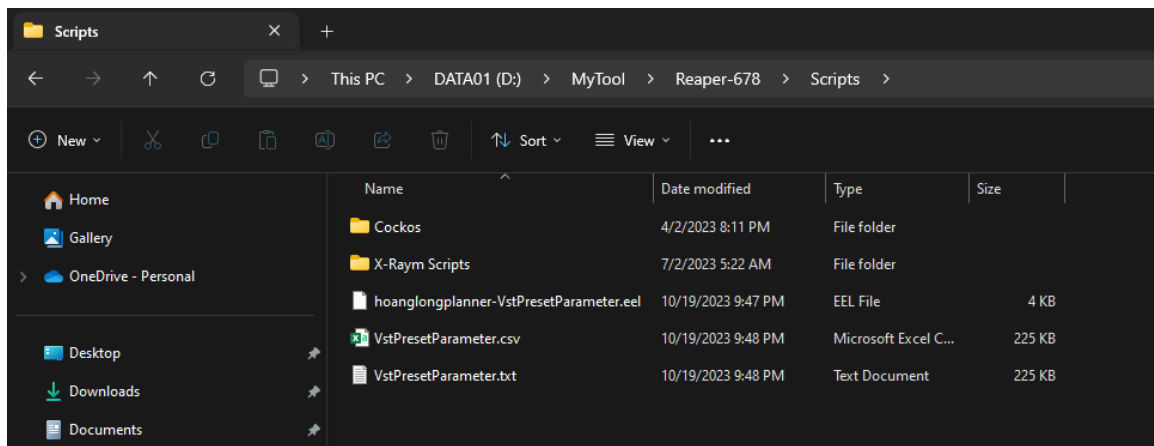


Figure 2: CSV Filepath Location

```
1 //--FilePath--
2 K_FileLocation_CSV = "/Scripts/VstPresetParameter.csv";
3 K_FileLocation_TXT = "/Scripts/VstPresetParameter.txt";
4 ParseTo(K_FileLocation_CSV);
5 ParseTo(K_FileLocation_TXT);
```

## Source Code (New)

```
1 //2023.10.19 hoanglongplanner
2 //Get a list of parameter names from the FX to CSV
3
4 //Output message to Reaper Console Terminal
5 function msg_s(m)
6 (
7     ShowConsoleMsg(m);
8     ShowConsoleMsg("\n");
9 );
10
11 //All info slider into this
12 function secondary_info(Pidx)
13 (
14     temp =1;
15
16     RV = TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_pv);
17     pval = TrackFX_GetParam(tr, 0, Pidx, minval, maxval);
18     pval_ex = TrackFX_GetParamEx(tr, 0, Pidx, minval_ex, maxval_ex, midval_ex);
19     pval_norm = TrackFX_GetParamNormalized(tr, 0, Pidx);
20     RV = TrackFX_GetParameterStepSizes(tr, 0, Pidx, step,
21     smallstep, largestep, istoggle);
22
23     sprintf(#pv2,
24     "%05.2f,%05.2f,%05.2f,%05.2f,",
25     pval_norm,
26     midval_ex,
27     minval,
28     maxval
29     );
30
31     //Get context current
32     #pv2 += #form_pv;
33
34     //Reaper Hack to get context middle value
35     TrackFX_SetParam(tr, 0, Pidx, midval_ex);
36     TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_def);
37     #pv2 += ",";
38     #pv2 += #form_def;
39
40     //Reaper Hack to get context minimum value
41     TrackFX_SetParam(tr, 0, Pidx, minval_ex);
42     TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_min);
43     #pv2 += ",";
44     #pv2 += #form_min;
45
46     //Reaper Hack to get context maximum value
```

```

47  TrackFX_SetParam(tr, 0, Pidx, maxval_ex);
48  TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_max);
49  #pv2 += ",";
50  #pv2 += #form_max;
51
52  //Append all values
53  #pvalues += #pv2;
54
55  //Return value to original set value
56  TrackFX_SetParam(tr, 0, Pidx, pval);
57  );
58
59  //Get VST Parameter from the 1st track of Reaper, and 1st FX of that track
60  function ParseTo(file_name)
61  (
62      //get first selected track and first FX
63      (tr = GetSelectedTrack(0, 0)) && (num_params = TrackFX_GetNumParams(tr, 0)) ?
64      (
65          TrackFX_GetFXName(tr, 0, #FX_name);
66
67          msg_s("\n \n===== \n");
68          #FX_name += "\n";
69
70          msg_s(#FX_name);
71
72          (file = fopen(file_name, "w")) ? (
73
74              msg_s("Paste to file, please wait...");
75
76              //Write VST Name at the top of page
77              fwrite(file, #FX_name, 0);
78
79              TrackFX_GetPreset(tr, 0, #presetName);
80              #presetName += "\n";
81              fwrite(file, #presetName, 0);
82
83              #K_HEADER = "ID,Name,Value Current,Value Middle,Value Min,Value Max
84              ,Context Current,Context Middle,Context Min,Context Max\n";
85
86              //Write header table
87              fwrite(file, #K_HEADER, 0);
88
89              //--Write to File--
90              //Init Loop Index Number
91              idx = 0;
92
93              loop(num_params,TrackFX_GetParamName(tr, 0, idx, #param_name) ? (
94                  //Prefix Param Num

```



```
95     sprintf(#pvalues,"%03d", idx +1-1);
96     //Append parameter name
97     #pvalues += #param_name;
98     //Seperate parameter value
99     #pvalues += ",";
100    // #pvalues += #param_name;
101
102    pv = TrackFX_GetParam(tr, 0, idx, minvalOut, maxvalOut);
103
104    //Ending parameter
105    // #pvalues += "\n";
106
107    secondary_info(idx);
108
109    #pvalues += "\n";
110
111    //Add space for every 10 parameters
112    //(idx +1) % 10 == 0 ? #pvalues += "\n";
113
114    //Output the end of sentence
115    //msg_s(#pvalues);
116
117    fwrite(file, #pvalues, 0); //=> Write all into file
118    );
119
120    //Loop increment
121    idx += 1;
122    );
123
124    fclose(file);
125    msg_s("Successful Parse !!");
126    );
127    );
128    );
129
130    //--FilePath--
131    K_FileLocation_CSV = "/Scripts/VstPresetParameter.csv";
132    K_FileLocation_TXT = "/Scripts/VstPresetParameter.txt";
133    ParseTo(K_FileLocation_CSV);
134    ParseTo(K_FileLocation_TXT);
```

## Source Code (Old)

```
1 //2023.10.19 hoanglongplanner
2 //Get a list of parameter names from the FX
3
4 //Output message to Reaper Console Terminal
5 function msg_s(m)
6 (
7     ShowConsoleMsg(m);
8     //ShowConsoleMsg("\n");
9 );
10
11
12 //All info slider into this
13 function secondary_info(Pidx)
14 (
15     temp =1;
16
17     RV = TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_pv);
18     pval = TrackFX_GetParam(tr, 0, Pidx, minval, maxval);
19     pval_ex = TrackFX_GetParamEx(tr, 0, Pidx, minval_ex, maxval_ex, midval_ex);
20     pval_norm = TrackFX_GetParamNormalized(tr, 0, Pidx);
21     RV = TrackFX_GetParameterStepSizes(tr, 0, Pidx, step,
22     smallstep, largeststep, istoggle);
23
24     sprintf(#pv2,"%05.2f, %05.2f, %05.2f, %05.2f, %05.2f, %05.2f, %05.2f
25     , %05.2f, %05.2f,%05.2f, %05.2f, %05.2f,\ ",
26     minval,
27     maxval,
28     minval_ex,
29     midval_ex,
30     maxval_ex,
31     step,
32     smallstep,
33     largeststep,
34     istoggle,
35     pval,
36     pval_ex,
37     pval_norm );
38
39     #pv2 += #form_pv;
40
41     //Reaper Hack to get middle value
42     TrackFX_SetParam(tr, 0, Pidx, midval_ex);
43     TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_def);
44     #pv2 += ", ";
45     #pv2 += #form_def;
46
```

```

47 //Reaper Hack to get minimum value
48 TrackFX_SetParam(tr, 0, Pidx, minval_ex);
49 TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_min);
50 #pv2 += ", ";
51 #pv2 += #form_min;
52
53 //Reaper Hack to get maximum value
54 TrackFX_SetParam(tr, 0, Pidx, maxval_ex);
55 TrackFX_GetFormattedParamValue(tr, 0, Pidx, #form_max);
56 #pv2 += ", ";
57 #pv2 += #form_max;
58
59 //Stuff
60 #pvalues += #pv2;
61
62 //Return value to original set value
63 TrackFX_SetParam(tr, 0, Pidx, pval);
64 );
65
66 //Get VST Parameter from the 1st track of Reaper, and 1st FX of that track
67 function VSTParameterToCSV(file_name)
68 (
69 //get first selected track and first FX
70 (tr = GetSelectedTrack(0, 0)) && (num_params = TrackFX_GetNumParams(tr, 0)) ?
71 (
72     TrackFX_GetFXName(tr, 0, #FX_name);
73
74     msg_s("\n \n===== \n");
75     #FX_name += "\n";
76
77     msg_s(#FX_name);
78
79     (file = fopen(file_name, "w")) ?
80     (
81         //Write VST Name at the top of page
82         fwrite(file, #FX_name, 0);
83
84         TrackFX_GetPreset(tr, 0, #presetName);
85         #presetName += "\n";
86         fwrite(file, #presetName, 0);
87
88         msg_s("Value Min Max Ex  Min  Mid Max");
89         msg_s("Steps Toggle Value ValEx ValNorm ParameterName\n");
90
91         #K_HEADER = "PARAM ID, Name, Min, Max,
92         Min Val Extreme, Middle Val Extreme, Max Val Extreme,
93         Steps, Steps Small, Step Large, IsToggle,
94         Value, Val Extreme, Value Normalize,

```

```

95         Context Current, Context Middle, Context Min, Context Max\n";
96
97         //Write header table
98         fwrite(file, #K_HEADER, 0);
99
100        //--Write to File--
101        //Init Loop Index Number
102        idx = 0;
103        loop(num_params,TrackFX_GetParamName(tr, 0, idx, #param_name) ?
104            (
105                sprintf(#pvalues,"%03d, ", idx +1-1); //=> Prefix Param Num
106                #pvalues += #param_name; //=> Append parameter name
107                #pvalues += ", ";
108                // #pvalues += #param_name;
109
110                pv = TrackFX_GetParam(tr, 0, idx, minvalOut, maxvalOut);
111
112                // #pvalues += "\n"; //=> Ending parameter
113
114                secondary_info(idx);
115
116                #pvalues += "\n";
117
118                //Add space for every 10 parameters
119                //(idx +1) % 10 == 0 ? #pvalues += "\n";
120
121                //Output the end of sentence
122                msg_s(#pvalues);
123
124                //Write all into file
125                fwrite(file, #pvalues, 0);
126            );
127            //Loop increment
128            idx += 1;
129        );
130
131        fclose(file);
132    );
133 );
134 );
135
136 //--FilePath--
137 K_FileLocation_CSV = "/Scripts/ParameterNames.csv";
138 K_FileLocation_TXT = "/Scripts/ParameterNames.txt";
139 VSTParameterToCSV(K_FileLocation_CSV);
140 VSTParameterToCSV(K_FileLocation_TXT);

```