GLOBAL AUDIO SOLUTIONS



RiTA Studio

USER MANUAL

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ABOUT THIS MANUAL

This manual describes RiTA Studio 1.0.0 for Windows and macOS, both the plugin (VST3 and AU) and the standalone application. The controls, the window and the presets are the same in every format: where something differs, the manual says so. The document is a Word file so that it can be kept up to date: chapters, text and screenshots can be edited, added or removed as the product evolves.

All screenshots are in English and show example settings, not a real system. RiTA Studio is also available in Spanish, Portuguese, French and Chinese; the language is chosen in Menu > Preferences and applies at once, with no restart.

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CONTENTS

1. INTRODUCTION 5
   1.1 PLUGIN AND STANDALONE 5
   1.2 WHAT EACH PART DOES 6
2. INSTALLATION AND REQUIREMENTS 7
   2.1 REQUIREMENTS 7
   2.2 MAC 7
   2.3 WINDOWS 7
   2.4 AFTER INSTALLING: THE HOST 8
   2.5 UNINSTALLING 8
3. LICENSE 9
   3.1 THE LICENSE AGREEMENT 9
   3.2 ACTIVATE 10
   3.3 ACTIVATE BY EMAIL 10
   3.4 WITHOUT A CONNECTION 11
   3.5 THE LICENSE OF THIS COMPUTER 11
4. GETTING STARTED 12
   4.1 AS A PLUGIN 12
   4.2 AS A STANDALONE 12
   4.3 MONO AND STEREO 12
   4.4 THE ORDER OF THE SIGNAL 12
5. THE WINDOW 13
   5.1 THE TOP BAR 13
   5.2 THE GRAPH BAR 13
   5.3 THE GRAPH 14
      THE PHASE 14
   5.4 THE METERS 14
   5.5 WHAT IS BLUE 15
6. DSP MODE 16
7. FILTERS AND OUTPUT 18
   7.1 THE OUTPUT OF THE CHANNEL 18
   7.2 THE CROSSOVERS 18
   7.3 THE 20 FILTERS 18
      FIR REVPHASE 19
   7.4 THE CHINGONIZER 19
   7.5 THE SAMPLE RATE 19
8. THE FIR FILTERS 21
   8.1 X-OVER FIR 21

8.2 IMPORT FIR 21
8.3 THE SHARED SETTINGS 22
8.4 LINEAR PHASE 22
9. BYPASS, ALL OFF AND RESET 23
9.1 ALL OFF 23
9.2 RESET 24
10. LATENCY AND LINKS 25
10.1 THE LATENCY INDICATOR 25
10.2 LATENCY LINK 25
10.3 PARAMETER LINK 25
11. READING AND FOLLOWING RITA 27
11.1 CONNECTING 27
11.2 READING AND FOLLOWING 27
11.3 WHAT IS TAKEN 28
11.4 WHAT RITA HAS AND IS NOT HEARD HERE 28
12. PRESETS AND SETTINGS 29
12.1 PRESETS 29
12.2 WHAT IS SAVED WHERE 29
13. PREFERENCES, UPDATES AND ABOUT 30
13.1 PREFERENCES 30
13.2 UPDATES 31
13.3 ABOUT 31
14. WHAT RITA STUDIO ADDS 32
14.1 THE FILTER BAR 32
14.2 MID AND SIDE 32
14.3 HPF AND LPF IN LINEAR PHASE 33
14.4 RTA AND WHAT IS OFF 33
14.5 INPUT GAIN 33
14.6 TILT 33
14.7 SIDECHAIN 33
14.8 SEVERAL FILTERS AT ONCE 33
14.9 SOLO 33
14.10 DYNAMIC FILTERS 34
14.11 LIMITS 34
15. SUMMARY OF VALUES 35

(Word builds the contents when the document opens; if not, right-click on it and choose Update Field.)

1. INTRODUCTION

RiTA Studio is the filters of **one RiTA DSP channel** as a plugin: high-pass and low-pass crossovers, an equalizer of twenty filters, the Chingonizer, three FIR filters and the output of the channel, with its gain, delay and polarity. The filters are computed as RiTA 2.8 computes them, so what you hear is what RiTA draws.

It can work on its own, like any equalizer, or with RiTA: it **reads** a RiTA channel once, or **follows** it so that what changes in RiTA changes in the plugin too. It never writes to RiTA.



The RiTA Studio window with example settings.

1.1 PLUGIN AND STANDALONE

FORMAT	WHERE IT RUNS	WHAT FOR
VST3	Windows and macOS, in a host that loads VST3 plugins	Inserting it on a track or bus of a DAW or a live host.
AU (Audio Unit)	macOS, in a host that loads Audio Units	The same, in Mac hosts.
Standalone	Windows and macOS, with no host	Processing an input of the audio interface and sending it to its outputs, as an application.

The window, the filters, the presets and the license are the same. Only the source of the audio differs: in the plugin it is the host; in the Standalone, the audio interface chosen in its options (chapter 4).

1.2 WHAT EACH PART DOES

PART	WHAT IT IS FOR
Top bar	RiTA's address, Read from RiTA, Follow RiTA, the latency indicator and the Menu.
Graph bar	Links, DSP mode, Bypass, All off, Reset, Solo Mid, Solo Side and the view of the curve.
Graph and meters	The curve of what is playing, with a point for each filter, and the input and output levels.
Output row	Polarity, gain and delay, HPF, LPF and the Chingonizer.
FIR row	X-Over FIR, AEQ FIR, Import FIR and the settings shared by the FIR filters.
The 20 filters	The equalizer, each band with its switch.

2. INSTALLATION AND REQUIREMENTS

2.1 REQUIREMENTS

COMPUTER	SYSTEM	FORMATS
Mac with Apple Silicon (M1 or later)	macOS 11 or later	VST3, AU and Standalone
PC	64-bit Windows 10 or 11	VST3 and Standalone

- A RiTA Studio license for that computer (chapter 3): a key of RiTA Plugin, the same for RiTA Channel and RiTA Studio. It is not RiTA's.
- For the plugin, a host that loads VST3 or AU. For the Standalone, an audio interface.
- RiTA is only needed to read or follow a channel, and it can be on another computer on the network.

> **Note:** There is no version for Intel Macs at the moment.

2.2 MAC

1. Double-click **RiTA_Studio-1.0.0-macOS-Apple-Silicon.pkg**.
2. If macOS says it cannot verify the developer, click OK and go to **System Settings > Privacy & Security**. The notice about the installer is at the bottom: click **Open Anyway** and confirm with your password or Touch ID.
3. Follow the steps of the installer. It asks for the computer's password. If there was a version, it is replaced.
4. When it finishes, click Close and open your host, or the Standalone.

The installer puts each format in its place:

FORMAT	FOLDER
AU	/Library/Audio/Plug-Ins/Components/RiTA Studio.component
VST3	/Library/Audio/Plug-Ins/VST3/RiTA Studio.vst3
Standalone	/Applications/GlobalAudioSolutions/RiTA_Studio/RiTA Studio.app

> **Note:** If macOS blocks the plugin or the Standalone the first time they open, allow it in System Settings > Privacy & Security, as with the installer.

When macOS asks whether the Standalone may use the microphone, click **Allow**: without this permission no audio comes in from any interface. If you denied it, turn it on in System Settings > Privacy & Security > Microphone. When reading from RiTA, macOS may also ask for permission to access the local network.

2.3 WINDOWS

1. Close the host and the Standalone if they are open. Double-click **RiTA_Studio-1.0.0-Windows-x64.exe**.
2. If "Windows protected your PC" appears, click **More info** and then **Run anyway**. Windows asks for permission to make changes: click Yes.
3. Choose the language of the installation and follow the steps. If there was a version, it is replaced.

4. Click **Finish**. With the run box ticked, the Standalone opens at once.

The installer puts each format in its place:

FORMAT	FOLDER
VST3	C:\Program Files\Common Files\VST3\RiTA Studio.vst3
Standalone	C:\Program Files\GlobalAudioSolutions\RiTA_Studio\RiTA Studio.exe, with a shortcut in the Start menu

2.4 AFTER INSTALLING: THE HOST

If the host does not show RiTA Studio, make it scan for plugins again. The plugin appears as RiTA Studio, by the manufacturer Global Audio Solutions.

2.5 UNINSTALLING

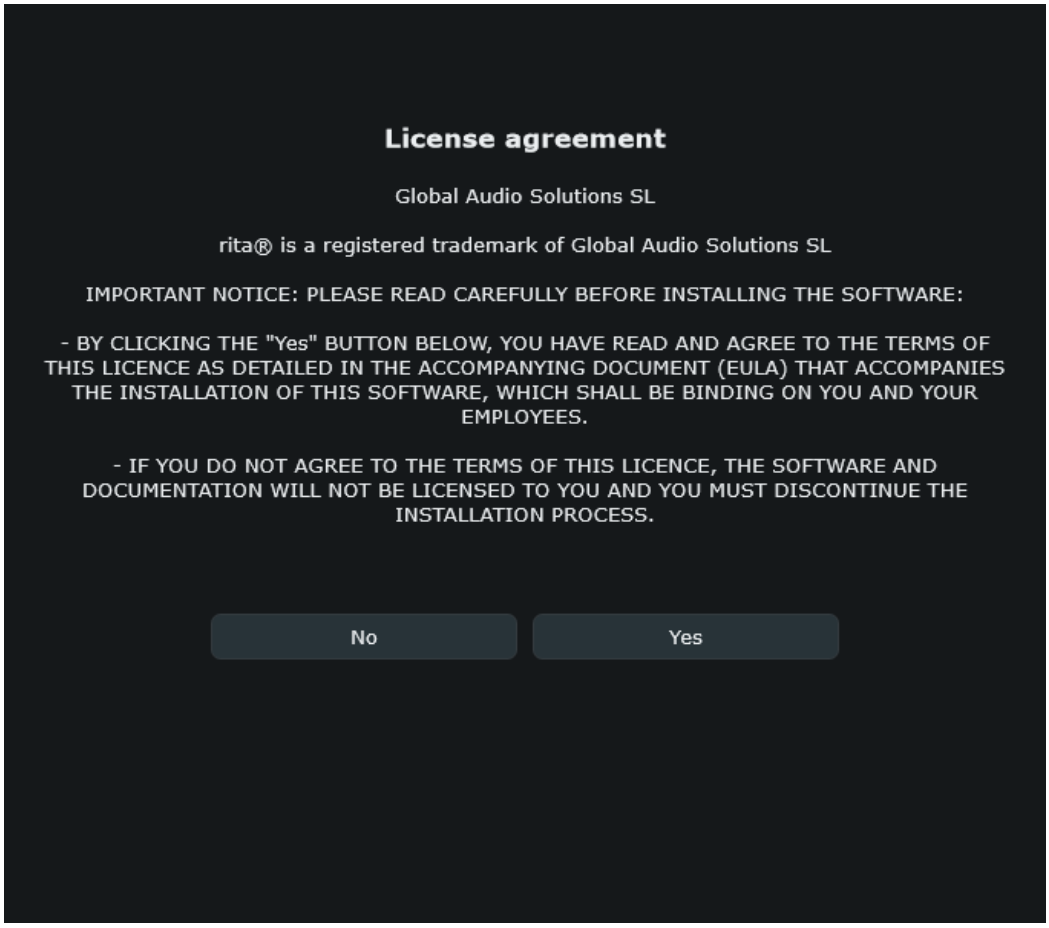
- Mac: delete the three paths of the table above.
- Windows: Settings > Apps > RiTA Studio > Uninstall. It removes the VST3 and the Standalone.

> **Note:** Uninstalling does not delete the license, the settings or the presets. The settings and the license are in the user's folder (chapters 3 and 12); the presets, wherever they were saved.

3. LICENSE

RiTA Studio uses RiTA's license system: one key of **RiTA Plugin** for each computer, which opens RiTA Channel and RiTA Studio. It is not RiTA's license: a key of RiTA does not open the plugins, nor the other way round. Without a valid license, a window covers the plugin: it cannot be used and it does not sound.

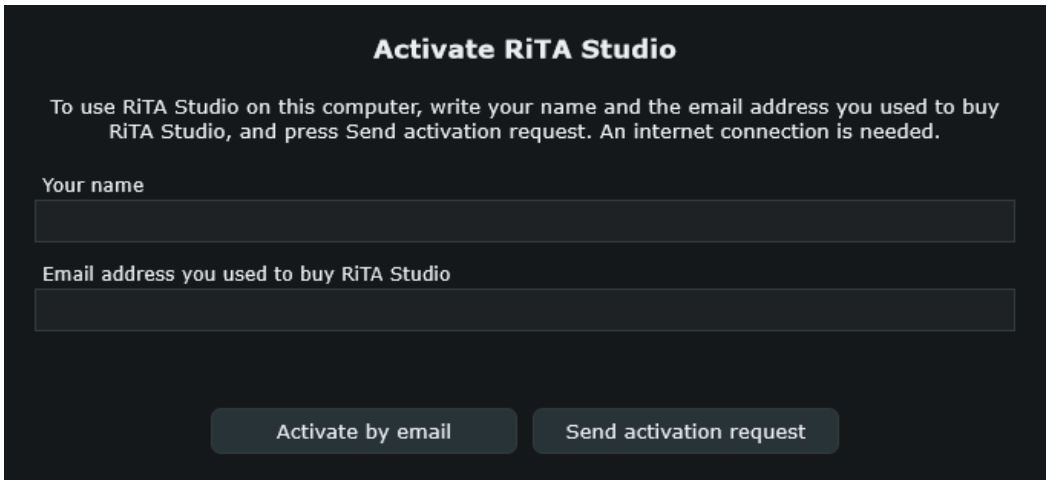
3.1 THE LICENSE AGREEMENT



The license agreement, the first time a plugin opens on a computer.

The first time a plugin opens on a computer, the **license agreement** appears, which refers to the EULA that comes with the installer. To use the plugin, press **Yes**; with **No** it cannot be used and it does not sound. It is accepted once, for RiTA Channel and RiTA Studio.

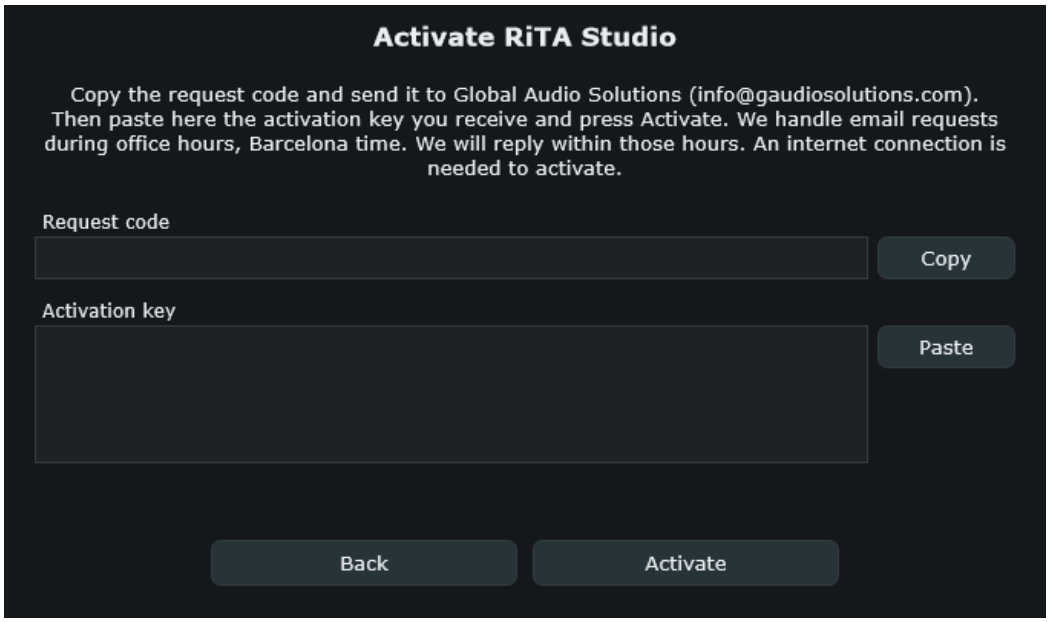
3.2 ACTIVATE



The activation request.

1. Write your name and the email address you used to buy the plugin, and press **Send activation request**. An internet connection is needed.
2. The request waits until Global Audio Solutions authorizes it. You can wait with the window open or close the plugin: the next time you open it, it activates by itself.
3. When the key arrives, the plugin says "License activated" and is ready. If the request is not approved, the window says why; another one can be sent.

3.3 ACTIVATE BY EMAIL



Activation by email. The request code is covered here.

If you cannot wait, or something fails, press **Activate by email**: copy the **Request code** and send it to info@gaudiosolutions.com. Paste the **Activation key** you receive and press **Activate**. The internet is needed too, as the key is checked with the server. Email requests are handled during office hours, Barcelona time.

3.4 WITHOUT A CONNECTION

The plugin checks the license with the server at most once a day. Without the internet it keeps working with the last good answer for 30 days or 200 starts; after that it asks to connect (Retry). If the server says that the key was withdrawn or deactivated, another one has to be requested.

3.5 THE LICENSE OF THIS COMPUTER

Menu > License... shows the license of this computer. From there it is **deactivated** to move it to another computer: in two steps and with the internet, and the plugin stops working on this one. At the end it shows a deactivation code: keep it as proof.

SYSTEM	WHERE THE LICENSE GOES
Windows	C:\ProgramData\GlobalAudioSolutions\RiTA Plugin
Mac	/Library/Application Support/GlobalAudioSolutions/RiTA Plugin

> **Note:** The license is tied to the computer and is activated once: it works for every user account of the computer, both plugins and every format. To use the plugin on another computer, deactivate it on this one and activate it there.

4. GETTING STARTED

4.1 AS A PLUGIN

1. Insert RiTA Studio on the track or bus you want to process.
2. Open its window. The first time, activate the license (chapter 3).
3. Choose the brand in **DSP mode** (chapter 6): it decides which filters there are and how they are computed.
4. Set the filters, or read a RiTA channel (chapter 11).

Every control is a parameter of the host: it can be automated and it is saved with the session, including the coefficients of the FIR filters. Each instance is a channel, with its own settings.

4.2 AS A STANDALONE

1. Open RiTA Studio. In the top bar of the window, click **Options** and choose **Audio/MIDI Settings...**.
2. Choose the audio interface, the inputs and outputs, the sample rate and the buffer size.
3. If the notice **Audio input is muted to avoid feedback loop** appears, click **Settings...** and untick **Mute audio input**. It starts muted to avoid feedback when the input and output are the computer's microphone and speakers: turn it off only when the path is safe.
4. Set the filters, or read a RiTA channel (chapter 11).

The options window and the **Options** menu are in English whatever the language chosen. The Standalone remembers its settings and the audio interface when it closes. Besides the Menu of the window, Options has options of its own:

OPTION	WHAT IT DOES
Audio/MIDI Settings...	Chooses the audio interface.
Save current state... / Load a saved state...	Saves and loads the state in a file of the Standalone's own. To work, and to take settings to the plugin, use the presets of the Menu (chapter 12).
Reset to default state	Starts from nothing, so everything is lost, the AEQ and Import FIR too. It is not the Reset button of the window (chapter 9).

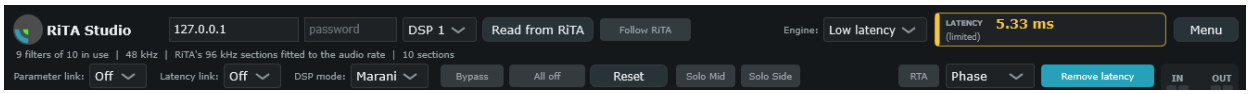
4.3 MONO AND STEREO

RiTA Studio works in mono and in stereo, with as many inputs as outputs: mono to mono or stereo to stereo. It does not accept mono to stereo or more than two channels. In stereo, **both sides have exactly the same filters**, because a RiTA DSP channel is mono. To treat left and right separately, use two instances, one on each mono channel or track.

4.4 THE ORDER OF THE SIGNAL

The order is RiTA's: HPF, the 20 filters, LPF, Chingonizer, and then the FIR filters. The output of the channel, with its gain, delay and polarity, applies to that result.

5. THE WINDOW



The top bar and the graph bar.

5.1 THE TOP BAR

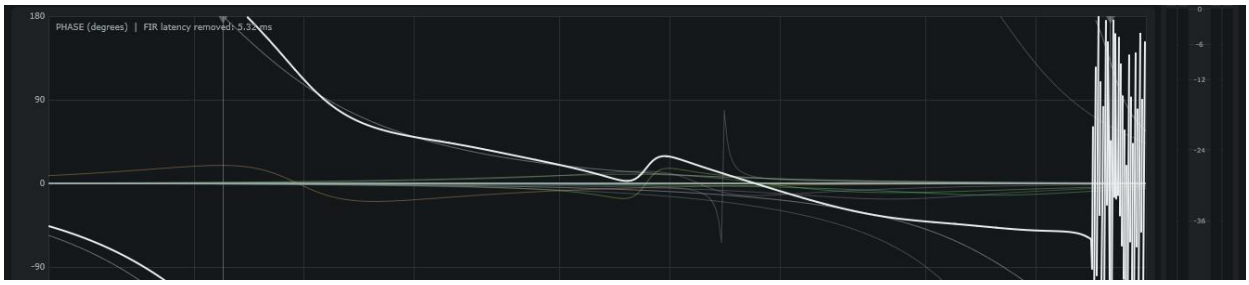
CONTROL	WHAT IT IS
RiTA: IP or IP:port	Where RiTA is (chapter 11).
password	Only if RiTA asks for one. It is never saved.
DSP	The DSP channel of RiTA that this plugin is, 1 to 8.
Read from RiTA / Follow RiTA	Reads the channel once, or follows it.
Status line	Below: how many filters are in use, the sample rate and which filter sections are used.
LATENCY	The latency of the plugin (chapter 10).
Menu	Presets, Apply plugin to, Preferences (chapter 13), License (chapter 3), Check for updates and About.

Without **Show the connection to RiTA** (Preferences) the address, the password, the DSP, Read, Follow and what RiTA said are not there; if it was following, it goes on. Without **Show the graph** the graph and its bar are not there, and the window is lower: only what is below them.

5.2 THE GRAPH BAR

CONTROL	WHAT IT IS
Parameter link	Off, or a group from A to H: the instances of the group follow each other (chapter 10).
Latency link	Off, or a group from A to H: the instances of the group match their latency (chapter 10).
DSP mode	The brand of the processor: RiTA, Meyer, Marani or Kingray (chapter 6).
Bypass, All off, Reset	Chapter 9.
Magnitude / Phase	What the curve draws.
Remove latency	Only in Phase: takes the delay of the FIR out of the curve.
Range	±6, ±12, ±24, ±30 or ±48 dB. It is only the view, and Phase does not use it.

5.3 THE GRAPH



The magnitude: the white curve is the total, and each filter has its point and a curve of its colour.

The curve is what is playing, with the filters, the FIR and the gain of the channel. Each filter is also drawn on its own, in its colour, with its number.

ACTION	WHAT IT DOES
Drag the point of a filter	Moves its frequency and gain.
Mouse wheel on the point	Changes its Q.
Double click on the point	Sets its gain to 0 dB; the type stays.
Double click on an empty place	The first filter that is Off comes in there.
Drag the triangle at the top	Moves the frequency of the HPF or the LPF.
Double click on a gain knob	Sets it to 0 dB.

> **Note:** A filter switched off with its switch has no point on the graph and keeps its values. The double click on an empty place only uses filters whose type is Off.

THE PHASE



The phase of the filters and the FIR.

In **Phase** the curve is the phase of the filters and the FIR, with the polarity, in degrees from −180 to +180. **Remove latency**, on by default, takes out the delay of the FIR, to see what the filters do and not that delay. The delay of the channel is never in the phase. In this view the points cannot be dragged.

5.4 THE METERS

Next to the graph are the input (IN) and the output (OUT), left and right. The bar is the RMS level with the ballistics of a VU meter, the line is the peak, held for a second and a half, and the light on top says that 0 dBFS was reached; a click clears it. A mono signal only moves the left bar.

5.5 WHAT IS BLUE

A blue panel is a process that is acting, whether the change came from the controls, the host or RiTA. A filter that does nothing is not blue, for example a Parametric at 0 dB or the Chingonizer with no gain. The status line counts the filters in use out of the PEQ Bands (Preferences).

6. DSP MODE

The **DSP mode** is the brand of the processor the channel is set for, as RiTA's DSP Type. It chooses which filters appear in the lists, with their names, and how they are computed. Read from RiTA takes RiTA's.

Chosen here, the channel is converted as RiTA does it: the bell and the shelving keep their sound, what the new brand does not reach goes to its limit, and a filter, crossover or order it does not have goes off or to the nearest. With the Meyer the filters go to its fixed rows, the first Low Shelf and the first High Shelf go to the U-Shaping, and what does not fit goes to the free rows 17 to 20. The status line says how many things changed of what was on, and its tip which. The host, a preset, RiTA or the parameter link change it without converting.

BRAND	CROSSOVERS	THE 20 FILTERS
RiTA	None, Butterworth, Linkwitz-Riley, Bessel, Elliptic, Chebyshev I and II	Off, Parametric, Low Shelf, High Shelf, APF 1st and 2nd order, RevPhase 1st and 2nd order
Meyer	None, Butterworth, Linkwitz-Riley	Fixed types: 1-10 bells in steps of 0.1 octave, 11-15 U-Shaping, 16 APF of 2nd order. 17-20 free: bell, shelving, APF of 2nd order or RevPhase of 1st or 2nd order (RiTA does not have them)
Marani	None, Butterworth, Linkwitz-Riley, Bessel, NXF	Bell, Bell-Adaptive Q, Bell-Classic Q, Hi and Lo-Shelving (1st order, 2nd order, Slope and VariQ), Low and High Pass, Band Pass, Notch Filter, All Pass and RevPhase
Kingray	None, Butterworth, Linkwitz-Riley, Bessel	RiTA's. Bell with Zölzer's Q and Bessel at −3 dB on its frequency

The Q and the gain go over the range of each type in each brand. In RiTA, Q from 0.1 to 40 and ±30 dB; in Marani, its table, with Q up to 128 and ±15 dB, and 4 to 104 in the Notch; in Kingray, Q from 0.27 to 10 and ±15 dB; in the bell of the Meyer, Q from 0.67 to 10 and ±18 dB. In Marani's Slope shelving the Q knob is the slope, 6 to 12 dB/oct, and its name changes to Slope. The order of the crossovers goes only through those the brand has: in the Meyer, Linkwitz-Riley 2 or 4; in Kingray and Marani, Butterworth without 5 and 7, and Kingray's Bessel too; Marani's Bessel, 2 or 4.

The U-Shaping of the Meyer is one curve of 5 gains, −15 to +15 dB, and 4 corners, each with its slope: its order, 6 dB/oct each, in the column of the Q as in RiTA (1 to 8 the first two, 1 to 6 the others): the filters 11 to 14 are the bands 1 to 4 and the 15 is the band 5, which has only a gain. A band does not reach its gain if its corners are close, as in the processor. With the Chingonizer on, which uses the corners 1 and 4, the bands 1 and 5 do nothing, and the frequency and slope of the band 4 stay fixed.

With Meyer the FIR work as with any other brand: X-Over, AEQ and Import. In RiTA the Meyer has no FIR; in the plugins it has.

Changing to Meyer sets the **PEQ Bands** to 16, the filters of the processor; to more only if, converting, a filter went to the free 17 to 20. They can be changed after, and they do not change what you chose for a new plugin. The free bells are spread among the 10 of the processor. Changing from Meyer to another brand leaves the plugin as a new one: your PEQ Bands come back, the APF of filter 16 is a bell again if it was off, the bells at 0 dB turn on and are spread, and the width is shown as a Q.

Note: If a setting that was read or loaded uses a type the brand does not have, it stays at the end of the list, to be seen and not to change by itself. All Marani models are treated as one, with all their types; when RiTA says it is a MIR E, it computes at 48 kHz as in RiTA.

7. FILTERS AND OUTPUT



The output, the crossovers and the Chingonizer.

7.1 THE OUTPUT OF THE CHANNEL

CONTROL	RANGE	DETAIL
Gain dB	−60 to +60 dB	It shows in the curve. Double click: 0 dB.
Delay ms	0 to 680 ms	It is a setting, not latency: the host is not told.
Invert polarity	Yes or no	Inverts the polarity of the channel.

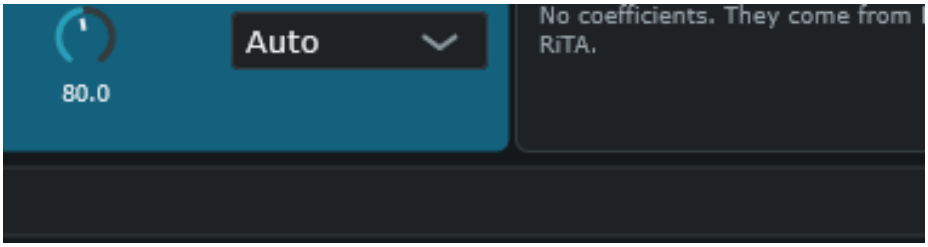
7.2 THE CROSSOVERS

The HPF and the LPF have the types of the chosen brand. The frequency goes from 1 Hz to 30 kHz and the order from 1 to 8.

TYPE	DETAIL
None	No filter.
Butterworth	−3 dB at the corner frequency.
Linkwitz-Riley	Two Butterworth in series: even orders only. −6 dB at the corner.
Bessel	Normalized as in RiTA; in Kingray, −3 dB on its frequency.
Elliptic	Ripple dB is the ripple of the pass band.
Chebyshev I	Ripple dB is the ripple of the pass band.
Chebyshev II	Attenuation dB is the attenuation of the stop band.
NXF (Marani)	The order chooses the slope: from 1 (−40 dB) to 8 (below −75 dB).

> **Note:** The field RiTA calls Q in the crossovers is not a Q: it is dB, from 0.1 to 120. That is why it is called Ripple dB or Attenuation dB here, and it is off in the types that do not use it.

7.3 THE 20 FILTERS

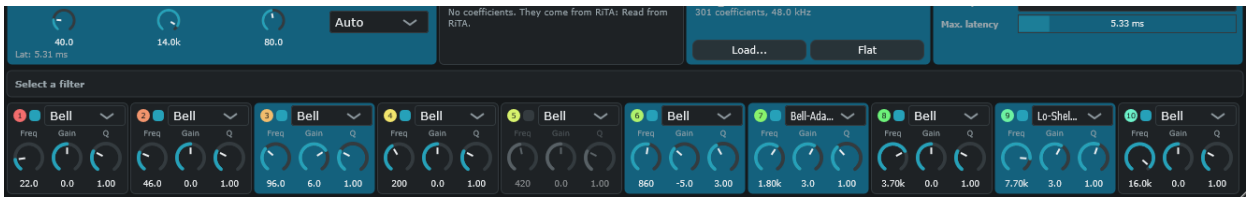


Three bands: band 3 in use, band 4 at 0 dB and band 5 off with its switch.

Each band has its number and colour, the same as on the graph; a square **switch**, blue when it is on; its type; and its frequency (20 Hz to 20 kHz), gain and Q knobs. They start spread from 22.4 Hz to 16 kHz.

Only the bands in use are there: **PEQ Bands**, in Preferences, 4 to 20. When the number goes down, those beyond turn off and keep their values; those in use, from 1 to the number chosen, all turn on. The free bands (Parametric at 0 dB, on or off: they are not heard) are spread for as many as there are, as in RiTA: with 20, every half an octave; with fewer, from 22 Hz to 16 kHz on a log scale (with 10: 22, 46, 96, 200, 420, 860, 1800, 3700, 7700 and 16000 Hz), with a Q of 1. They are spread when a new plugin opens, with Reset, when the PEQ Bands change and when the DSP mode changes; those with a gain or of another type stay where they are. With **BW** instead of Q, the width of the bands is shown in octaves; it sounds the same. The Chingonizer and the FIR can be taken out in Preferences: what is not shown does not sound, as in RiTA, and comes back as it was when shown again.

- **Switching it off**: the band stops sounding and keeps its type and values. It is the same as a filter that is not ticked in RiTA.
- **Type Off**: it does not sound either, and it is what the double click on the graph uses to place a new filter.
- The knobs a type does not use are off. An APF, for example, has no gain.



The 20 filters, with the types of the Marani mode.

FIR REVPHASE

RevPhase 1st and RevPhase 2nd are filters of the list, not separate panels: they are the inverse of an all-pass of that order, to take its phase out, at the frequency and with the Q of the band. Their length is FIR Taps and they add latency (chapter 8).

7.4 THE CHINGONIZER

It shapes the overall tonality with two shelves, without using two of the twenty filters. It has a switch, frequency and gain, and two versions:

- **MK1**: a low and a high shelf at the same frequency, with opposite gains.
- **MK2**: a low shelf at a quarter of the frequency and a high shelf at four times, plus a level gain.

7.5 THE SAMPLE RATE

RiTA computes its IIR filters as a processor working at 96 kHz. At 96 kHz or more, RiTA Studio uses those same filters. Below that, each section is turned into another at the audio rate with the same magnitude, without taking the signal to another rate and back, so the IIR filters add no latency at any rate.

At 44.1 and 48 kHz the typical difference with RiTA is thousandths of a dB: 90 % of the filters tested stay within 0.3 dB and 97 % within 1 dB. The largest differences are in Chebyshev and Elliptic filters with the corner near

12 kHz. An all-pass keeps its frequency and group delay; at 48 kHz it is within 1 degree of RiTA up to 1 kHz, and further near the top of the band.

8. THE FIR FILTERS



X-Over FIR, AEQ FIR, Import FIR and the shared settings.

ROW	WHERE IT COMES FROM
X-Over FIR	A linear-phase crossover designed here, with its switch.
AEQ FIR	The one RiTA's Auto EQ leaves. It only comes from RiTA, with Read or Follow: here it has its switch and nothing else.
Import FIR	Coefficients from a file, with Load...; Flat takes them out.
FIR RevPhase	One of the types of the 20 filters (chapter 7).

Beside each FIR is its latency, as in RiTA: **Lat: x ms**, that of this FIR on its own, where its peak is. It has to be compensated in the other channels. Without **FIR** in Preferences, the whole FIR row goes, with the shared settings, and the FIR do not sound; when it is shown again, the ticked ones sound again.

8.1 X-OVER FIR

The X-Over FIR button switches it on and off; off, it keeps its type and values. Choose Low Pass, High Pass or Band Pass, or None to take it out. It is the same design as RiTA 2.8.2. Freq 1 is the corner frequency, the lower one in a Band Pass; Freq 2 is the upper one, only in Band Pass. The window can be Kaiser, Chebyshev, Hann, Hamming, Blackman, Blackman-Harris, Rectwin, Gauss, Butterworth or Linkwitz-Riley. The last two are those filters in linear phase, with their Order, 1 to 8, at 6 dB/oct each; Linkwitz-Riley only has even orders. Atten dB, from 20 to 150 dB, is used with Kaiser, Chebyshev, Butterworth and Linkwitz-Riley. In Band Pass, the second list is the window of Freq 2, and each corner is designed on its own; with Same as 1, one for both.

FIR Taps is the longest the X-Over can be: it uses the taps it needs, so the higher the frequency, the less latency. For example, an LR4 low pass with 4096 taps, at 48 kHz, uses 663 at 1 kHz and 165 at 4 kHz. A window with a very low corner uses them all.

With the other windows, Order is Auto or 2, 4, 6 or 8. Auto gives the slope of 1/6 of an octave. With a number, it looks for the taps that get closest to that Linkwitz-Riley down to -40 dB, up to FIR Taps. It is only a likeness: the taps change how wide the slope is, not its shape. In Band Pass, each corner goes on its own.

8.2 IMPORT FIR

Load... reads a WAV file or a text with the numbers. The panel says its name, how many coefficients it has and at what rate.

- It takes 1 to 32768 coefficients and uses up to 8192. With more, it is cut, and the panel says how many it had.

- A linear-phase file is cut around its middle and stays linear phase. Any other is cut where its energy is, with a short fade.
- A WAV at another rate is resampled to the audio rate. A text is used as it is.

The coefficients of the AEQ FIR and the Import FIR are saved with the session and with presets.

8.3 THE SHARED SETTINGS

CONTROL	WHAT IT DOES
FIR Taps	The length of the RevPhase and the longest the X-Over can be: 64 to 8192, 512 to start with. Longer: steeper and more exact, and more latency and CPU.
Engine	In the top bar, beside the latency. Low latency: the FIR adds only its own delay. Low CPU: a quarter of the CPU with long FIRs, and 1024 samples more of latency. Linear phase: see below.
Max. latency	The most delay the FIR may have, in ms. To start with, and with a double click, it is half the FIR Taps, and it follows them. In Linear phase it is a budget: see below.

When **Max. latency** is lowered, the start of the FIR, its pre-ringing, is taken out, and what is left before the peak fades in. The latency goes down but the response changes, the more the less latency is asked for, and the graph draws it as it is. The latency indicator says "(limited)".

> **Note:** With FIR filters of 8192 taps or fewer there is no reason to use the Low CPU engine: it is for very long responses. Changing engine does not crossfade: it is a setting, not something to move while it plays.

8.4 LINEAR PHASE

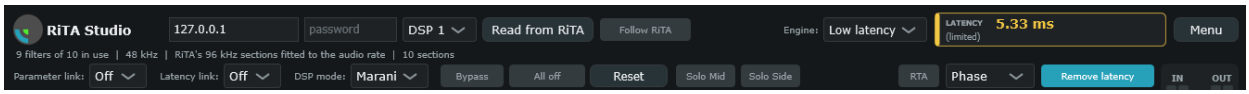
With the Engine at Linear phase, the HPF, the LPF, the 20 filters and the Chingonizer keep their magnitude and lose their phase: they become part of the FIR. What is only phase stays as it is: the APFs among the 20 filters and the RevPhase. The X-Over FIR, the AEQ and the Import stay as they are too.

The Max. latency says how much linear phase there is. On entering this engine it is 43 ms, and the more latency you allow, the lower it reaches. The magnitude is always the same: what does not fit, very low or very narrow filters, keeps its own phase.

The host is told this latency, and it counts with that of the other FIR. It exists only if some filter acts: it comes with the first one, and the host adjusts, which can be heard as a small jump. All off takes it out, unless a HPF or LPF is left, which it does not switch off.

> **Note:** A very low or very narrow filter needs more latency than you allow it: the graph draws what really sounds, so the difference is seen there. Linear phase has pre-ringing: before a sharp hit an early echo can be heard if the filters are very pronounced.

9. BYPASS, ALL OFF AND RESET



The three buttons are to the right of the DSP mode.

BUTTON	WHAT IT DOES	WHAT IT LEAVES ALONE
Bypass	The signal goes through unprocessed. It is the host's bypass.	It keeps the same latency, so nothing jumps. No setting changes.
All off	Switches off whatever is on: the 20 filters, the Chingonizer and the X-Over, AEQ and Import FIR. It goes red. The latency of the FIR goes away.	The HPF, the LPF, the gain, the delay and the polarity.
Reset	Puts everything in its initial state, and stops following RiTA. It asks first, because it cannot be undone.	The AEQ and Import FIR with their switches, the links, RiTA's address and the settings.

9.1 ALL OFF



With All off pressed, in red: the switches are off and only the crossovers are in the curve.

It is for comparing the system with and without equalization, losing nothing. When pressed, every blue switch goes off and the plugin remembers which ones were on. Pressed again, those come back on. What was switched on by hand meanwhile stays on, so you can switch everything off and listen to one band alone.

The state of All off and what was on are saved with the preset and the session.

9.2 RESET

It asks for confirmation and then leaves every parameter as in a new instance. It also forgets which preset was open, so that Save preset does not write over the previous one.

> **Note:** If the instance is in a Parameter link group, the others of the group follow the Reset, like any other change of parameters. To remove the coefficients of the Import FIR, use its Flat button.

10. LATENCY AND LINKS

10.1 THE LATENCY INDICATOR



The indicator, with the latency limited.

At the top right is the latency in milliseconds. It is what the host is told, so that it compensates. Below it says where it comes from, and its tooltip gives the detail.

COLOUR	LATENCY
Green	No latency.
Amber	Up to 10 ms.
Orange	Up to 40 ms.
Red	More than 40 ms.

SOURCE	LATENCY
IIR filters (crossovers, 20 filters, Chingonizer)	None, at any sample rate, except in the Linear phase engine.
X-Over FIR or a linear-phase file	Half its length: 512 taps at 48 kHz is 5.33 ms.
FIR RevPhase	Its own delay.
AEQ or Import FIR that is not linear phase	It has no single delay: its latency is where its peak is. The indicator says "(FIR peak)".
Low CPU engine	1024 samples more.
Linear phase engine	That of Max. latency, 43 ms to start with, if some filter acts.

> **Note:** The delay of the channel, in the output row, is a setting: it does not count as latency and the host is not told.

10.2 LATENCY LINK

The instances of RiTA Studio with the same letter have the latency of the slowest: each of the others adds a delay for the difference and tells that number to the host. So the channels stay aligned whatever FIR each has, also in a host that does not compensate. The group adjusts by itself when a FIR changes or an instance comes in or leaves.

10.3 PARAMETER LINK

The instances with the same letter follow each other: when a parameter of one changes, from its window, from automation or from a read of RiTA, the others take the same value. It is what two channels that have to be the same need, such as a stereo pair made of two mono instances.

- Nothing is copied when joining a group: they follow each other from then on.
- The coefficients of the AEQ and Import FIR are not linked: each instance loads its own.
- The two links are independent, and neither is linked itself: each instance has its groups.

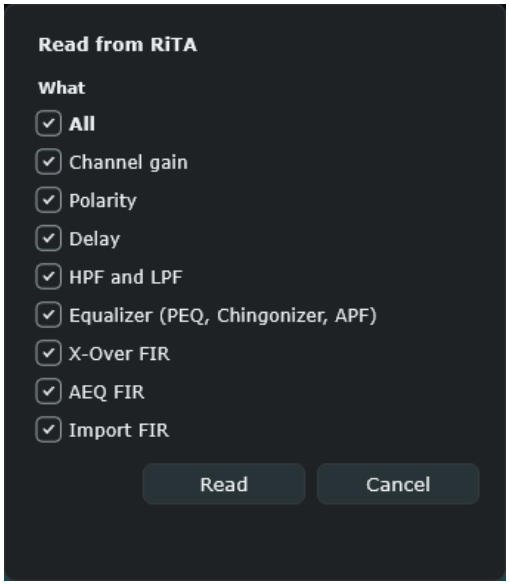
> **Note:** The links reach the instances of one process. A host that loads each plugin in a separate process does not link them, and they do not reach other plugins or go from one Standalone to another. A change in the group moves a delay, which sounds as a jump: do it stopped.

11. READING AND FOLLOWING RITA

RiTA Studio connects to RiTA through its API, over the network, and **never writes to RiTA**: the information always goes from RiTA to the plugin.

11.1 CONNECTING

1. In RiTA, turn on the API in **Tools > API**.
2. Type the address: the IP or, if needed, IP:port. With no port, 26101 to 26105 are tried. If RiTA has a password, type it in its field; it is never saved.
3. Choose the channel, DSP 1 to DSP 8.
4. Click **Read from RiTA** or **Follow RiTA**. The window of what is taken opens.



The window of what is taken from RiTA.

5. Tick what you want to take and confirm. **All** ticks every part, and unticking any part unticks All.

11.2 READING AND FOLLOWING

BUTTON	WHAT IT DOES
Read from RiTA	Reads the channel once, puts it in the controls and disconnects.
Follow RiTA	Reads it and stays connected: when it changes in RiTA, it changes here. What is changed in the plugin stays until RiTA changes it. If the connection is lost it says so and tries again every 3 seconds.

Follow is not saved with the session: it is switched on by hand each time. While following, Read is not needed.

11.3 WHAT IS TAKEN

PART	DETAIL
Channel gain, Polarity, Delay	Those of the channel. More than 680 ms stays at 680, and the status line says so.
HPF and LPF	Type, frequency, order and RiTA's Q field, which is dB.
Equalizer	The 20 filters with their switches and the Chingonizer. A type the plugin does not know is left Off, and it says how many.
X-Over FIR	The design, with its switch: type, frequencies, taps, window and attenuation. It is computed here, as in RiTA.
AEQ FIR, Import FIR	The coefficients, with their name and whether they are ticked. More than 8192 are cut, and it says so.
DSP mode	It goes with the crossovers or the equalizer. While following, it changes when RiTA's does.
FIR Taps	RiTA has one length for the X-Over and another for the RevPhase; the plugin has one. The longest of the ones in use is taken, and it says when they differ.

If All off is pressed, a read of RiTA releases it first. What was read stays in the state of the plugin, like everything else. The choice of what is taken, the address and the channel are saved with the session.

> **Note:** If the connection fails, the status line says why: most often Tools > API is not on in RiTA, or the address or the password are wrong.

11.4 WHAT RITA HAS AND IS NOT HEARD HERE

If RiTA has acting something the Preferences leave without sound (filters above the PEQ Bands, or the Chingonizer or a FIR taken out), a message lists it. **Change** turns on what is missing and raises the PEQ Bands up to the highest filter that acts; **Leave as it is** changes nothing, and the message does not come back until RiTA has something more or it is read or followed again. A filter at 0 dB does not act and does not count; if there are more bands here than in RiTA, there is no message. RiTA's Alignment APFs are not in RiTA Studio, and the status line says so.

12. PRESETS AND SETTINGS

12.1 PRESETS

In the **Menu**, **Save preset** writes over the last preset loaded or saved; with none, it asks where, as **Save preset as...**. **Load preset** loads a file and applies it at once.

A preset is a **.ritastudio** file with the whole sound: the parameters and the coefficients of the AEQ and Import FIR. The same file works in the VST3, the AU and the Standalone, on Windows and on Mac. Loading one keeps the two links of that instance, RiTA's address and what is taken from RiTA.

> **Note:** The host's own presets and sessions keep working as always. A preset made before the switches of the bands existed opens with all of them on.

12.2 WHAT IS SAVED WHERE

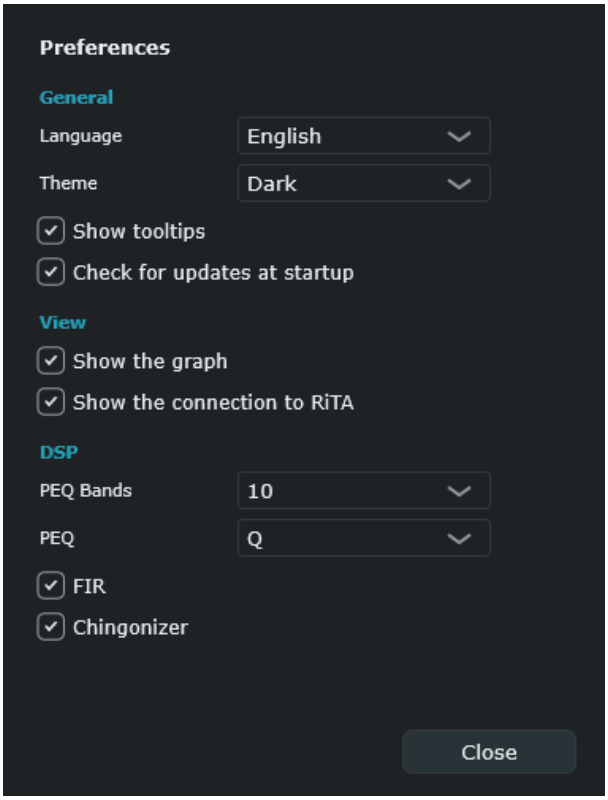
WHERE	WHAT
User settings	Language, theme, tooltips, updates, whether the graph and the connection to RiTA are shown, the view of the curve (range, Magnitude or Phase, and Remove latency), the last address of RiTA and the last DSP options of Preferences, which a new instance starts with. They are the same for every instance and format, they are not in presets and Reset leaves them alone.
Preset	Everything else: filters, crossovers, FIR, output, DSP mode, switches, All off and the DSP options of Preferences (PEQ Bands, Q or BW, FIR, Chingonizer).
Host session	The same as the preset, plus the links, RiTA's address and channel, and what is taken from RiTA.
Standalone	Its sound settings and the audio interface, when it closes.
Never	RiTA's password.

SYSTEM	SETTINGS FILE
Windows	%APPDATA%\GlobalAudioSolutions\RiTA Studio.settings
Mac	~/Library/Application Support/GlobalAudioSolutions/RiTA Studio.settings

13. PREFERENCES, UPDATES AND ABOUT

13.1 PREFERENCES

Menu > Preferences... opens a window of its own, as RiTA's. Each change applies at once; **Close**, Esc or Enter close it.



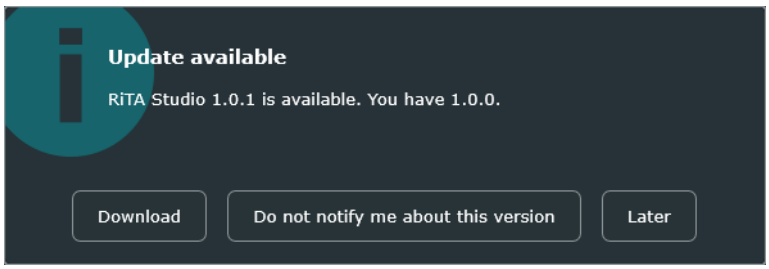
The Preferences window.

OPTION	WHAT IT DOES
Language	English, Español, Português, Français or 中文, in every window of the plugin. The names of the filter types and of the windows are not translated: they are RiTA's.
Theme	Dark or Light, for every RiTA plugin open.
Show tooltips	The short help that appears when the mouse rests on a control, in the chosen language.
Check for updates at startup	The automatic check (below).
Show the graph	Without it the window is lower: only what is below it.
Show the connection to RiTA	The address, Read, Follow and what RiTA said. Hidden, what is followed goes on.
PEQ Bands	How many filters the plugin uses, 4 to 20; with Meyer, 16 when it is chosen. The free ones are spread over the band (chapter 7).
PEQ	Q or BW: the width of the bands as a Q or in octaves. It sounds the same.
FIR	The X-Over, AEQ and Import FIR. Taken out, they do not sound.
Chingonizer	Taken out, it does not sound; it comes back as it was.

The first four and the two of the view are the same for every instance. The DSP ones belong to each instance and go with the session and the presets; the last chosen are the ones a new instance starts with.

13.2 UPDATES

A couple of seconds after the first window opens, the plugin checks whether there is a newer version. It does so once per host session, not once per instance. If there is none, or there is no connection, it says nothing.

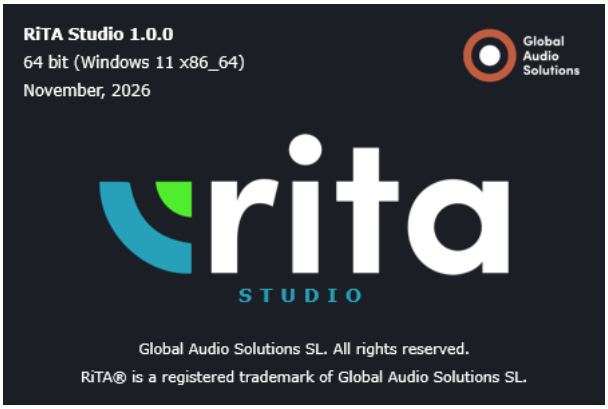


The notice of a new version (example).

- **Download** opens the download page in the browser. The plugin downloads and installs nothing.
- **Later** closes the notice; it comes back next time.
- **Do not notify me about this version** stops the notices for that version, but the next one will be announced.

Menu > Check for updates... checks at once and always answers. **Check for updates at startup**, in Preferences, turns the automatic check on or off. The check only reads a file on the Global Audio Solutions server: it sends no data.

13.3 ABOUT



The About window.

Menu > About shows the version, the system and the month of the version. A click or a key closes it.

14. WHAT RITA STUDIO ADDS

RiTA Studio is RiTA Studio for mixing: it has all of the above and adds what follows.



Filters on the Mid and on the Side, with their two curves, and the bar of the selected filter.

14.1 THE FILTER BAR

Above the 20 filters there is a bar with what the selected filter has. To select one, click its strip or its point in the graph.

CONTROL	WHAT IT DOES
Stereo, Mid or Side	What the filter acts on. The strip shows an M or an S.
Solo	Listen to the band of the filter. One filter at a time.
Dynamic	The gain of the filter moves with the level in its band. The strip shows a D.
Threshold	−60 to 0 dB. Over this level, in its band, the gain moves.
Range	−30 to +30 dB. How far the gain goes. Negative cuts, positive boosts.

14.2 MID AND SIDE

The Mid is what is the same in left and right, and the Side what is different. Each of the 20 filters, the HPF and the LPF can act on both, or on one only. A HPF on the Side, for instance, leaves the low frequencies in mono. When they are not the same, the graph draws two curves: the Mid in white and the Side in colour. A mono signal has only Mid.

With **Apply plugin to**, in the Menu, the whole plugin goes to the Mid or the Side: filters, crossovers, FIR, Chingonizer, gain and polarity act on that part only, and the other goes through untouched and aligned, with the same latency. The delay of the channel stays on the whole signal. It is saved with the preset and the session.

The points of the graph carry an M or an S when the filter acts only on the Mid or the Side.

14.3 HPF AND LPF IN LINEAR PHASE

Each HPF and LPF has a **Linear** switch, on to start with, that only acts with the Engine at Linear phase; in the others it is grey. Off, that filter keeps its own phase and the others stay in linear phase: this way a low HPF does not ask for a long FIR.

14.4 RTA AND WHAT IS OFF

The **RTA** button, above the graph, draws the spectrum of what goes out, in its own scale, 0 to −90 dBFS. A filter that is off stays in the graph, in grey, and can be selected; with the Bypass the curve goes grey.

14.5 INPUT GAIN

The output panel also has an input gain, −60 to +60 dB. It goes before everything, so a dynamic filter hears it, and the curve includes it.

14.6 TILT

With the DSP mode at RiTA, the 20 filters have the Tilt type: it turns the response around its frequency, which stays at 0 dB. With a positive Gain it raises the highs and lowers the lows by the same, up to ±15 dB, and the Q sets the slope.

14.7 SIDECHAIN

With a dynamic filter, the **SC** button of the bar makes it listen to what the host sends to the sidechain input of the plugin, in its band, and not to its own signal. With nothing connected, as in the Standalone, it stays at its Gain.

14.8 SEVERAL FILTERS AT ONCE

With Ctrl (Cmd on a Mac) and a click, in the graph or on a strip, a filter is added to the selection or taken out. Dragging one moves them all: the same ratio of frequency and the same dB. The wheel and the double click act on all, and what is changed in the bar goes to all, except the Solo. A click on an empty place of the graph clears the selection.

14.9 SOLO

- Solo Mid and Solo Side, in the graph bar: only that part is heard, on both sides, at the end of the chain.

- Solo of a filter: its band is heard, by its frequency and Q, with what the filter does. For a shelf, what is under or over it. If it is on the Mid or the Side, that part is heard. If it acts on both, Solo Mid and Solo Side still count: the band of that part is heard.

They are for searching and do not change the settings of the sound, but they are heard at the output and are in the session: take them off when done.

14.10 DYNAMIC FILTERS

A filter with a gain can be dynamic: a bell or a shelf, in any DSP mode. Not the U-Shaping. Its gain is the rest and, when the level in its band goes over the Threshold, it moves up to the Range. Attack and release are automatic, by the frequency. In the graph a line goes from the point of the filter to where it is now, and the bar says how many dB it has moved.

It works in every engine. In Linear phase it stays linear while it moves, and adds latency: 24 to 192 ms at 48 kHz, only while there is a dynamic filter and it fits in the Max. latency. If the Max. latency does not reach, the filter stays dynamic with its own phase.

14.11 LIMITS

With the DSP mode at RiTA, the 20 filters go to ±30 dB and a Q of 40. The other brands keep the limits of their processor. FIR Taps and the Import FIR files go to 8192.

15. SUMMARY OF VALUES

CONTROL	RANGE
Formats	VST3, AU (Mac) and Standalone
Channels	Mono or stereo, with as many inputs as outputs
Brands	RiTA, Meyer, Marani and Kingray
Channel gain	−60 to +60 dB
Channel delay	0 to 680 ms
HPF / LPF	1 Hz to 30 kHz, order 1 to 8 (Linkwitz-Riley even only)
Ripple or attenuation of the crossovers	0.1 to 120 dB
The 20 filters	20 Hz to 20 kHz. RiTA: −30 to +30 dB and Q from 0.1 to 40. Marani: ±15 dB and Q up to 128
Chingonizer	MK1 or MK2, 20 Hz to 20 kHz, −20 to +20 dB
FIR Taps	64 to 8192, 512 to start with
X-Over FIR	Low Pass, High Pass or Band Pass, attenuation from 20 to 150 dB
Import FIR	Files of 1 to 32768 coefficients, WAV or text; it uses up to 8192
Max. latency	0 to 500 ms; to start with, half the FIR Taps
Graph range	±6, ±12, ±24, ±30 or ±48 dB
Links	Off or groups A to H
RiTA channels	DSP 1 to DSP 8