Fxunits.com



RAC12

owner's manual

revision 1.3.2

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Important Safety Instructions



WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

CAUTION: To reduce the risk of fire or electric shock, do not remove screws. There are no user serviceable parts inside. Refer servicing to qualified service personnel.

- 1. Keep away from sources of heat such as heat ducts, registers or appliances which produce heat.
- 2. Connect only to a standard AC outlet of 100–240V, 47–63 Hz.
- 3. Only use the power adapter received with your RAC12.
- 4. Always plug the power adapter before powering your rig.
- 5. If another power adapter is needed, please ensure the power adapter used delivers a 9V DC 500mA (+ inside).
- 6. Keep the power cord in good condition. Do not kink, bend, or pinch. If the cord becomes damaged, discard and replace it.
- 7. If not using your RAC12 for extended periods of time, disconnect from AC power.
- 8. Protect the unit from rain and excessive moisture.
- 9. Refer servicing to qualified personnel only.
- 10. Stop operation of the unit and obtain service if:
 - a. Liquids or excessive moisture enter the unit.
 - b. The unit operates incorrectly or performance is inconsistent or erratic.
 - c. The unit has been dropped and/or the enclosure damaged.
- 11. Prolonged exposure to high volume levels can cause hearing damage and/or loss. The use of hearing protection in high volume situations is recommended.

Certificate of Conformity

Cedia Industrie, France, hereby declares on its own responsibility that the following product:

RAC12

covered by this certificate and marked with CE label, conforms to following standards:

EN60065 (IEC 60065)	Safety requirement for mains operated electronic and related apparatus for household and similar use.
EN 55103-1	Product family standard for audio, video, audio-visual, and entertainment lighting control apparatus for professional use. Part 1: Emission.
EN 55103-2	Product family standard for audio, video, audio-visual, and entertainment lighting control apparatus for professional use. Part 2: Immunity.

with reference to regulations in following directives: 73/23/EEC, 89/336/EEC.

January 2015 Sébastien Chrisment, General Manager Cedia Industrie

EMC / EMI

This equipment has been tested and found to comply with the limits for a Class B Digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. There is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- ▶ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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1 Introduction

Thanks for purchasing a RAC12, we have put a lot of work, heart and inspiration into developing this product and we hope it will fulfill your expectations.

The RAC12 was born from our love of the Fractal Audio Systems Axe-Fx guitar preamp/effects processor and the feeling something was still missing from tube amplifiers or classical rack effects/pedals: knobs.

That's where the RAC12 will fill the need, giving you 12 infinite rotary controllers fully dedicated to controlling the Axe-Fx's parameters. As you may know, some parameters in the Axe-Fx are numerical values (Amp DRIVE for example) while others are more like ON/OFF values (like FAT/CUT/BRIGHT switches). That's why we did not use simple rotary knobs but chose rotary/switch encoders. This means that every knob on the RAC12 is also a switch.

Now you must be thinking 12 knobs and 12 switches make only a total of 24 possible controllable parameters. But the RAC12 is a lot more powerful than that: It allows you to **control up to 384 Axe-Fx parameters**. How? Let's now talk about the RAC12 Pages concept.

WE STRONGLY RECOMMEND TO SWITCH OFF PARAMETERS "MFC ECHO TO MIDI OUT" (AxeFx II XL), "MIDI THRU" (AxeFx II) AND "USB ADAPTER MODE", OTHERWISE UNEXPECTED BEHAVIOUR OF THE RAC12 MAY OCCUR.

These parameters are exposed in the I/O menu then MIDI tab of your AxeFx.

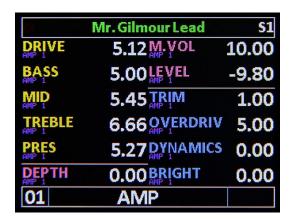
We also recommend you use the RAC12's Offline function (see Chapter 6) in live/rehearsal situations, if you want absolutely no audio dropouts. The RAC12 only causes audio dropouts on rare situations, when the AMP type parameter is on the current page by example.

2 Pages

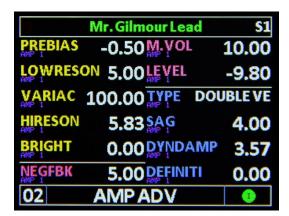
As you can see from the picture below, the RAC12 fits 12 rotary knobs in a single rack unit (1U).



The parameter names above each knob match the default RAC12 configuration on page 1, which is dedicated to AMP block parameters. Here is the RAC12 screen when on this page:



A Page is a RAC12 concept describing a set of 12 knobs and 12 switches functionalities. What does that mean? Let's see what the default configuration of page 2 looks like:

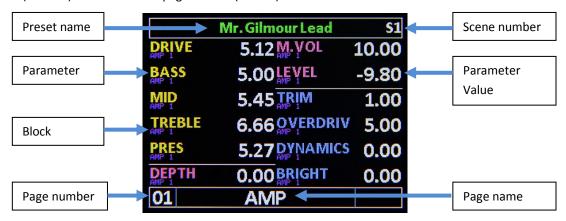


The 12 knobs now control different Axe-Fx parameters: The first knob (labeled DRIVE on the front panel) now controls the Preamp Bias parameter, the knob labeled BASS now controls the Low Resonance parameter...etc. The RAC12 gives you 16 fully configurable pages.

Every switch also controls a different Axe-Fx parameter on each page. Every page, knob and switch function is fully user-configurable, see the RAC12Edit chapter. There are various ways to choose the page in use within the RAC12, either manually or automatically. Every way of selecting a page is detailed in the advanced functionalities chapter.

3 RAC12 screen layout

This is the first screen you will see when your RAC12 is connected to your Axe-Fx*. This screen displays the current preset's name (in green), the current scene (S1 in this example), the 12 parameters assigned to each knob, the current page number (01 here) and the current page's name ("AMP").



Before going further, let's clarify a few things:

- As you can see, parameters have 3 different colors. This is a convenient way to link a parameter to its assigned physical knob. Same goes for the two horizontal lines you can see between the different parameters colors.
- Under each parameter you can see a purple block name (here AMP 1) for three reasons :
 - You can mix parameters from different block types (AMP and CAB by example) on the same page.
 - You can mix parameters from different block instances (AMP1 and AMP2) on the same page.
 - You need to know which block instance's parameters are displayed and will be modified when turning a knob.
- The page's name can be modified, as a simple way for the user to know what parameters are being used on that page. Use RAC12Edit to configure your pages parameters and names.

When moving a knob, a more detailed screen appears:



Then the default screen is back, reflecting changes made:



Values modified from the RAC12 or from the Axe-Fx's front-panel are displayed in red, until the preset is saved or reverted (see the advanced functionalities chapter) or the current page is changed.

4 Switches

The RAC12 allows you to choose from a large number of functions for every switch. This configuration is done in RAC12Edit (see RAC12Edit chapter).

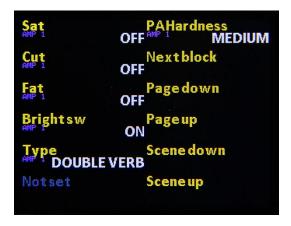
Each switch can be assigned to an Axe-Fx parameter or a RAC12 functionality (see advanced functionalities chapter). But the cool thing is you can assign different functions to the same switch depending on whether you just click the switch, double-click it or keep it pressed.

For easier configuration, only RAC12 functions can be assigned to switch actions "double-click" and "long press". Both RAC12 functions and Axe-Fx's parameters can be assigned to the switch action "click".

We'll now focus on the typical case, when a switch is assigned an Axe-Fx's parameter. You can assign every sort of Axe-Fx parameter to a switch but you must be aware that clicking a switch will only increment the value of the parameter. This is the intended behavior for parameters such as CUT, BRIGHT etc... as clicking the switch will cycle CUT from ON to OFF to ON etc... For numerical parameters, we do not recommend using switches as it would only allow you to increment the parameter's value.

A RAC12 specific function allows you to see every switch assignment. This function is assigned to the "DRIVE" switch (left-most) long-press action, so just push the first knob and keep it pressed to see the switches assigned functions.

You will typically get this screen:



Here you can see some RAC12 functions assigned to the 5 last knobs, see advanced functions chapter for more details.

5 RAC12Edit

RAC12Edit is free software you will need to configure your RAC12 if the default configuration does not suit you.

It's also needed to upgrade the RAC12's firmware, or to backup/restore configurations.

You can download it at http://fxunits.com/.

Windows and Mac OSX are both supported. Minimum software version supported is XP for Windows and 10.7 or later for OSX.

A Windows driver is needed, available at http://fxunits.com/, but no driver is needed on OSX.

RAC12Edit regularly checks online for an update.



5.1 Installing Driver (Windows only)

A driver is needed on Windows systems. The driver is compatible with systems from Windows XP to Windows 7 (32/64 bits) and can be used on Windows 8/8.1/10 with a specific method.

Download the driver from http://fxunits.com, open and extract it with your preferred software (it's a zip archive) and launch the "dpinst-x86.exe" executable if your system is 32bits, or "dpinst-amd64.exe" if it's a 64bits system. Your system may warn you:



Just click "Install this driver software anyway".

Then plug your RAC12 into a USB port, Windows should recognize the RAC12.

For Windows 8/8.1/10 installation, see this method:

http://www.makeuseof.com/tag/how-can-i-install-hardware-with-unsigned-drivers-in-windows-8/

5.2 Firmware update

Every RAC12Edit version will have the latest RAC12 firmware embedded. It means you don't have to download a firmware

file, just get the latest RAC12Edit software from our website, and then click on

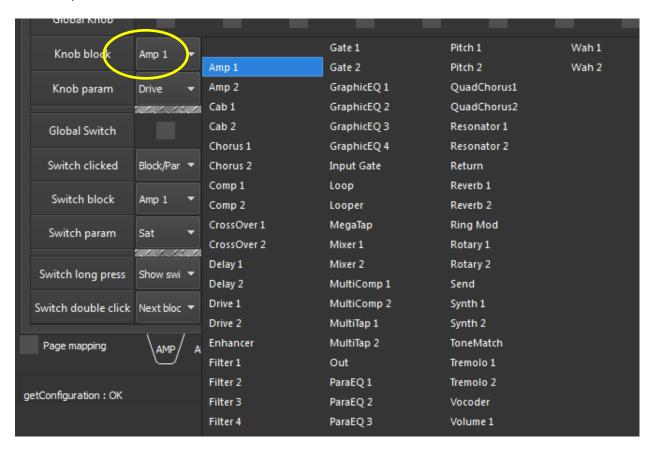


You can see the latest additions/improvements in the main RAC12Edit menu, under "Release Notes".

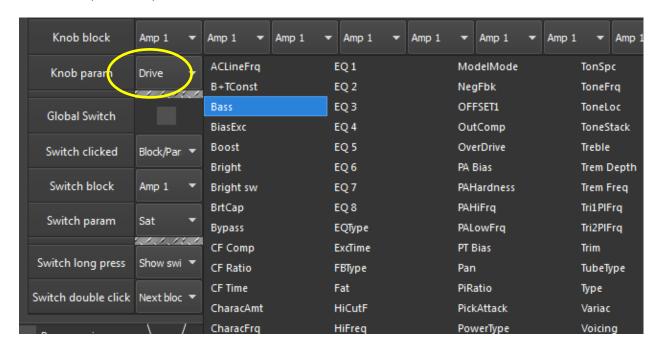
RAC12's screen will turn black during update, this is normal behavior.

5.3 Configuration

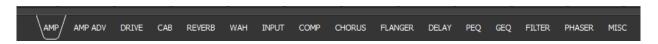
For each knob, select the Axe-Fx block it will control.



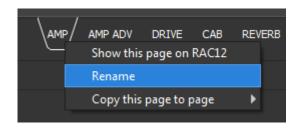
Then the block's parameter you want it to control:



Repeat this for every knob on every page (see chapter 2), selecting a different page with the tab control at the bottom of RAC12Edit:



Each page is easily renamed, by double-clicking on the name or using the context-menu:



Page ordering can be modified just by dragging and dropping the page label:



Once your configuration looks good, we recommend saving it to your computer using the



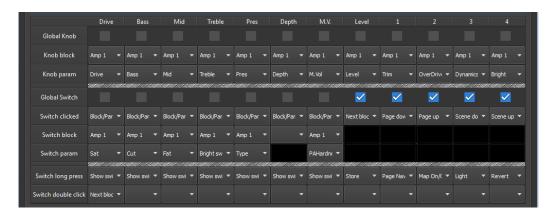


5.4 Global knobs and global switches

This is a very important concept in the RAC12. Just see it as a way to have identical knob/switch functions on every page, without having to configure each page.

This can be very convenient by example for your main level knob.

This concept is also frequently used with RAC12 advanced functions (see chapter 6), as it is of course a lot more convenient to just push and maintain the STORE switch to save your preset, regardless of the current page selected on the RAC12.



So here is what the checkboxes you see in RAC12Edit do:

- Global knob: When checked, the corresponding knob will have the same function across every page.
- Global switch: When checked, the corresponding switch will have the same function across every page.
- Switch long press and Switch double click: **These functions are always identical** across the different RAC12 pages.

So in the default RAC12 config, the Level/1/2/3 and 4 switches will have the same functions across the pages.

6 RAC12 advanced functions

Here is a list of all the RAC12 functions you can assign to switch actions "click", "double-click" or "long press":

- Page Navig: When engaged, turn the same knob you've just activated to select the page to display, then click the switch again to validate your choice.
- Map On/Off: Turns on or off the Page Mapping functionality (see Page Mapping chapter).
- **Scene Navig**: When engaged, turn the same knob you've just activated to select a new Scene, then click the switch again to validate your choice.
- Light: When engaged, turn the same knob you've just activated to modify the RAC12's screen brightness, then click the switch again to validate your choice.
- Scene Up / Scene Down: Increments/decrements the current Scene.
- Store: Will save your preset modifications to the current preset slot of your Axe-Fx.
- **Revert**: Will load last saved preset parameters.
- **Show switch**: Will show you the actual switch functions (see Switches chapter).
- **Preset Up / Preset Down**: Increments/decrements the current preset number on the Axe-Fx.
- Page up / Page down: Moves to next/previous page.
- Scene 1 to Scene 8 : Directly recall a specific Scene.
- Link mode : switches Link Mode between ON and OFF. When in Link Mode, every parameter adjustment made on a block instance is also reflected to other instances of the same block. By example, if you modify the Level parameter of the AMP block's instance AMP1, the Level will also be adjusted in the AMP2 instance.
- **Compare** / **Fast Compare** : Compare the sound of your preset between its current state and the last saved state.

The Compare function will save the full preset data into the RAC12, thus the operation may take up to 9 seconds on the Axe-Fx XL and about 5 seconds on the Axe-Fx II, due to the slow speed of MIDI transfers. No data should be lost with this operation.

The Fast Compare will only save the parameters values that are used in the RAC12 pages and it won't work if you modified the AMP type parameter by example. But it only takes 3 seconds. Be careful with this function as it may lose some of your modifications. Of course, the latest saved preset data is untouched by the operation.

- Next Inst : The RAC12 will cycle to the next instance of each block present in the current page. By example, if the current page displays parameters from block AMP1 and block CAB1, engaging this function will display the values from the same parameters but from blocks AMP2 and CAB2. Engaging this function again will go back to AMP1/CAB1. If the blocks used in the current page have more than 2 instances, the function will cycle thru every instance (for example PEQ1->PEQ2->PEQ3->PEQ4->PEQ1)...
- **Default**: Will set to its default values the parameters of the effect currently displayed on the RAC12. If the current page displays parameters from different effect blocks, the first block encountered is defaulted.
- Offline: When engaged, the RAC12 will not communicate with your AxeFX anymore. This can be useful in live situations, where you don't want glitches in your AxeFX sound. The RAC12 will not produce glitches/cuts in your sound in most cases, but the AxeFX communications can sometimes produce little cuts, when on the AMP ADV page by example. Other pages don't produce any glitch.
- X/Y: Will switch between X/Y parameters sets for all the blocks present in the current page.
- Page 1 to Page 16: Direct access to a specific page.
- MIDI CC: Sends a MIDI CC value. This function is accessible on "Knob block" or "Switch block" (when Switch clicked function is Block/Param) lines of RAC12Edit. Be sure to correctly setup your MIDI CC channel in RAC12Edit (at window's bottom-right).

RAC12Edit also allows you to choose the different timeouts used on the RAC12, in the **Options menu** click on "Set Timeouts" entry:

- Knob screen: Sets the time waited after a knob has been moved to return to the main screen.
- Popups : Sets the time a popup windows is displayed when clicked a switch.
- Screen Saver: You can disable the screen-saving function and set its timeout.
- Max Acceleration : Sets the knobs maximum acceleration (in % of original acceleration)

<u>About the "Exit alt. knob with click"</u>: This setting (in the Options menu) allows you to choose between two different behaviours when you click a switch on the RAC12, but only for switches that were assigned a typical knob function like by example Amp's block Drive parameter. In this case, here is described the two behaviours:

- If the option is checked, clicking the switch will display the regular knob screen (see chapter 3), but this screen will not timeout, you'll have to click the same switch again in order to get back to the main screen.
- If the option is not checked, clicking the switch will display the regular knob screen and the main screen will automatically be displayed again after the regular knob screen timeout (see upper).

<u>Offline at startup</u>: This option allows you to choose the RAC12 behavior when booting-up: Offline (will not ask anything to the AxeFx) or default behavior.

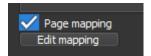
<u>Automatic Instance selection</u>: This option tells the RAC12 to automatically select a present instance of the block displayed upon preset change. The default behavior is to enable this option.

<u>Set Colors</u>: Allows you to customize the RAC12 screen colors, including Pages default color. In order to customize individual page color, use the context menu on each page label. In this context menu you'll also be able to reset the page color to default page color.

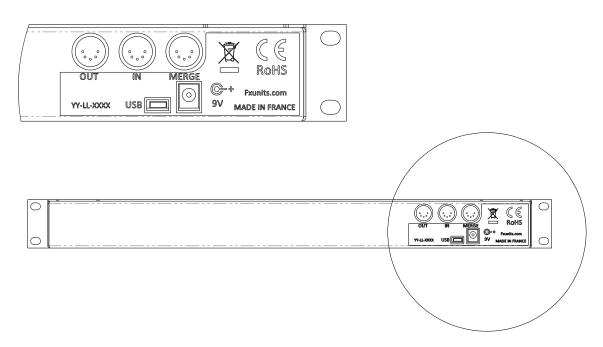
7 Page Mapping

Page choice can be made by engaging Page Navig function or Page Up/Down functions (see RAC12 advanced functions chapter), but it can be useful to have the RAC12 automatically display a specific page when you recall a preset on the Axe-Fx. This is what Page Mapping does. When this function is engaged, each preset recall (or MIDI PC message) will cause the RAC12 to look in a specific table for which page to display.

This table can be configured in RAC12Edit, when enabling Page Mapping. You will see a list of 768 presets (only the first 384 are useful if you have an Axe-Fx II) and the corresponding page that the RAC12 will display on preset recall.



8 Connections

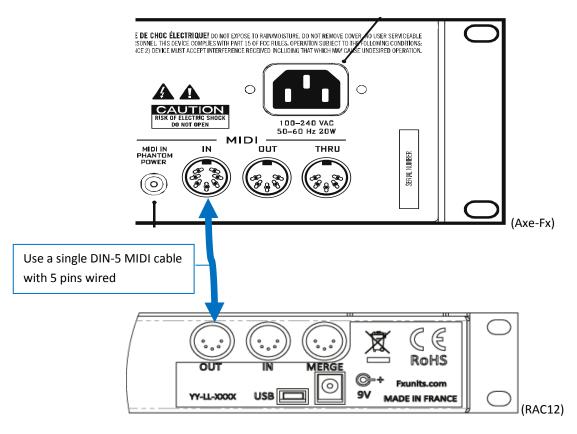


The RAC12 powers itself either from the USB port or the 9V DC connector.

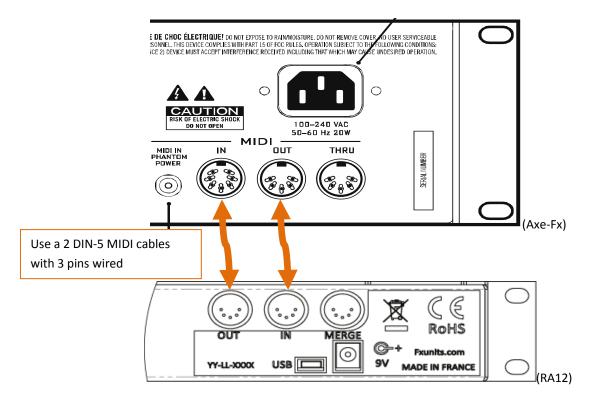
We strongly recommend using a good 5 pin DIN (DIN-5) MIDI cable, which has the **5 pins wired**. With such cable, **only one cable is needed** to connect the RAC12 to your Axe-Fx: Just connect the Axe-Fx's MIDI IN to the RAC12's MIDI OUT. As both Axe-Fx and RAC12 support bidirectional MIDI, the MIDI communications will work with a single cable. Be aware that, in this configuration, you should not connect anything to the RAC12's MIDI IN!

If you use the Fractal Audio Systems MFC101, we strongly recommend connecting it to your Axe-Fx with Ethernet/Ethercon or FASLink™. The RAC12 will need the Axe-Fx's MIDI IN socket.

8.1 Connecting a single RAC12

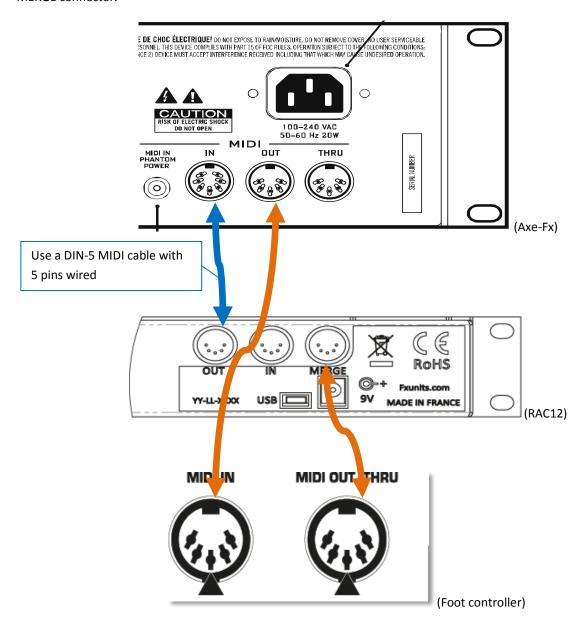


OR



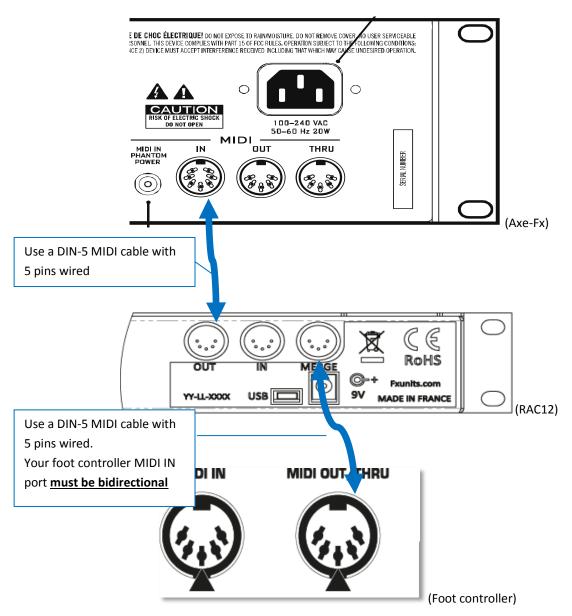
8.2 Connecting a foot-controller or other MIDI equipment (RAC12 mk I)

You must use the MERGE connector of the RAC12. This connector is **not bidirectional**, meaning only MIDI traffic incoming to the RAC12 will be transferred to the Axe-Fx, but MIDI communications from the Axe-Fx will not be routed back to the MERGE connector.

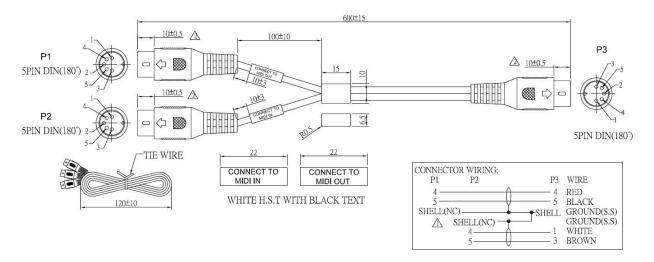


8.3 Connecting a foot-controller or other MIDI equipment (RAC12mk II)

You must use the MERGE connector of the RAC12 mk II. This connector <u>is bidirectional</u>, meaning MIDI traffic incoming to the RAC12 will be transferred to the Axe-Fx, <u>and MIDI communications from the Axe-Fx will be</u> routed to the MERGE connector on pins 2&3.

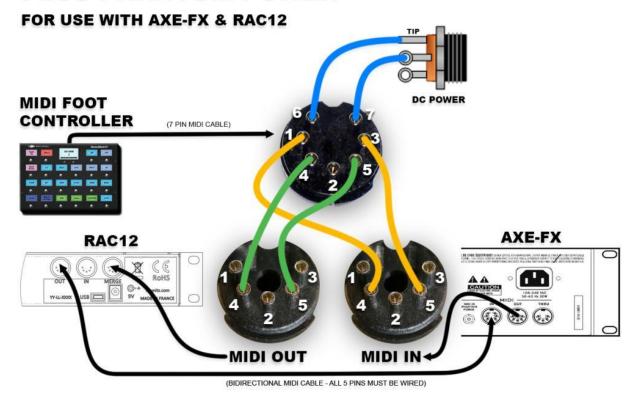


If your foot-controller only has separate midi in/out (and its midi in port does not handle bidirectional), you should buy/make a MIDI Y-cable like this one :



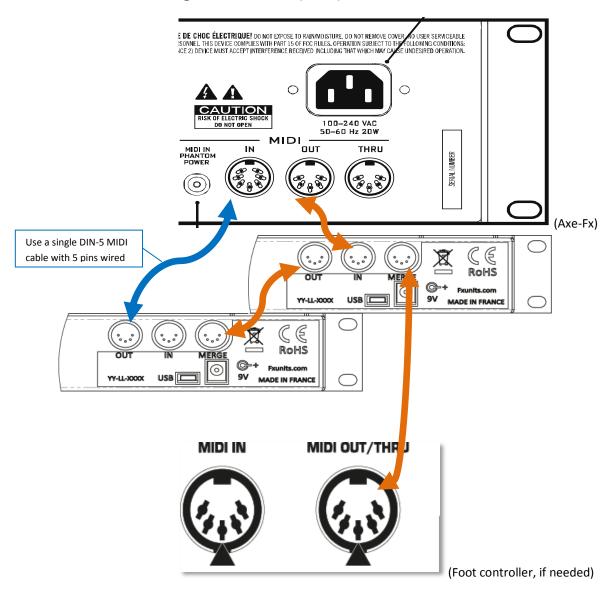
8.4 If phantom power is needed

DIY MIDI IN/OUT Y SPLIT BOX PLUS PHANTOM POWER



(courtesy of forum member npx)

8.5 Connecting two RAC12's (mk I)



8.6 Connecting three (or more) RAC12's

For those wanting to use more than two RAC12 with their Axe-Fx, just contact us at support@fxunits.com

9 Specifications

The RAC12 supports Fractal Audio Systems Axe-Fx II or XL with firmware>13.07. However, for higher parameter accuracy, the latest Axe-Fx firmware is preferred.

MIDI	INTE	RFACE

IN Connector: 5-pin DIN

OUT Connector: 5-pin DIN, bidirectional MERGE Connector:

5-pin DIN

GENERAL

320x240 2.2" dot matrix graphic color LCD Display:

Dimensions: 483 × 44 × 140 mm Weight: 2.2 kg (4.85 lbs) 9V DC Input Voltage: <1 W Power Consumption:

ENVIRONMENTAL

Operating Temperature: 32 to 122 °F (0 to 50 °C) -22 to 167 °F (-30 to 70 °C) Storage Temperature: Humidity: Max. 90% non-condensing

Specifications subject to change without notice.

MIDI Implementation Chart

Function		Transmitted	Received
Basic Channel	Default Changed	x	х
Note Number	True Voice	х	х
Velocity	Note ON	x	x
	Note OFF	x	x
After Touch	Keys	x	x
	Channels	x	x
Pitch Bend		х	х
Control Change		Х	х
Program Change	True Number Bank Select	х	0
System Exclusive	Fractal Audio	o	o
	Real-Time	x	x
	Non-Real-Time	x	x
System Common	Song Position	x	x
	Song Select	x	x
	Tune Request	x	x
System Real-Time	Clock	X	x
	Commands	X	x
Auxiliary Messages	Local ON/OFF	x	x
	All Notes OFF	x	x
	Active Sense	x	x
	Reset	x	x

Warranty

Cedia industrie warrants that your new RAC12 product shall be free of defects in materials and workmanship for a period of one (1) year from the original date of purchase.

During the warranty period, Cedia industrie shall, at its sole option, either repair or replace any product that proves to be defective upon inspection by Cedia industrie.

Cedia industrie reserves the right to update any unit returned for repair and to change or improve the design of the product at any time without notice. Cedia industrie reserves the right to use reconditioned parts and assemblies as warranty replacements for authorized repairs. This warranty is extended to the original retail purchaser for units purchased directly from Cedia industrie or one of its authorized distributors or resellers.

This is your sole warranty. Cedia industrie does not authorize any third party, including any dealer or sales representative, to assume any liability on behalf of Cedia industrie or to make any warranty for Cedia industrie. Cedia industrie may, at its option, require proof of original purchase date in the form of a dated copy of original authorized dealer's invoice or sales receipt. Service and repairs of Cedia industrie products are to be performed only at the Cedia industrie factory or a Cedia industrie authorized service center. Unauthorized service, repair or modification will void this warranty.

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