

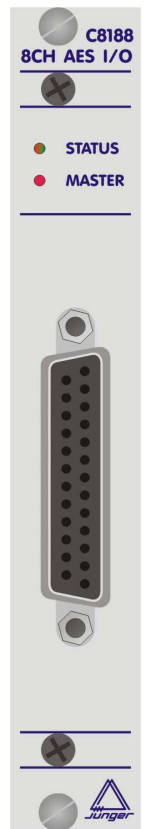
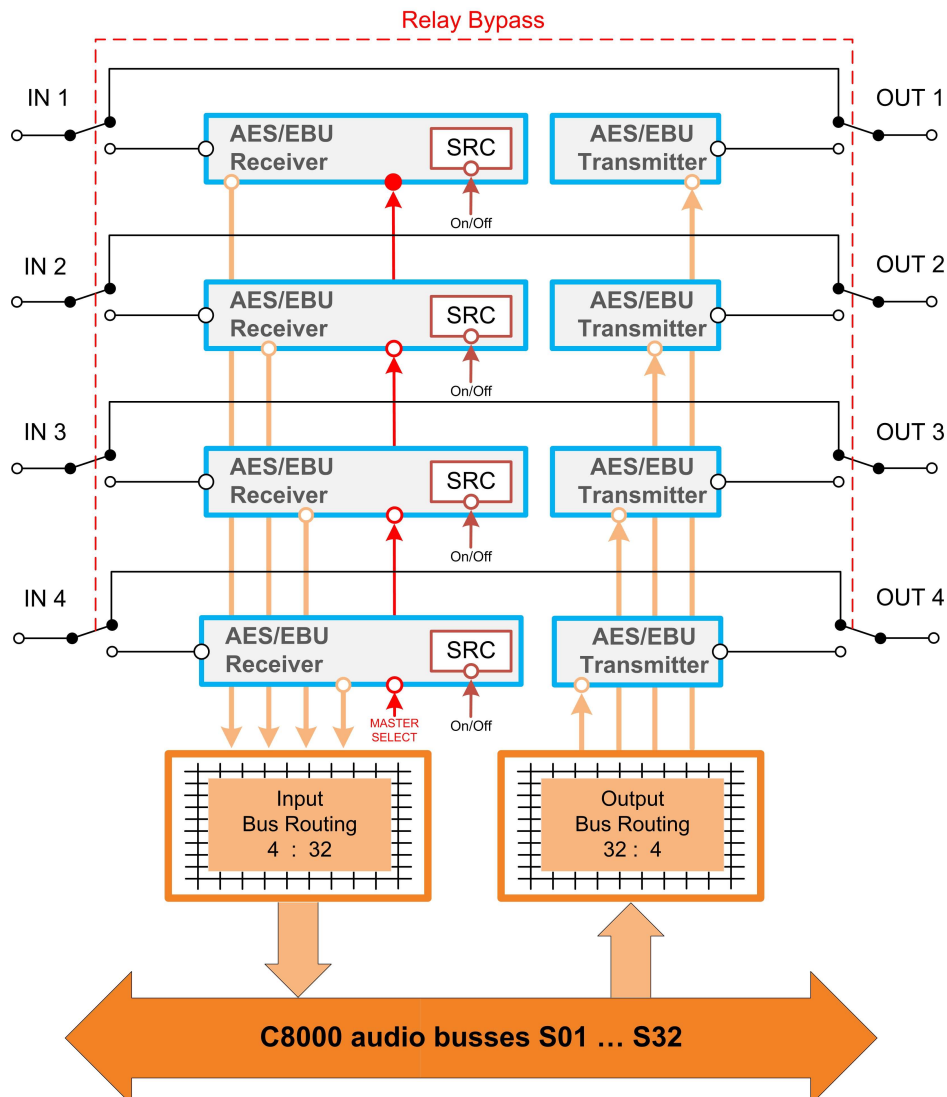
4 Channel AES/EBU I/O

C8188

features

- 4 balanced AES inputs
- Input Sample Rate Converters (SRC)
- 4 balanced AES outputs
- Relay bypass for pairs of I/Os
- Relay wait time after power up
- Master mode (clock master for the frame)
- 25pin Sub-D, industrial standard (TASCAM) pin assignment
- Remote control via C8702 Frame Controller, GPI/O or http based API

block diagram



technical specifications

AUDIO :

resolution : 24bit
sample rate : 32...48kHz
format: AES3
110Ohm input impedance, balanced
110Ohm output impedance, balanced
Input level : > 0,3Vpp
Output level 3,0Vpp

GENERAL :

I/O connector 25pin Sub-D, female
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 C8188 does not have front panel controls. It may be configured via a DIP switch and a rotary encoder. On the **front panel** there are two **LEDs** with different display modes:

STATUS

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

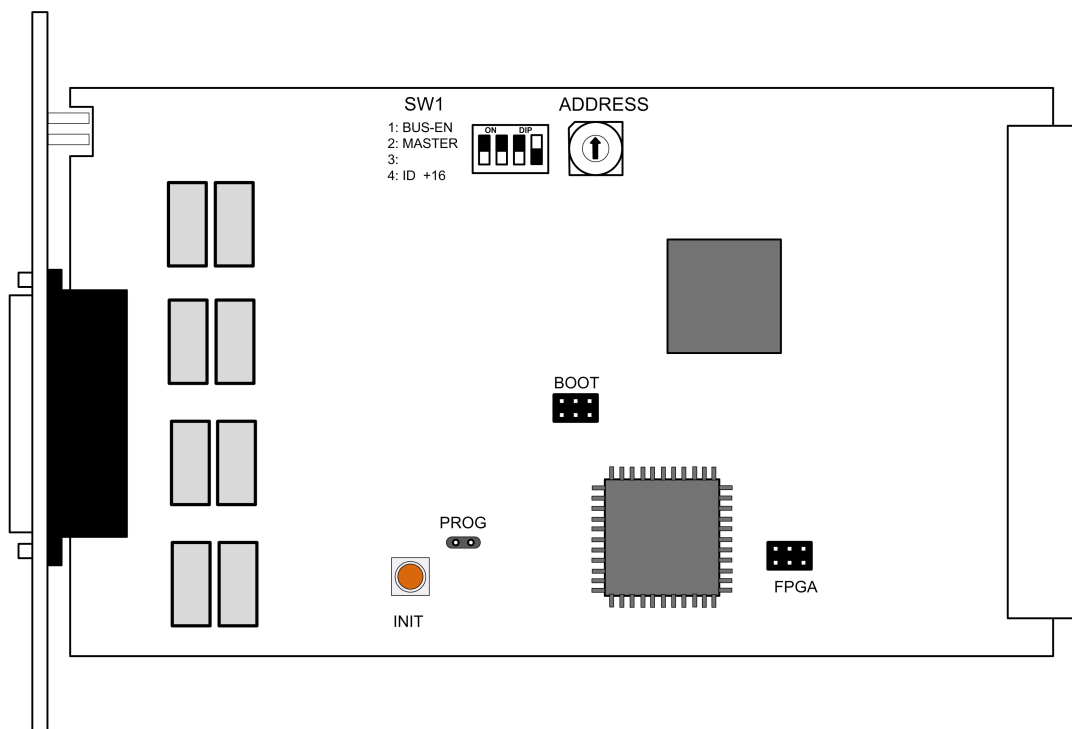
MASTER

off = the audio bus interface clock must be provided by the frame
red = the 8188 is clock master for the frame

pin assignment of 25pin Sub-D connector

Signal	plus	GND	minus
AES_1 In	24	25	12
AES_1 Out	18	19	6
AES_2 In	10	11	23
AES_2 Out	4	5	17
AES_3 In	21	22	9
AES_3 Out	15	16	3
AES_4 In	7	8	20
AES_4 Out	1	2	14

location of switches:



switch settings

BUS-EN:

ON

automatically connects the outputs to the C8k audio buses on power up. The output configuration will be taken from the **NV** (non volatile) **memory**.

OFF

disconnects the module outputs from the C8k buses on power up.

MASTER:

the module is clock master for a C8932 frame

#3

OFF, not used

ID +16

ON

CAN address range is extended by **+16**, counting from 0x10 to 0x1F (16 – 31)

OFF

CAN address ranges from 0x0 to 0xF (0 – 15)

rotary encoder settings

ADDRESS

0 – F

sets the CAN ID . The 16 switch positions are hexadecimal numbers (0x0 to 0xF). Each module within a frame must be assigned a **unique** CAN bus address for proper communication with other modules of the frame.

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**.

INIT

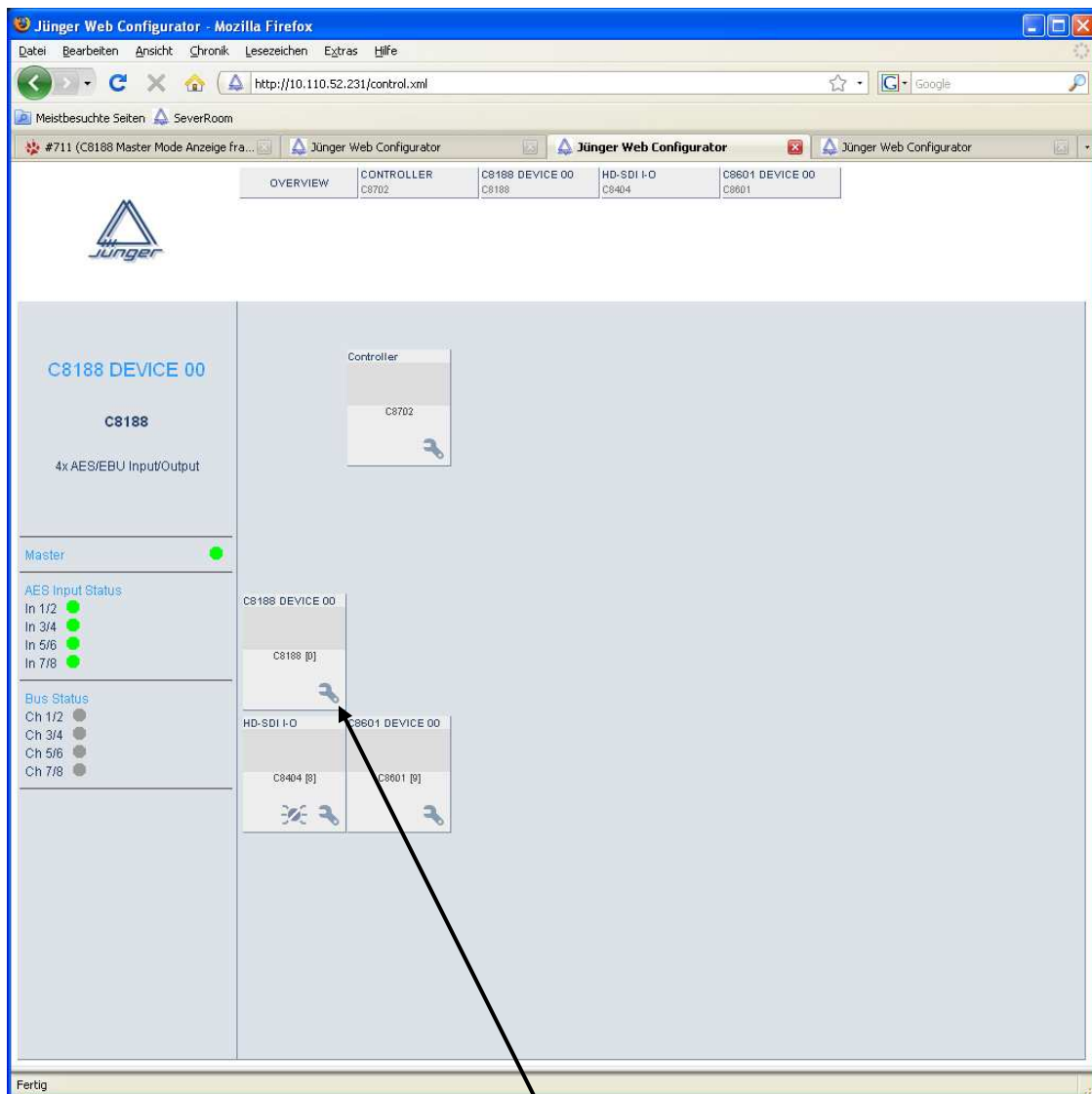
the button initializes the module to factory default if one holds it down while power up.

web browser based GUI

**Set up of all configurations, parameters and functions via a web browser.
See also C8702 Frame Controller manual**

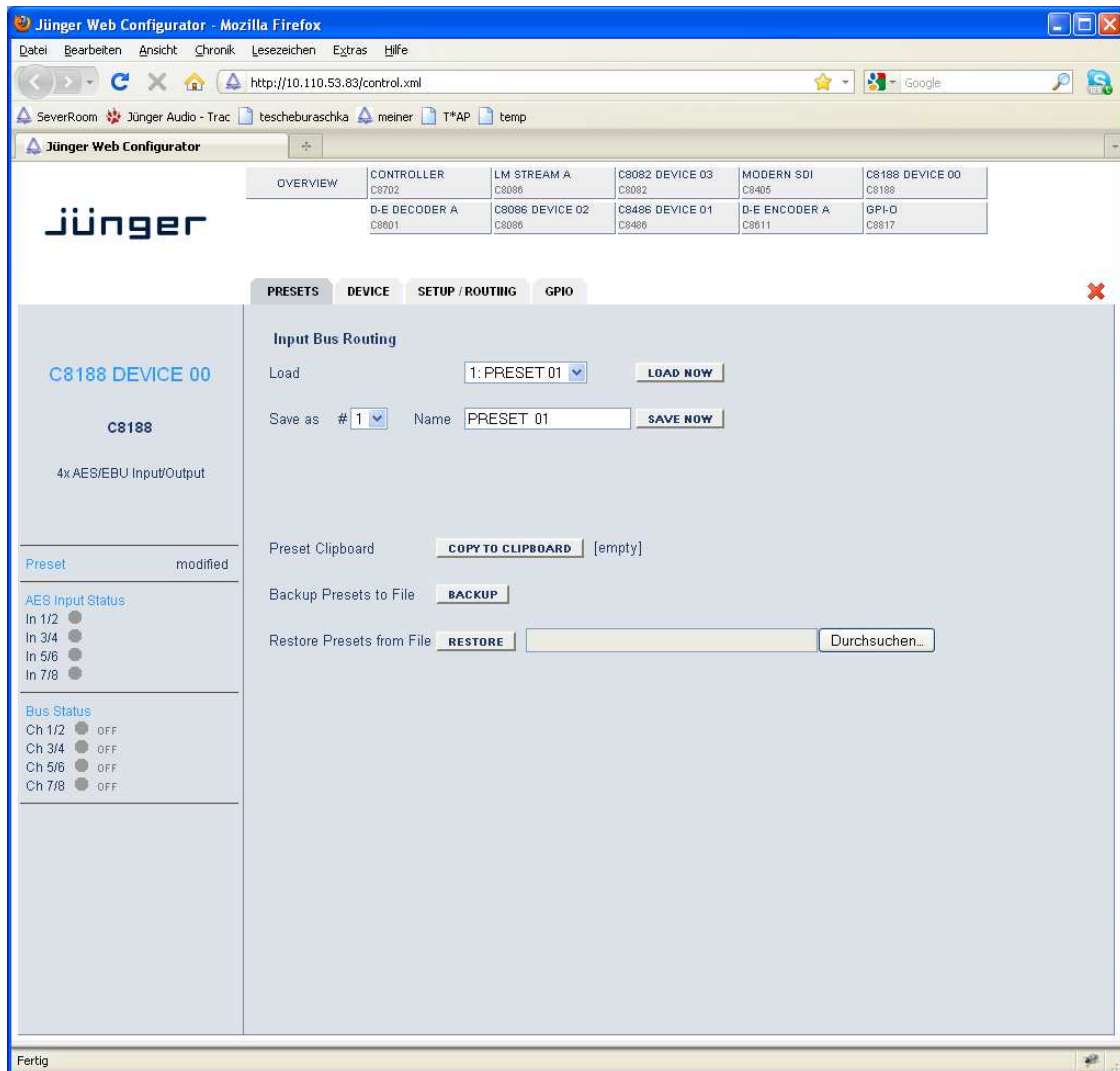
OVERVIEW

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 **C8188** 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:

PRESET



Input Bus Routing

for flexible signal routing you may change the input bus configuration by one of the 8 Presets

Load

will load one of the available presets from the modules NV memory

Save as # Name

here you can select a Preset Number (memory location) and assign the preset a 16 character name

Preset Clipboard

you can copy the data of the active parameters to a clip board and paste such data into the preset memory of another module within one frame

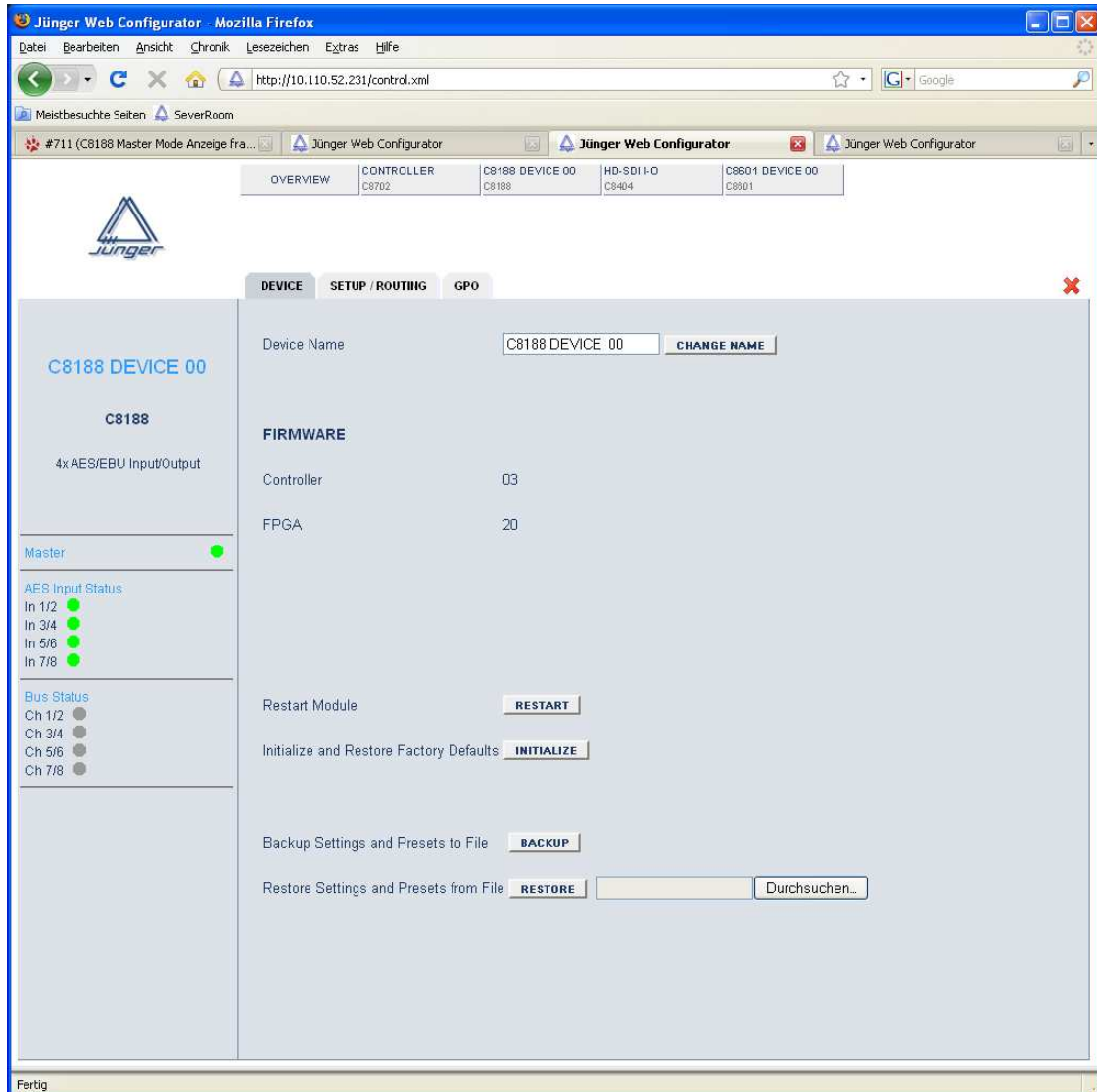
Backup Presets to File

store all presets of one C8082 into a file

Restore Presets from File

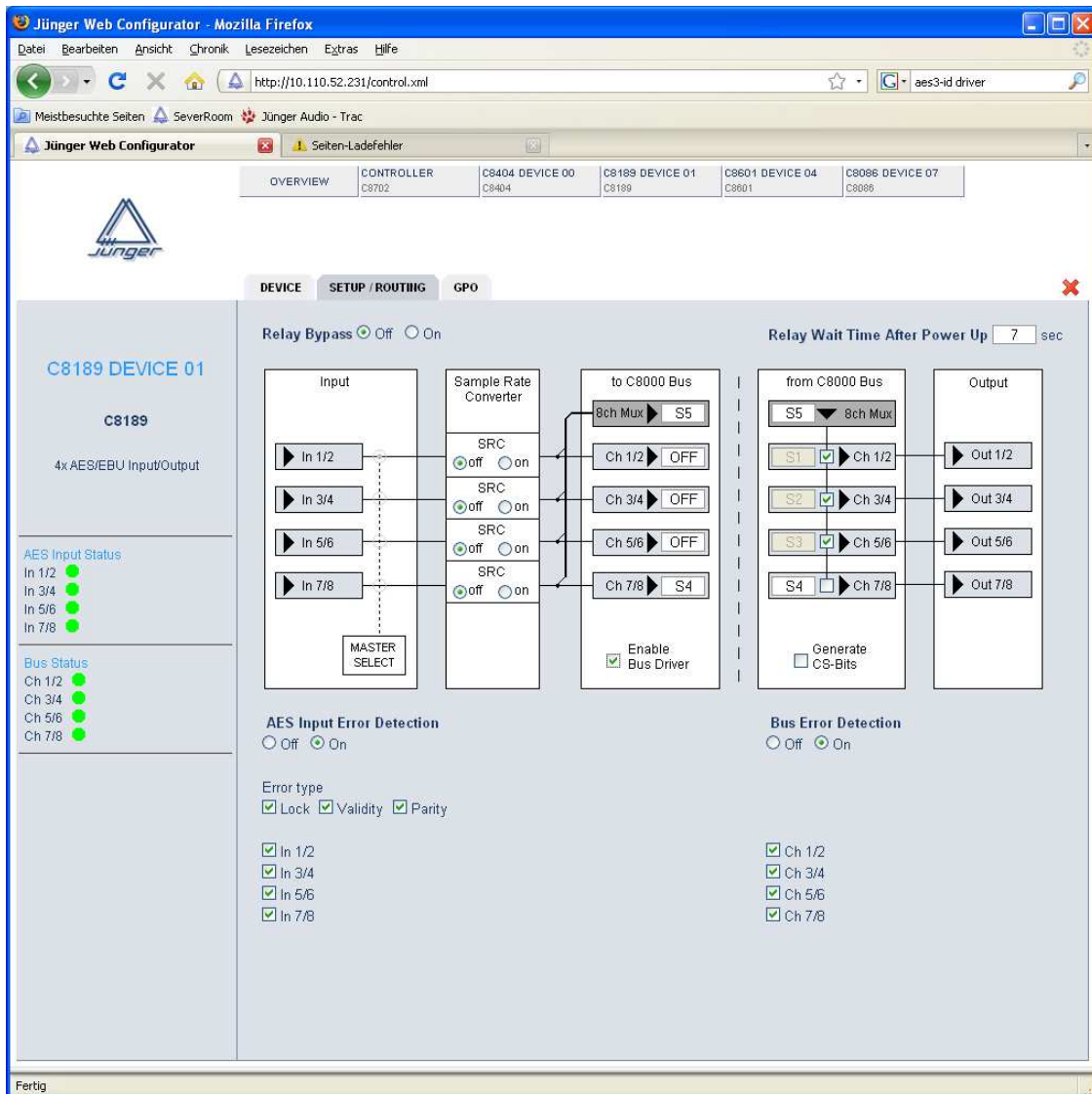
restore all presets for a C8082 from a file

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 | display of the actual firmware of the module controller |
| FPGAP | display of the actual firmware of the FPGA |
| 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 with the content of the backup file. |

SETUP / ROUTING



Relay Bypass

the AES I/Os provide a relay for each pair, which may be turned off with this switch, i.e. the I/Os are put in **Relay Bypass** mode.

Relay Wait Time After Power Up

the **Relay Bypass** is active as long as the module has no power. If power is turned on, the module will wait this amount of time before the relays are engaged to disable **Relay Bypass**.

MASTER SELECT if the module is turned into **Master mode** by **SW1**, you may select here one of the four **AES inputs** as the actual MASTER input. In this case the clock reference of that input will be used to synchronize the whole C8932 or an island of the C8934 frame.

Important note! For a **C8932** frame the **C8188** must be placed into one of the slots marked red and no other sync source (e.g. C8830) must be installed.

Sample rate Converter it is possible to turn on a SRC for that AES input.

to C8000 Bus here you assign the audio signals from the AES inputs to c8k busses
8ch Mux sends all 4 signal pairs on one bus line
Ch 1/2 ... Ch 7/8 sends a pair of input signals to one bus line

Enable C8000 Bus Drivers turns on all module bus drivers (from tri state mode).

from C8000 Bus here you assign the signals from the c8k bus to the AES outputs
8ch Mux receives 8 channels from one bus line. The assignment of pairs to the AES outputs must be done by the respective check boxes
Ch 1/2... Ch 7/8 receives a pair of signals from the c8k bus

AES Input Error Detection the status of the AES inputs can be monitored for AES signal present and for 3 detailed error types:

Lock AES receiver lock status
Validity AES3 validity bit detected
Parity AES parity (data errors detection)
You can mask each AES input for error detection:
grey - error detection disabled
green - no error detected / PCM audio
yellow - no error detected / non audio (Dolby E, D)
red - indicates an error condition.

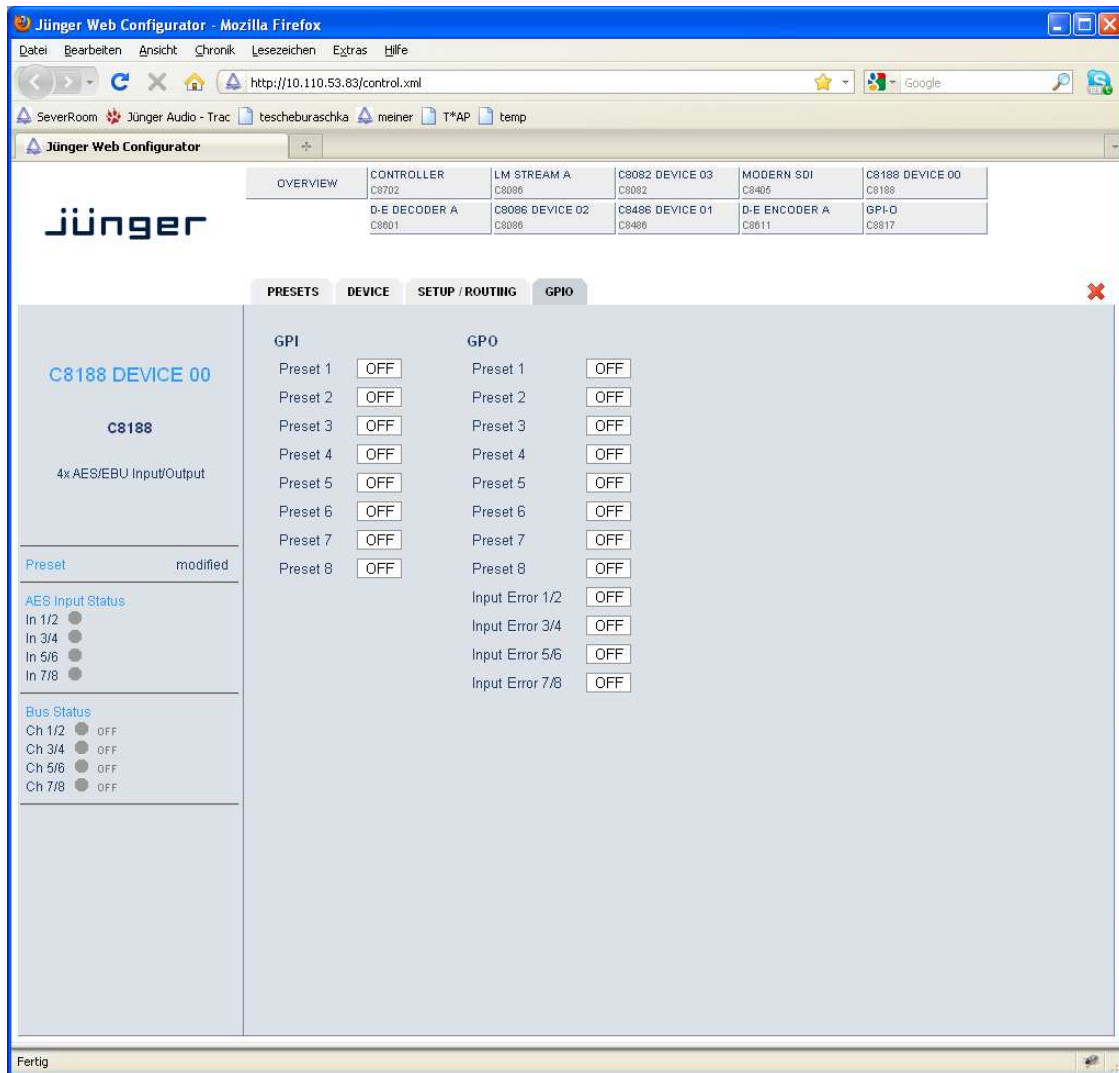
The input status may be presented to external monitoring systems via **SNMP**. The frame controller summarizes such status information and generates **SNMP traps** for the frame as an entity or may activate GPOs (if GPI/O module(s) are installed). The **SNMP manager** may afterwards poll the "**modulesStatus**" (see SNMP documentation for details).

Bus Error Detection 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). 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 as a soft LED.

grey - error detection is disabled
green - no error detected
red - indicates an error condition.

The bus status may also be presented to external monitoring systems via **SNMP**.

GPO



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 easy interconnection with more generic monitoring equipment. If an event occurs the C8188 puts the assigned number on the CAN bus so a C8817 **GPIO** module or the **brc8x** may turn on a relay or button LEDs (see C8817 manual for details).