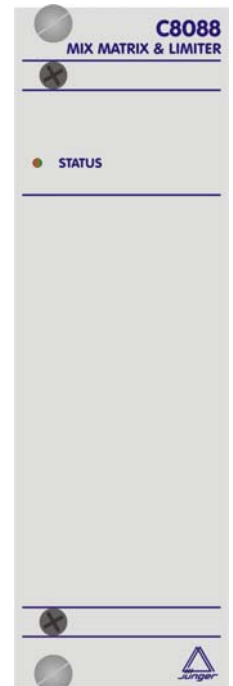


8 Channel Mix Matrix with Limiter

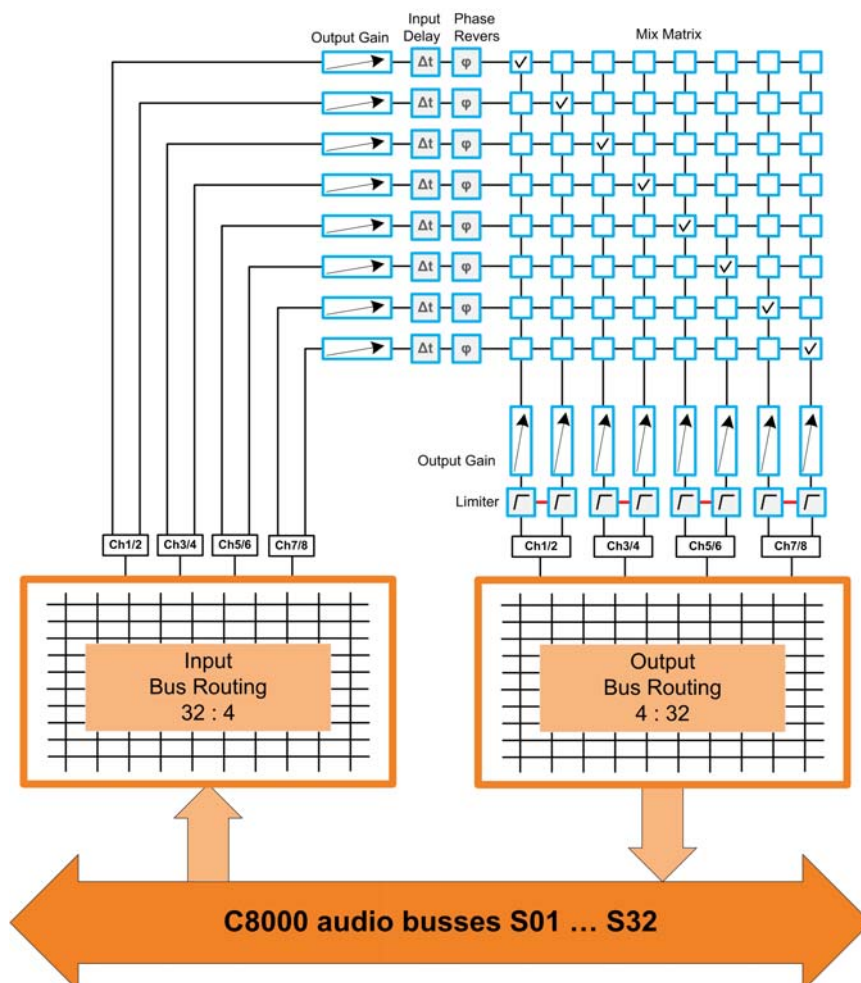
C8088

features

- 8 x 8 audio matrix
- Input gain control
- Input phase reverse
- Variable input delay (60ms max.)
- Output gain control
- Output limiter
- Cross fade of settings when changing presets
- Alternative set of C8k bus inputs
- remote control via C8702 Frame Controller, GPI/O or http based API



block diagram



8 Channel Mix Matrix with Limiter

C8088

technical specifications

AUDIO :

resolution :	24bit			
sample rate :	32...48kHz			
audio processing :	8 x 8 mix matrix			
Input gain	-20dB	...		+20dB
Input delay	0ms	...		60ms
Input phase reverse	0°	or		180°
Cross fade time	15ms	...		5sec.
Output gain	-20dB	...		+20dB
Limiter Threshold	0dBFS	...		-20dBFS
Limiter program	fixed to Junger "UNI" setting			
Bit transparent mode	for pairs of inputs			
Cross Fade	15ms	...		5sec.

GENERAL :

backplane connector :	ref. to DIN41612, 64pin, a+b, male
power supply :	+5V DC
power consumption :	approx. 1.000mA
dimension :	3RU, 4HP, 160mm depth
temperature :	10°C ... 40°C
humidity :	90%, non condensing

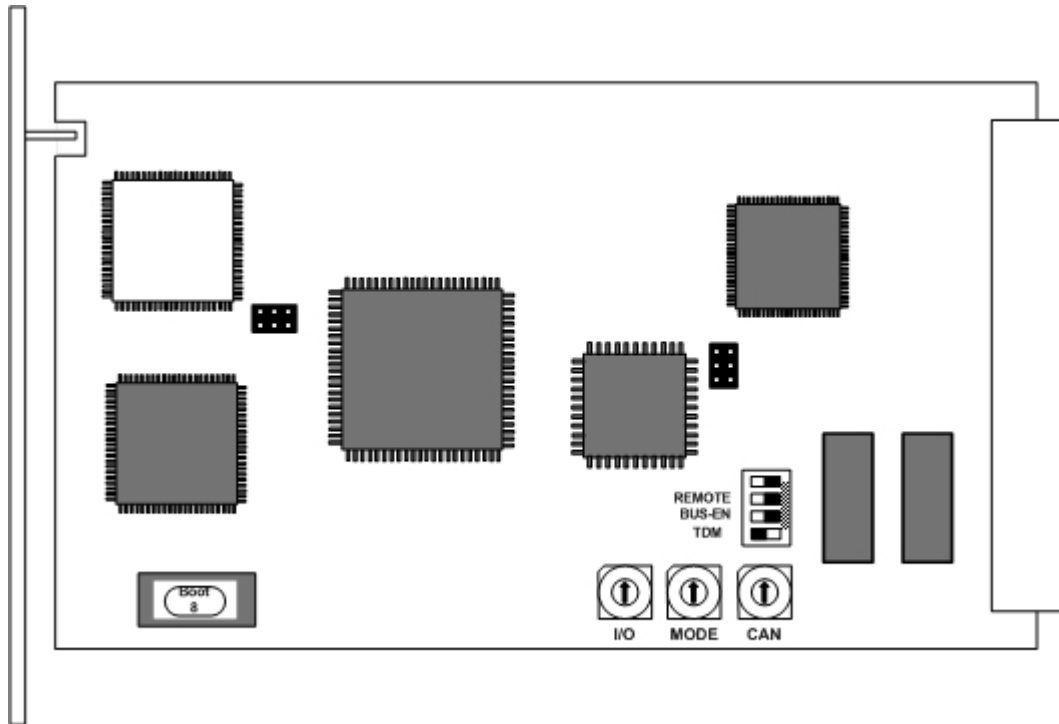
hardware settings

The C8088 does not have front panel controls. It may be configured by a DIP switch and via web browser.

On the front panel there is a status LED with different display modes:

green	=	status OK
yellow flashing	=	the module is under control of the Frame Controller
red	=	status is bad. It needs remote reading of the status via GUI. It is likely that the Frame Controller has issued a SNMP trap.

location of switches:



Dip-switch settings

Since this type of module has an electronic output routing facility, great care must be taken when installing or exchanging a module!

NO LABEL:	ON CAN address range is extended by +16 (counting from 0x10 to 0x1F) OFF CAN address range is standard (counting from 0x0 to 0xF) see rotary encoder settings below.
REMOTE:	must be ON
BUS-EN:	ON Connects the outputs to the C8k audio buses on power up automatically. The output configuration will be taken from the NV (non volatile) memory . OFF Disconnects the module outputs from the C8k buses on power up.

Important note! To avoid audio bus conflicts when you replace a module or install an additional one and the configuration is unknown, the output bus drivers must be disabled by **BUS-EN=OFF** before inserting it. If all settings are done remotely and the unit fits into the bus assignment scheme of a frame, you must remove it and place the switch back into position **BUS-EN=ON**.

TDM:	must be OFF
-------------	--------------------

8 Channel Mix Matrix with Limiter

C8088

rotary encoder settings

I/O	not used
MODE	not used
CAN	0 – F The 16 switch positions are hexadecimal numbers (0x0 to 0xF) it sets the CAN ID. Each module within a frame must be assigned a unique CAN bus address for proper communication with other parties of the frame, e.g. the frame controller or the GPI/O module.

Important note! This address also sets the position of the module graphic when you control the frame via the web GUI by a C8702 frame controller. See C8k system manual for details.

remote control operation

- Web-server based remote control of parameters via frame controller C8702
- 3rd party remote control by http protocol based API (please contact Junger Audio for details)
- Hardware GPI/O control of preset operation and special module functions
- Remote control by the **brc8x Broadcast Remote Controller** via CAN bus

8 Channel Mix Matrix with Limiter

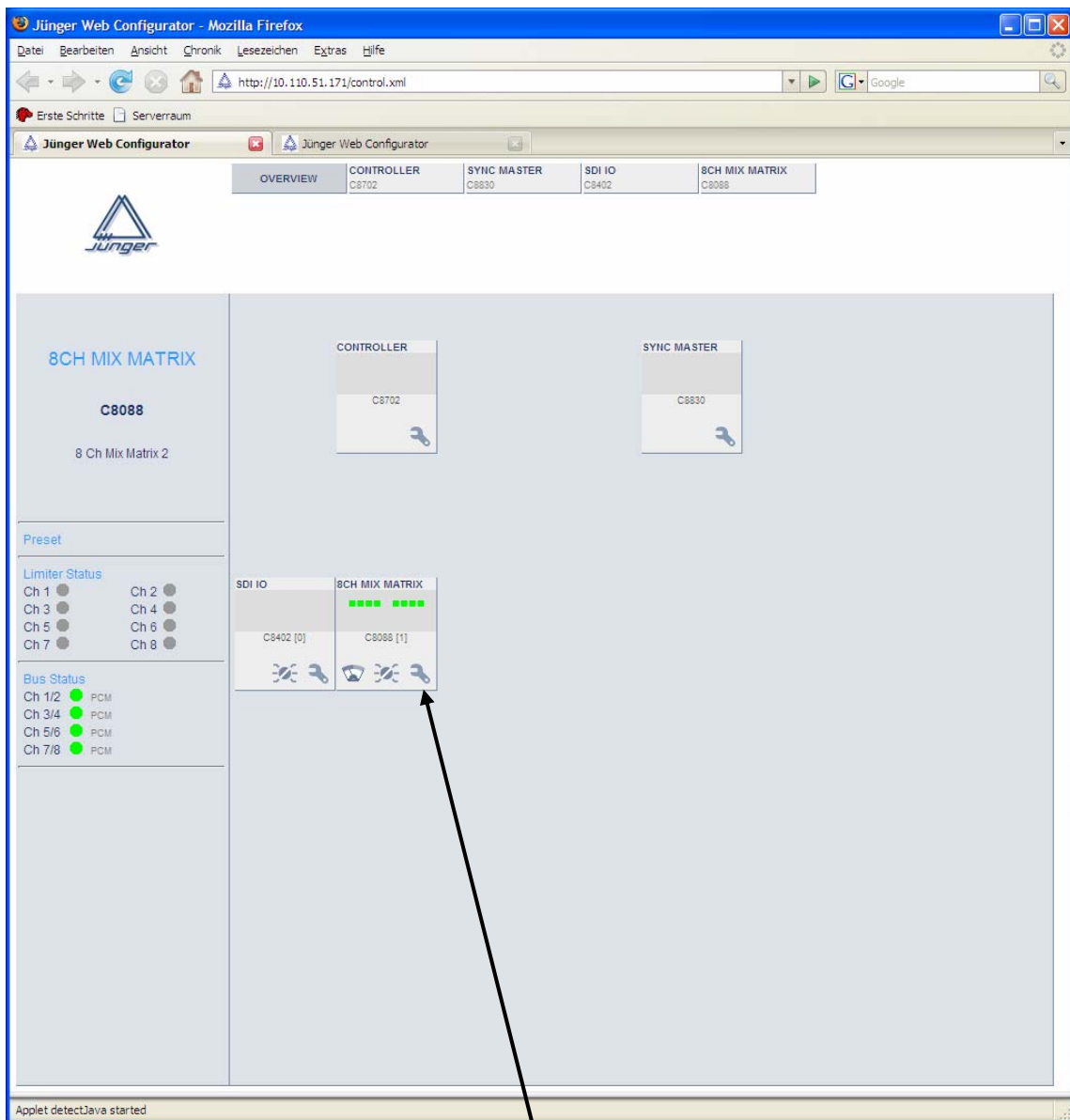
C8088

web browser based GUI

**Set up of all configurations, parameters and functions via a web browser.
See also C8702 Frame Controller manual and respective firmware release notes.
Layout and functionality are related to firmware version 1.8.x of the C8702.**

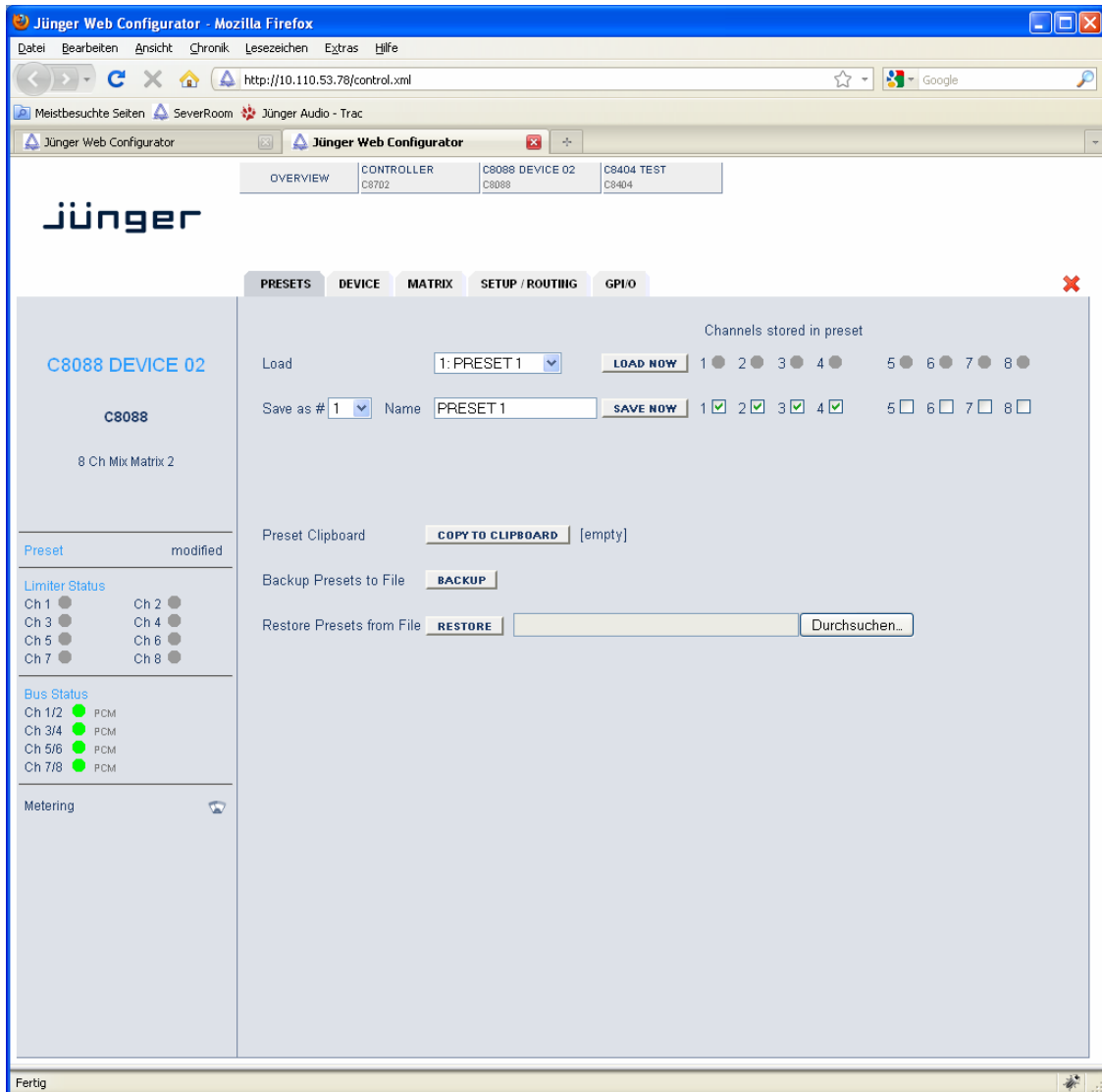
OVERVIEW

The modules overview of a frame (below the display of an example frame) :



By simply clicking on the spanner tool symbol ● you will get the control pages of the **C8088** and the status window on the left side, which you will also see on mouse over.
The entrance to the module setup is the **PRESET** page:

PRESETS



The **C8088** has **16 Presets**. These Presets are named **PRE1** to **PRE16** by default. The status window at the left hand side shows the name of the active preset. The phrase “**modified**” will appear in line with the Preset name, if a preset parameter was changed by the operator.

Load Preset

select a preset by name and press **<LOAD NOW>**

Channel Mode

The 8 soft LEDs show which channel is effected by the active preset

Save as Preset #

select a preset NV memory number

Name

assign the preset a **16 digit name** and select the **channel** from which settings must be stored and press **<SAVE NOW>**

Preset Clipboard

copy the active preset to a clip board, The data may be used by other modules inside the same frame.

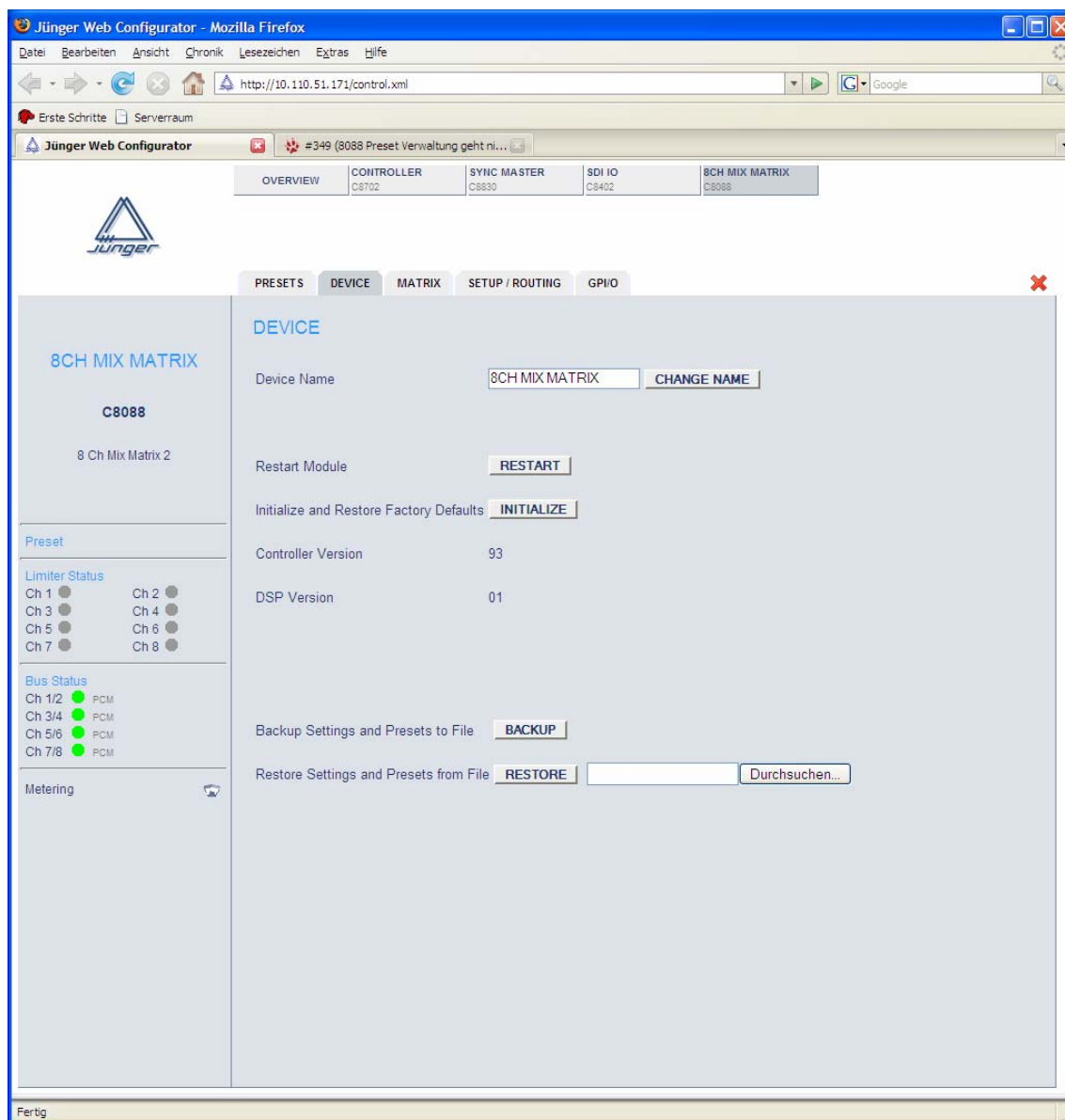
Backup Presets to File

creates an backup **XML file** which may be stored to the PC

Restore Presets from File

you can select a backup file from the PC.

DEVICE



Device Name

you can assign the module a **16 digit name**

Restart Module

<**RESTART**> performs a warm start (soft reset)

**Initialize and Restore
Factory Defaults**

<**INITIALIZE**> restores the factory default values for all parameters of the module including all presets. The input bus assignment will be set to S01 ... S04, the outputs are turned OFF and the bus drivers will be disabled.

Controller Version

display of the actual firmware of the module controller

DSP Version

display of the actual DSP firmware

8 Channel Mix Matrix with Limiter

C8088

Backup Settings and Presets to File

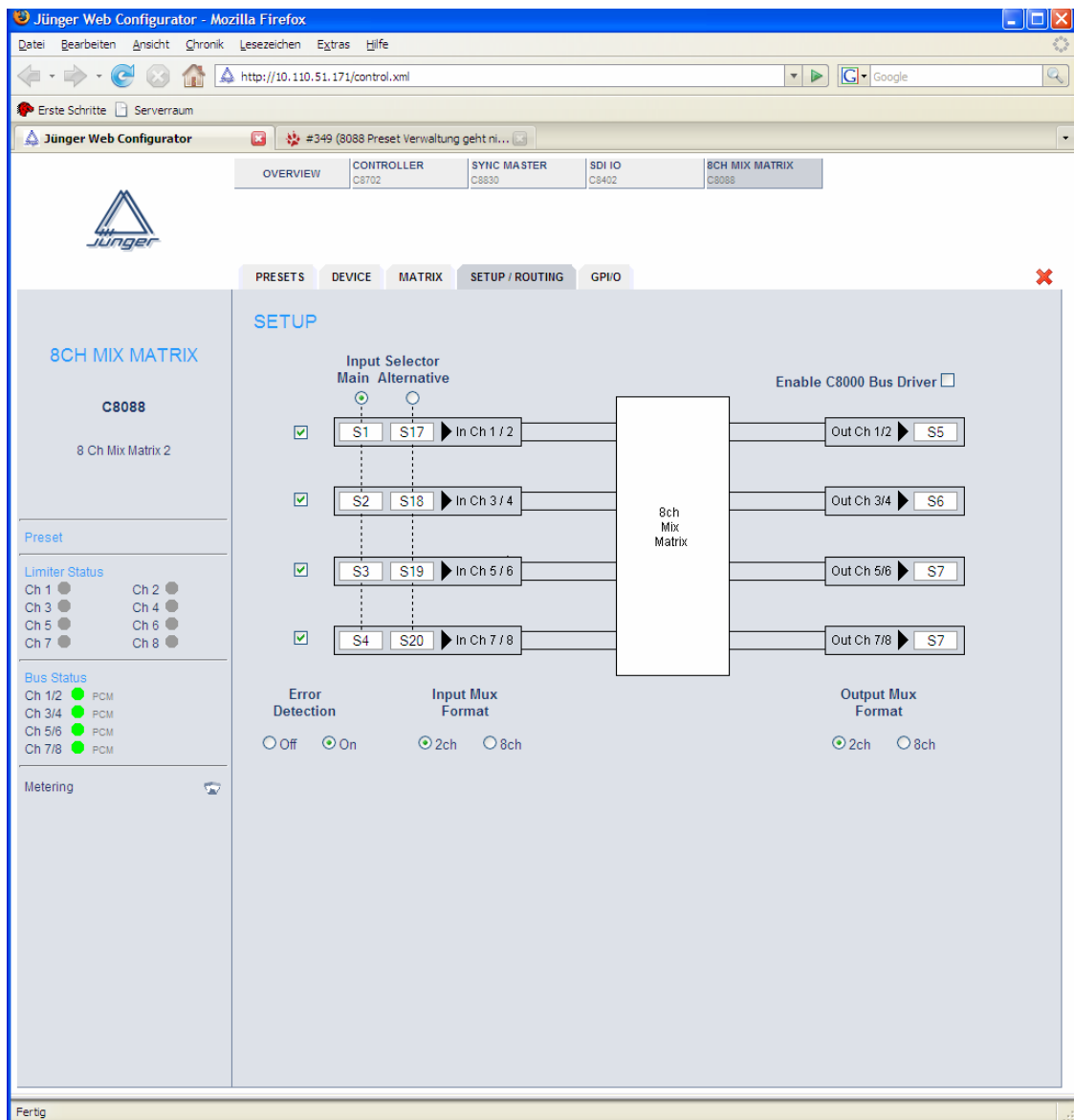
<BACKUP> will put all active parameters and the content of all presets into an XML file. You may store such file on a PC.

Restore Settings and parameters from File

you may select a matching XML file from a PC.

<RESTORE> will overwrite all active parameters and the content of the presets by the content of the backup file.

SETUP / ROUTING

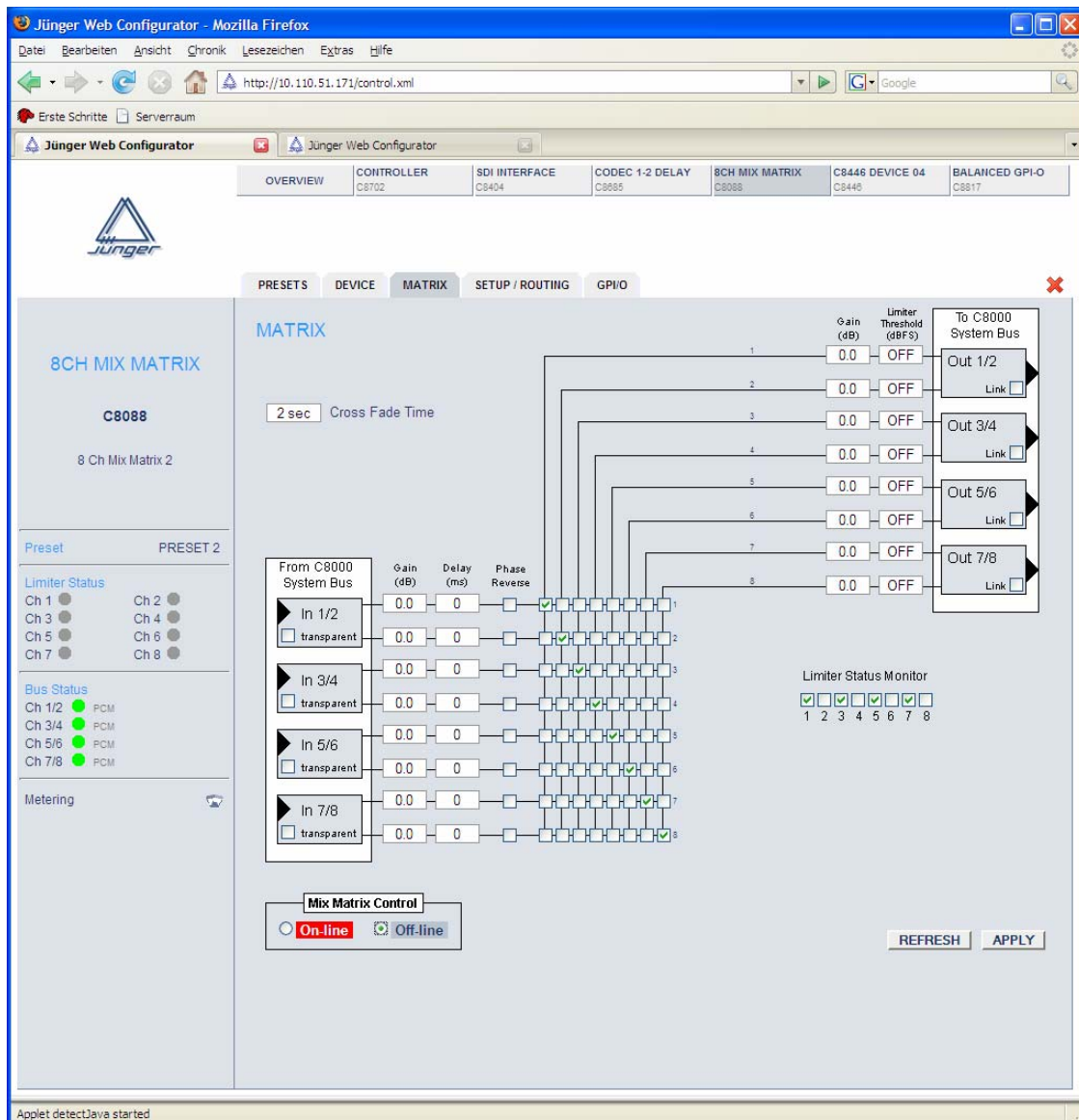


8 Channel Mix Matrix with Limiter

C8088

Input Selector	selects between two sets of inputs named Main and Alternative
Main Input	you can select a set of 4 busses as the main input of the module
Alternative Input	you can select a set of 4 busses as an alternative input bank
Input Mux Format	here you select if the input audio signals are multiplexed in 2ch or 8ch mode. If in 8ch mode only the upper bus assignment field will be available
Output Mux Format	here you select if the output audio signals are multiplexed in 2ch or 8ch mode. If in 8ch mode only the upper bus assignment field will be available
Enable C8000 Bus Drivers	turns off all module bus drivers (tri state mode)
Error Detection	<p>The serial audio data from the frame bus can be monitored for proper positioning of an Error-Flag. A bad Error-Flag is an indication that there is disturbance upstream (input signal, input module, other DSP module).</p> <p>The Error Detection can be turned Off and On for each input from the bus. You will see the status of the busses on the left hand side: “Bus Status”. A grey “LED” shows that the detection is disabled. While green is OK, red indicates an error condition.</p> <p>The bus status may be presented to external monitoring systems via SNMP. The frame controller summarizes such status information and generates SNMP traps for the frame as an entity or may activate GPOs (if GPI/O module(s) are installed). The SNMP manager may afterwards poll the “modulesStatus” for more detailed status information per input (see SNMP documentation for details).</p>

MATRIX



From here you can set up the matrix relevant parameters :

Cross Fade Time

if you select a preset, the Cross Fade Time is used to fade between possible gain changes.

transparent

for pairs of input signals it is possible to turn the matrix into **bit transparent** mode. This allows to pass **Non Audio** (e.g. Dolby E) signals through the matrix without destroying it.

Gain

sets the input and output gain of the individual channels by as much as +/- 20dB

Delay

the input channels may be delayed by 60ms each.

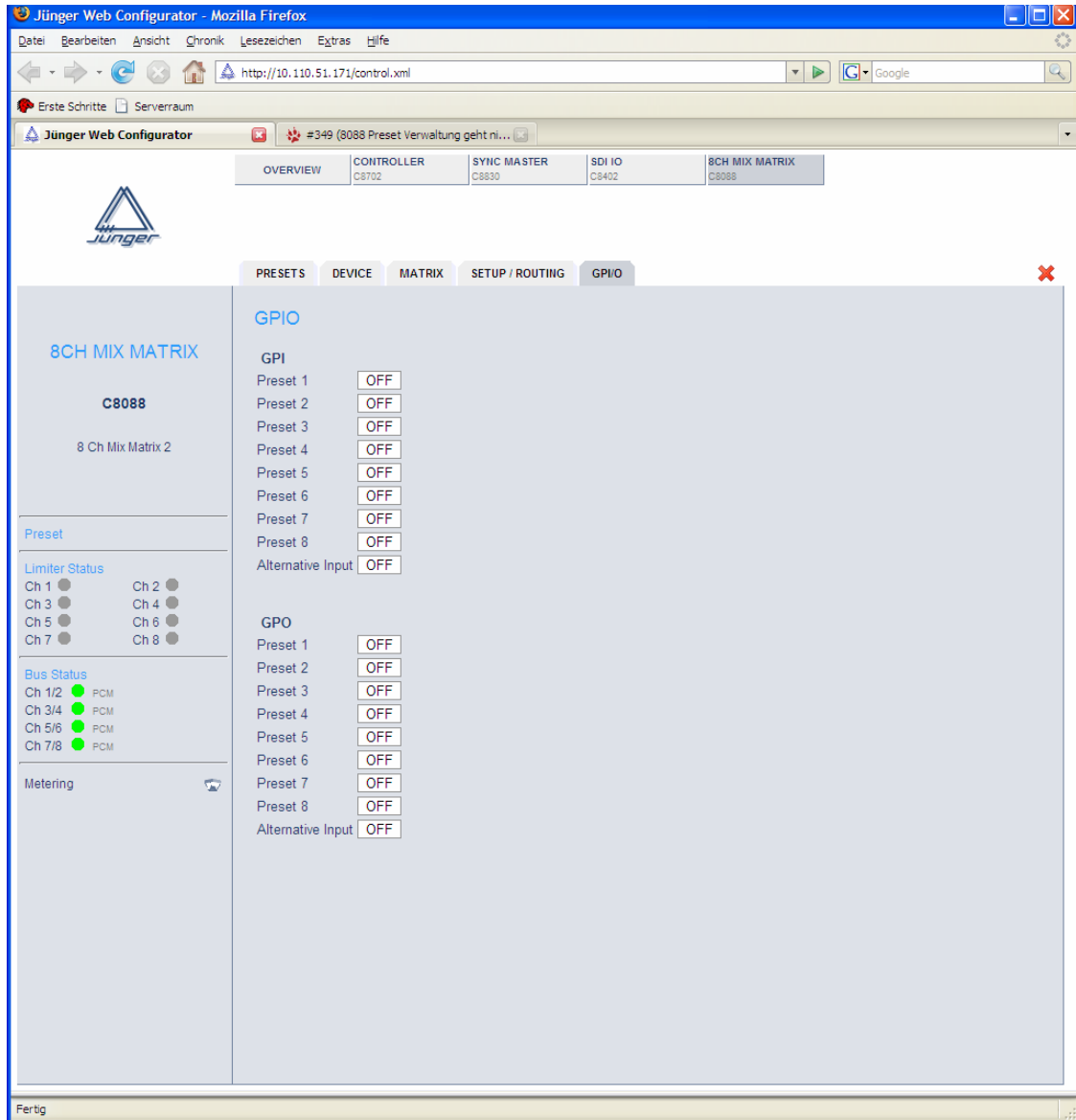
8 Channel Mix Matrix with Limiter

C8088

Phase Reverse	the Phase Reverse switch will change the phase of that particular input channel by 180 degrees.
Mix Matrix	the matrix is represented by 8x8 check boxes. Each check box acts like a mixing node. You can assign as much as 8 input channels to a mixing node and you can assign an input channel to all 8 mixing node in any combination
Limiter Threshold	each output has a brick wall limiter. You can set the threshold for each limiter from 0dBFS to -20dBFS in steps of 0.1dB
Link	if you are using pairs of mixing nodes for stereo mixing you may link the limiter processing together. The setup for the limiter threshold as well as the gain settings are linked together in this case so you only need to use one setting for both channels.
Limiter Status Monitor	enables the monitoring of the limiter activity. If the limiter gain reduction is higher than 6dB for a time period of 5sec. the limiter status soft LED turns red. This status may be used by an external monitoring system such as a SNMP manager.
Mix Matrix Control	the mix matrix can either operate in On-line or Off-line mode. If in On-line mode all settings will be sent immediately to the module. If in Off-line mode you may change several settings and send it as a whole to the module by pressing the <APPLY> button. If in Off-line mode you may use the <REFRESH> button to gather an updated display of the settings of the mix matrix.

Important Note: The channels stored in presets (see page 6/12) are related to the output channels of the C8088. This is the same way as it was implemented for the groups of presets for the predecessor C8080.

GPI/O



GPIs

are useful if you want to recall settings remotely (e.g. by presets). The C8k frame can handle **127** different **GPIs**. You must assign a unique number to the respective function. Such numbers will be generated by the **brc8x** Broadcast Remote Controller or by a **GPI/O** interface module. If the **C8486** receives such a number by the CAN bus, it will load the respective preset for example or will turn a bypass function on.

GPOs (Tallies)

may signal the status of a module by means of relay switches. Those relays have **NO** (normally open) as well as **NC** (normally closed) contacts. This allows for easy interconnection with more generic monitoring equipment. If an event occurs the C8446 puts the assigned number on the CAN bus so a C8817 **GPI/O** module or the **brc8x** may turn on a relay or button LEDs (see C8817 manual for details).