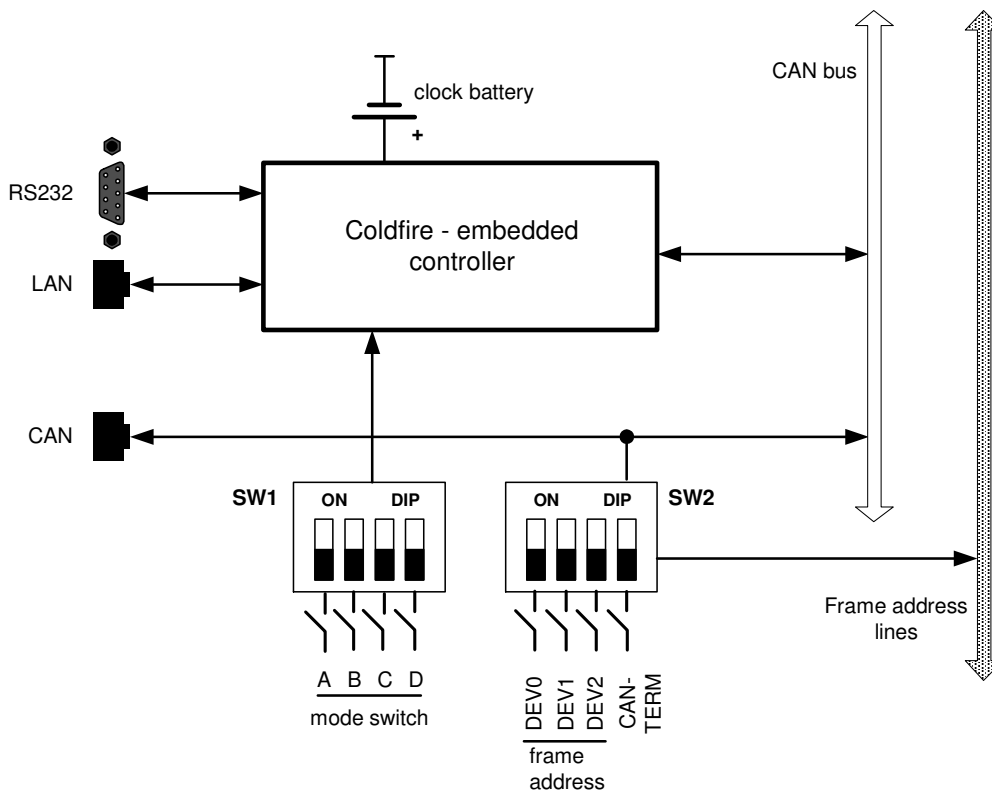## Frame Controller

C8702

Features

- **TCP/IP** over **Ethernet** interface for C8000 frames

- **CAN** bus interface 125kbit/s or 1Mbit/s

- **WEB** server for set up and monitoring of C8k modules

- **EmBER plus** protocol for 3rd party applications

- Optional **SNMP** agent

- Front side RJ45 **Ethernet** connector

- Front side RJ45 **CAN** connector

- Front side 9-pin **serial (RS232)** service connector

- Front side **INIT** button

- Front side **STATUS LED**

- Three tier security schema with password checking

Block diagram

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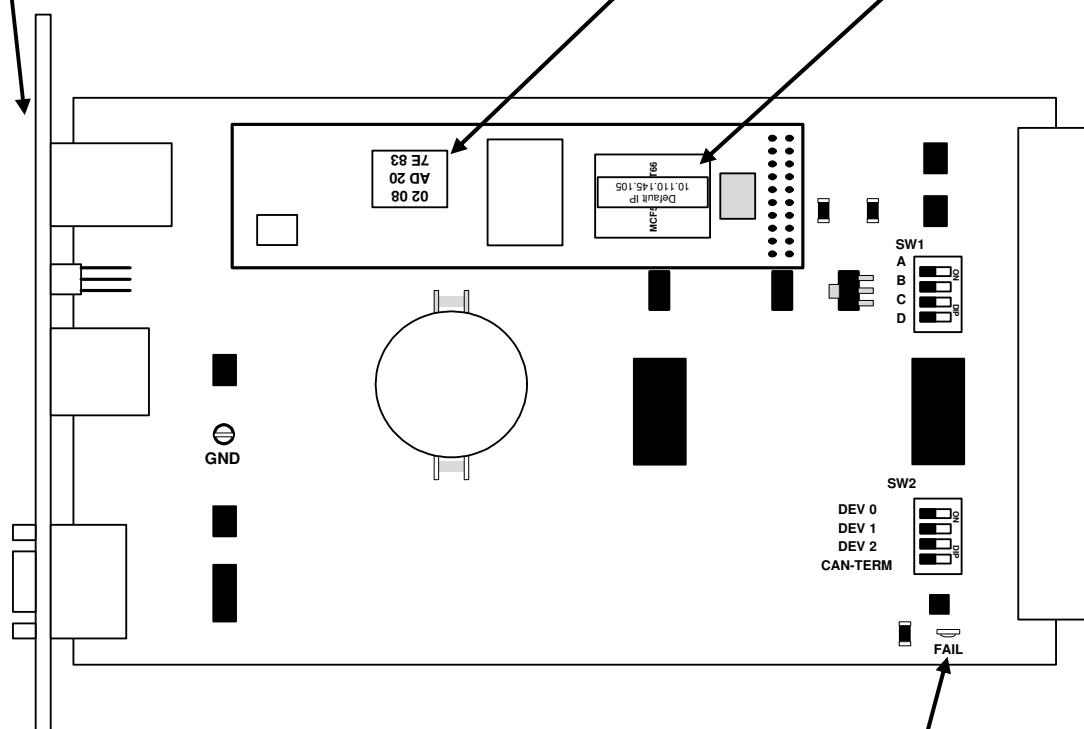C8000

Frame Controller

C8702

Installation

Location of labels and switches on the C8702 module.

The default IP address label is located on the "Coldfire" chip of the controller module and on the front panel of the module.

While the MAC address is printed on a label here:

The **FAIL** LED flashes red if a power failure is detected on the carrier board.

	SW1 #1	**<A>** must be **OFF**	
Set	**SW1 #2**	**<B>** to **ON**	(all other to OFF) if **only one power supply** is installed.
Set	**SW1 #3**	**<C>** to **ON**	(all other to OFF) if the Frame Controller is installed in a **C8942** frame.
Set	**SW1 #3&#4**	**<C>** and **<D>** to **ON**	(all other OFF) if the Frame Controller is installed in a **C8912** frame.
	SW2 #1 - #3	**<DEV 0>** / **<DEV 1>** / **<DEV 2>** must be **ON**	
Set	**SW2 #4**	**<CAN-TERM>** to **ON**	(terminate the CAN bus) if **no sync module** is installed. If a **brx 8x** remote panel is connected, it must be off.

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Important Note! For high density applications with C8491 or C8492 and C8492(B) compact modules, it is possible to operate the **CAN bus** with **1MBit/s** to increase the internal bandwidth for loudness logging and metering. After power-up the **C8702** checks the **CAN bus** and automaticlly sets its **CAN bus** speed accordingly. If by accident one inserts a low speed module afterwards, the C8702 will enter "CAN bus off mode" and will reboot after a while until that module is removed.

Don't mix up modules which are set to **different** CAN bus speeds.

For loudenss logging, live plot or bar graph display you must use the **J*AM** from version 2.9.0 and higher.

status display
if 1MBit/s is used:

Image Version	1.19.0
High CAN Bus Speed	enabled
Temperature	32.5 °C
Power Status	●

Technical specifications

Controller Module	Processor	Motorola MCF8250 Coldfire
	RTC	DS1306
	Operating System	eCos
External Connectors	LAN	RJ45 10/100Mbit Ethernet
	RS232	D-Sub 9-pin controller serial interface #1
	CAN	RJ45 CAN1.1 extension of internal bus
Front panel switch	INIT	Reset (warm start) Initialize (factory default)
Front panel LED	STATUS	Yellow = booting / init feedback Green = operating
Default settings	IP address	10.110.xxx.yyy default calculated from Ethernet MAC address
	Net mask	255.255.0.0
	Gateway	No entry
	Controller CAN ID	0
	Frame address	0
	Can termination	OFF
Power Supply	5Vdc (4.75 … 5.25V), max. 250mA	
Dimension	3RU, 4HP, 160mm depth	
Connector	DIN41612	
Environmental	Operating temperature	0 … 40ºC
	Non-operating	-20 … 70ºC
	Humidity	< 90%, non-condensing

Frame Controller

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Connector pin assignments

RJ45	LAN
Pin #	Function
1	Tx +
2	Tx -
3	Rx +
4	
5	
6	Rx -
7	
8	

RJ45	CAN
Pin #	Function
1	CAN-H
2	CAN-L
3	
4	GND
5	GND
6	
7	
8	

D-Sub	RS232
Pin #	Function
1	DCD
2	Tx D
3	Rx D
4	DTR
5	GND
6	DSR
7	CTS
8	RTS
9	N.C.

Set up of the module

The communication with the C8k modules is done via the CAN bus, i.e. the **Frame Controller** "talks" to the C8k modules via CAN bus while external applications communicate via TCP/IP over Ethernet with the C8702. The CAN bus is a simple two-wire differential serial bus, it operates in noisy electrical environments with a high level of data integrity. Its open architecture and user-definable transmission medium makes it extremely flexible. Capable of high-speed (1 Mbits/s) data transmission over short distances (40 m) and low-speed (5 kbits/s) transmissions at lengths of up to 10,000 m, the multi-master CAN bus is highly fault tolerant, with powerful error detection and handling designed in.

Important Note! Junger Audio uses a default bit rate of 125 kbit/s and guarantees **cable lengths** of up to **300m** if one connects a brc (broadcast remote controller). As an exeption for high density application with C8942 and C8912 compact frames and C8491, C8492 and C8492(B) compact modules, the internal CAN bus **may** operate with 1Mbit/s. In this case it is **not** possible to use brc controllers!

Very important is the termination of the transmission medium to avoid signal degradation by reflections.

Setting the frame ID of a C8k frame:
- The frame address switches DEV0 – DEV2 must be set to ON. The frame controller does not support multiple frames anymore.

Termination of the CAN bus:
- The CAN bus must be terminated by two 120Ω resistors on both ends. The frames have one integrated terminator on the back plane. A decision must be taken how to deal with the second one. You may either use the Sync interface or the Frame Controller to terminate the bus. If the CAN connector of the **C8702** is used for an external remote controller (e.g. the brc), the bus must be terminated on the remote controller (at the far end).

Important Note! The **CAN-TERM** switch must be set to **OFF** if it is terminated on the Sync-Module. If **no Sync-Module** is installed (in case a MADI / SDI or AES interface operates in Master-Mode), the CAN bus **must be terminated** by SW2-4. If a brx 8x panel is connected it must be turned **off** and termination must be turned **on** on the **brc 8x** panel.

Setting the mode switch for single power supply operation:
- if only one power supply is installed (e.g. the C8911 frame has only one PS)
  the mode switch **"B"** must be set to **ON** in order to turn power fail monitoring off.

Setting the mode switch for C8942 high density frames:
- For the C8942 frames the mode switch **"C"** must be set to **ON** to turn **sync fail monitoring off** (this frame type has no central sync source) and **fan monitoring on**.

Setting the mode switch for C8912 dual power supply 19" 1RU frames:
- For the C8912 frames the mode switches **"C"** and **"D"** must be set to **ON** to turn **fan monitoring on**.

Reset the C8702:
- press the **INIT** button briefly at any time and the Frame Controller will reboot immediately.

Important Note! Rebooting the Frame Controller has **no effect** on **audio processing**.

Initialize the C8702 to **factory default** settings:
- Approx. 40 sec. after power is turned on or after pressing the **INIT** button briefly (reset function), the **STATUS LED** lights yellow. Now you may press the **INIT** button and hold it firmly until the **STATUS LED** flashes three times. This is an acknowledgement that the C8702 has been initialized to factory default settings (you may also hold down the **INIT** button at any time until the **STATUS LED** flashes three times).
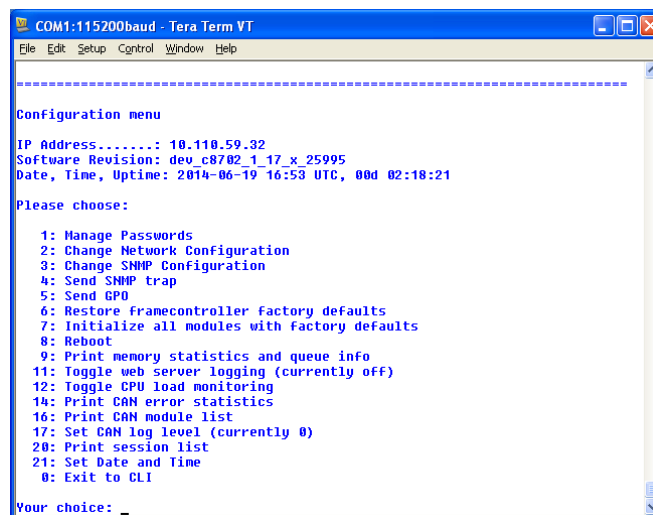
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Setting the IP address

Important Note! If you are not familiar with the Internet Protocol, you must contact an administrative person of your IT department for help.

There are two principal ways to change the IP configuration. You can use the so-called console interface or you may use a **Web Browser**.

1. Connect with a PCs COM port:
    * use a physical or virtual (via a serial < > USB adaptor) COM port
    * connect it via a 1:1 cable to the RS232 9-pin connector
    * run a terminal program (115.2-8-N-1, no handshake)
    * select that COM port
    * press **<ENTER>**:

You will get a similar window that shows the momentary IP configuration and a Configuration Menu. The layout depends on the screen settings and the OS. The content of that menu may vary depending on the **Frame Controller** firmware version.

1.1 Select: **"Change Network configuration" <2> <ENTER>**
     You must set an IP address **and** the subnet mask. If you skip the "Netmask"
     the IP address will not be changed. Gateway address is optional and may be skipped.

1.2 Select: **"Reboot" <8> <ENTER>**
     Press small **<y>** and **<ENTER>** to start the reboot process

2. Connect the C8702 via an Ethernet cross over cable to a PC:

2.1 Change the network setting of the PC
     The PC must be given an IP address from the address room of the C8702 **default IP address.**
     The factory **default IP address** is printed on a label on the controller module (see installation).
     The **subnet mask** of the factory default address is **255.255.0.0.**

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Important Note! If the **C8702** has an unknown IP configuration you may initialize it to factory default settings (see above). This will restore the factory default IP configuration.

2.3   Open a browser and enter the default IP address ● in the URL field:
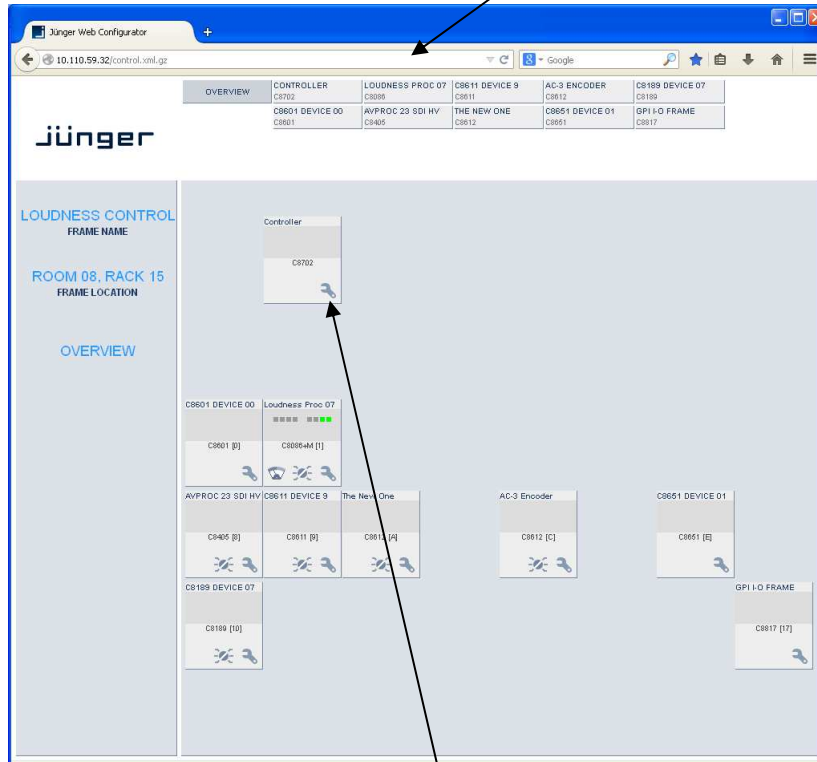
2.4   On the web site click on the **spanner tool**
       This opens the **"SYSTEM CONFIG"** tab of the Frame **CONTROLLER** setup.

2.5   Enter the desired **NETWORK** configuration:

2.6   Press **<CHANGE NETWORK CONFIGURATION>**

2.7   Reboot the C8702:

In order to make the IP configuration permanent you must reboot the frame controller.

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Web technology based GUI

The **GUI** is based on common web technologies so you can display it nearly everywhere.
External Ethernet based access to the Junger devices is maintained by a dedicated 32Bit
communication processor that is part of the **C8702 Frame Controller** module.
The **communication processor** does not control the module parameters directly. It transfers
commands and data from and to a **module control processor** which on the other hand controls the
module parameters as well as **GPI/O**s. The **module control processor** and the **communication
processor** both communicate via the **CAN bus** internally. Therefore the external communication is
shielded somewhat from the audio processing by this two tier approach. I.e. you can update the
firmware of the **Frame Controller** without disturbing the audio processing.
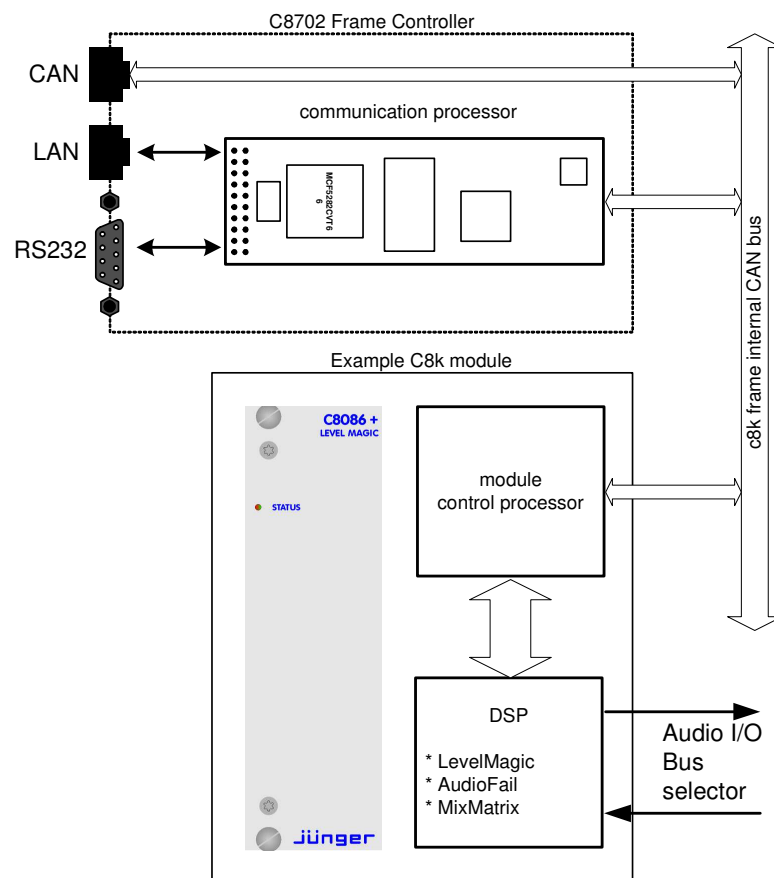
The **communication processor** runs a **HTTP and** an **UDP** server. You may also activate a
Telnet, an **Ember server** and a **Proxy** to communicate with the **brc** remote controller.
As a fee-based option you may activate a **SNMP agent** as well.

Over a serial 1:1 connection (RS232: 115200, 8, N, 1, no protocol) you will gain access to the
console interface (see IP set up above). It offers low level communication for administrative,
service and testing purposes. The functions available from the console interface may very from
different **Frame Controller** firmware versions.

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Settings for the browser

The GUI functions are based on web technology. Due to the permanet changes of browser versions we try to support Windows **IE** and Google **Chrome** as best we can, but we do all testing on Mozilla **Firefox** (54.x at the moment of editing this document**).**

For proper operation, the environment needs some settings which are not always set up by default when installing the OS, so you must check it yourself:

* You must **"allow cookies"** from the Junger Units.

* Pay attention to settings of **3ʳᵈ party tool bars** (like Yahoo) which may overwrite the browser general settings!

* In order to receive any kind of files (e.g. frame back-ups, presets) from the Frame Controller, the security options must be checked to allow for downloads.
  - Automatic prompting for downloads   = Enable
  - File download   = Enable

Important Note! To display bar graph meters the C8702 will launch a **JAVA Web Start** application. This requires the installation of an actual **Java Runtime Environment 8.x** (or higher) on the PC. You will get it as a free download from a lot of sites around the world or directly from the license owner Oracle:

https://ww.java.com/en/download

If you click on the meter icon of a c8k module, The frame controler will provide a ***.jlnp** file for download :
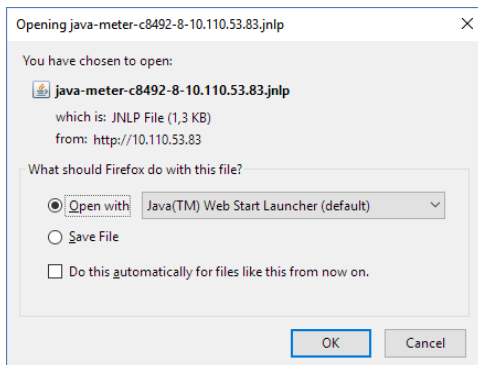
This file contains all nessecary information for the **JAVA Web Start** launcher that in turn will start the **JAVA Virtual Machine** (JVM).
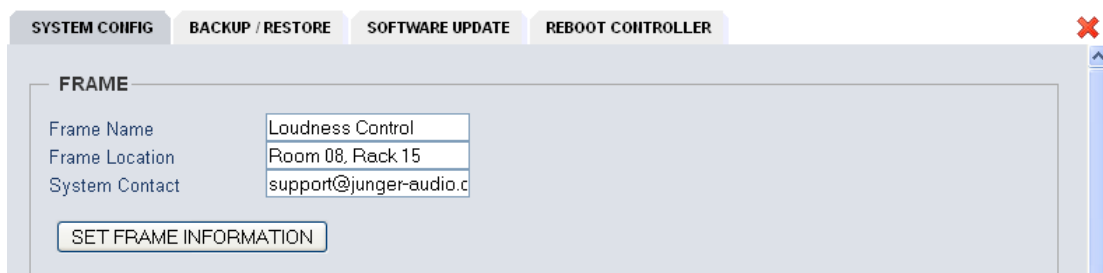
You will be promted if you want to run the application:
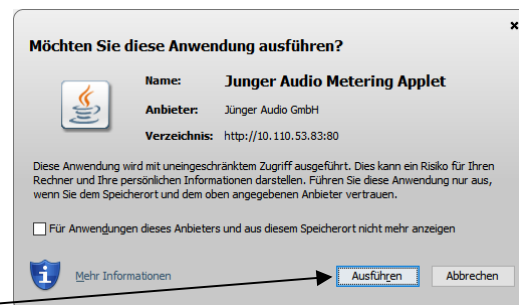
If you confirm,
the applet will display the respective bar graph meters:

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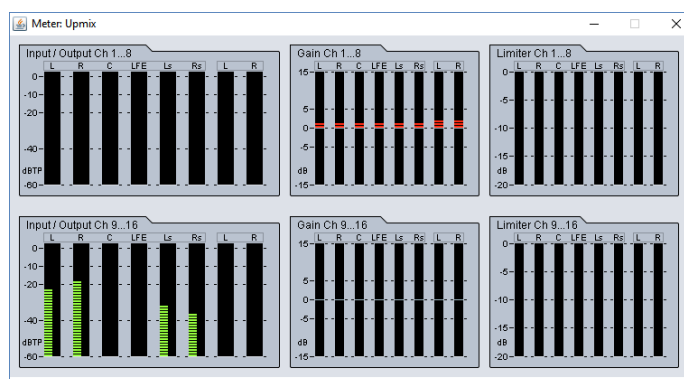
* If the PC is part of a MS Domain, you must check if the LAN settings are correct. If you have configured your IE settings manually you must disable "Automatically detect settings". Otherwise it could happen that your settings are overwritten automatically at next reboot.

* You must declare the browser as an exception for the **Windows® Firewall** in order to maintain proper **UDP** data transfer from and to the **JAVA Web Start** application. If you see security issues for your system you may use the **METERING** configuration (see further below) to limit the **UDP** port numbers instead of making an exception for all incoming network connections.

Setting of frame information
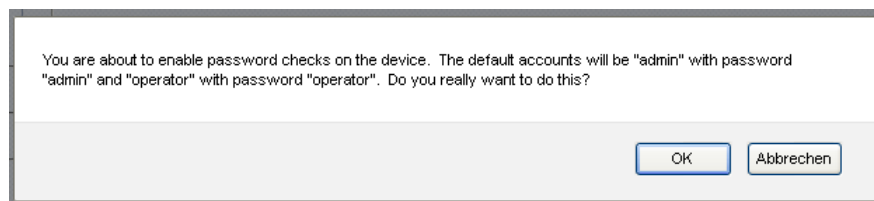
The **Frame Name** and the **Frame Location** as well as the **System Contact** are used by the SNMP **sysObject** OIDs (Object Identifier).

Activation of the security feature

The web interface of **Junger Audio** units offers a two tier **security schema**.
* **Operators** can view everything and load presets.
* **Administrators** can set up C8k frames including their modules.
They are allowed to change parameters and write presets.
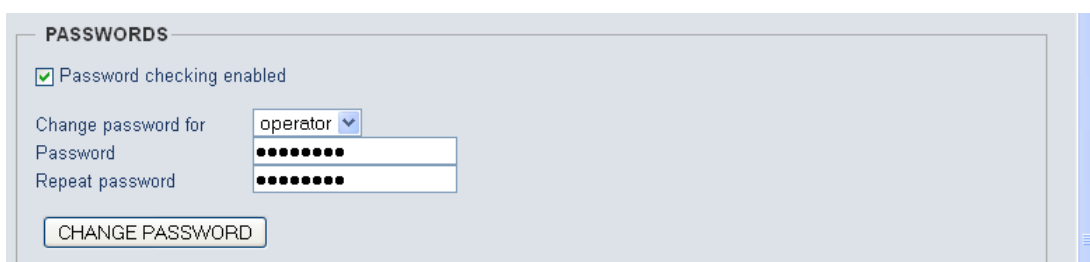
You must check **"Password checking enabled"** to activate this feature, you will be notified about the default settings:

If you click **<OK>** the Frame Controller will close all open sessions and you must log in again as user **"admin"** with the default password **"admin"**.
Now you may change passwords for both the admin and the operator:

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Setting UDP port range for metering

In order to receive data for the meter bar graph display, **if a local firewall is active**, you must open it for the browser application or you must reserve UDP ports (for which the firewall will be held open). Here you can tell the frame controller which UDP port(s) are reserved for metering:

After the launch of the **JAVA Web Start** bar graph meter application it will be told by the frame controller which ports it may check for receiving UDP data packets.

On the counterpart, the PC, you must define an exception for the firewall.
Open Fire Wall settings and go to exceptions (example from Windows XP OS):

1. right click on the network symbol in the windows task bar
2. select **"Change Windows Firewall settings"**
3. click on the **"Exceptions"** tab
4. open the **"Add Port"** menu:

Here you must give this rule a unique name (e.g. "c8k frame #17") and assign it a **UDP port** number.
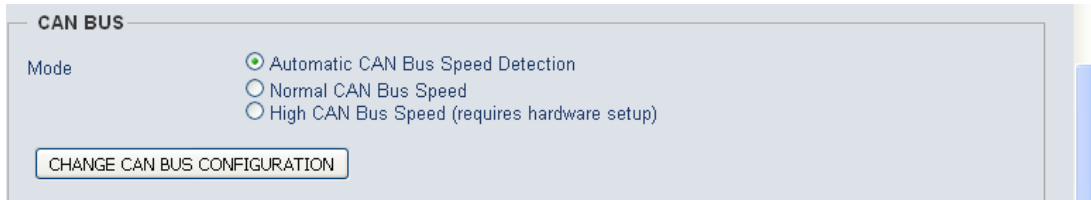
Important Note! If you want to connect from different PCs with one and the same c8k frame, it is sufficient to use one UDP port per c8k frame because different PCs will open different IP socket connections with the same frame controller.

If you want to connect from one PC with different frames, a unique UDP port number for every remote frame is necessary! Therefore you may assign a range of UDP ports for the Frame Controller:

Important Note! Connection of multiple **JAVA** applets from the **same PC** with the **same module** is not implemented! In such case the previous applet will be closedkilled.

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Setting of CAN BUS speed

CAN BUS

Mode   ⦿ Automatic CAN Bus Speed Detection
        ○ Normal CAN Bus Speed
        ○ High CAN Bus Speed (requires hardware setup)
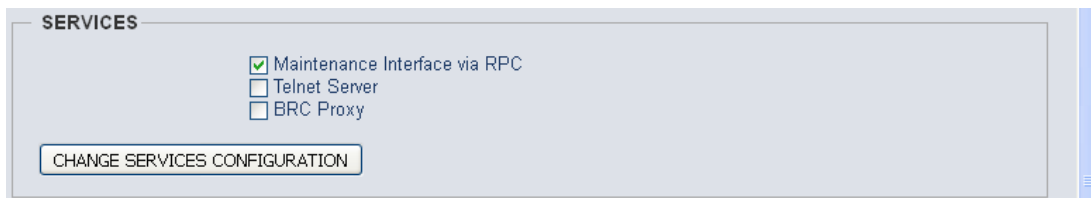
[CHANGE CAN BUS CONFIGURATION]

You can select between the two CAN bus speeds: **Normal** (125kBit/s) or **High** (1Mbit/s) and the **Automatic** detection of the installed modules.

Important Note! Don't mix up modules which are set to **different** CAN bus speeds.
High speed CAN bus is **only** available for C8491, C8492, C8492(B) and C8817-3.

Selecting services

For special applications you may activate the following services:

SERVICES

☑ Maintenance Interface via RPC
☐ Telnet Server
☐ BRC Proxy

[CHANGE SERVICES CONFIGURATION]
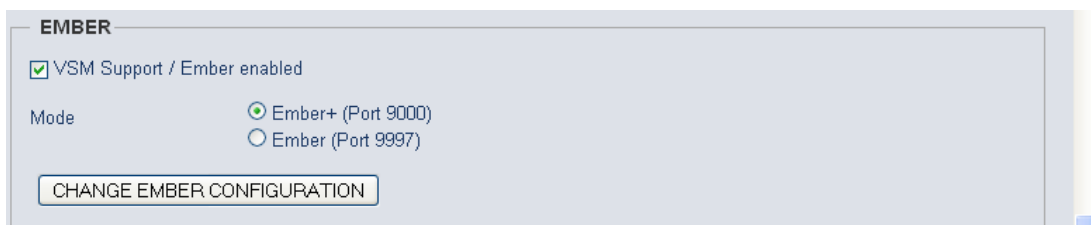
Maintenance Interface via RCP is for internal use only.

Telnet Server   For remote access to the console interface via TCP/IP you must enable the Telnet Server (TCP port 22).

BRC Proxy   If a **brc 8x** is connected via the CAN bus one must activate this option. Compared with previous implementation, the brc remote panel no longer talks to the modules directly. A proxy instance is used as the "man in the middle".

Enable EmBER protocol support

EMBER

☑ VSM Support / Ember enabled

Mode   ⦿ Ember+ (Port 9000)
        ○ Ember (Port 9997)

[CHANGE EMBER CONFIGURATION]

VSM Support / **Ember enabled** You may directly connect with a **VSM** application or use the Ember or Ember+ protocol to remote control the c8k frame.

For details of the VSM system see http://www.l-s-b.de/uk
and for Ember code depository go to: http://code.google.com/p/ember-plus/

Important Note! Right now we support both, the old Ember and the **Ember+** protocol. It is our intention to remove the old Ember server as soon as **VSM** fully supports **Ember+.**
We highly recommend you base your implementation on **Ember+**.

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Setup of SNMP functions

Important Note! SNMP protocol is a licensed feature that must be purchased for the C8k system. Pls. contact your local dealer.

Junger Audio supports **SNMPv1 GET** PDUs (Protocol Data Unit) for polling the c8k frame only. We do **not** support **SNMP SET** PDUs. The agent may also send **Traps** on predefined conditions and/or may fire **GPOs** via the C8k GPI/O interface (C8817).

The setup of the **SNMP** functions is done via the Frame Controller **SYSTEM CONFIG** menu, if the **SNMP** option is activated:

Here you can tell the Frame Controller a **Trap Sink IP Address**, its **Port Number** and the **Community string** which must be used for basic authorization.

You may enable **Traps** and/or set a respective **GPO** number for use by GPI/O module(s).

In principle, the module generates verious status information and sums (or rather condenses) fail conditions if there are multiple inputs or processing channels.

The **Frame Controller** polls the modules permanently for such status information and sums (condenses) that information for the entire frame. An external monitoring tool (SNMP Manager) may poll the SNMP agent based on the **Junger-C8K-MIB-4**. The **MIB** and the associated document can be requested from **Junger Audio**.

The **SNMP manager** can also "sit and wait" to receive **Traps** from the SNMP agent and may poll the frame afterwards. The procedure depends on the implementation of the management tool.
For legacy monitoring applications, the c8k frame may be equipped with GPI/O module(s). In this case the system can fire GPOs (relay closures) based on the above settings.

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Retrieving diagnostics information
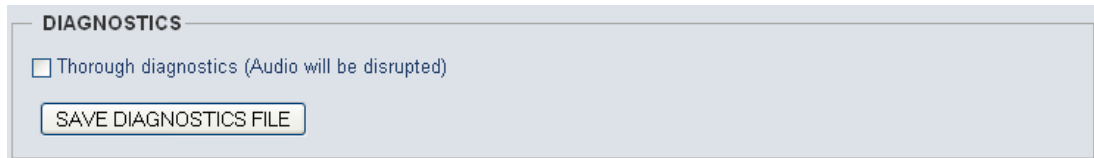
The diagnostic file is an assembly of log information from the frame controller for investigation by Junger Audio staff. After pressing the **<SAVE DIAGNOSTIC FILE>** soft button an XML file will be generated. You must download it to your PC and send it to Junger Audio GmbH if requested.

Important Note! "Thorough diagnostics" is a more comprehensive procedure that will interrupt audio processing in some of the modules. Only use this process if advised by Junger support team.

Update of the Frame Controller firmware

The firmware for the C8702, called **"image"** (example: "rel_c8702_1_19_0-32665.img"), must be "burned" into the flash memory of the Frame Controller.
You may get such an image by **http download** of a ZIP file from Junger Audio.
Below is an example of a respective URL:

www.junger-audio.com/download/firmware/C8000/C8702/rel_c8702_1_19_0-32665_fw-32679.zip

Such zip file contains an image file and actual module firmware packed into an archive file (example: "rel_c8000_1_19_x_fw-32679.arc") as well as updated manual(s) and other relevant current documents. After downloading you must unzip it and store the file(s) locally.

Open the **SOFTWARE UPDATE** pane of the Frame Controller:

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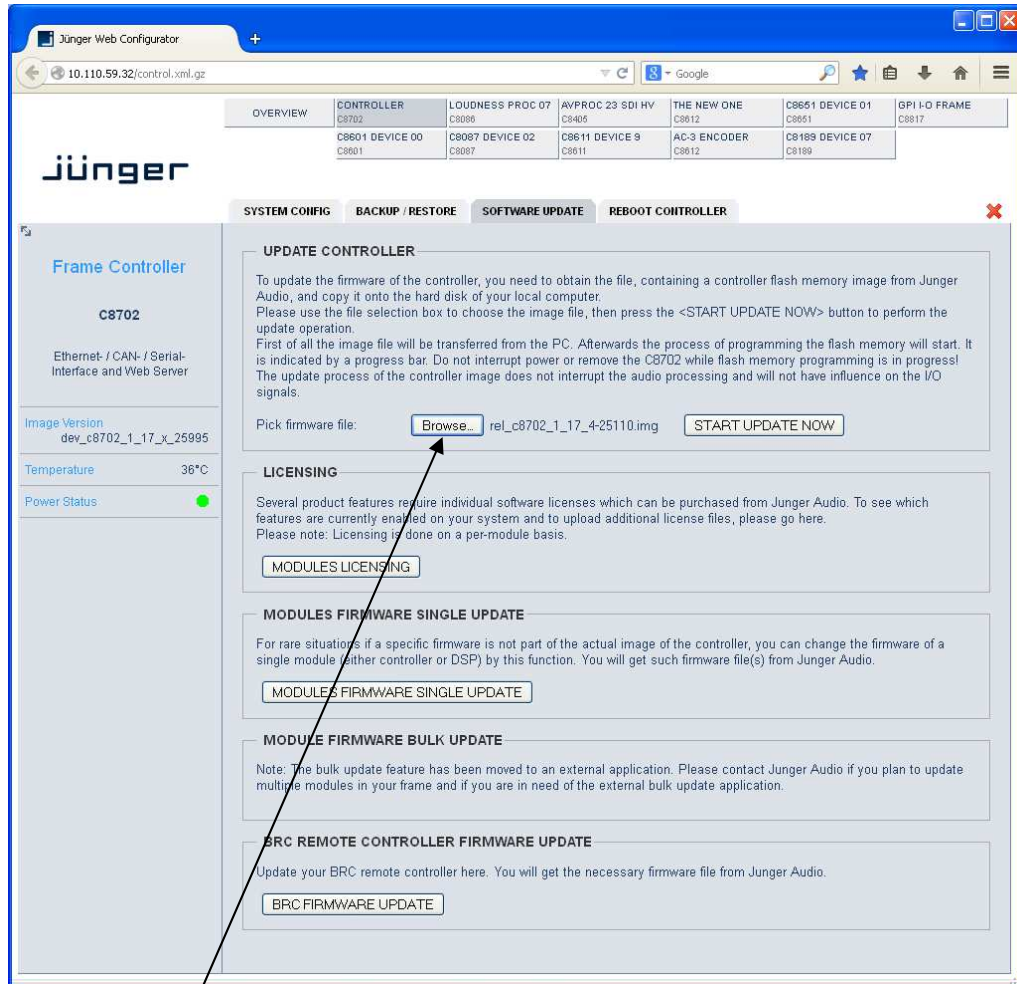
You must browse ● for the appropriate image file from the previously unpacked ZIP. Once done you must press the **<START UPDATE NOW>** soft button. This process has 3 steps. The controller will upload the image file from the **PC** into its memory, afterwards it will erase the flash memory and finally burn the new image file into it.

First you will get the message that the file is being transferred. Afterwards you will see a **progress bar** when the process has started:
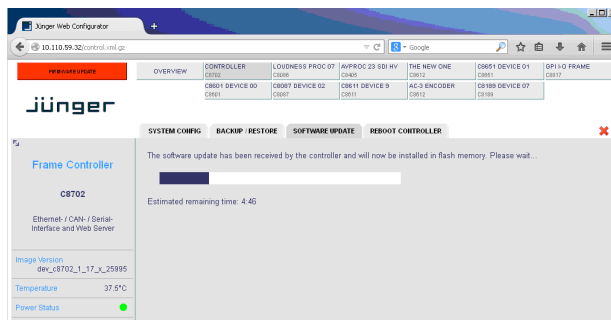
When finished, the browser will show a message:
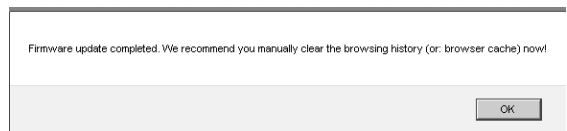
Click **<OK>** and the browser will reload the web site from the Frame Controller in order to be up to date. It is recommended to flush the browser cache to get rid of older content.

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Possible problems when updating from older Frame Controller firmware

If you can not reach the GUI via an actual browser you must do a little trick to update the frame controller. You must reboot the C8702 by briefly pressing the **<INIT>** button (or rebooting it from the console interface). After approx. 60sec (boot up time) you should open the browser again and enter the URL:

<p style="text-align:center">http://<C8702-IP-address>/standalone-update.html</p>

The following page will open:
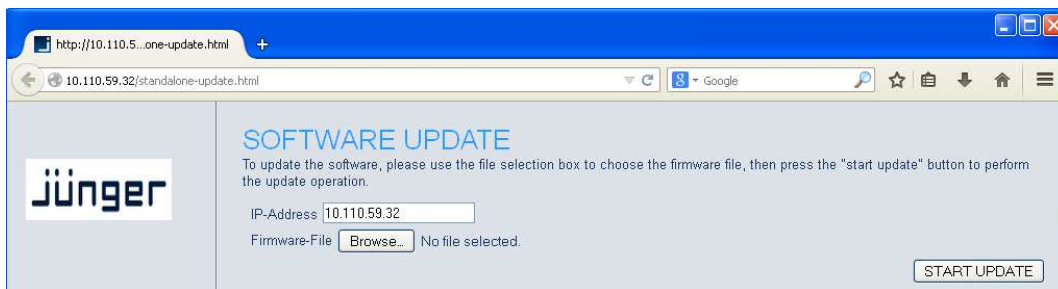
Proceed with the image update as described above. When finished you will get a pop up, saying the update was o.k. (it takes approx. 4 - 5 mins – be patient pls.).

Important Note! There was a change in the way the Frame Controller image is sent from the PC to overcome a possible bottleneck of non-fragmented RAM. If you update from an older version (< 2660) you should reboot the Frame Controller before starting the image update. This will ensure that there is enough non-fragmented RAM for the existing update procedure.

If the Frame Controller reboots with the old firmware you must use the "-a" image: (example) "rel_c8702_1_17_8-28002-a.img".

In rare events (if you come from a very old firmware it might be necessary that the update is performed in a two tier approach: First use the "minimal" image:
"rel_c8702_minimal_image_1_0_1-30583.img" (the image number may change over time) and as a second step update the actual release.

Modules firmware update

Modules firmware update will normally be done via the **Bulk Updater** software.

If there is the need for special firmware combinations or you don't want to use the latest firmware for any reason, you can make use of the **MODULE FIRMWARE SINGLE UPDATE** function. This function gives you a drop down list of the modules of a frame, their addresses and their actual firmware.

Important Note! Before you update any module firmware and a new image comes with the module firmware archive, you must update the **Frame Controller**. Otherwise the GUI may show incorrect module control pages or the module is displayed in orange or red color.
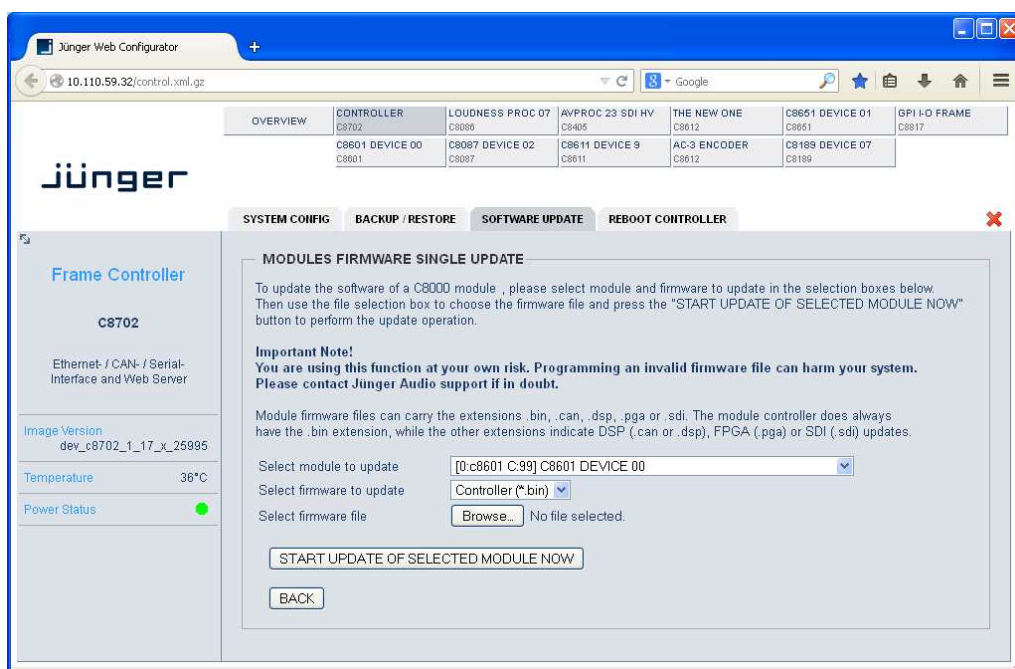
This is a basic tool and it needs a bit of care when using it. You must update module by module and for each module you must choose the respective part of the firmware, all one by one.

Select module to update	[address:type actual firmware] module name module controller firmware is indicated by **C:xx** DSP firmware is indicated by **DSP:xx** FPGA firmware by **FPGA:xx** SDI firmware is indicated by **SDI:xx** NXP processor based modules C:xx DSP:xx FPGA:xx
Select firmware to update	[Controller (*.bin)] [DSP (*.can)] [FPGA (*.pga)] [SDI (*.sdi)] [Controller, DSP, FPGA, SDI (*.nxp)]
Select firmware file	You must browse for the location of the respective file (where you have unpacked the archive or where a single file received from Junger is stored).

Important Note! It is not possible to select a firmware file directly from an archive folder.
You must unpack that archive in order to use the individual firmware file(s).

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Modules licensing

The **SNMP feature** of the Frame Controller and several special functions of modules like the **Metadata Option** for the LevelMagic processor or number of channels and/or the **surround** feature of compact modules like the **C8492** are options which may be purchased later and which must be enabled in the field.

In order to get the correct licensing file from Junger Audio you must send the Licensing Information file to Junger Audio. You must go to **CONTROLLER > SOFTWARE UPDATE > MODULES LICENSING:**

The table above shows the current license status of an example frame.
You must press: **<SAVE LICENSE INFO>**.
The Frame Controller will now generate an XML file that you must download to your PC and send to Junger Audio for reference.
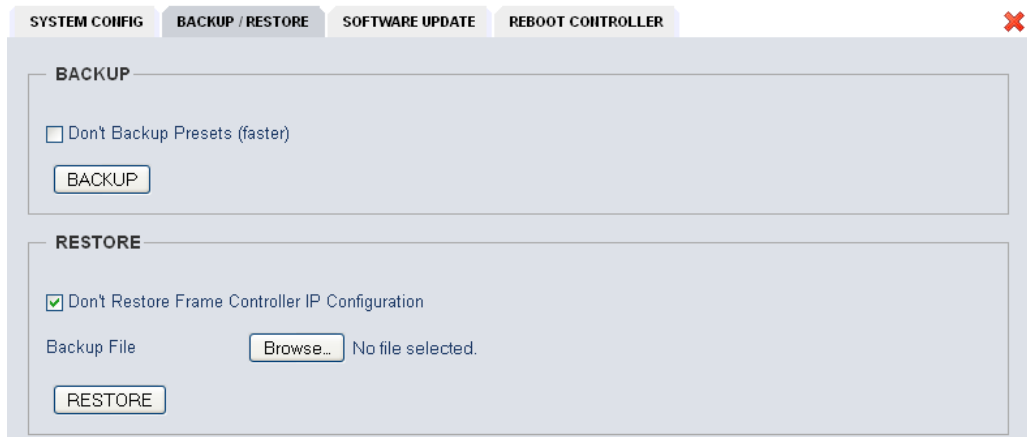
In return you will get the "License file" that you must upload to the Frame Controller.
You can browse for the file and press **<APPLY LICENSE NOW>**.

Important Note! Some license features need the latest module firmware. Therefore it is recommended that you update the frame before applying the license key file to the frame.

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System backup and restore

For safety reasons or when doing module firmware updates you may want to backup the on air parameters and presets of the modules in a frame:

When you press **<BACKUP>** the frame controller will gather all information stored in individual modules of the frame and will build an **XML file** that contains such information. Due to the size of the frame and the complexity of the modules installed it may take a little while. When it's done you will be notified by a pop up. You must select "save file", press **<OK>** and a file dialog will open.

If you drop the preset content of the modules the process will be much faster.
In this case you must check the "**Don't Backup Presets (faster)**" option.

If you want to restore settings of a whole frame you must browse for a backup file stored on the PC and press **<RESTORE>**:

"**Don't Restore Frame Controller IP Configuration**" option:
If the backup file is from a different frame but with the same configuration or from a partially equipped frame from the test bench, you can prevent overwriting your current frame IP address by the one from the backup file.

Hints for operation

The common web technology has many advantages but also a few disadvantages. Most of the information displayed relies on the data the **browser** receives on demand from the web server of the **communication processor**, i.e. it polls the web server for data. The polling process is divided into time slices of different priorities and the browser content will not be updated automatically for all areas, so a manual reload is recommended if you are not sure about the parameters you see in the GUI.

If a module dies or someone removes a module from the frame, the module graphic turns **red**:
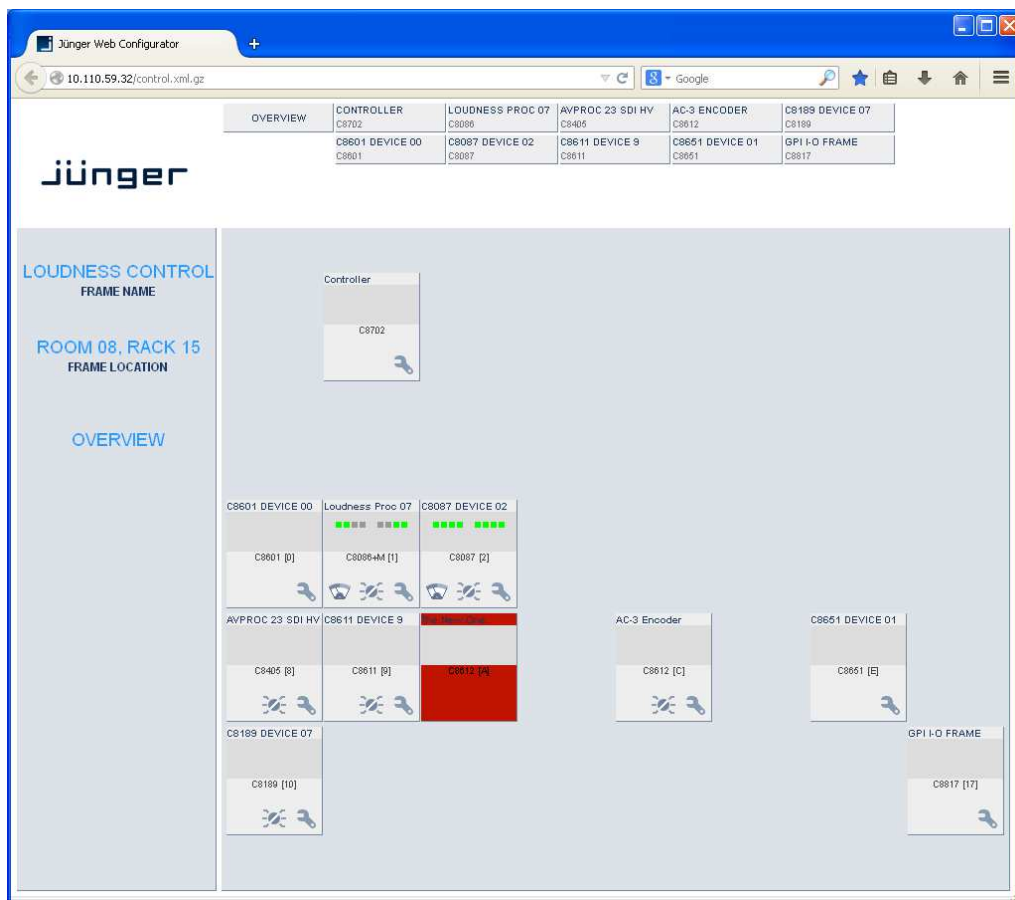
You can only get rid of the **red** coloured module graphic by inserting a working module. If the module is permanently removed you must reboot the Frame Controller. Press the **RESET** button on the front panel briefly, select **REBOOT CONTROLLER** from the web interface or select **"Reboot"** from the console menu. If the reboot was not initiated by the browser you will get a pop up that you have been logged out and you must press the **<OK>** button.

If a module has problems with updating a firmware component (rarely seen with older hardware) it may happen that this process is not successful and the module may stay in programming mode. That mode is indicated by **orange** color instead of **red** as above. If you experience such behavior you must start the update process again. On some occasions it might be necessary to power cycle that specific module before starting the update process again.
It is always a good idea to connect to the console of the Frame Controller either by Telnet via TCP/IP or natively by RS232 or USB to RS232 converter and to run a terminal program to observe the debug printouts (see page 5).

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Important Note! The module for replacement **must** be of the **same type** and **must** have the **same CAN address**. If a **different module type** is used with the **same CAN address** as the one removed, you **must reboot** the Frame Controller!

Under some circumstances the **browser session** with the web server of the **C8702** Frame Controller will **expire.**
In this case you must reload [F5] or close the browser and start it again in order to open a new session.

To change values of parameters more comfortably we use a little **slider**.
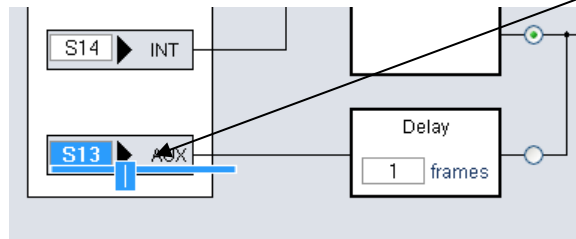
After clicking into such an input field, the slider may either be **moved** by the **mouse pointer** or the **arrow keys** of the keyboard or by the **mouse wheel**.

Error monitoring and **auto switch over** on error conditions

This function is implemented for the **C8402/03/04/05 SDI** modules. It allows the detection of an error condition downstream in the signal path. Such an error condition may happen if a downstream DSP module like the C8086+ has a problem or its input signal is gone. This function offers you the possibility to switch over to an alternative bus for fail save operation. Such an alternative bus may be the input of the DSP module for simply bypassing it (if the moduel fails) but it may also be an alternative audio signal such as a pre-recorded announcement.

For details see C8402/03/04/05 manual.

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Monitoring the processing status of a processing module

The major parameter of the audio processing is the **momentary GAIN** of the module. This gain is permanently changed by an adaptive dynamic process like **LevelMagic™**. If this gain sticks at one end of its working range for too long, the settings of the processing parameters should be checked.

For the Level Magic process we have defined the "stick" condition as follows:
If the **low pass weighted average gain** of the process is **equal** or **above** the Leveler **max Gain** for more than 10 secs. the respective **Processing Status** soft LED will turn from **green** to **red** (see status panel left hand side):

The monitoring of the processing status may be turned ● [ON / OFF] via the respective check boxes: "**Proc Status Monitor**" above. It is important to turn it off if a processing channel is not in use or the leveler max gain settings are too low for good reasons so it will cause an error by definition.
This will prevent the system from generating unfounded alarms (if the bad condition is monitored by an external entity).

Enhanced bit transparent mode

The SDI I/O or AES modules generate a **non audio** flag that indicates if the de-embedded data are marked as non audio.

Important Note! This information does **not** mean that there is **no** signal.

This is the case for coded signals like **Dolby E** or **Dolby Digital** (AC3) or similar formats.
These are data streams sent over two ordinary digital audio channels as a transport media.
Audio processing equipment must not modify such data stream. Therefore you may turn the signal chain into the **Bit Transparent** mode.

In the past, the knowledge about such data streams came from external equipment or was gathered from play lists of automation systems.
Now the Junger processing channnel may be set up to **Bit Transparent** mode = [**off** / **on** / **auto**]:
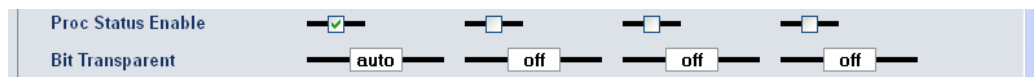
In "**auto**" mode the module detects the **non audio** flag and will then pass the stream through the processing module without touching it to avoid damage to the data structure.
You may also turn it "**on**" manually or via a preset for external control.