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INSTALLATION MANUAL
PAA20+
V 2.0

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1. SAFETY

1.1 GENERAL

IMPORTANT: READ THIS MANUAL BEFORE INSTALLING AND OPERATING THE DEVICE.

- This device is for indoor use only. Do not install outdoor without an appropriate weather protection.
- Never modify or handle the mechanical or electrical safety devices installed in the product. Do not change or modify in any way the original design of the device.
- If the device does not work properly, stop at once and notify the installer service.
- In case of an eventual repair, leave it in the hands of the distributor who installed it. Always use original spare parts and accessories, which must be installed by an authorized installer.

1.2 INSTALLATION

- Installation must be done in conformity with the operating manual and the local security norms. The customer and the installer take responsibility for the non-compliance of the norms.
- This device needs a standard cord and plug according to the local security rules of the installation site. It's mandatory to maintain this cord accessible for its disconnection in case of need and in good conservation conditions. If this power supply cord is damaged, a official distributor or trained installer must replace it with a new one
- The installation must have an easy accessible main supply standard socket near the device installation place.
- Main power supply for the device must have an appropriate Protection Earth (PE) according to the local security rules, also a standard socket with PE and a power supply cord including PE line.
- Do not handle the electrical system of the device. It must be installed by an authorized technician.
- Before starting, verify the line connections, as well as the earth connection and/or differential and magneto-thermic switches. There could be an electrical discharge if you don't follow the above-mentioned procedure.
- Only tool required for the device installation is a small flat head screwdriver, for tightening and loose the rear connector screws.

1.3 PROPER USE

- Do not use this device if you have not previously received the necessary instructions of safety, use and cleaning by an expert user.
- Read and understand the operating manual of this device before using.
- Always disconnect the device before cleaning or any kind of maintenance or repair. Pull out the plug from socket (do not pull from cable). Keep cable away so as not to step on it, which could be dangerous.
- Make sure that all safety metal plates and stickers on device are easily readable. If not ask your distributor for more and attach them.
- For maintenance, repairing and cleaning works, the system must be disconnected from the main supply. Do not operate the device without having received the proper safety, use and cleaning instructions from an expert user.

2. INTRODUCTION

The Proyecson PAA20+ Automation adapter makes it easy to interface digital cinema playback equipment with existing cinema control systems, allowing thus fully automated presentations.

Input and output connections enable digital cinema equipment to control existing lighting, automation, and other old systems. The unit converts network or serial control signal from the digital cinema playback system in relay closures. It can be connected in parallel with existing film automation systems making it easy to switch between film and digital shows, even to run seamless presentations mixing both film and digital content.

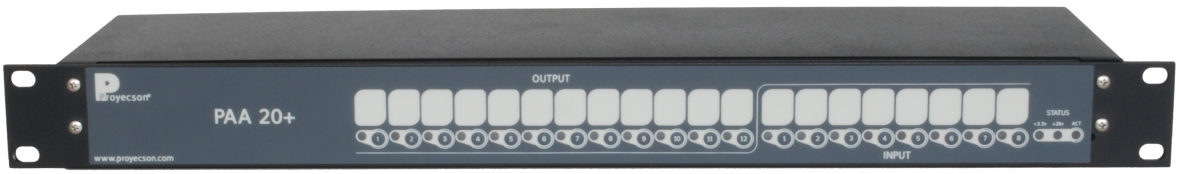
The PAA20+ is compatible with most of the Digital Cinema servers in the market: Dolby, Doremi, GDC, Qube and Datasat.

The device includes 12 fully configurable dry relay outputs and 8 opto-isolated inputs that can be used for trigger individual cues. These relay closures can drive up to 10 A 250 Vac / 10A 30Vdc in normally open and closed dry contacts. Front-panel indicators are provided for all inputs and outputs, ensuring that system status is clearly visible at all times.

The powerful and user friendly web based user interface offers you the capability to fully configure the performance of the unit.

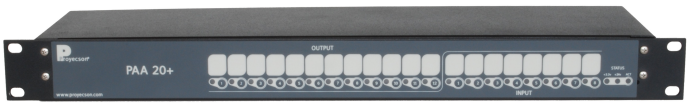
The unit is easy to install 19” rack-mounted. Rear panel connectors are provided to allow an easy wiring.

Valid for any other application not necessarily related with Digital Cinema.



3. FEATURES

PAA20+ Front Panel



LED Indicator
General purpose input, relay output status, 24V and 3.3V.

Test Buttons
Buttons for test and manually activation purposes for each input/output.

PAA20+ Rear Panel Connections

General Purpose Inputs
Eight opto-isolated low-voltage inputs, screw terminals, 24V logics.

General Purpose Outputs
Twelve high current fully configurable relay outputs, screw terminals, normally closed and normally open contacts 10A 230v max.

24v / Max: 1A output
Usable for input and output auxiliary circuits.

Serial Ports
9-PIN female D-connector.

Network Connection
RJ-45 female connector; 10Base-T.

Construction		**Warranty**
Industrial chassis, screw closure, connectors in the back panel, 1U 19” rack-mounting.		Three years limited, parts and labour; see disclaimer. Specifications subject to change without notice.
Power Requirements		**Disclaimer of Warranties**
1) 100-240 VAC, 50-60 Hz or 2) 24 VDC, 2 A		Equipment manufactured by Proyecson S.A. is warranted against defects in materials for a period of one year from the date of purchase. There are no other express or implied warranties and no warranty of merchantability or fitness for a particular purpose, or of non-infringement of third-party rights (including, but not limited to, copyright and patent rights).
Dimensions and Weight		
483 x 128.5 x 44 mm.		
Environmental Conditions		
Operating: - 0ºC to 40ºC (32ºF to 104ºF) - 20% to 80% relative humidity (non-condensing). Storage: - -5ºC to 60ºC (23ºF to 140ºF) - 10% to 80% relative humidity (non-condensing).		

4. FRONTAL PANEL

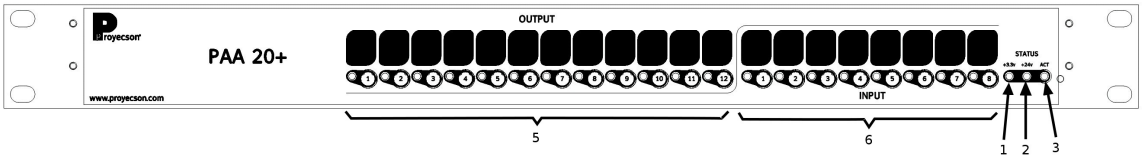


Figure 4.A

1. 24vdc indicator
2. 3.3vdc indicator
3. Activity indicator
4. Manual activation buttons and output active status leds.
   - The led indicates that the output is active.
   - Activate the outputs directly with the pushbuttons without using the server. Outputs will only remain active while keeping the button pressed.
5. Manual activation push button and input active status leds.
   - The led indicate that input is active.
   - Pushbuttons allow forcing inputs manual activation.
6. Reset button, accessible through the pinhole in the front plate.

5. REAR PANEL

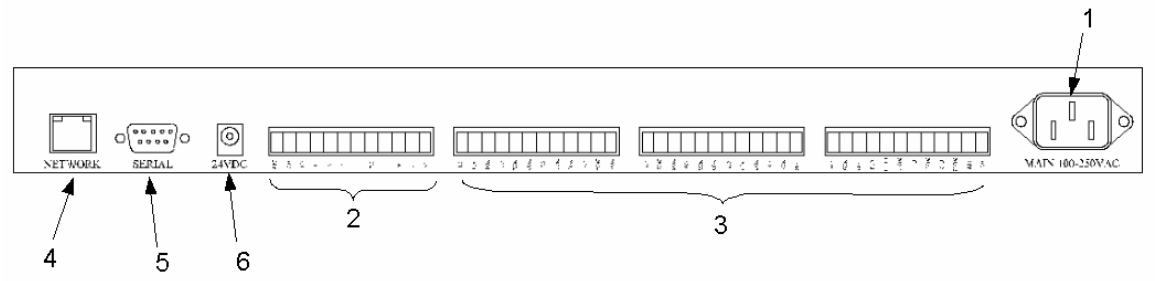


Figure 5.A

1. Main power supply input 100 - 230 VAC.
2. Inputs connector.
3. Outputs connectors.
4. RJ45 network connection port with connection and activity leds indicator.
5. 9 pin female D-connector serial port.
6. 24VDC auxiliary power supply input.

6. CONNECTION PROCEDURE

6.1 CONNECTION TO DOLBY DSS SERVERS

The PAA20+ must be connected to a Dolby DSS100, DSS200 or DSS220 servers through port RS232.

Connect the RS232 serial port of the Dolby server to the RS232 serial port of the PAA20+ using a pin to pin male to female standard serial cable.

Configure the PAA20+, the Dolby server serial port and send/receive commands as explained throughout this manual.

See the interconnection diagram on the following picture:

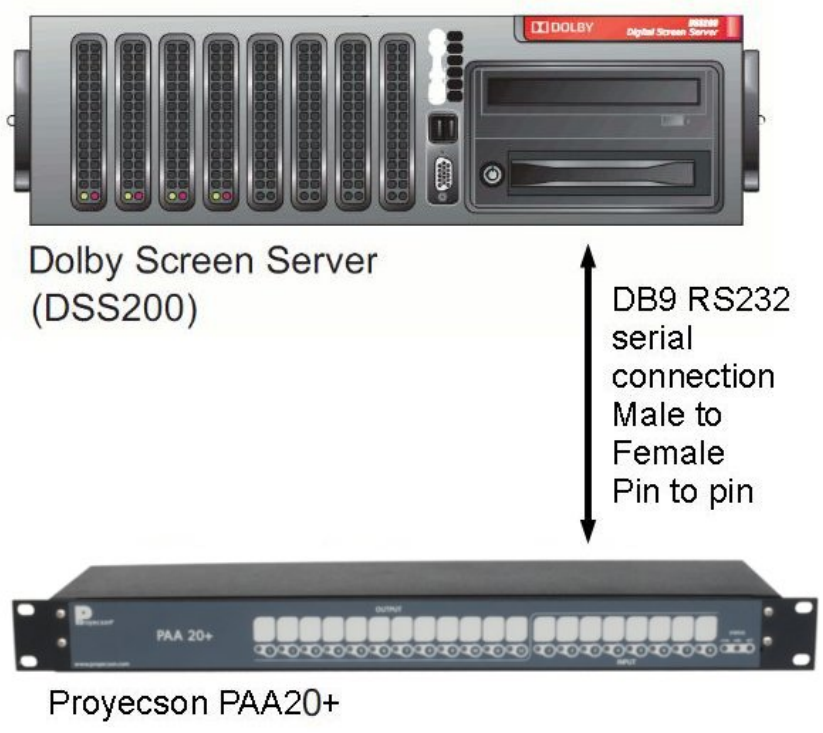


Figure 6.1C

6.2 CONNECTION TO DOREMI DCP SERVERS OVER ETHERNET

The connection of the PAA20+ to any Doremi server can be done through the Ethernet port.

The PAA20+ must be added to the Doremi server as a new device and send/receive commands configured as explained throughout this manual.

See the interconnection diagram on the following picture:

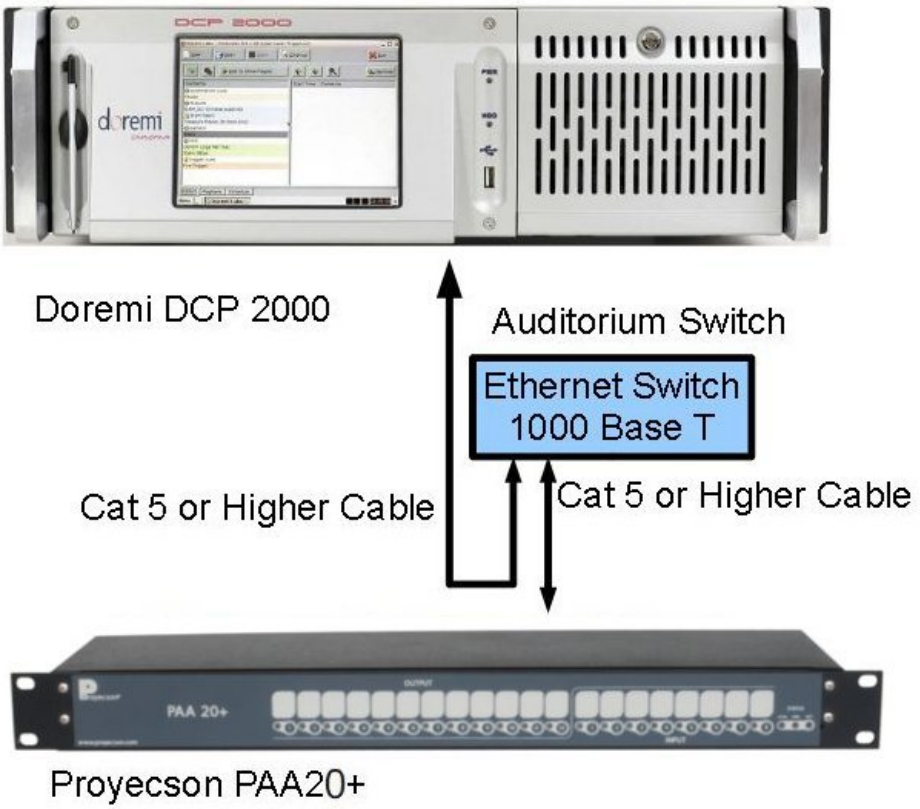


Figure 6.2C

6.3 CONNECTION TO DOREMI DCP SERVERS USING SERIAL PORT

Only DCP200, DCP2K4 and ShouVault Doremi servers with 2.0.5.0 or higher software version could be connected to PAA20+ using the serial port.

It is not possible to connect the IMS1000 server with the PAA20+ using the serial port.

You need to add the PAA20+ as a serial device as explained throughout this manual. The connection diagram is in the **Figure 6.3A**:

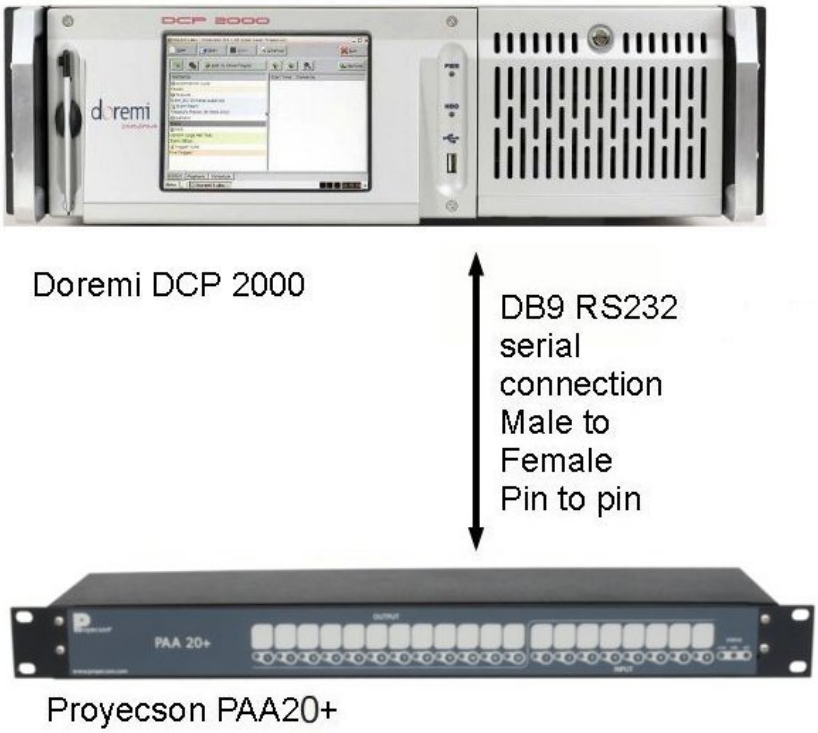


Figure 6.3A

6.4 CONNECTION TO GDC SERVERS OVER ETHERNET

The connection of the PAA20+ to any GDC server can be done through the Ethernet port.

The PAA20+ must be added to the GDC server as a new device and output/input commands configured as explained throughout this manual.

See the interconnection diagram on the following picture:

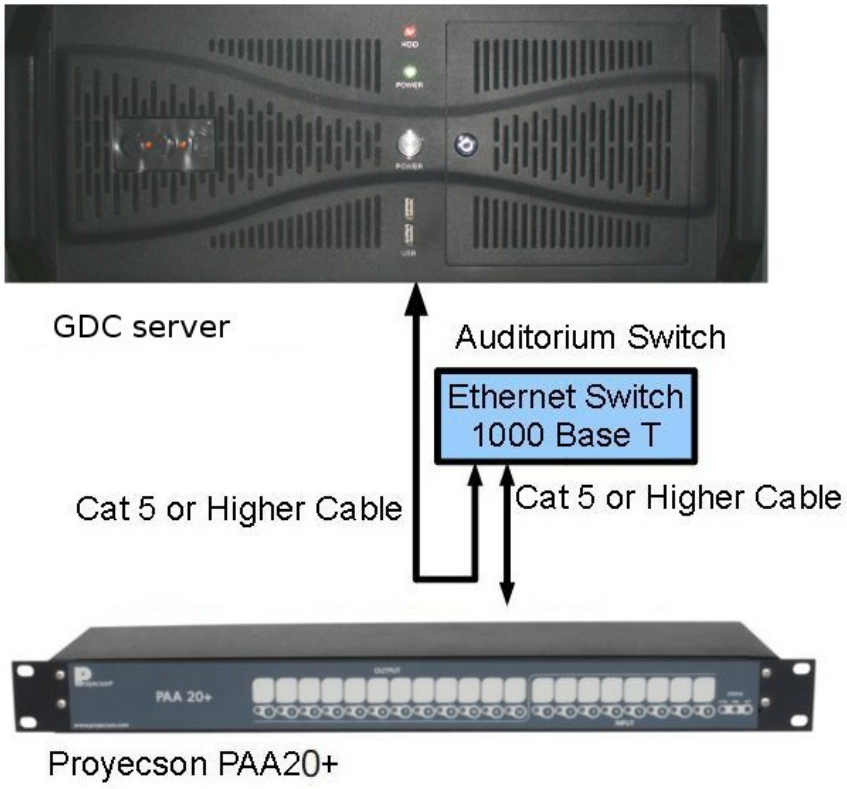


Figure 6.4A

6.5 CONNECTION TO GDC SERVERS USING THE SERIAL PORT

Only SX-2001, SX-2000A and SX-2000AR GDC servers could be connected to PAA20+ using the serial port.

It is not possible to connect the SX-3000 server with the PAA20+ using the serial port.

The PAA20+ must be added to the GDC server as a new device and output/input commands configured as explained throughout this manual.

See the interconnection diagram on the following picture:

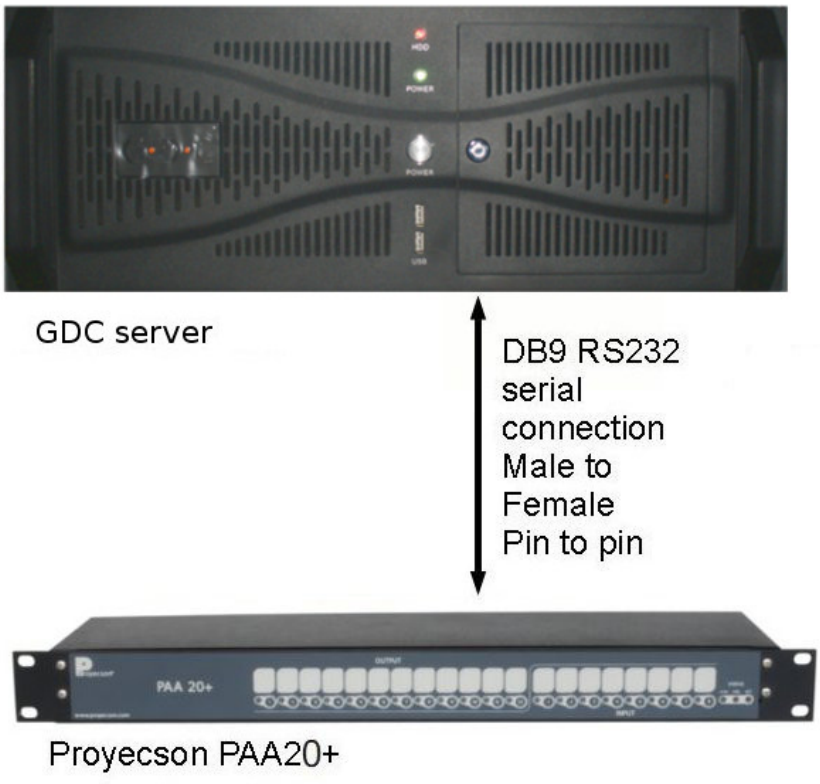


Figure 6.5A

6.6 CONNECTION TO QUBE XP-D SERVER USING THE SERIAL PORT

The connection of the PAA20+ to a Qube XP-D server can be done using the serial port.

The PAA20+ must be added to the Qube server as a new device and output/input commands configured as explained throughout this manual.

See the interconnection diagram on the following picture:

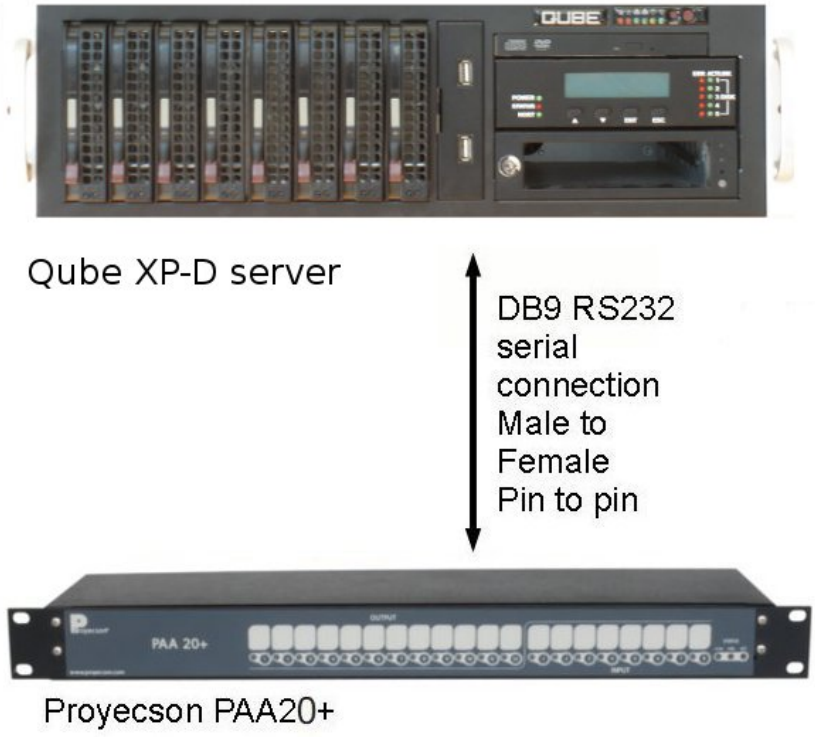


Figure 6.6A

6.7 CONNECTION TO DATASAT DC20 SERVER USING SERIAL PORT

The connection of the PAA20+ to a Datasat DC20 server can be done using the serial port.

The PAA20+ must be added to the Datasat server as a new device and output/input commands configured as explained throughout this manual.

See the interconnection diagram on the following picture:

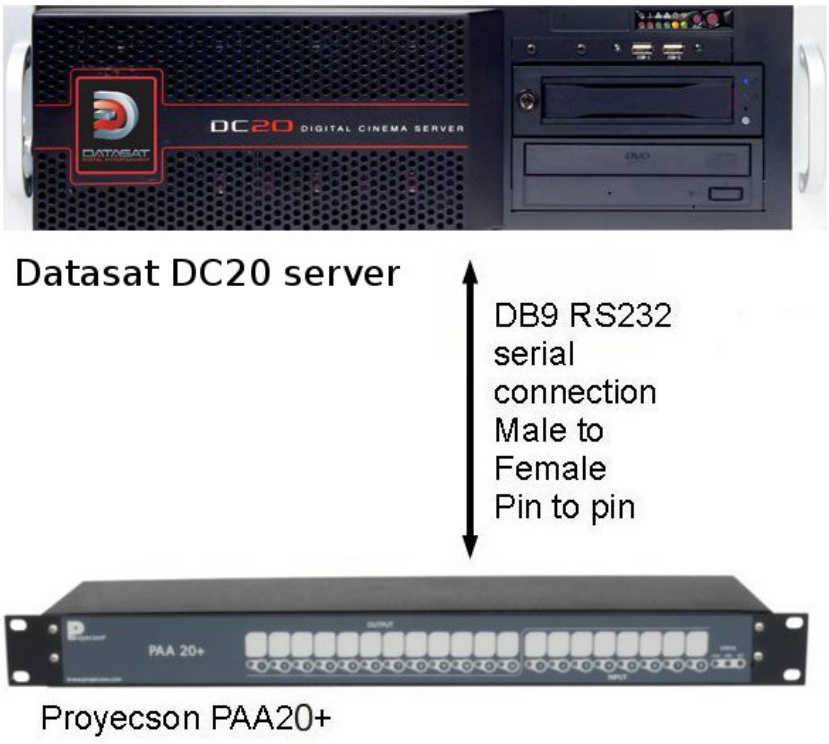


Figure 6.7A

6.8 CONNECTION TO BARCO ALCHEMY (ICMP) OVER ETHERNET

The connection of the PAA20+ to a Barco Alchemy (ICMP) server can be done through the Ethernet port. The physical Ethernet port used for the Alchemy to communicate with the automation devices is the same used for the projector control.

The PAA20+ must be added to Barco Alchemy (ICMP) server as a new device and output/input commands configured as explained throughout this manual.

See the interconnection diagram on the following picture:

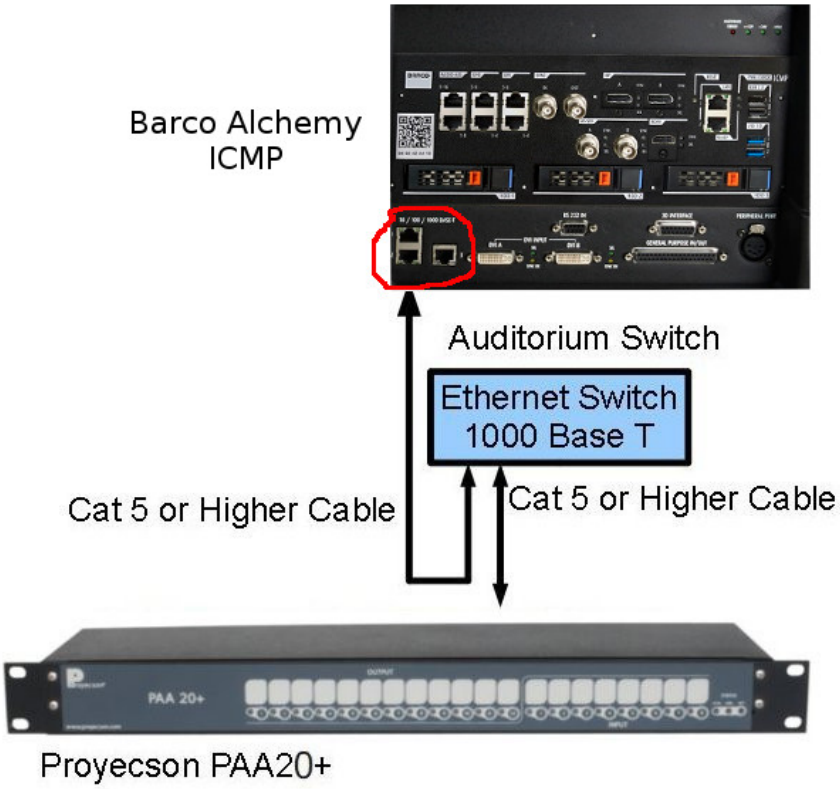


Figure 6.8A

6.9 CONNECTION TO IMS SERVERS OVER ETHERNET

The connection of the PAA20+ to any Doremi, Dolby or NEC IMS server can be done through the Ethernet port.

The PAA20+ must be added to IMS server as a new device and send/receive commands configured as explained throughout this manual.

See the interconnection diagram on the following picture:

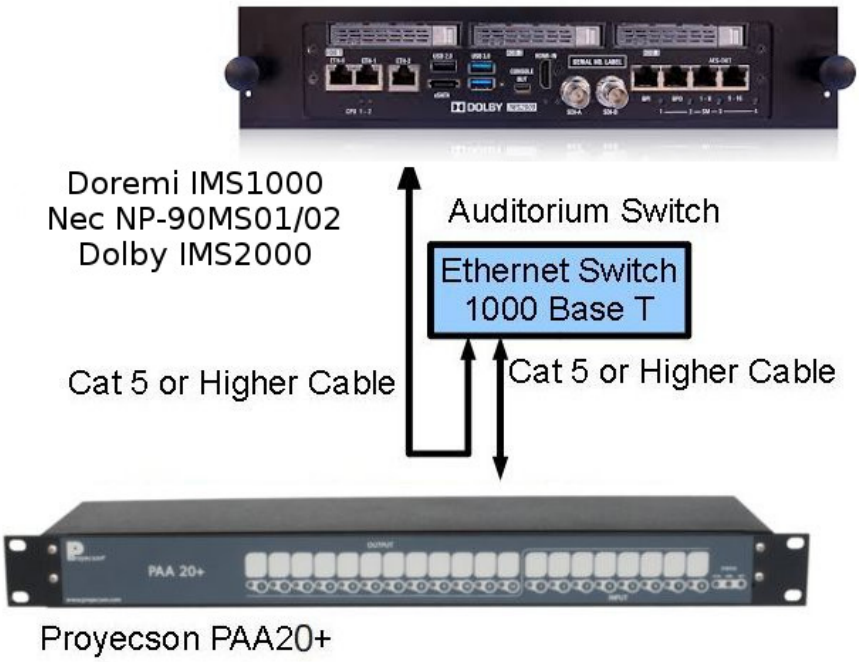


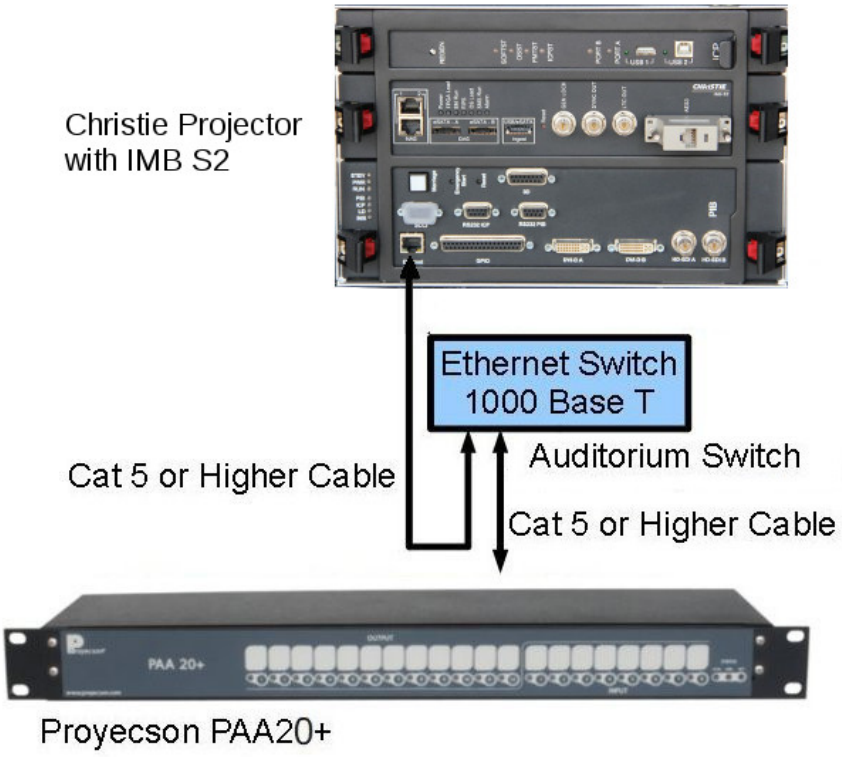
Figure 6.9A

6.10 CONNECTION TO CHRISTIE IMB S2 SERVER OVER ETHERNET

The connection of the PAA20+ to the Christie IMB S2 server must be done through the Ethernet port.

The PAA20+ must be added to IMB S2 server as a new device and send/receive commands configured as explained throughout this manual.

See the interconnection diagram on the following picture:



7. ADMINISTRATION OF THE PAA20+.

Before connecting the PAA20+ to the server, you need to set up the device to achieve the desired performance.

The configuration must be done through a web browser in a computer connected directly to the PAA20+ Ethernet port.

7.1 CONNECTING WITH THE PAA20+.

To connect the PAA20+ it is necessary to know the IP address of the unit you are trying to access. The device is shipped with IP 10.0.0.180 configured by default. In order to be able to set up the port in the future or to access it remotely, we strongly recommend annotating the new IP shortly it change.

If you do not know the IP but you know the subnet where it was configured, it is possible to use the PAA20+ Tester and Programmer software available at the FTP:ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+ to search the device. The installation and use procedures for this program are described in **APPENDIX D: PAA20+TESTER AND PROGRAMMER SOFTWARE**.

It is possible to reset the unit to factory configuration using the reset button located in the front. If you keep the button pressed for more than tree seconds, until the "status" LED increases its blink frequency, the unit will be loaded with the factory default configuration.

To configure the Paa20+ over the Ethernet connection, follow these instructions:

1. Connect the PAA20+ and the PC that will be used to configure it to an Ethernet switch.
2. Both devices have to be connected to the same sub-network, therefore if the PAA20+ still has the factory configuration, the PC should be able to access the IP address 10.0.0.180.
3. Once both devices are connected and the PC is configured, it is possible to do a "ping" to check if the PAA20+ is accessible from the PC.
4. With the connection operative, open a browser (Firefox, Internet Explorer, Opera, etc) and point it to the PAA20+ IP address. If everything is right, PAA20+ web interface "Status" page will be shown. Please see Figure 7.2.1A.

7.2 PAA20+ WEB ADMIN INTERFACE.

The interface displays a menu in the left side of the page where you can select different options.

7.2.1 STATUS PAGE.

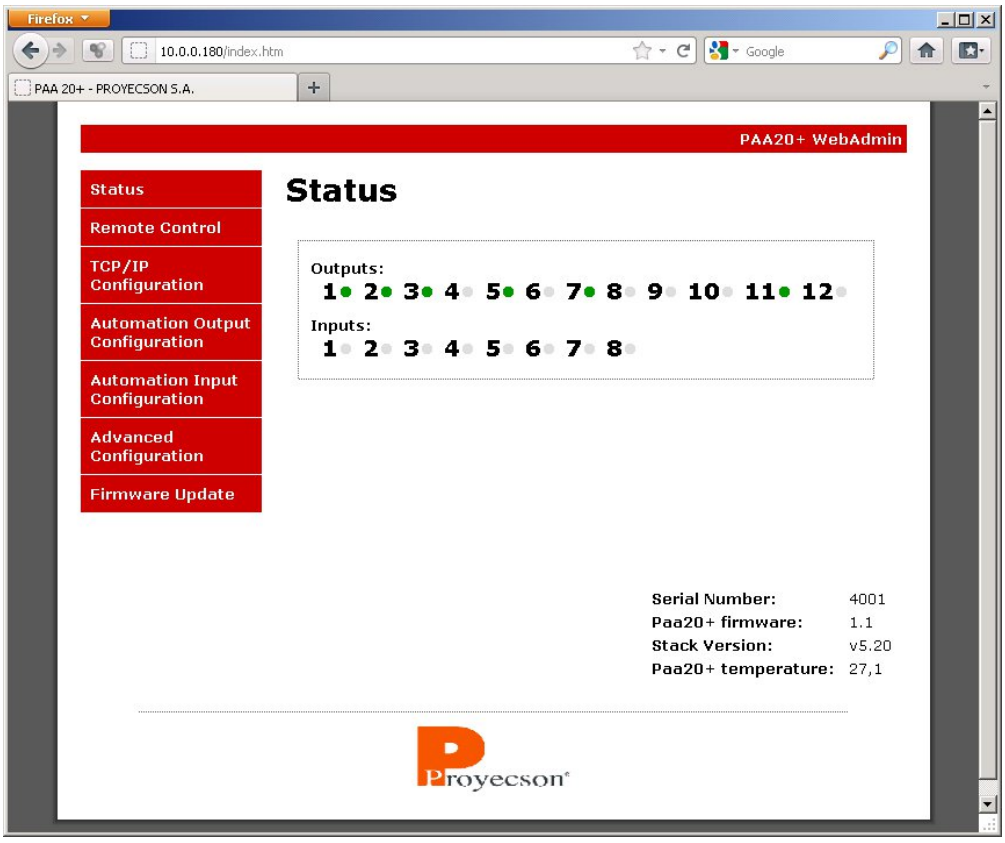


Figure 7.2.1A

The first and initial page of the Web Admin interface is the "Status" page. In this page you can check the state of the inputs and outputs of the device, as well as the firmware, the Ethernet stack version and the temperature inside the PAA20+ in degrees Celsius.

Outputs and inputs indicators are in green when active and in gray otherwise.

7.2.2 ADVANCED ADMINISTRATION.

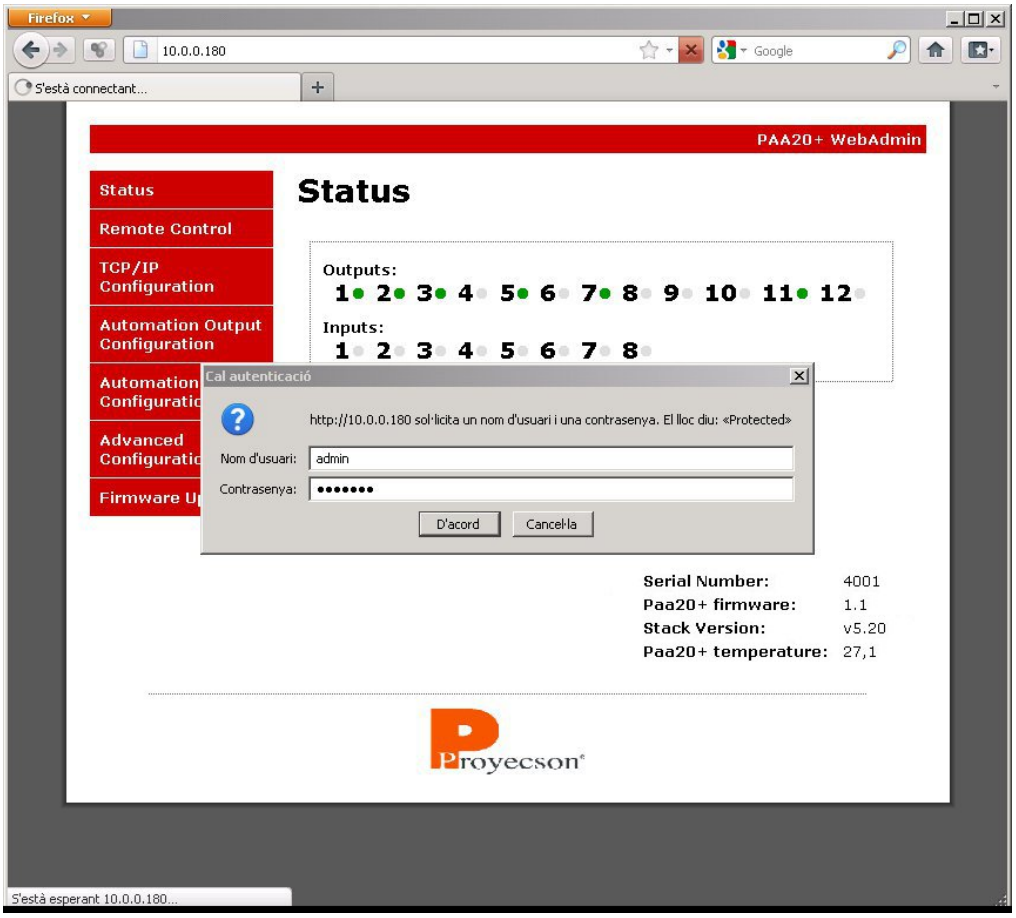


Figure 7.2.2A

To be granted access to other menu options you need to be authenticated using the **admin** role as you can see in the **Figure 7.2.2A**. To obtain the password for the administrator level please contact with an authorized Proyecson dealer.

Once you introduced the correct user and password in the pop-up window you will gain full control of the PAA20+.

7.2.3 REMOTE CONTROL PAGE.

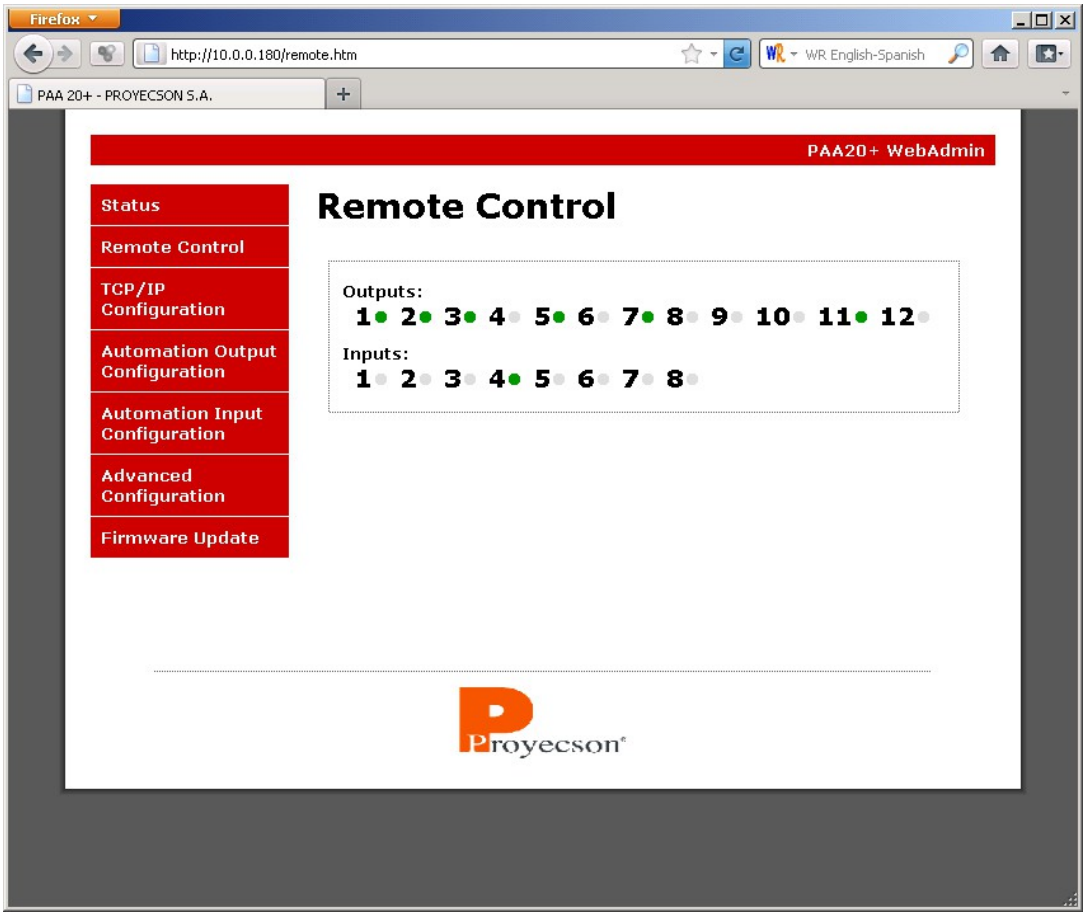


Figure 7.2.3A

The remote control page allows you to switch the output relays and to remotely test the inputs.

To toggle the output relay, click on the state indicator, on the right side of the output number.

The state indicator will appear in green and If the switch is on or gray if it is off.

7.2.4 TCP/IP CONFIGURATION PAGE.

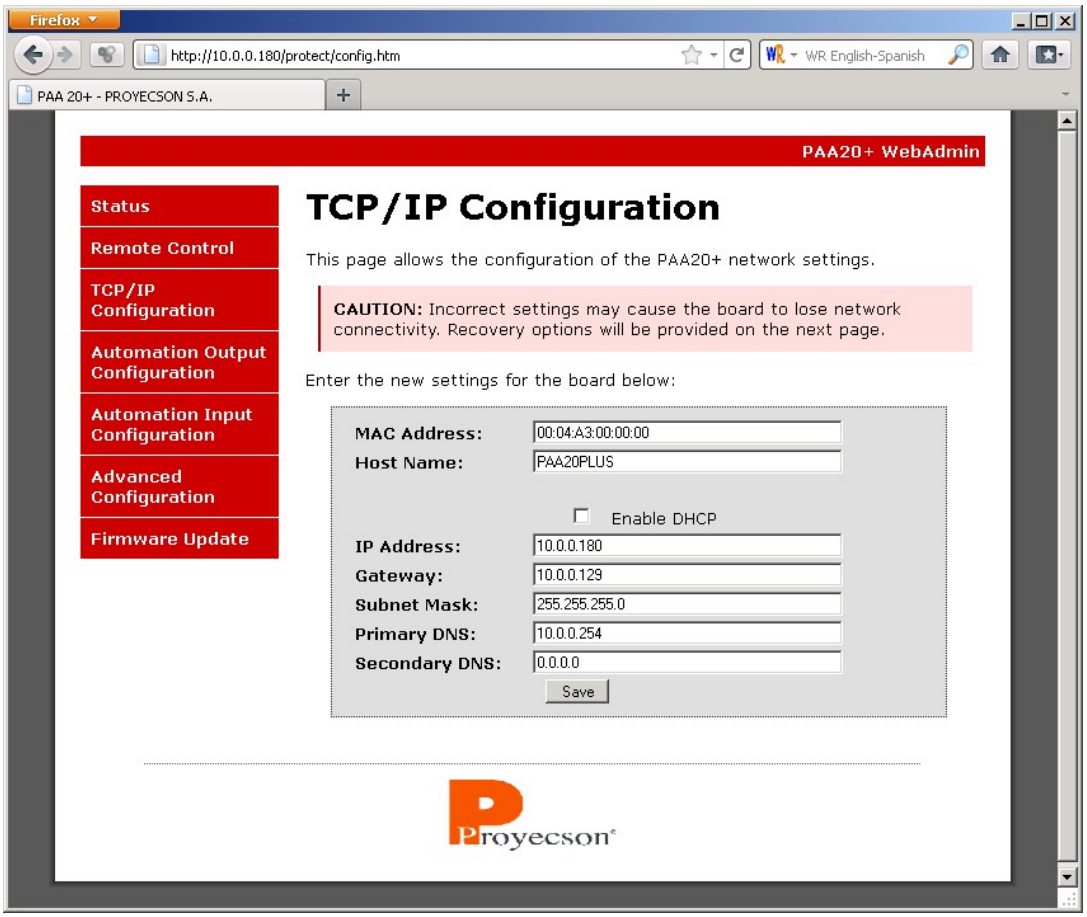


Figure 7.2.4Al

In this page you can configure the TCP/IP interface of the PAA20+. The configuration shown in the **Figure 7.2.4A** is the factory one, thus this is the configuration you will find in a brand new unit.

To change the configuration simply write a new value in the corresponding field and store it using the "save" button.

Do remember or annotate TCP parameters to ensure future connections with the device and to be able to properly configure the Digital Cinema server. In **APPENDIX C** you may find a table to annotate every TCP/IP parameters changes for future use.

 Be careful when changing TCP/IP parameters. Wrong configuration could cause the lost of communication with the PAA20+. You will possibly need to reset the TCP/IP configuration to its factory default.

 If you enable the DHCP option, be sure that you have a DHCP server enabled in the network were you are going to connect the PAA20+.

 The MAC address is a network unique identifier of the Ethernet interface, it is not possible to be modified by the user.

7.2.5 AUTOMATION OUTPUT CONFIGURATION PAGE.

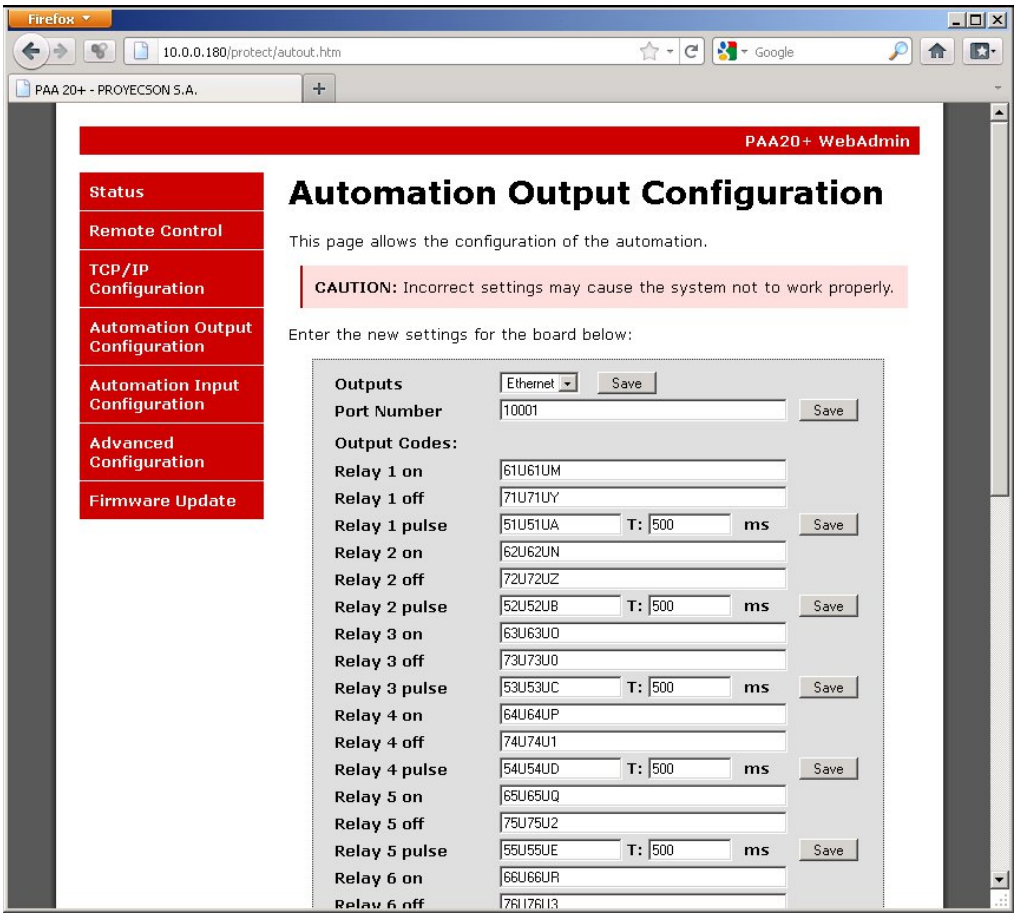


Figure 7.2.5Al

The Automation Output Configuration page is the interface to set up the reception of messages from the server and the relay performance.

To store the changes of every individual relay click on the "Save" button located at the right side of the "Relay n pulse" field. Values will not be stored unless you click on "save" before leaving the page or saving other fields.

Outputs: Is the field to choose if you want to receive cue messages from either the Ethernet interface or the Serial interface or both in parallel. **Figure 7.2.5.B** shows selection tab to do so.

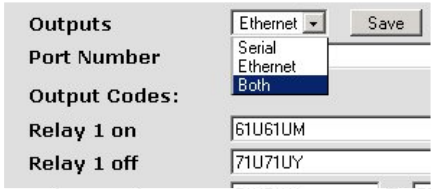


Figure 7.2.5.B

If you select both interfaces you can send messages to the PAA20+ using any of the Serial or Ethernet interfaces.

Port Number: Field to input the port number in which you want or receive the messages when using the Ethernet interface.

Default port is 10001.

Output codes:

These fields set the messages that the PAA20+ will receive from the server to perform the associated actions.

See **Figure 7.2.5.A** and **Figure 7.2.5.C**, they show the top and the bottom of the Automation Output Configuration page. Every action listed in the left column is associated with the character string inside the textbox. When the PAA20+ receives a valid message followed by a valid "Message Terminator" it executes the associated action.

There are three types of actions:

- **On**: Activates de associated relay output.
- **Off**: Deactivates the associated relay output.
- **Pulse**: Activates the associated relay output for a time specified in the "T:" field.
    - **T**: Pulse duration in milliseconds for the output. Value may be set from 1ms to 9999ms. Pulses shorter than 20ms do not ensure activation of the relay contact. Default value is 500ms (0.5s).

Messages in the Figures are the factory default messages, compatible with both Dolby and Doremi configuration files available at the FTP: ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+. To change messages, write down new ones in the associated textbox and press the save button to the right.

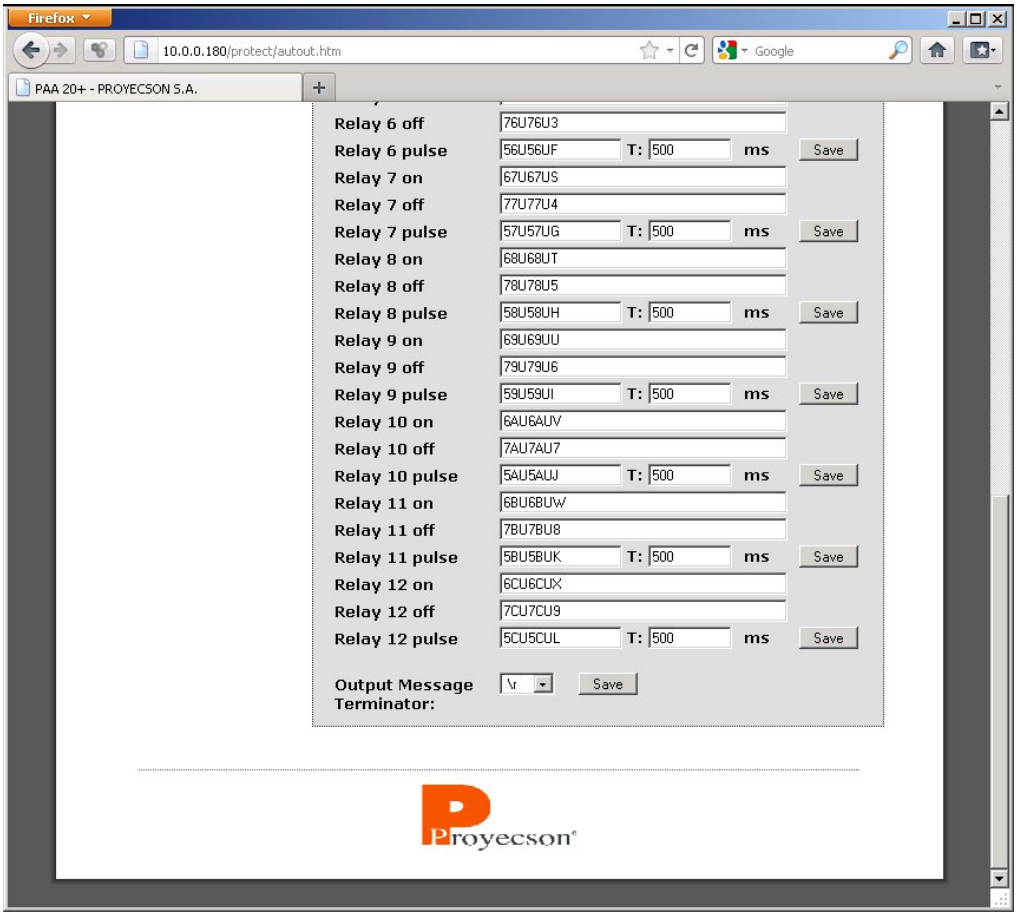


Figure 7.2.5C

Output Message Terminator: This field lets you choose the message terminator for output messages.

You can choose between:

- **\r** - "Return command", 0x0D in hexadecimal.
- **\n** - "New line command", 0x0A in hexadecimal.
- **\r\n** - "Enter command", a return command followed by a new line command.

The factory default message terminator is the "return" command. You may see the selection tab options in **Figure 7.2.5D**.

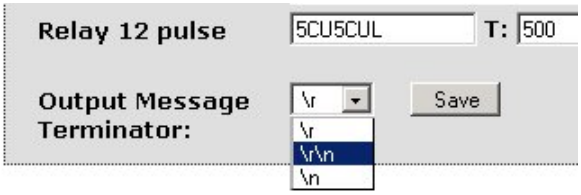


Figure 7.2.5D

Actual firmware version limits the message length to **seven** characters in these fields.

Should you modify the factory default messages, use of the provided Dolby and Doremi server configuration files is not advisee because messages will not match.

7.2.6 AUTOMATION INPUT CONFIGURATION PAGE.

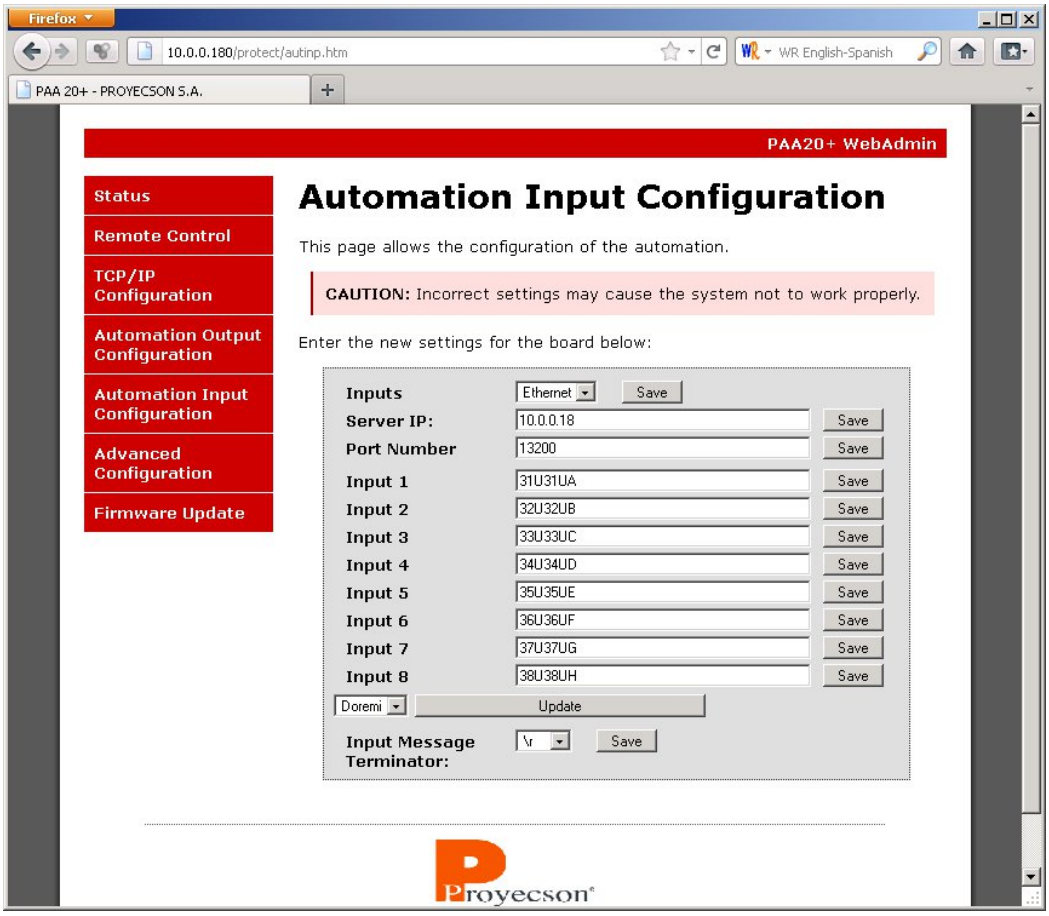


Figure 7.2.6A

The Automation Input Configuration page is the interface to setup the messages sent to the server. **Figure 7.2.6A** shows a snapshoot of the page. Values shown in the figure are factory defaults.

To store changes proceed as in the previous page.

Inputs: Field to choose if you want to send cue messages via the Ethernet interface or the Serial interface. **Figure 7.2.6B** shows selection tab to do so.

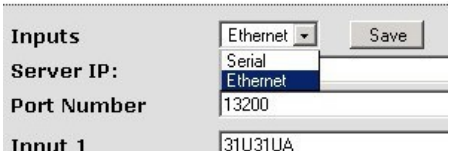


Figure 7.2.6B

Serial interface in the server end should be configured to work at 9600bps, 8bits, 1 stop, no parity and no flow control.

Server IP: Sets the IP of the server to which the PAA20+ will send input messages.

Port Number: Sets the TCP/IP port of the server which the PAA20+ will send the messages.

Input codes:

In these fields you can set the messages that the PAA20+ will send to the server when any input is activated. This activation may come from rear input connector, frontal buttons or from the Remote Control page in the PAA20+ WebAdmin interface.

See **Figure 7.2.6A**, it shows the Automation Input Configuration page. Every input listed at the left column is associated with the character string inside the textbox in the central column. When the PAA20+ detects a valid input activation, it sends the message associated with the input using the interface selected above.

Messages in the Figures are factory default messages compatible with Dolby configuration files available in the FTP: ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+. To change messages, write down new ones in the associated textbox and press the save button to the right side of each one.

Server selection:

With the actual firmware version it is possible to load pre-configured messages for Doremi and Qube servers input signals.

To set the input messages for your server, use the selection tab as you can see in the **Figure 7.2.6C** and click on the "Update" button.

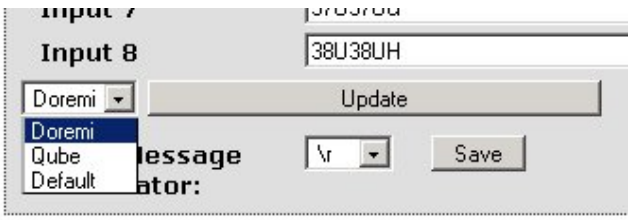


Figure 7.2.6C

If you select a Doremi server, a popup window alerts you about the necessity of setting the Input Message Terminator to "\r\n". **Figure 7.2.6.D** shows this popup window.

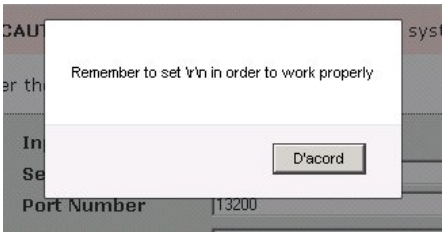


Figure 7.2.6D

After the Doremi server selection is done, the Automation Input Configuration page look as you can see in the **Figure 7.2.6E**.

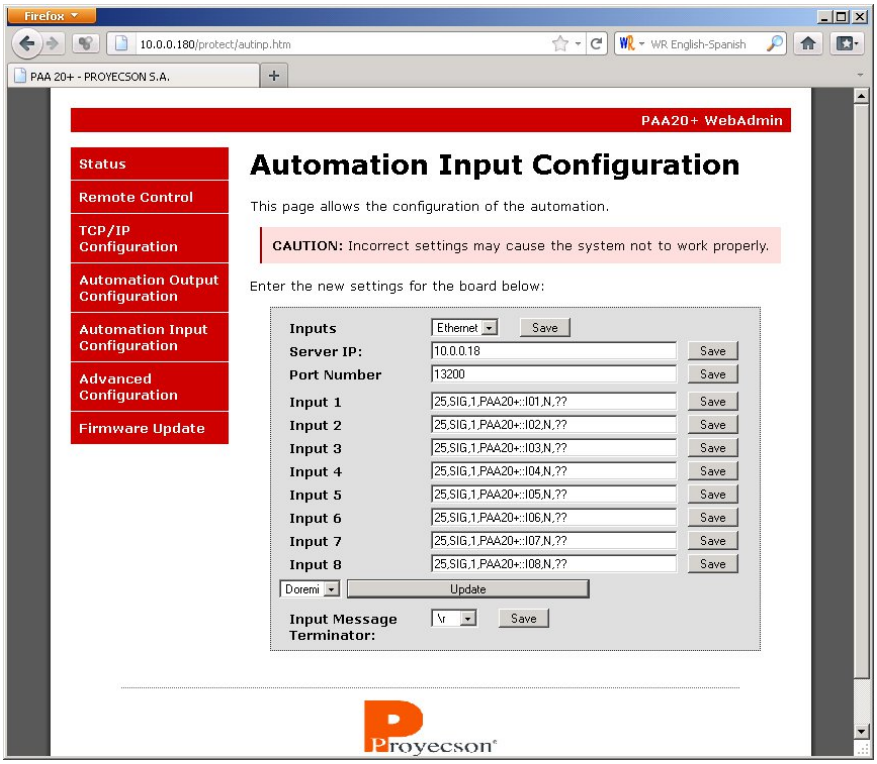


Figure 7.2.6E

This “Update” button fills in the “Input n” fields with the Doremi server input messages, but does not save them. You must save every input individually to store the message string into the PAA20+ data memory.

Every time you save an Input field, the other ones return to their stored values as you can see in the example showed in **Figure 7.2.6F**, where we saved the Input 1 value. You will need to press the “Update” button each time you need to save an Input field.

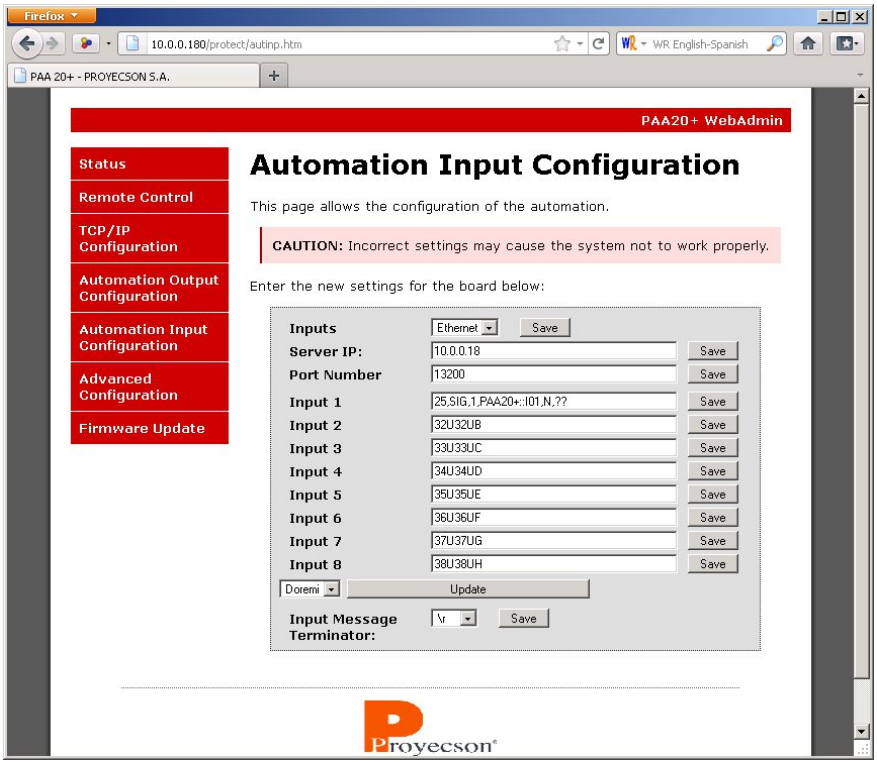


Figure 7.2.6F

Follow this procedure to set the Automation Input Configuration for other servers listed in the server selection tab. **Figure 7.2.6G** shows the filled in fields for a Qube XP-D server.

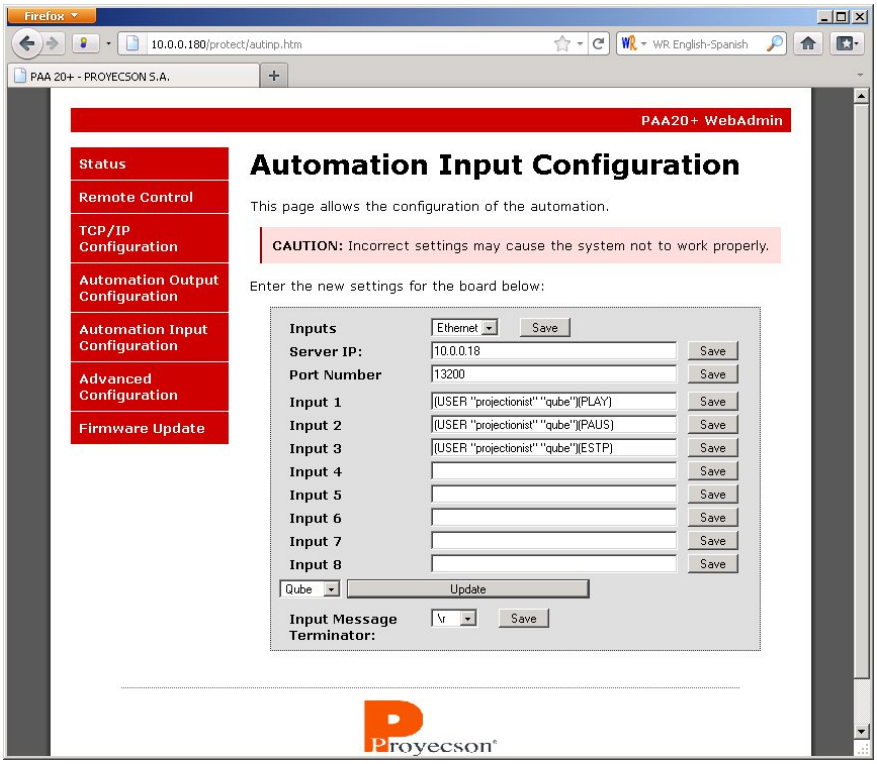


Figure 7.2.6G

The "Default" selection fills in the "Input n" fields to the factory default messages.

Input Message Terminator:

As in the Output page, this field let you choose the message terminator for Input messages.

You can choose between:

- **\r** - "Return command", 0x0D in hexadecimal.
- **\n** - "New line command", 0x0A in hexadecimal.
- **\r\n** - "Enter command", a return command followed by a new line command.

The factory default message terminator is the "return" command.

Actual firmware version limits the message length to **thirty-four (34)** characters in the "Input codes" fields.

7.2.7 ADVANCED CONFIGURATION PAGE.

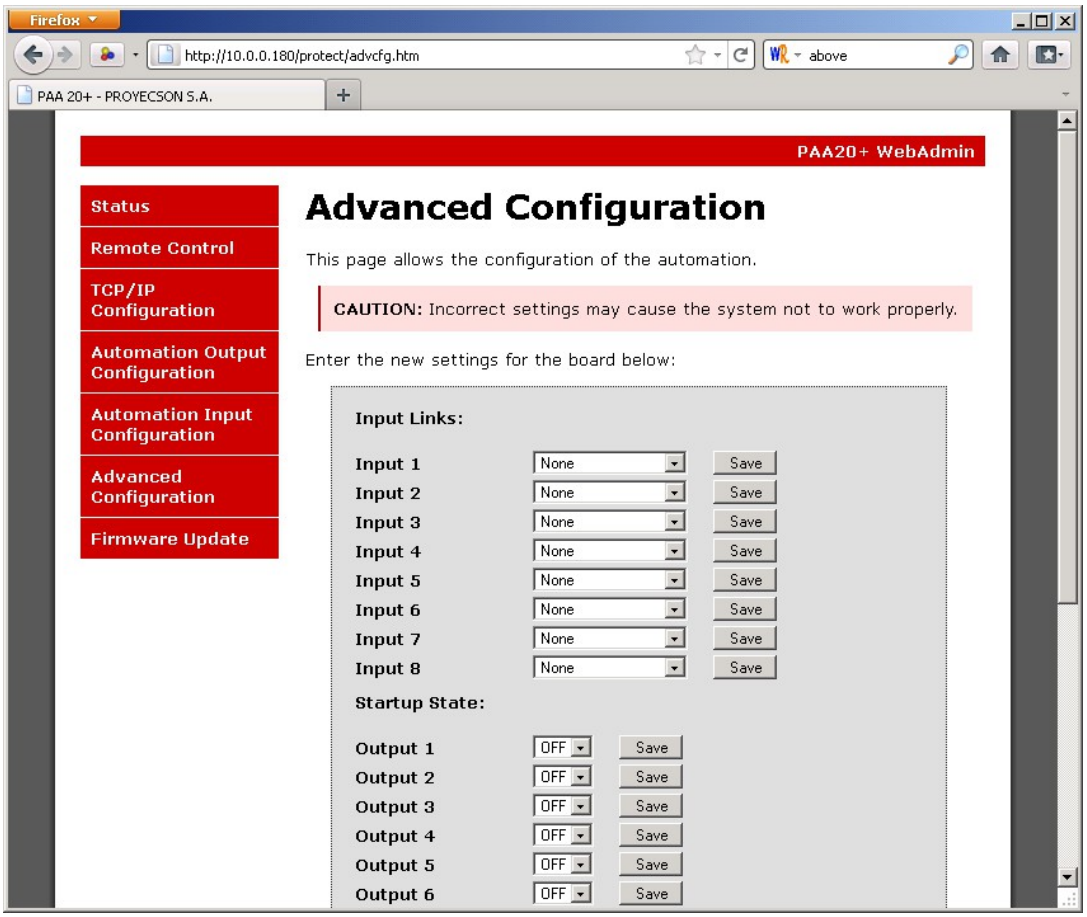


Figure 7.2.7A

Using the Advanced Configuration page it is possible to set some special features of the PAA20+. **Figure 7.2.7A** shows a snapshot of the top of this page. The advanced features in this firmware version are the "Input Link" and the "Startup State".

To store the changes proceed as in previous pages.

Input Links: This feature lets you link an input to an output without the intervention of the server. Using the selection tab in the right side of every input row, you can choose which of the four upper outputs (from relay 9 to relay 12) going to be modified.

You may see the options of the selection tab in the **Figure 7.2.7B**.

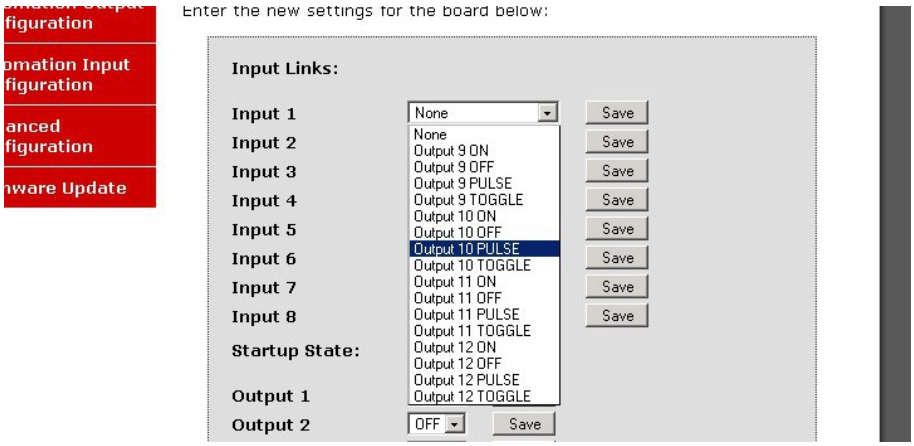


Figure 7.2.7B

Figure 7.2.7C shows you an example to activate a pulse in the Relay 10 when a valid input level is detected in the Input 1.

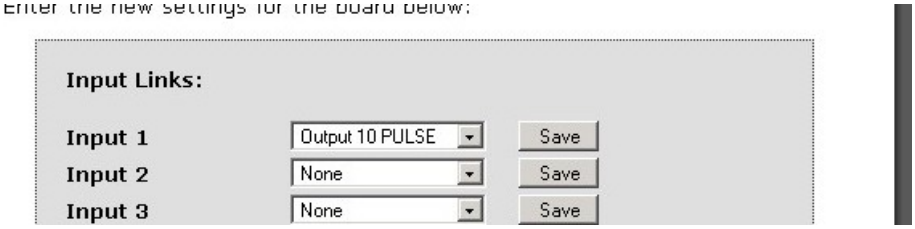


Figure 7.2.7C

StartUp State: This feature lets you choose the state of all the relays after every boot of the PAA20+.

See **Figure 7.2.7.D**. To the right side of every Output you can choose, using a selection tab, if the relay will boot up in the active state "ON" or in the non active state "OFF". **Figure 7.2.7E** shows the options of the selection tab and **Figure 7.2.7F** an example of such.

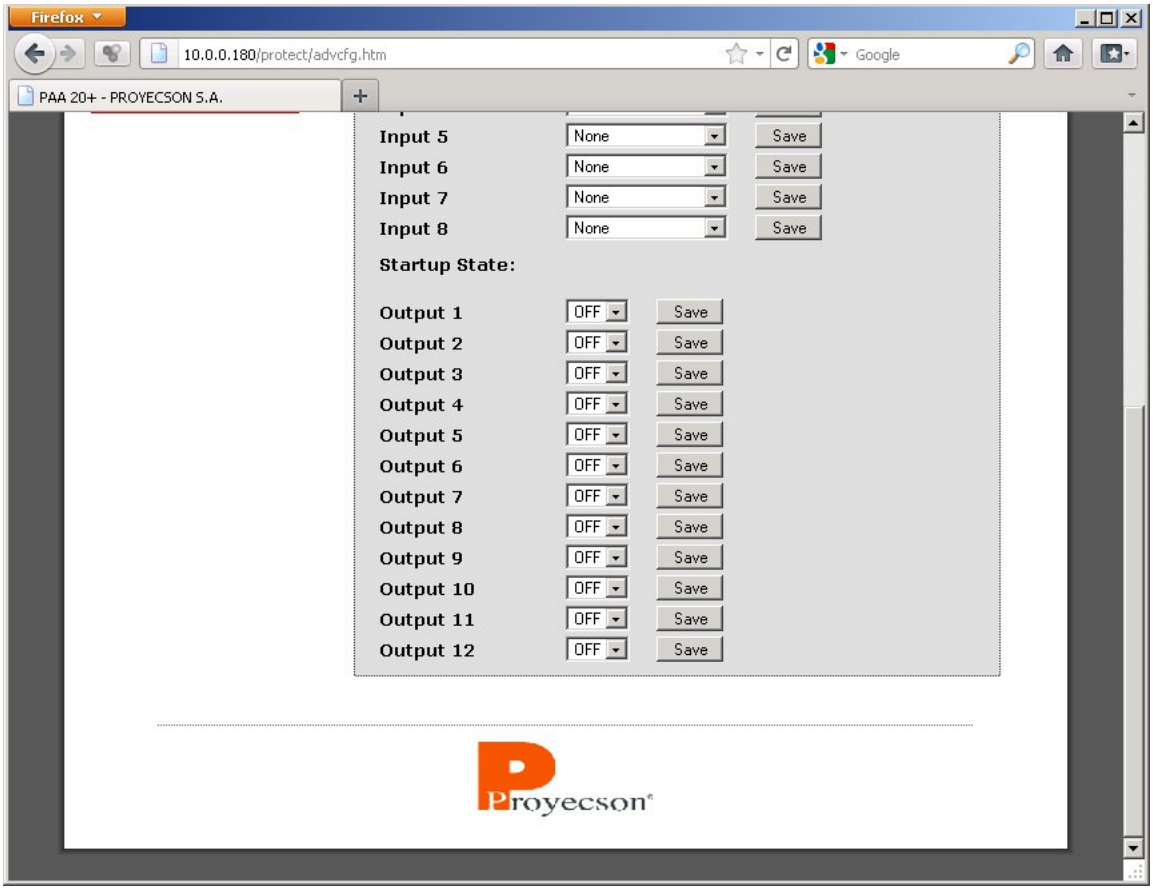


Figure 7.2.7D

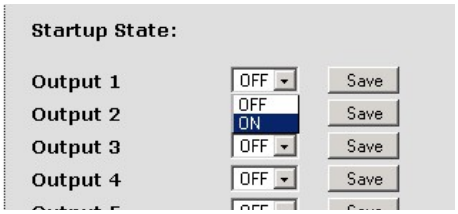


Figure 7.2.7E

Figure 7.2.7F

7.2.8 FIRMWARE UPDATE PAGE.

The following page is only for technical use. If you are not trained by Proyecson, please ignore.

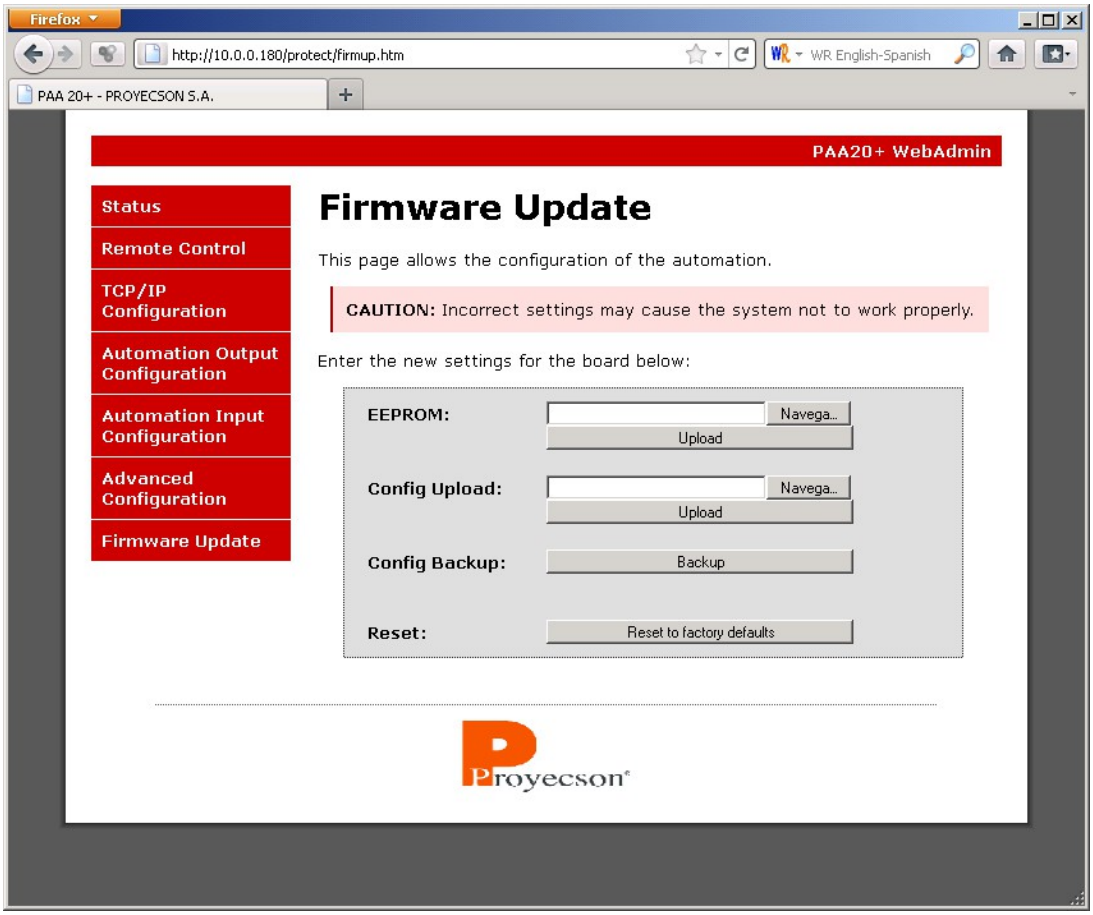


Figure 7.2.8A

EEPROM: Using this field you can upload the WebAdmin interface, located in a external EEPROM.

Config Upload: This field lets you upload a previously saved configuration file *.cfg, where Outputs, Inputs and Advanced configuration options are stored.

Config Backup: Using this field you can export the actual PAA20+ configuration to an *.cfg file.

Reset: This button applies a factory default reset to the PAA20+. This action implies an IP configuration reset.

8. SERVERS CONFIGURATION

In order for the PAA20+ to carry out its function, not only is necessary to configure the device, but also the server. Regarding this aspect, the different configuration methods for compatible servers will be described further on.

8.1. DOLBY DSS SERVERS CONFIGURATION

This manual is based on the Dolby Digital Cinema system version 4.3.2. Procedure may differ slightly for other Dolby Cinema system software versions.

Follow the next steps to configure the Dolby servers DSS200, DSS100/ DSP100 and DSS220 to be operative with the PAA20+:

1. Go to "SYSTEM" menu
2. In tab "AUDITORIUM" mark the option "This automation uses serial automation" and save. This action activates the "SERIAL AUTOMATION" menu tab (**Figure 8.1A**)

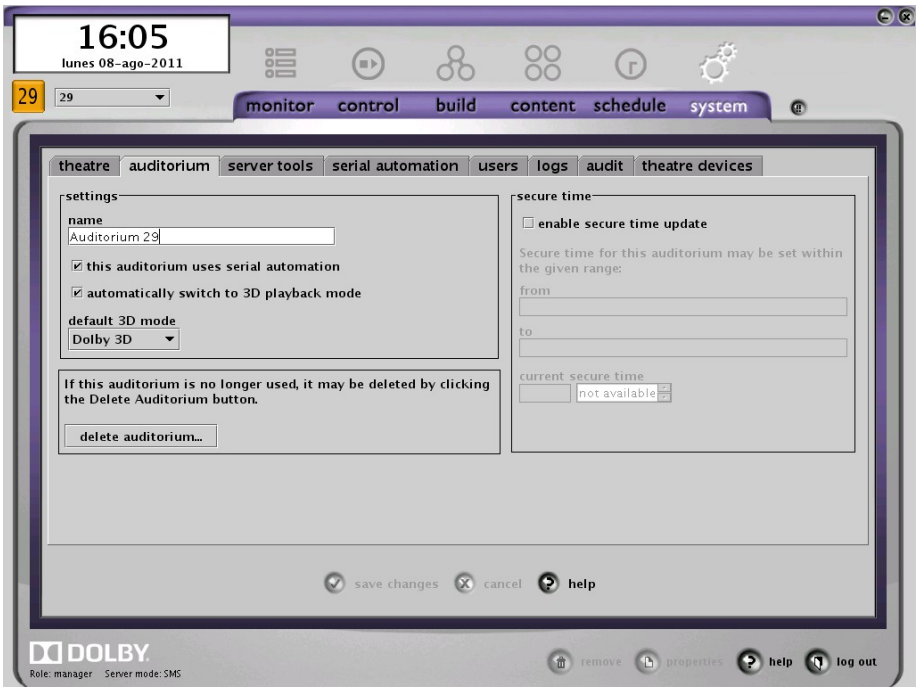


Figure 8.1A

3. Select tab “SERIAL AUTOMATION” to configure the serial port server.
4. In the configuration box “SERIAL PORT SETTINGS” choose the following parameters (**Figure 8.1B**):
   - Data rate = 9600.
   - Data bits = 8.
   - Parity = none.
   - Stop bits = 1.
   - Flow control = none.

5. In the configuration box “serial command settings” write “\0D” in the configuration box “termination” if you want to use the PAA20+ factory default termination, \r. You can use the “\A” termination that corresponds to the “\n” termination in the PAA20+. Leave the configuration box “reset” in blank as you can see in the **figure 8.1B** example.

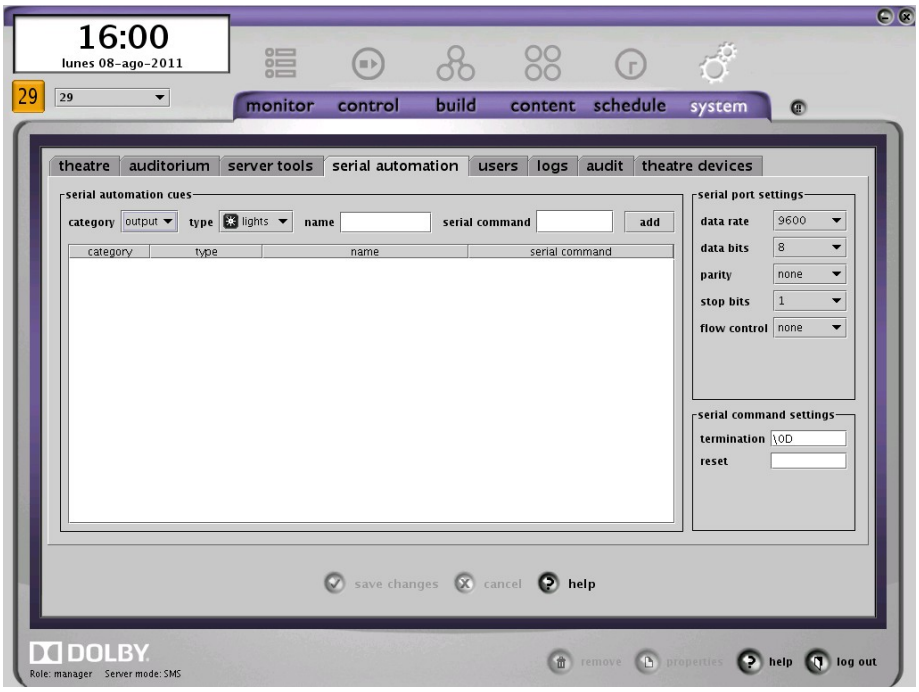


Figure 8.1B

6. Save changes.

7. Copy in a USB drive the file "**DolbySerialAutomation_v1.txt**" available in the FTP: ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+ should you choose to use the factory default output messages. We strongly recommend that the memory stick does only contain this file. Then, follow the instructions of the Dolby installation manual to import serial automation files.
8. Once the file is imported and the server restarted, the "SERIAL AUTOMATION" tab will be displayed as seen on **Figure 8.1C**.
9. Now the cues should be available in the Dolby server ready to be inserted in any show.
10. To modify cue name, double click on the column "name", do the modification and save changes. There is a possibility that the name doesn't appear in the "**build**" menu of the server. If such, you will need to reboot the server.

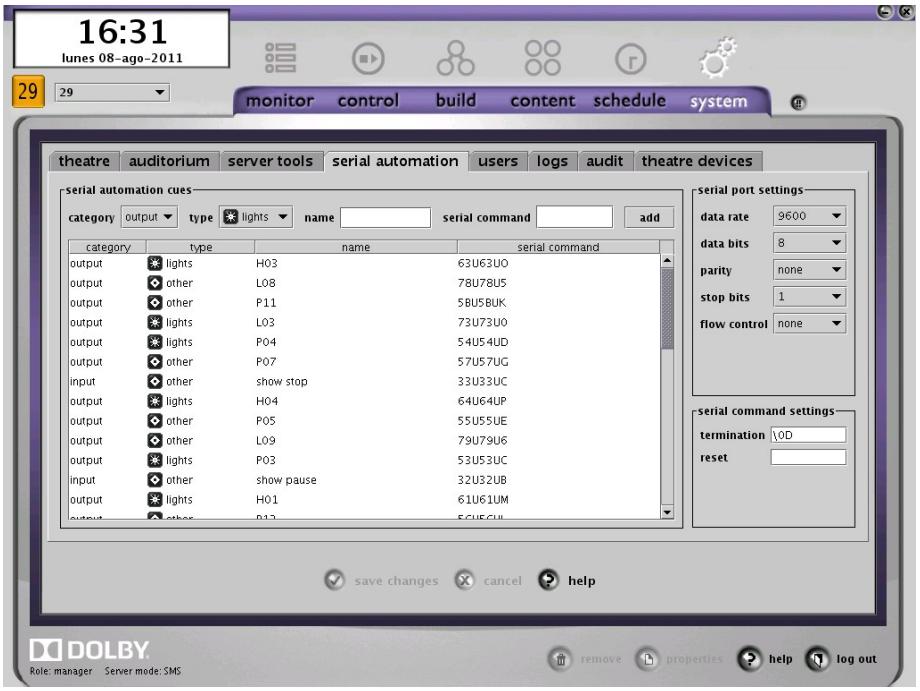


Figure 8.1C

11. To modify the cue type, click on the "type" column and make your selection between the "lights", "sound" and "other" option.

12. If you want to introduce the commands manually and do not want to use the "**DolbySerialAutomation_v1.txt**" file, write the corresponding commands described in "**APPENDIX A: SERIAL COMMANDS FOR DOLBY**" for every input and output of the PAA20+ or introduce your own messages and configure the PAA20+ accordingly.

8.2 DOREMI DCP AND SHOW VAULT SERIES SERVERS SET-UP.

This manual is baseed on the Doremi software version 2.0.10-0, other versions may differ.

You must add the device in the server, indicating the setup of the unit you want to control, before initiating a connection to the PAA20+.

8.2.1 Adding the PAA20+ to Doremi DCP and SV servers: Ethernet interface.

To add the PAA20+ as Ethernet device in DCP2000, DCP2K4 and ShowVault Doremi servers, follow the next steps:

1. Turn on the server.
2. Open the "Device Manager", by accessing it through the **Menu -> Doremi Labs Inc. -> Device Manager**.
3. Click on the icon "Add".
4. On the appearing pop-up window, select the device "Raw" as shown in the **Figure 8.2.1A**.

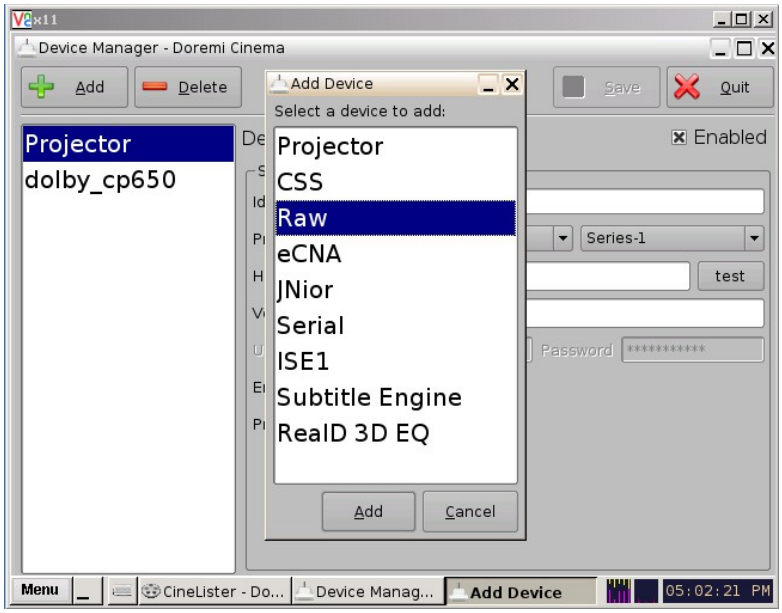


Figure 8.2.1A

5. Write “PAA20+” in the field “Identifier”.
6. Write the IP of the PAA20+ in the field “Device IP”.
7. Select TCP protocol on the drop-down tab “Protocol”.
8. Write “10001” in the field “Port”.
9. You may see the Device Manager window with this configuration on **Figure 8.2.1B**.
10. Click on “Save” to save the new device.

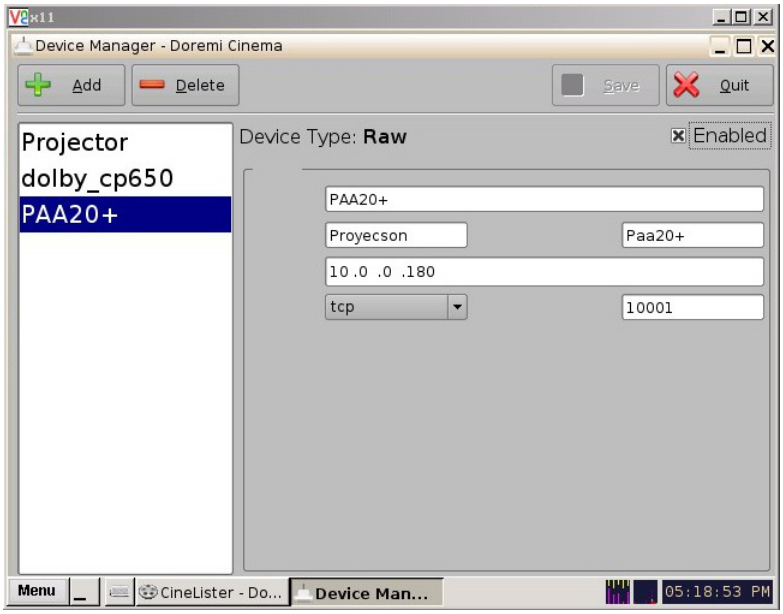


Figure 8.2.1B

11. You need to be authenticated as ‘admin’ in order to save changes and to be able to configure new devices. See **Figure 8.2.1C**.

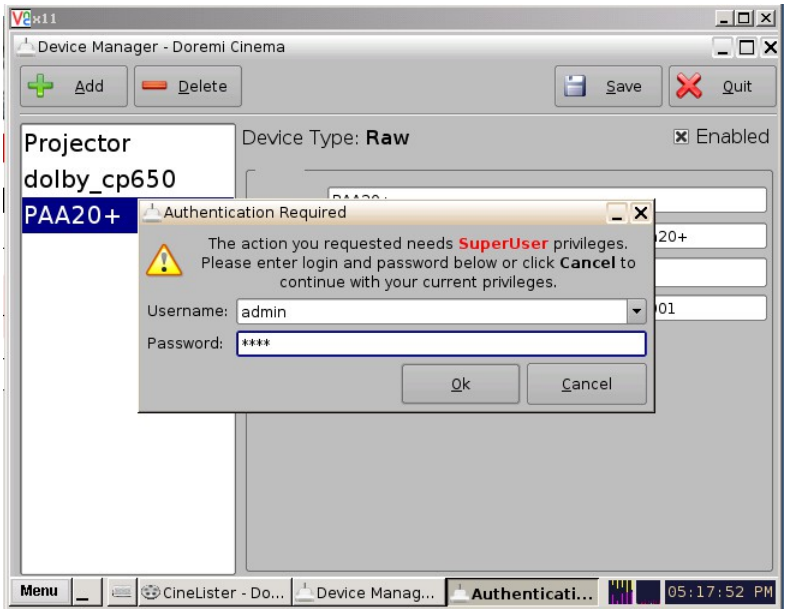


Figure 8.3.1C

12. Now the Paa20+ is configured and ready for the associated automation and trigger cues, to be created.

8.2.2 Adding the PAA20+ to Doremi DCP and SV servers: serial interface.

Only non-IMS servers as DCP200, DCP2K4 and ShowVault, support serial interface. To add the PAA20+ as a Serial device in the Doremi server software follow these steps:

1. Turn on the server.
2. Start the "Device Manager", accessible through **Menu -> Doremi Labs Inc. -> Device Manager**.
3. Click on icon "Add".
4. On the appearing pop-up window, select device "Serial" as shown **Figure 8.2.2A**.

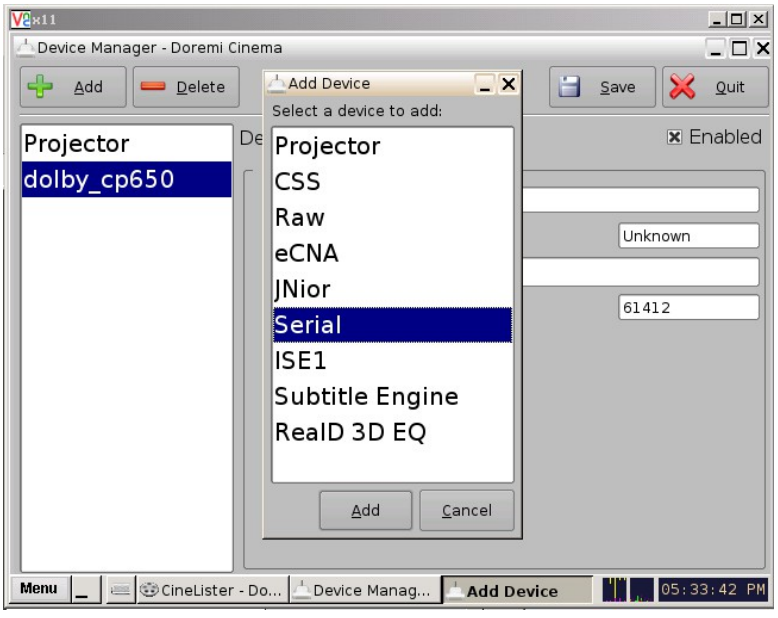


Figure 8.2.2A

5. Write "PAA20+" in the field "Identifier".
6. Set the Serial Setup as in **Figure 8.2.2B**:
    a. Serial Port: /dev/ttyS0.
    b. Speed: 9600.
    c. Data: 8.
    d. Stop bits: 1.
    e. Parity: none.
    f. Flow control: none.
    g. Message Type: fixed-length.
    h. 8 bytes in the byte length field.
7. Click on the icon "Save" in order to save the new device.

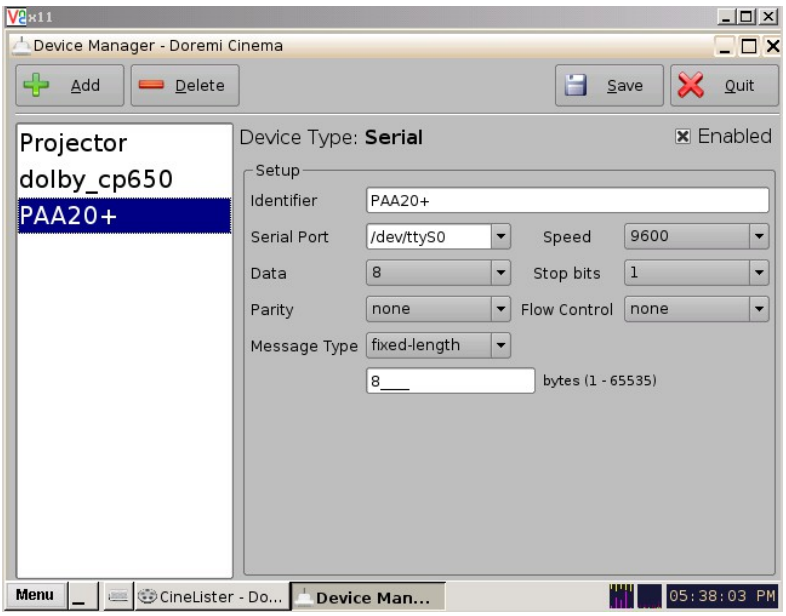


Figure 8.2.2B

8. If not logged as admin you will need to be authenticated.
9. Now the PAA20+ is configured and ready for create the associated automation and trigger cues to be created.

8.2.3 Setting up the output cues for Doremi DCP and SV servers (non-xml library method)

Once the device is added, set up the "cues" in order to manage the PAA20+ outputs. There are two methods to do this: the first one is to add the output cues (**only valid for output cues**, not for trigger cues) following the Doremi Macro Editor Manual.

1. Create a new "Macro" using the "+" button and name it, as shown in **Figure 8.2.3A**.

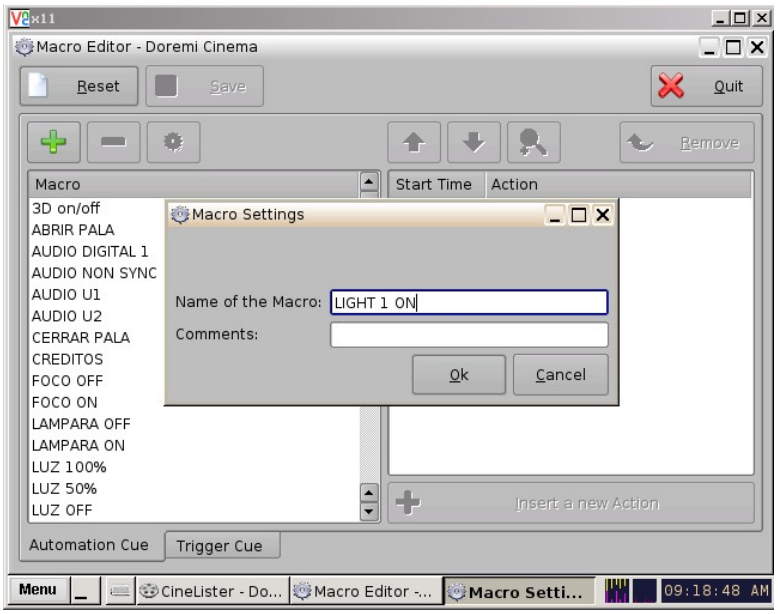


Figure 8.3.3A

2. Click on button "Insert a new action" while the new created macro is selected.
3. Select "Input/Output" in the "Add a new Action" pop-up window and click on "Add". See **figure 8.2.3B**.

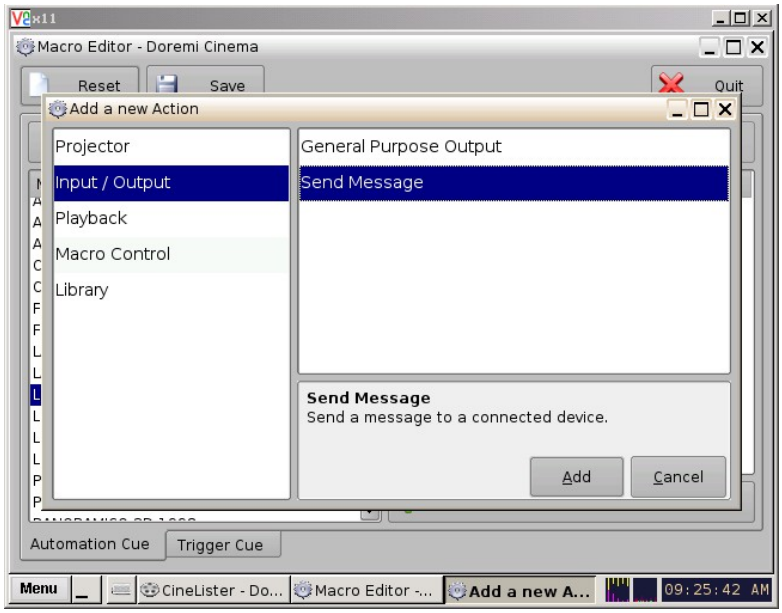


Figure 8.2.3B

4. On the "Send a Message" pop-up window write the following:
    - **Message Label**: Short description of the operation (optional).
    - **Device Name**: Select "PAA20+".
    - **Message Type**: Select "Text".
    - **Message**: Write the message in ASCII that will be sent to the PAA20+ when the macro cue gets executed. See the ASCII commands on **APPENDIX B: ASCII COMMANDS FOR DOREMI SERVER** if you want to use the factory default commands. You must write the codes exactly as shown in the table, otherwise the PAA20+ may not recognize them. If you want to use your own messages be careful with their length which, it's limited to 7 bytes and a **\r** terminator in this firmware version.
5. See an example of this from in the **Figure 8.2.3C**.

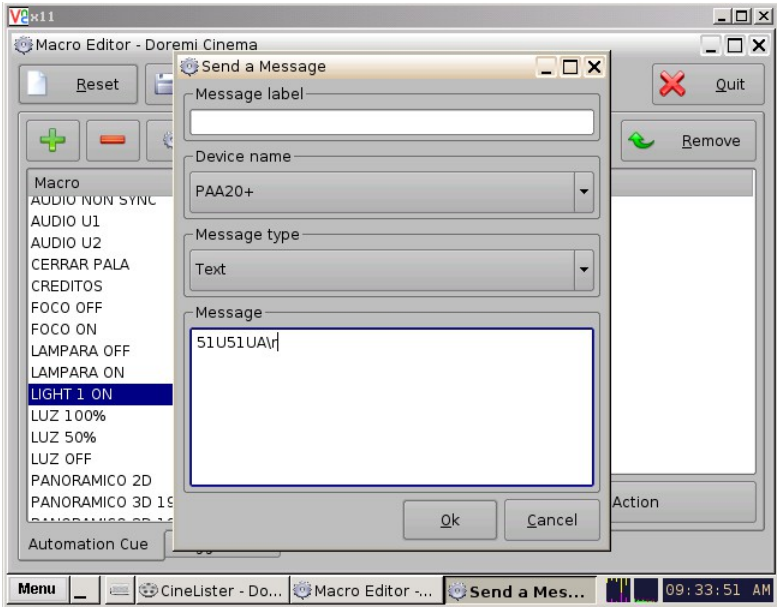


Figure 8.2.3C

6. Once the required macros are added, save changes. If you are not logged as admin, you will need to authenticate in order to save them. New macros will appear in "Cinelister".
7. To check in advance the macros, use the "Macro Execution" program in the "Doremi Labs Inc." menu. You can see a snapshot of the "Macro Execution" program in **figure 8.2.3D**.

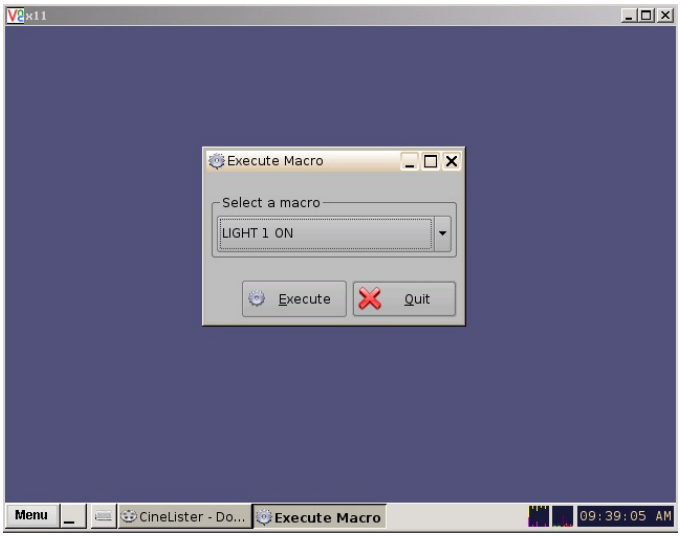


Figure 8.2.3D

8. If the command is successfully received by the PAA20+, a pop-up message like the one in the **figure8.2.3E** is shown.

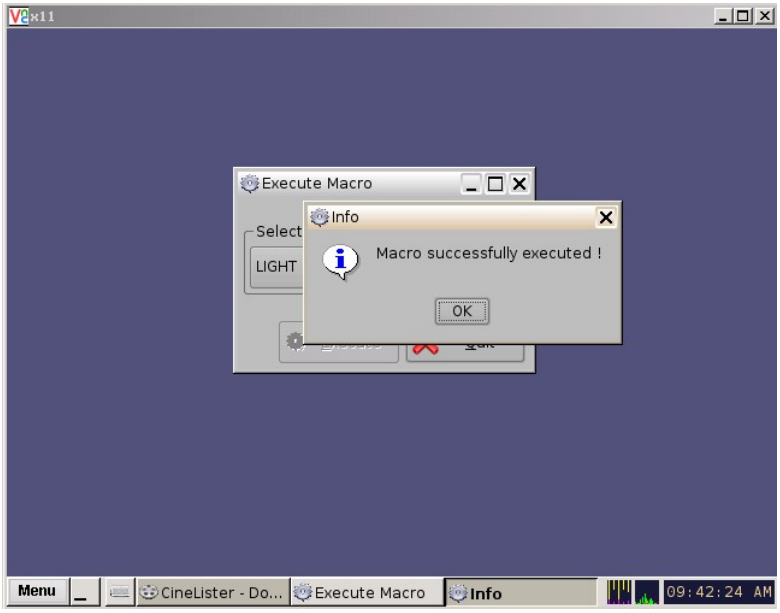


Figure8.2.3E

8.2.4 Setup output cues for Doremi DCP and SV servers using xml library

The second method to set-up the cues for the PAA20+ in a Doremi server is using the "PAA20V2.xml" file, available in the FTP: [ftp://manual:proyec-son@ftp3.proyecson.com/manual/paa20+](ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+), to create a cues library for the device in the server. Using this method you can use the PAA20+ **inputs and the outputs** with the Doremi server.

To do so you must follow these steps:

1. Connect a PC or laptop to the same network where the Doremi server is connected. To ensure that they are in the same network you may "ping" the server from the PC.
2. Open a ftp client and connect to the server using the server IP. You must log in as admin using the admin password supplied by Doremi. You can see an example in **figure 8.2.4A**. For this example we used the "WinSCP" ftp client and a server with IP address 12.100.85.111.

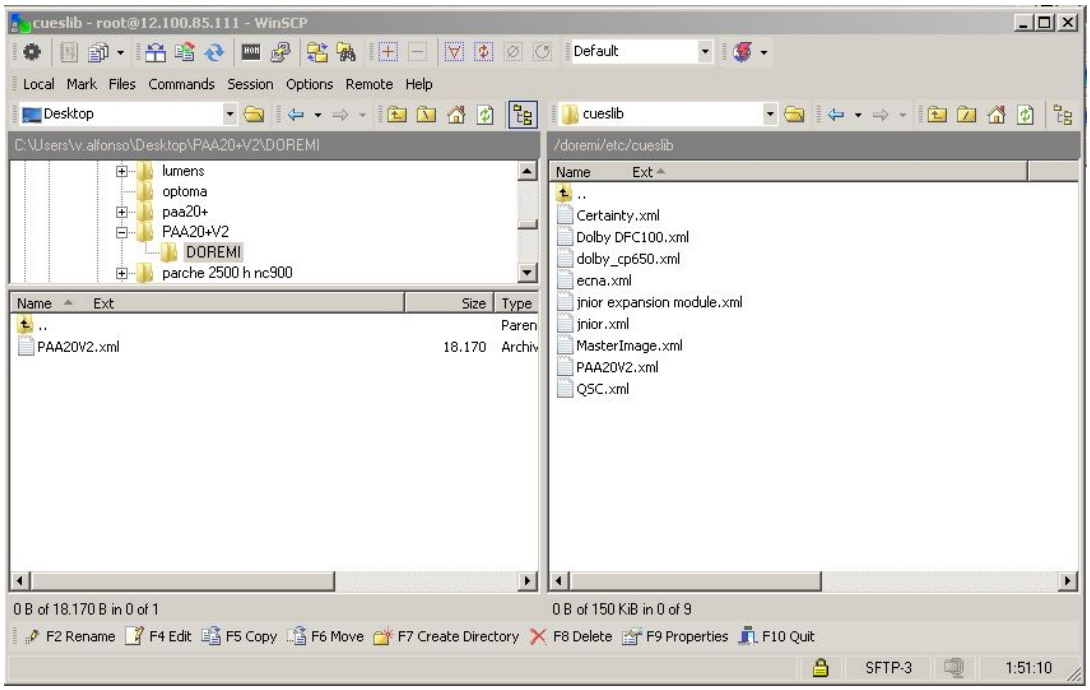


Figure 8.2.4A

3. Once you are connected to the server via ftp, upload the "PAA20V2.xml" file available in the FTP: ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+ to the "/etc/cueslib/" directory in the server. You can see the "PAA20V2.xml" loaded in this folder in **figure 8.2.4A**. Now, you should be able to set-up the output cues taking the commands from this library.
4. The procedure to create automation cues using the library is very similar to the one that does not, but simpler, first of all open the Doremi "Marco Editor".
5. Then create a new "Macro" with the "+" button and name it, like in **figure 8.2.4B**.

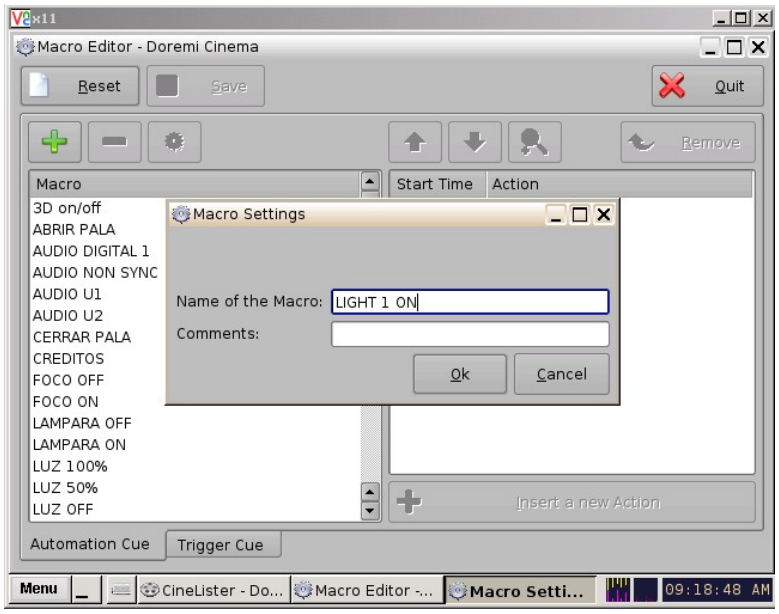


Figure 8.2.4B

6. Click on "Insert a new Action" button while the new created macro is selected.
7. Select "Library / PAA20+_V1" on the "Add a new Action" pop-up window and click on "Add". See **figure 8.2.4C**.

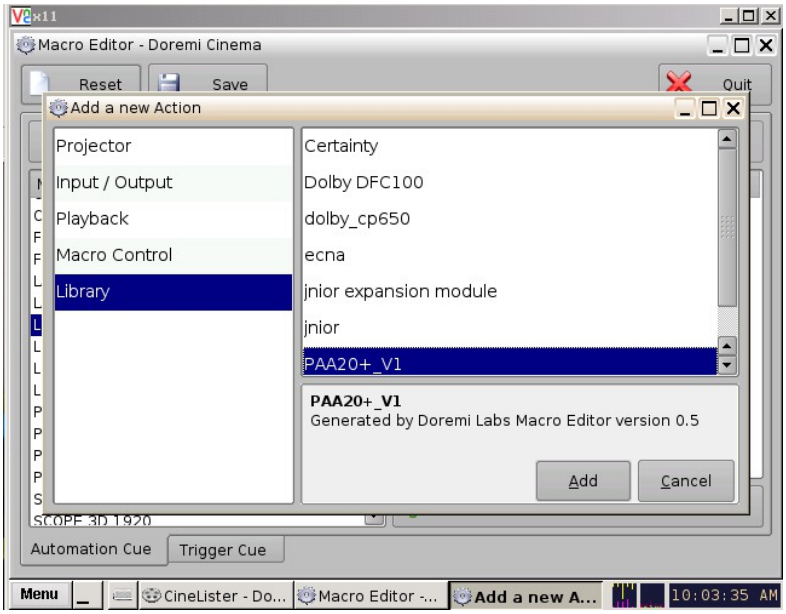


Figure 8.2.4C

8. On the "Library" pop-up window select the action needed and validate with the OK button as you can see in **figure 8.2.4D**. Keys for the action are these:
    - Actions from H1 to H12 activate (High) and maintain active the corresponding output.
    - Actions from L1 to L12 deactivate (Low) and maintain inactive the corresponding output.
    - Actions from P1 to P12 generate a momentary pulse (500ms) in the corresponding output.

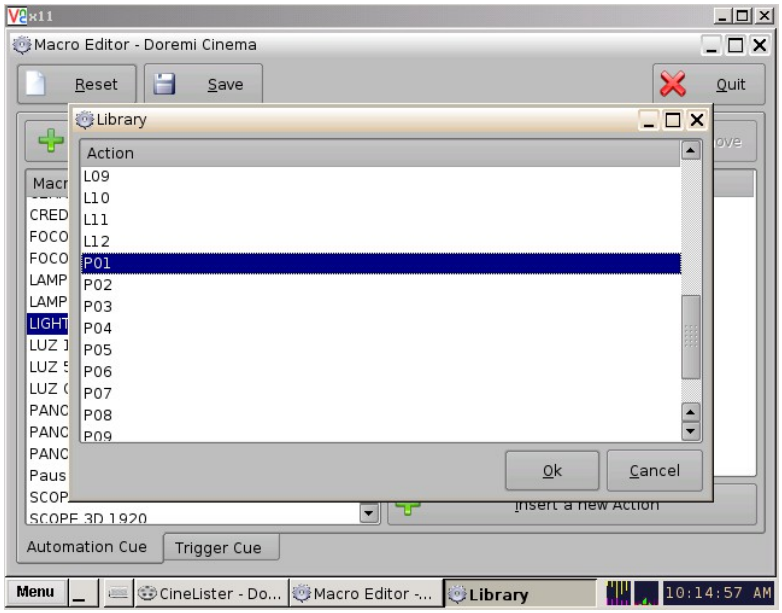


Figure 8.2.4D

9. On the "Send a Message" pop-up window ,**figure 8.2.4E**, write the following:
    - **Message Label**: Short description of the operation (optional).
    - **Device Name**: Select "PAA20+".
    - **Message Type**: Select "Text".
    - **Message**: Leave untouched, it is read from the PAA20+ library previously selected.

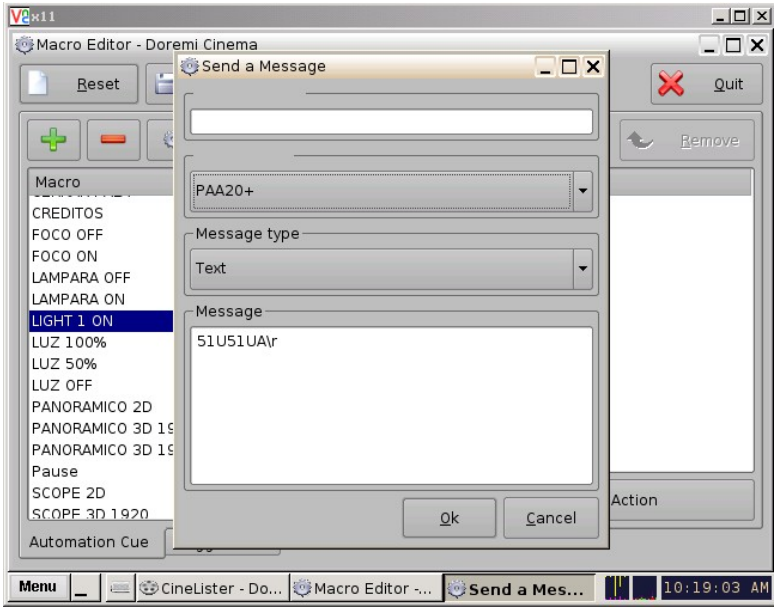


Figure 8.2.4E

10. Once the required macros are added, save changes and then use the macros in "Cinelister". If you are not logged as admin, you will need to be authenticated.

11. In order to check in advance the macros, use the "Macro Execution" program in the "Doremi Labs Inc." menu.

8.2.5 Setup the input cues using PAA20+ xml library

Using the XML library method it is possible to the PAA20+ inputs to send automation messages to the Doremi server. You need the "PAA20+_V1.xml" file loaded properly in the Doremi server to use this feature, in the 1,2 and 3 steps of the 8.2.4 section of this manual you may see the procedure to load the file and create the PAA20+ Library.

With this file loaded you can create trigger cues following these steps:

1. Open the Doremi "Macro Editor" application and select "trigger cue" tab. This window is used to manage the trigger cues. To create a new cue click on "+" button and in the pop-up window, name it and click on accept. Example is given in **Figure 8.2.5A**.

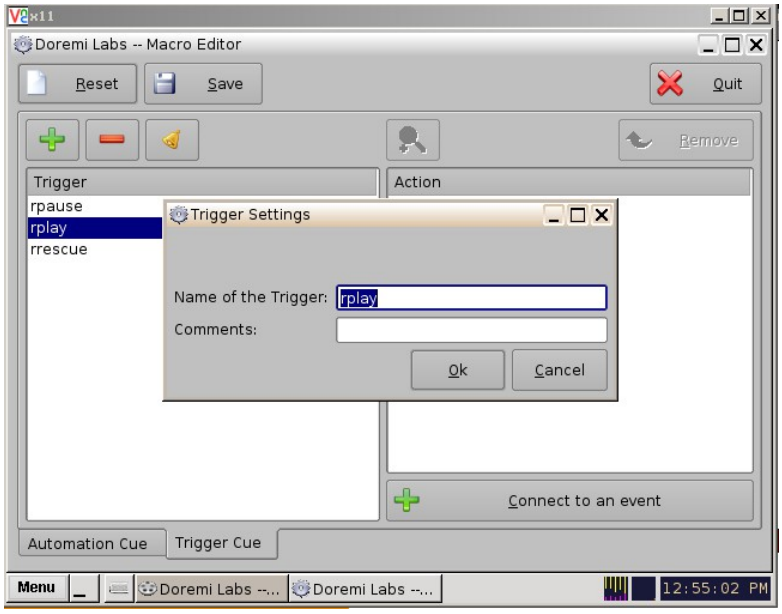


Figure 8.2.5A

2. When the "Events" pop-up window appears, **Figure 8.2.5B**, select the "Signal" option.

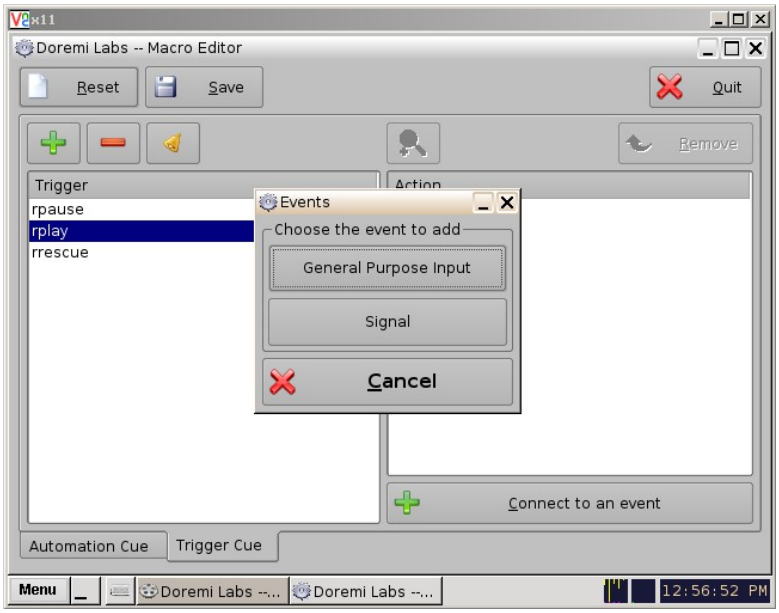


Figure 8.2.5B

3. In the "Signal Setup" pop-up window, select PAA20+ in the "Source device name" selection tab and press the "…" button in the "Signal name" field. **Figure 8.2.5C**.

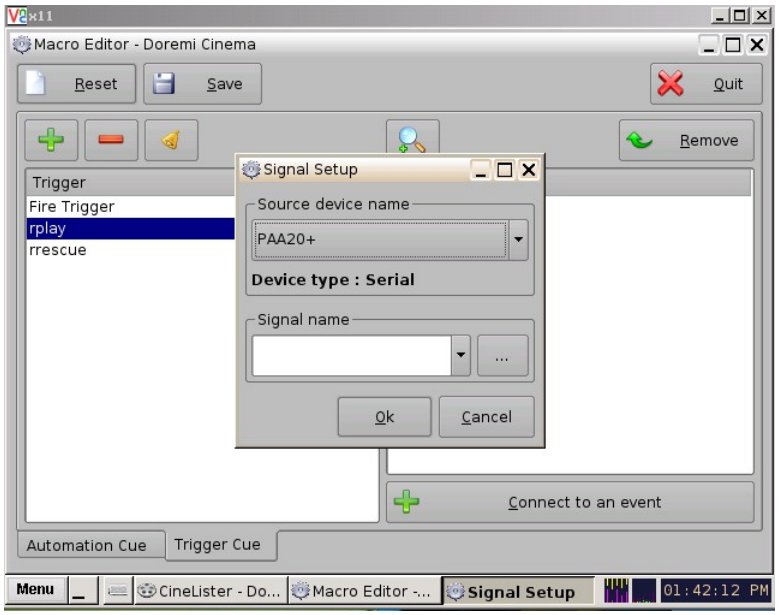


Figure 8.2.5C

4. Pressing this button you will open the "Signal Library" pop-up window, you must select the "PAA20+" in the "driver" window and choose the appropriate input of the PAA20+ in the "Signal" window. Every signal matches the physical input with the same number in the device. You may see an example for the Input 4 in **Figure 8.2.5D**.

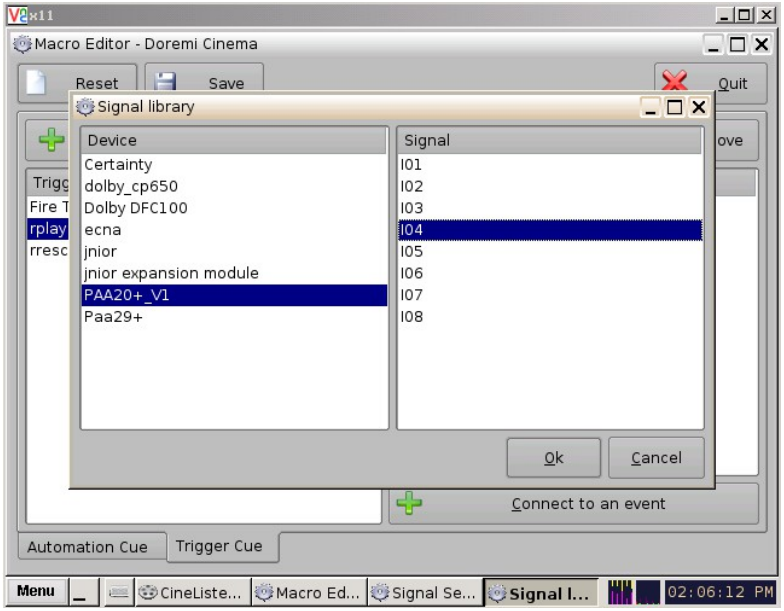


Figure 8.2.5D

5. Pressing the Ok button of the "Signal library" window you will go back to the "Signal Setup" window, but with the "Signal name" filled in with your previous chosen input selection. You can see the example for the Input 4 in **Figure 8.2.5E**. Click on the Ok button to finish the creation of the trigger cue.

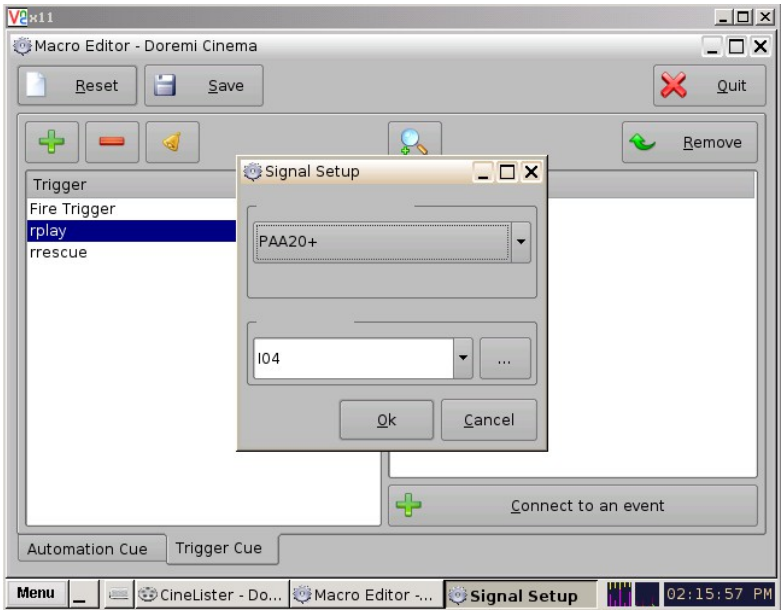


Figure 8.2.5E

6. Finally in the Doremi "Macro Editor" main screen you can save the trigger cues configuration using the "Save" button. If you are not logged as admin, you will need to be authenticated.
7. Now, you may use the "trigger cues" in the "Cinelister" editor to activate macros during the Show execution.

8.3 DOREMI, DOLBY AND NEC IMS SERIES SERVERS SET-UP.

8.3.1 Adding the PAA20+ to Doremi, NEC and Dolby IMS servers.

This point describes how to add the PAA20+ as Ethernet device in the Doremi IMS1000, Dolby IMS2000 server, NEC NP-90MS01 and NEC NP-90MS02 servers. All these devices uses the same software, but could be little differences on the GUI. To add the device follow the next steps:

1. Turn on the server.
2. Open the "Device Manager", by accessing it through the **ADMINISTRATION -> DEVICE MANAGER**.
3. Point to the **New** button.
4. On the appearing drop-down tab, select the "**RAW**" option as shown in the **Figure 8.3.1A**.

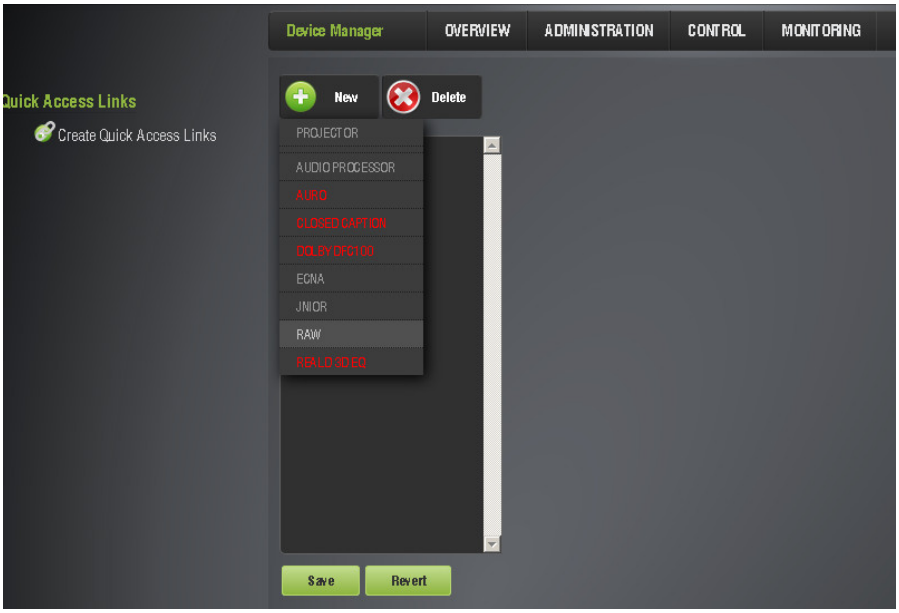


Figure 8.3.1A

5. Write "PAA20+" in the field "Identifier".

6. Write the IP of the PAA20+ in the field "Device IP".
7. Select TCP protocol on the drop-down tab "Protocol".
8. Write "10001" in the field "Port".
9. You may see the Device Manager window with this configuration on **Figure 8.3.1B**.
10. Click on "**Save**" to save the new device.

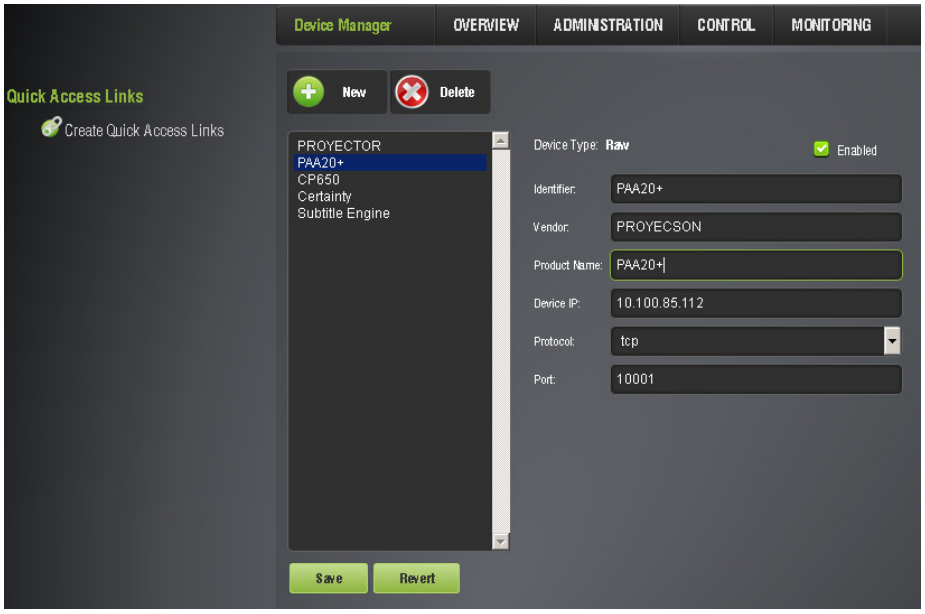


Figure 8.3.1B

11. You need to be authenticated as 'admin' in order to save changes and to be able to configure new devices.

12. Now the Paa20+ is configured and ready for the associated automation and trigger cues, to be created.

8.3.2 Setting up output cues for Doremi, Dolby and NEC IMS servers (non-library method)

Once the device is added, set up the "cues" in order to manage the PAA20+ outputs. There are two methods to do this: the first one is to add the output cues (**only valid for output cues**, not for trigger cues) following the Doremi Macro Editor Manual.

1. Open the "Macro Editor", by accessing it through the **ADMINISTRATION -> MACRO EDITOR → .AUTOMATION CUE**. to create a new "Macro" and name it, as shown in **Figure 8.3.2A**.

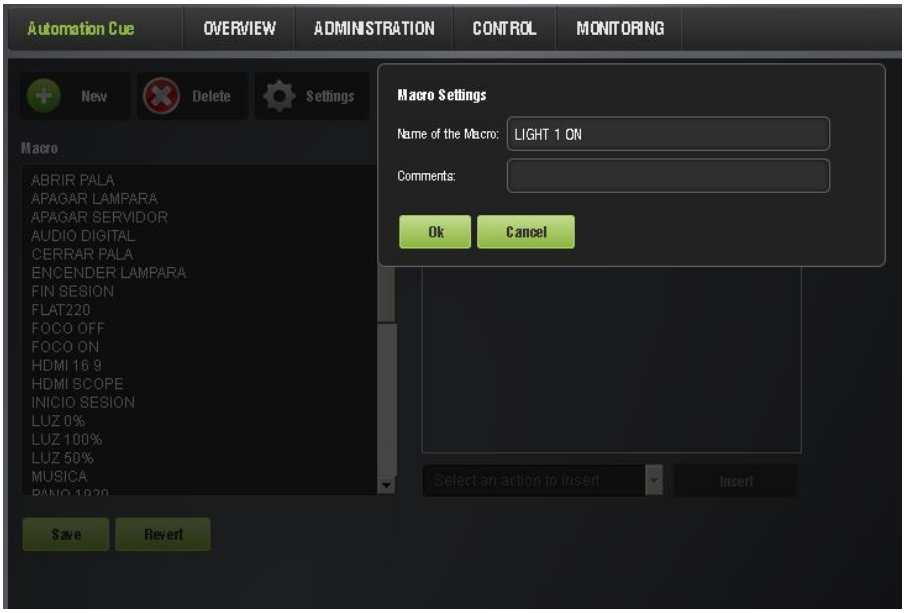


Figure 8.3.2A

2. Expand the "Select an action to insert" drop-down tab and select the "Send Message" option while the new created macro is selected. See **figure 8.3.2B**.
3. Once the "Send Message" is selected, click on the "**Insert**" button.

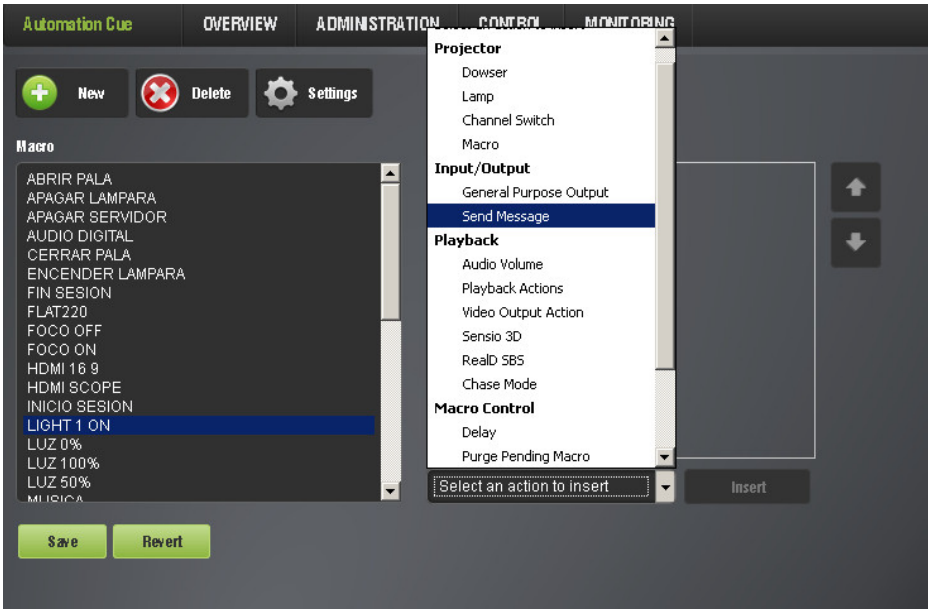


Figure 8.3.2B

4. On the "Send a Message" pop-up window write the following:

- **Message Label**: Short description of the operation (optional).
- **Device Name**: Select "PAA20+".
- **Message Type**: Select "Text".
- **Message**: Write the message in ASCII that will be sent to the PAA20+ when the macro cue gets executed. See the ASCII commands on **APPENDIX B: ASCII COMMANDS FOR DOREMI SERVER** if you want to use the factory default commands. You must write the codes exactly as shown in the table, otherwise the PAA20+ may not recognize them. If you want to use your own messages be careful with their length which, it's limited to 7 bytes and a **\r** terminator in this firmware version.

5. See an example of this from in the **Figure 8.3.2C**.

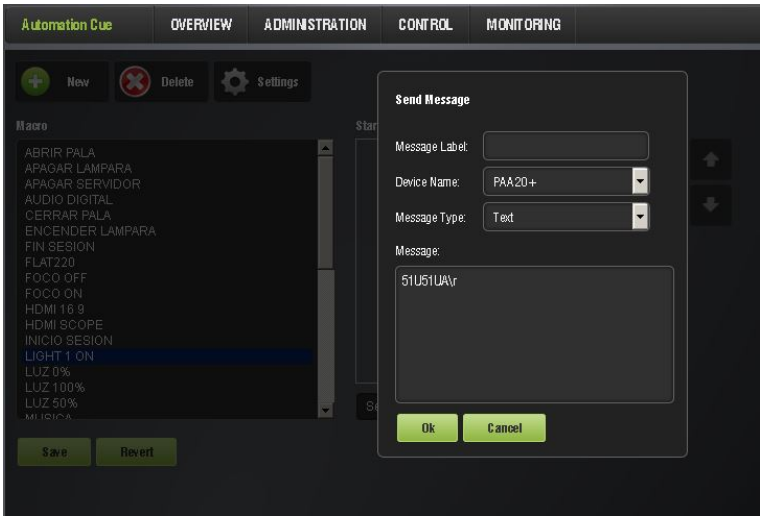


Figure 8.3.2C

6. Once the required macros are added, save changes. If you are not logged as admin, you will need to authenticate in order to save them. New macros will appear in "Cinelister".

7. To check in advance the macros, use the "**MACRO EXECUTION**" program in the "**CONTROL**." menu. You can see a snapshot of the "Macro Execution" program in **figure 8.3.2D**.

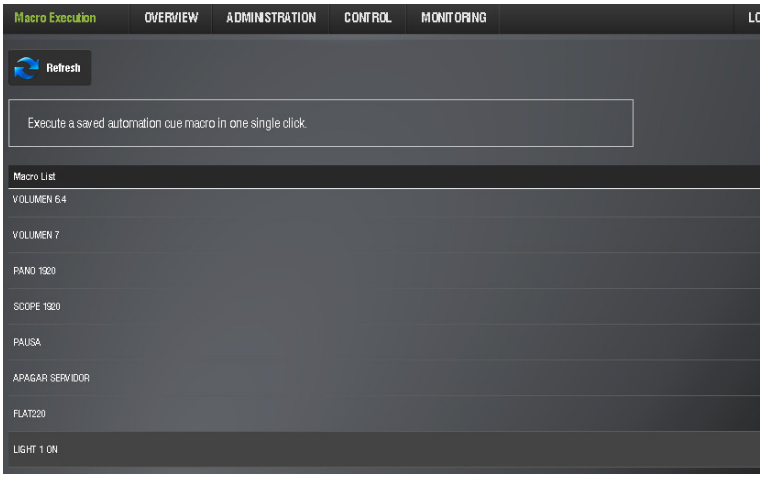


Figure 8.3.2D

8. If the command is successfully received by the PAA20+, a pop-up message is shown.

8.3.3 Setting up output cues for Doremi, Dolby and NEC IMS servers with xml lib.

The second method to set-up the cues for the PAA20+ in a these servers is using the "PAA20V2.xml" file, available in the FTP: [ftp://manual:proyec-son@ftp3.proyecson.com/manual/paa20+](ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+), to create a cues library for the device in the server. Using this method you can use the PAA20+ **inputs and the outputs** with the Doremi server.

To do so you must follow these steps:

1. Connect a PC or laptop to the same network where the Doremi server is connected. To ensure that they are in the same network you may "ping" the server from the PC.
2. Open a ftp client and connect to the server using the server IP. You must log in as admin using the admin password supplied by Doremi. You can see an example in **figure 8.3.3A**. For this example we used the "WinSCP" ftp client and a server with IP address 12.100.85.111.

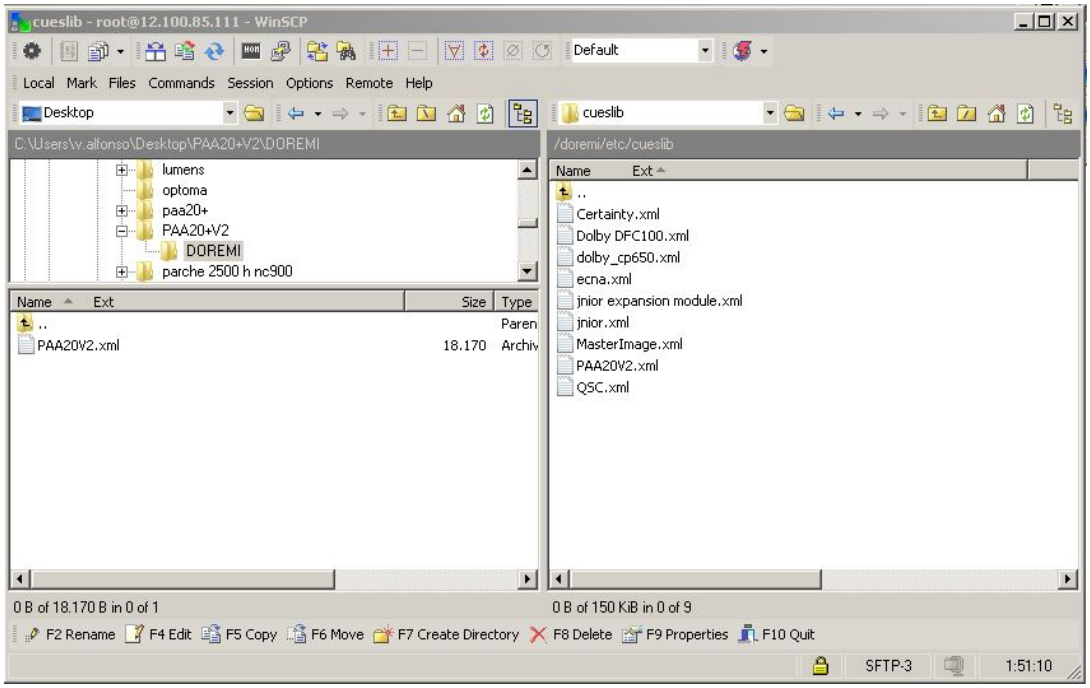


Figure 8.3.3A

3. Once you are connected to the server via ftp, upload the "PAA20V2.xml" file available in the FTP: ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+ to the "/etc/cueslib/" directory in the server. You can see the "PAA20V2.xml" loaded in this folder in **figure 8.3.3A**. Now, you should be able to set-up the output cues taking the commands from this library.
4. Open the "Macro Editor", by accessing it through the **ADMINISTRATION -> MACRO EDITOR -> AUTOMATION CUE**. to create a new "Macro" and name it, as shown in **Figure 8.3.3B**.

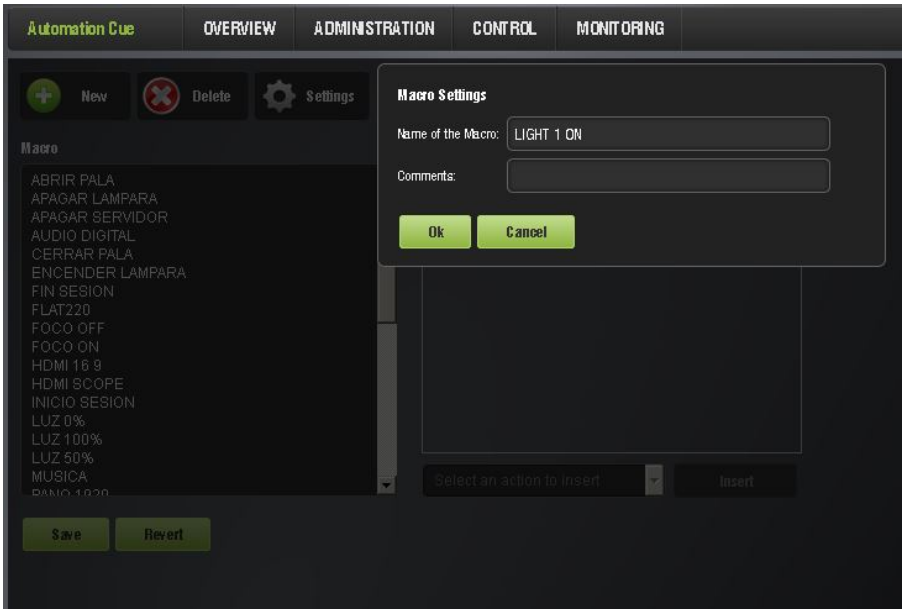


Figure 8.3.3B

5. Expand the "Select an action to insert" drop-down tab and select the "Library" option while the new created macro is selected. See **Figure 8.3.3C**.

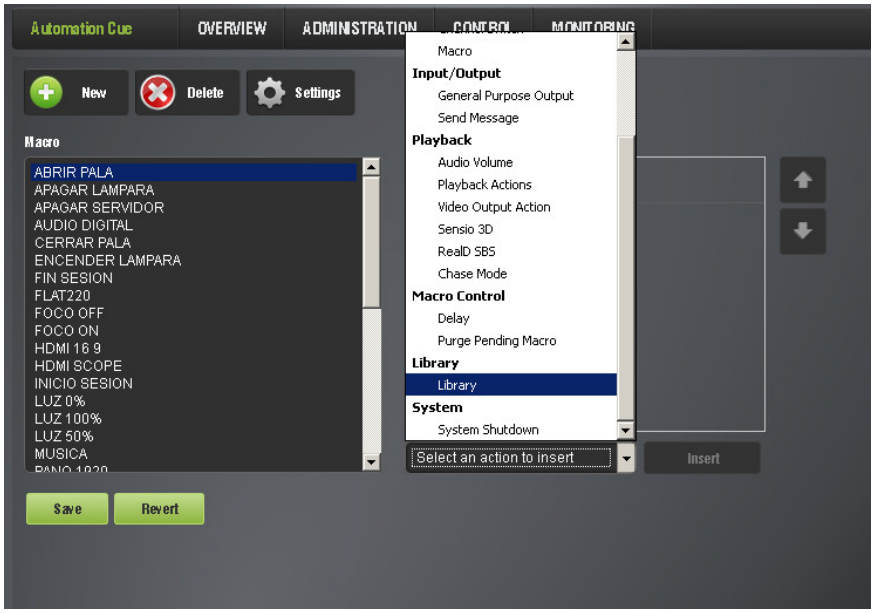


Figure 8.3.3C

6. On the pop-up window select have to select:

- Driver: PAA20V2.
- Action: The action you want to activate on the PAA20+.
  - Actions from H1 to H12 activate (High) and maintain active the corresponding output.
  - Actions from L1 to L12 deactivate (Low) and maintain inactive the corresponding output.
  - Actions from P1 to P12 generate a momentary pulse (500ms) in the corresponding output.
- Message Label: The text you want.
- Device Name: PAA20+
- Message Type: Text.
- Message: The one corresponding to the Action selected. Do not modify.

  See **figure 8.3.3D** as an example.

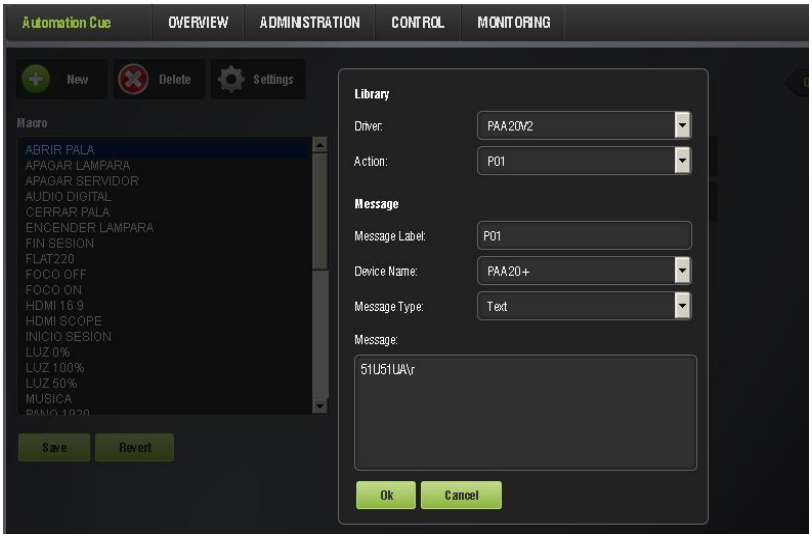


Figure 8.3.3D

7. Click on the "Ok" button and then on the "Save" button. The macro is created.
8. Once the required macros are added, save changes. If you are not logged as admin, you will need to authenticate in order to save them. New macros will appear in "Cinelister".
9. To check in advance the macros, use the "**MACRO EXECUTION**" program in the "**CONTROL**." menu. You can see a snapshot of the "Macro Execution" program in **figure 8.3.3E**.

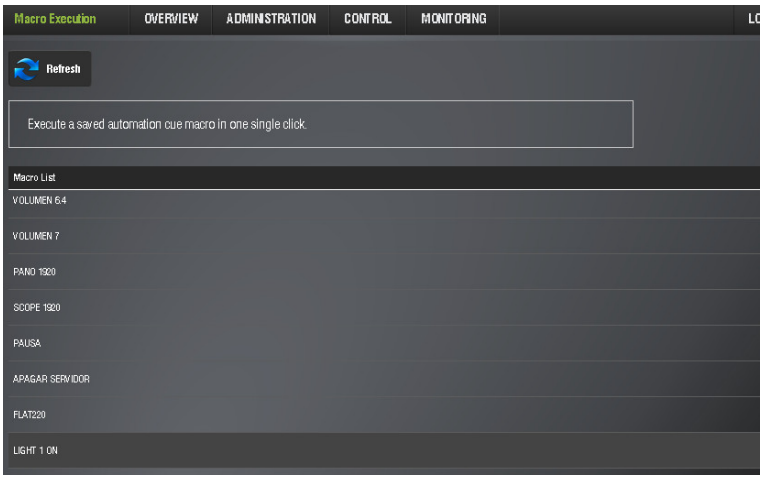


Figure 8.3.3E

8.3.4 Setting up input cues for Doremi, Dolby and NEC IMS servers with xml lib.

Using the XML library method it is possible to the PAA20+ inputs to send automation messages to the IMS servers. You need the "PAA20V2.xml" file loaded properly in the server to use this feature, in the 1,2 and 3 steps of the 8.2.8 section of this manual you may see the procedure to load the file and create the PAA20+ Library.

With this file loaded you can create trigger cues following these steps:

8. Open the "Macro Editor", by accessing it through the **ADMINISTRATION -> MACRO EDITOR → TRIGGER CUE**. This window is used to manage the trigger cues. To create a new cue click on "+ New" button and in the pop-up window, name it and click on accept. Example is given in **Figure 8.3.4A**.

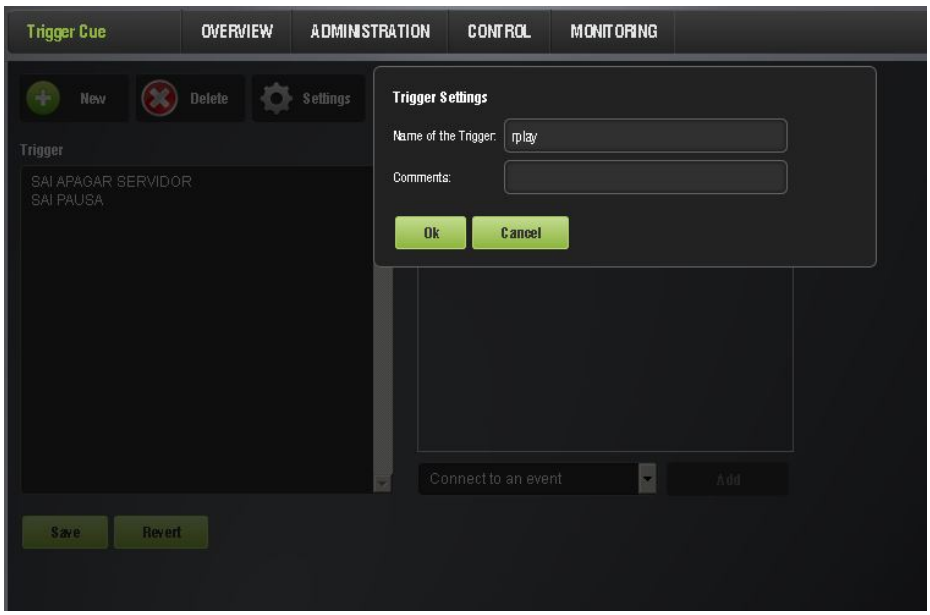


Figure 8.3.4A

9. When the "Connect to an event" drop-down, **Figure 8.3.4B**, select the "Signal" option.

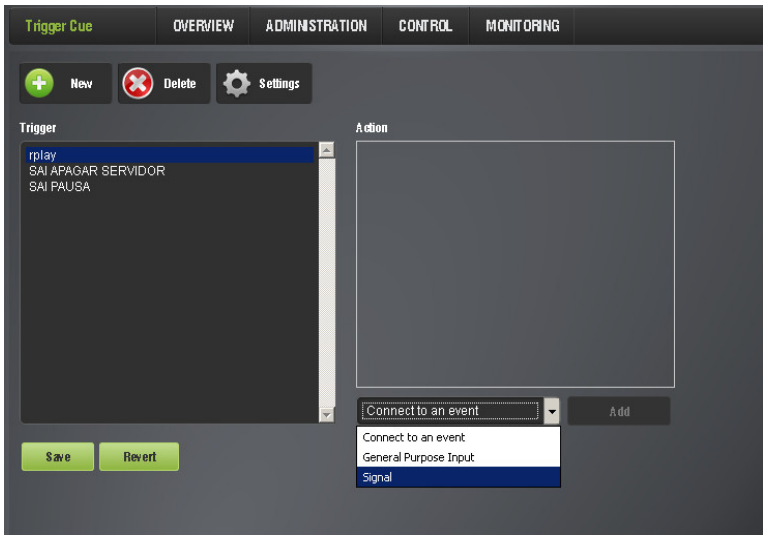


Figure 8.3.4B

10. In the "Signal Setup" pop-up window, select PAA20V2 in the "Driver" selection tab and select the desired input of the PAA20+ in the "Signal" drop-down menu. Every signal matches the physical input with the same number in the device. You may see an example for the Input 1 in **Figure 8.3.4C**.

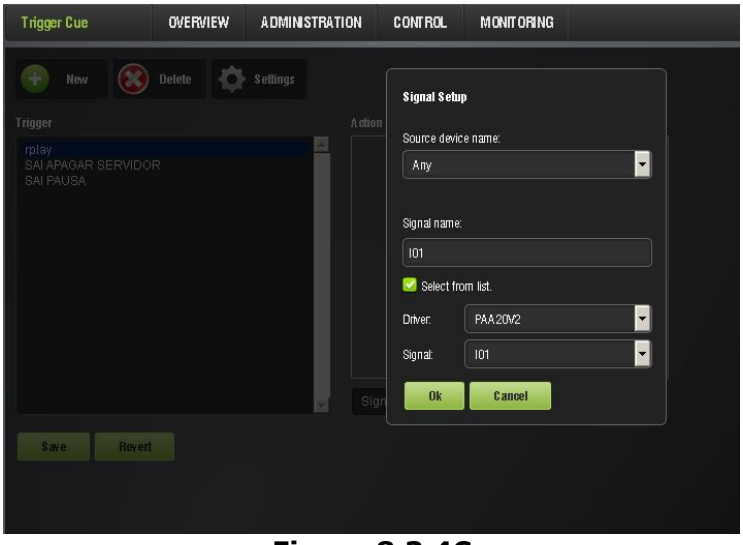


Figure 8.3.4C

11. Pressing the Ok button of the "Signal setup" window you will go back to the "Trigger cue" window. Click on the "Save" button to finish the creation of the trigger cue.

12. Now, you may use the "trigger cues" in the "Cinelister" editor to activate macros during the Show execution.

8.4 BARCO ALCHEMY ICMP SERVER SET-UP.

8.4.1 Adding the PAA20+ to Barco Alchemy ICMP servers: Ethernet interface.

This point describes how to add the PAA20+ as Ethernet device in the Barco Alchemy ICMP servers. To set up the automation devices in an Alchemy server it is mandatory to use the Barco Communicator software, it is not possible to do it using the Alchemy server GUI or Barco Commander:

1. Turn on the server projector and, therefore, the server.
2. Use the Barco Communicator software to connect to the Barco projector and log in as "Service Technician".
3. Click on the "Devices" button on **MEDIA SERVER→ AUTOMATION** menu **Figure 8.4.1A**.

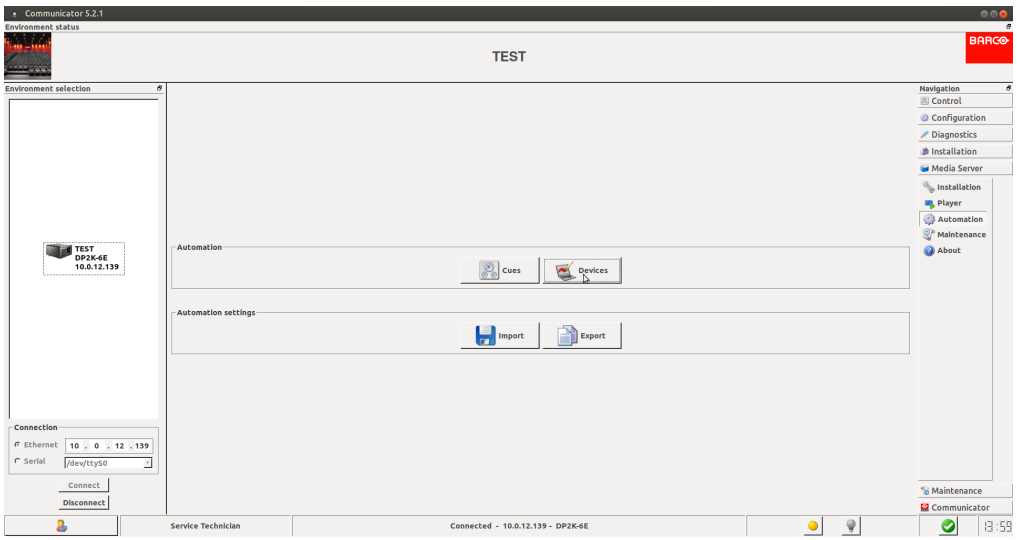


Figure 8.4.1A

4. In the "Device configuration" pop-up window click on the "Add device" button. **Figure 8.4.1B**.

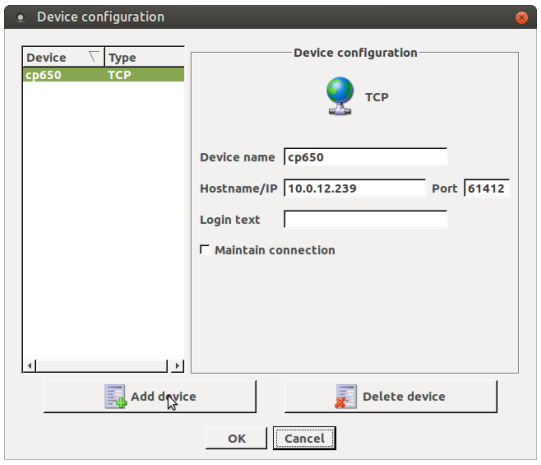


Figure 8.4.1B

5. In the "Add new device" pop-up window, select the **TCP** device type and click on the "Next" button. **Figure 8.4.1C**.

Figure 8.4.1C

6. In the "Device Configuration" window set the name, IP address and port for the PAA20+ device. The **Figure 8.4.1D** shows the factory IP configuration for the PAA20+. Click on the "Finish" button.

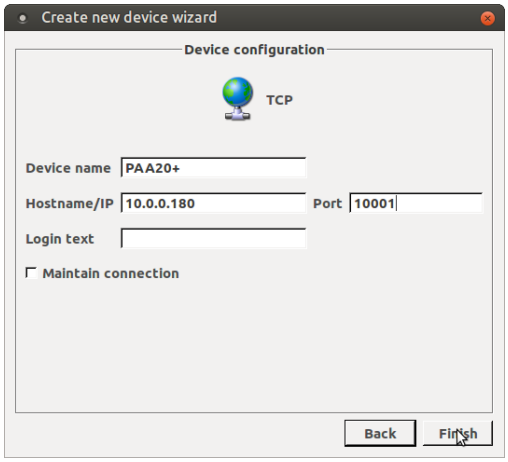


Figure 8.4.1D

7. The PAA20+ device is now configured, ready to add cues and triggers. **Figure 8.4.1E**

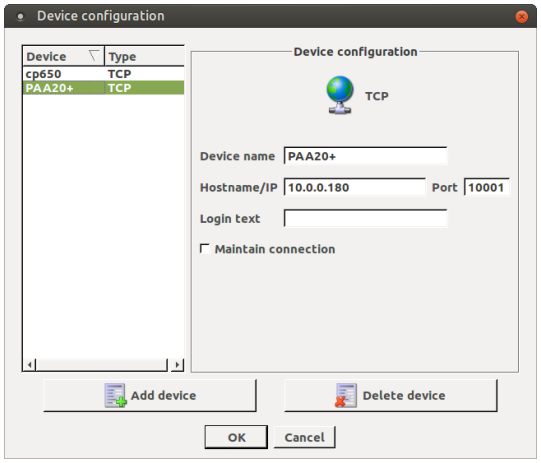


Figure 8.4.1E

8.4.2 Setting up the output cues for the Barco Alchemy server.

Once the device is added, set up the "cues" in order to manage the PAA20+ outputs. To add some cues manually follow these steps:

1. Using the Barco Communicator software connect to the projector as Service Technician.
2. Click on the "Cues" button on **MEDIA SERVER→ AUTOMATION** menu.
3. In the "Cue editor" pop-up window it is possible to create a group of cues to simplify the cues organization. To do it, click on the "Group" button. **Figure 8.4.2A**.

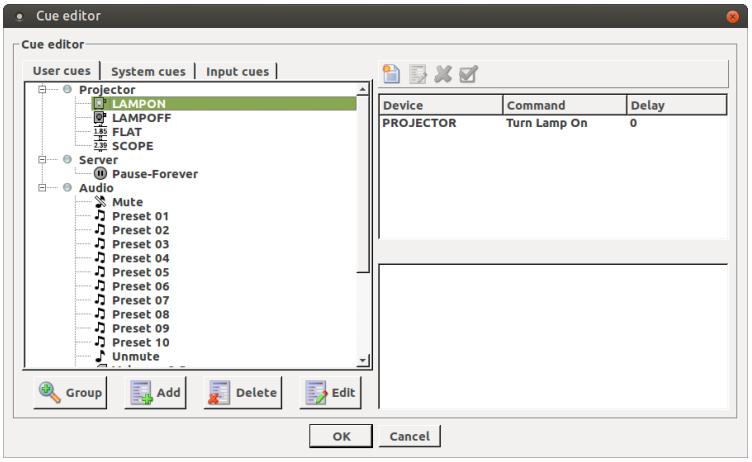


Figure 8.4.2A

4. In the "Group Management" pop-up window click on the new group icon and fill the "Group Name" with the name you want for the PAA20+ cues group. In the example we used the name "PAA20". Then click on the "Ok" button. **Figure 8.4.2.B**.

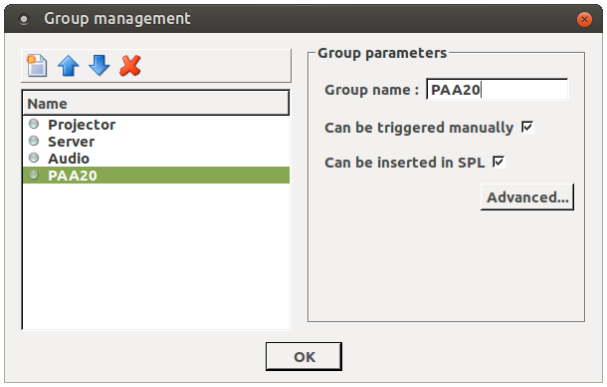


Figure 8.4.2B

5. Select the PAA20 group and click on the "Add" button, in the "Add cues" pop-up window write the name of the cue in the "Name" field, select the icon and the group as you can see in the **Figure 8.4.2C**.

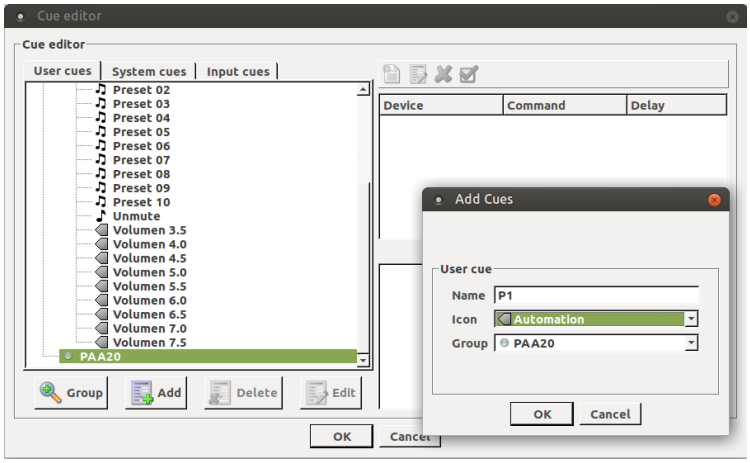


Figure 8.4.2C

6. The cue is created, now you have to associate commands to it. Select the cue and click on the "Add action" icon. **Figure 8.4.2D**.

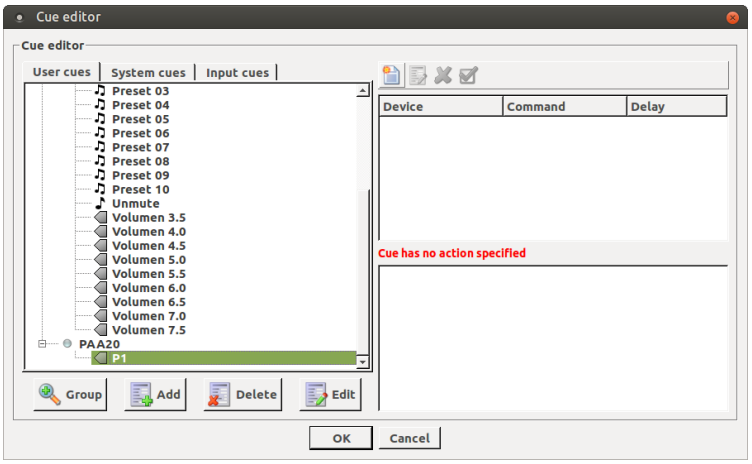


Figure 8.4.2D

7. In the pop-up window select the PAA20+ from the "Device" selection tab, the "Send Text" option from the "Command" selection tab and write the ASCII text string command in the text field. See the ASCII commands on **APPENDIX H: COMMANDS FOR BARCO ALCHEMY (ICMP) AND CHRISTIE IMB S2** if you want to use the factory default commands. After that click on the "Ok" button.

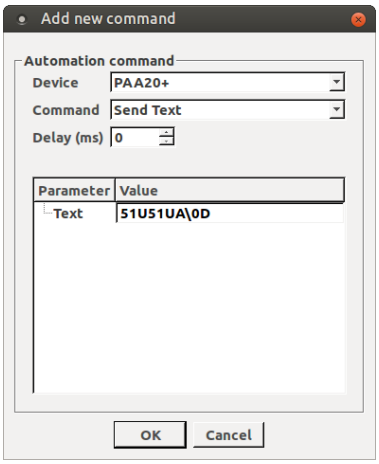


Figure 8.4.2E

8. Create all the cues you need and click "Ok" on the "Cue editor" window to save the cue settings. **Figure 8.4.2F**.

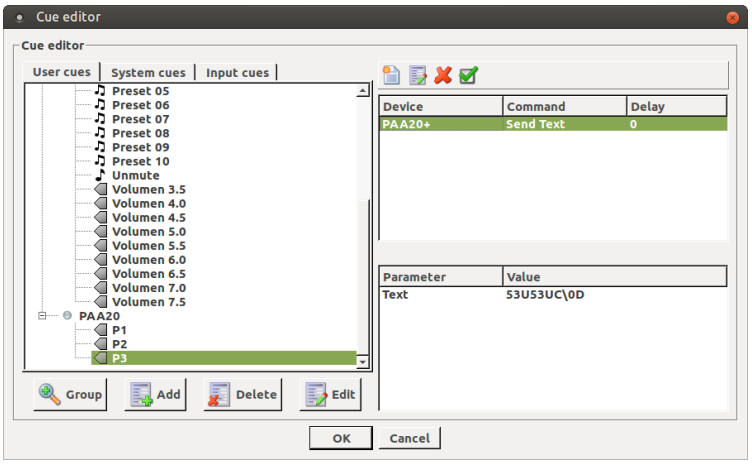


Figure 8.4.2F

9. Once you have all the cues created and saved, it is possible to add any cue to your shows or trigger it manually as a standard output cue.

8.4.3 Setting up the output cues for Barco Alchemy ICMP servers using xml library

There is another way to set-up the cues for the PAA20+ in a Barco ICMP server, using the "PAA20p_Alchemy_V01.xml" file available in the FTP: ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+ to create the PAA20+ device, cue group and cue library in the server. Using this method you can use the PAA20+ **outputs** with the Barco Alchemy ICMP server.

To do so you must follow these steps:

1. Download the "PAA20p_Alchemy_V01.xml" file from the ftp site.
2. Connect with the projector devices using the Barco Communicator software.
3. Log in as "Service Technician".
4. In "Media server -> Automation" menu click on the "Import" button.
5. Using the pop-up explorer, select the "PAA20p_Alchemy_V01.xml" file as you can see in the **Figure 8.4.3A**.

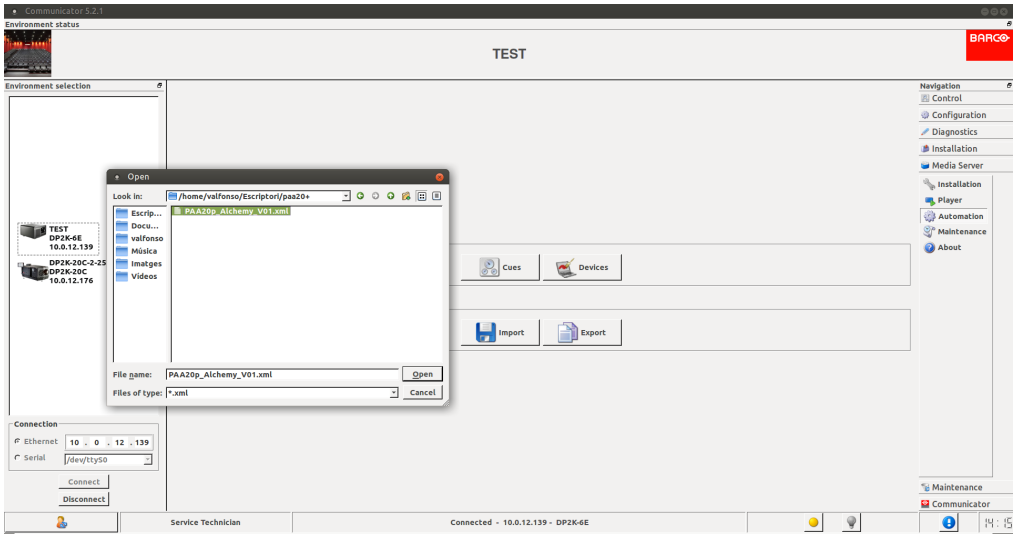


Figure 8.4.3A

6. The new cues, groups and devices, described in the xml file will appear in a pop-up window as you can see in **Figure 8.4.3B**.

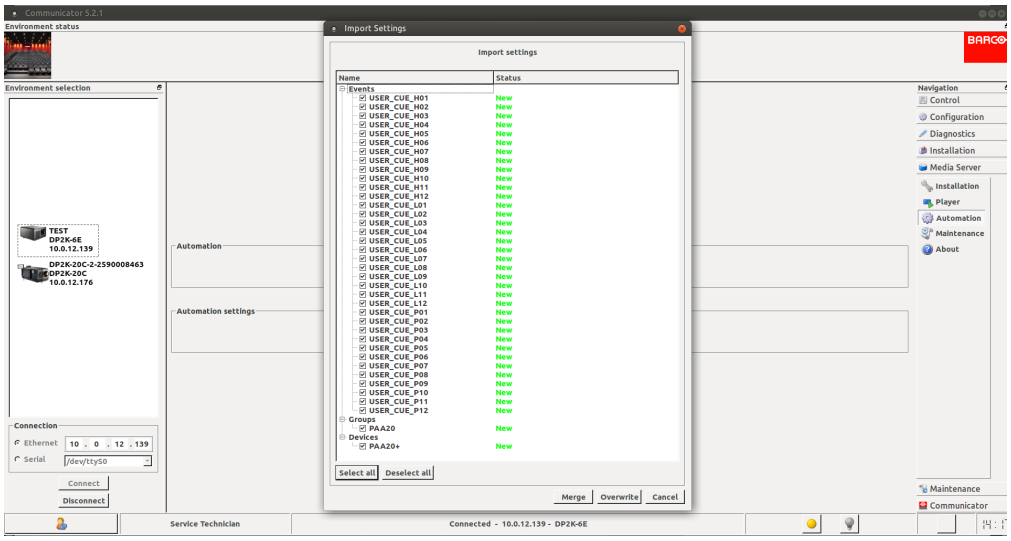


Figure 8.4.3B

7. Click on the "Merge" button of the pop-up window to add these cues, groups and devices to the existing automation file. A confirmation pop-up window will appear, click on the "OK" button. **Figure 8.4.3C**.

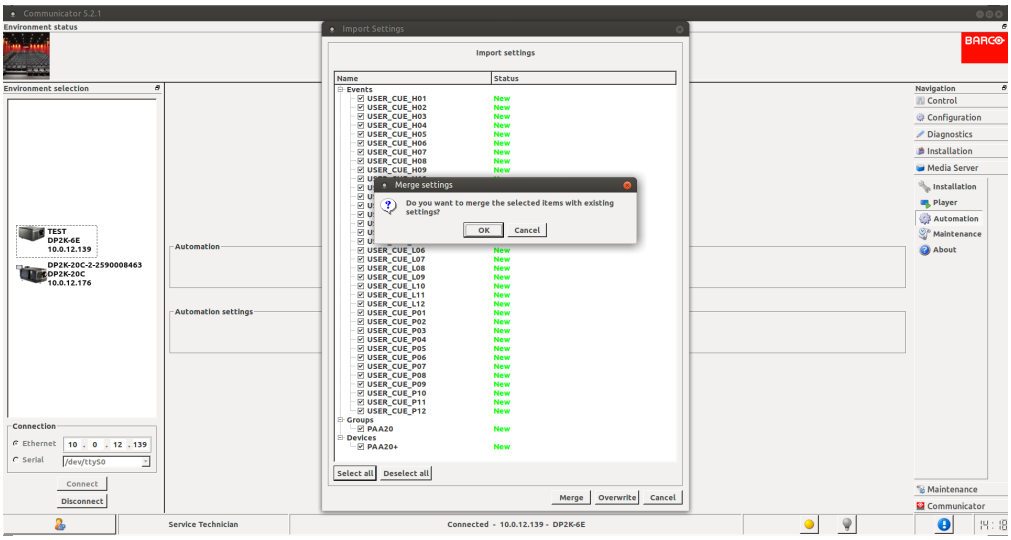


Figure 8.4.3C

8. Once you have all the cues saved, it is possible to replace the standard cue names imported from the .xml file for your own names and add any cue to your shows or trigger it manually, as a standard output cue. **Figure 8.4.3D**

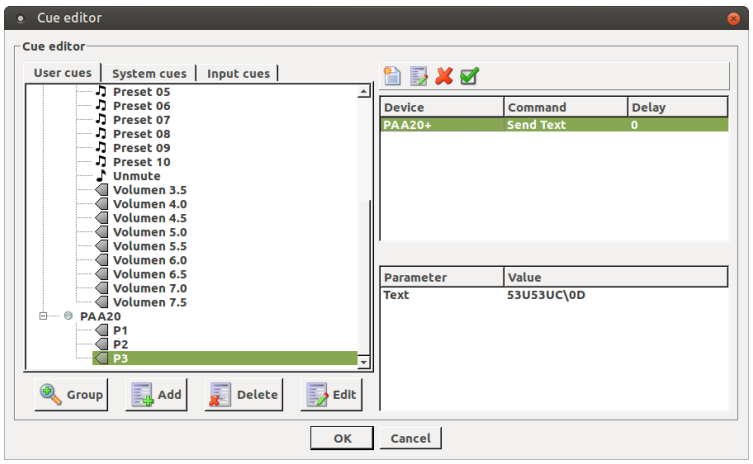


Figure 8.4.3D

8.4.4 Setting up the PAA20+inputs for Barco Alchemy ICMP servers.

IMPORTANT: This chapter only applies for PAA20+ devices with firmware version 4.3.3 or higher. If you want to use this functionality and your device has a lower version, please upgrade it.

Barco Alchemy (ICMP) server has a set of ASCII control messages we can use to control certain playback or automation functions. These messages and their description can be found on the **APPENDIX I: COMMANDS FOR BARCO ALCHEMY (ICMP) remote player management** of this document.

Using the "Automation Input Configuration" menu it is possible to send these commands to the Alchemy from the PAA20+ every time we have a Input activation (via front panel button, rear input connector or web interface).

Figure 8.4.4A shows the way to set these messages and TCP/IP options:

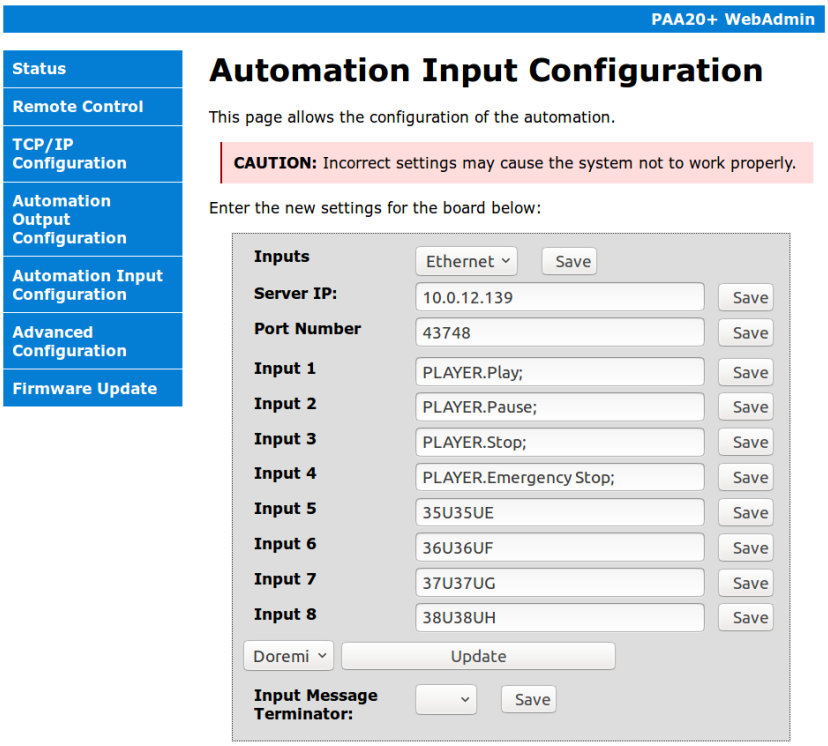


Figure 8.4.4A

Set the different fields in this way:

- Inputs: Etheret
- Server IP: Write the control network IP for the Barco projector. For this example 10.0.12.139.
- Port Number: 43748. It's mandatory tu use this port for the Alchemy.
- Input x: Write the ASCII command you want to send to the Alchemy server every time the associated input becomes active. It's mandatory that the messages matches with the ones from the **Apendix I** table.
- Input Message Terminator: It's possible to choose any of the four message terminators, but is recommended to use the "blank" one.

In the **Figure 8.4.4A** example, every time become activated the:

- Input 1: The PAA20+ will send a message to the Alchemy to start the playing of the player loaded content.
- Input 2: The PAA20+ will send a message to the Alchemy to pause the current playback.
- Input 3: The PAA20+ will send a message to the Alchemy to stop the current playback.
- Input 4: The PAA20+ will send a message to the Alchemy to activate the Emergency State with it's related actions.

Emergency Stop special case:

The Emergency Stop action definition is this: "Sets an error, forces the manual mode, stops the player and triggers automation events associated with Emergeny Stop".

This Emergency Stop could be used when you have a Fire or Emergency trigger in the theatre. It's a good practise to follow these steps:

- Connect the Fire or Emergency line from the Alarm system to one of the Inputs of the PAA20+, in the **Figure 8.4.4A** example we have used the "Input 4".
- Set the Input, Server IP, Port Number and Input Message terminator as explained. Click on it's "Save" button every time you change the seeting.

- Write the message "PLAYER.Emergency Stop;" in the text input field of the Input you have connected to the Alarm system and click "Save" button.
- Use the Barco Communicator software to connect to the Barco projector with the Alchemy server we want to send the control messages.
- Log in as Service Technician.
- Go to the "Media server -> Automation -> Cues" menu of the Barco Communicator.
- Once in the "Cue editor", go to "System Cues" tab and, if it's not yet created, click on the "Add" button to create the Emergency Stop cue.
- In the "Add Cues" pop-up window, choose the "On Emergency Stop" from the "Event" selection bar as you can see in the **Figure 8.4.4B** picture and click "OK".

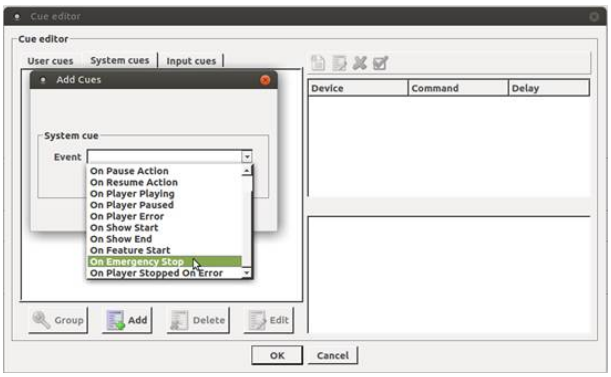
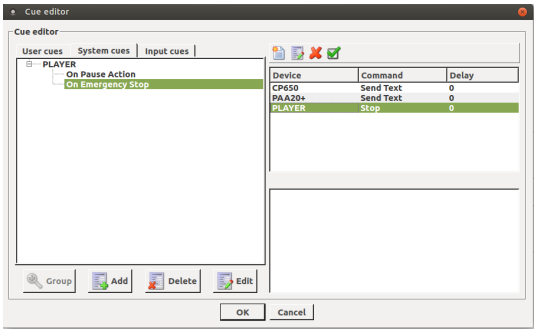


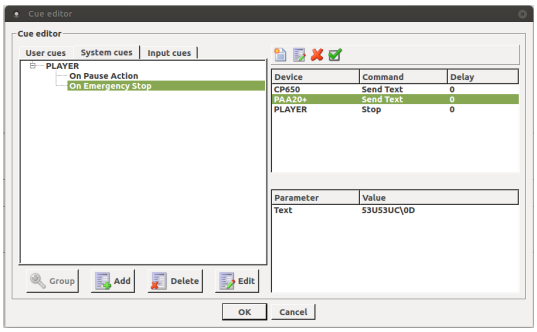
Figure 8.4.4B

- Then, every time the Alchemy receives the message < PLAYER.Emergency Stop; > on its 43748 port, this On Emergency Stop cue will be fired and every action you set on it will be also executed.

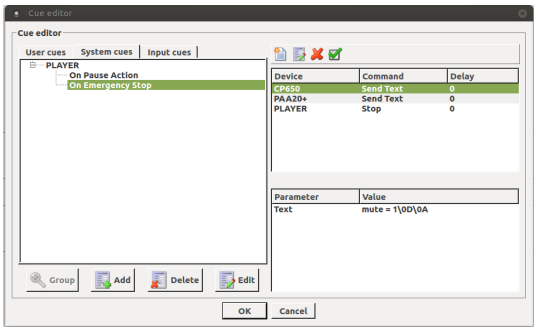
- For example we can create these actions:
  - Stop the playback:



  - Send the message < 53U53UC\0D > to the PAA20+:



  - Send a mute command to the CP650 audio processor:



- It is possible to add as many actions as you need.

8.5 GDC SERVER SET-UP.

This manual is based on three different GDC software versions:

- 7.7b –rc17 and older versions.
- 7.8.2 and higher for the SX-2001A and SX-2000A servers.
- 9.0 and higher for the SX-2000AR servers.

Before initiating a connection to the PAA20+, this must be first added as a new server device.

8.5.1 Adding the PAA20+ to the GDC server: Ethernet interface.

To add the PAA20+ as an Ethernet device in the GDC server follow these common steps to all software versions:

1. Turn on the server.
2. The server boots showing the SMS screen, **Figure 8.5.1A**.

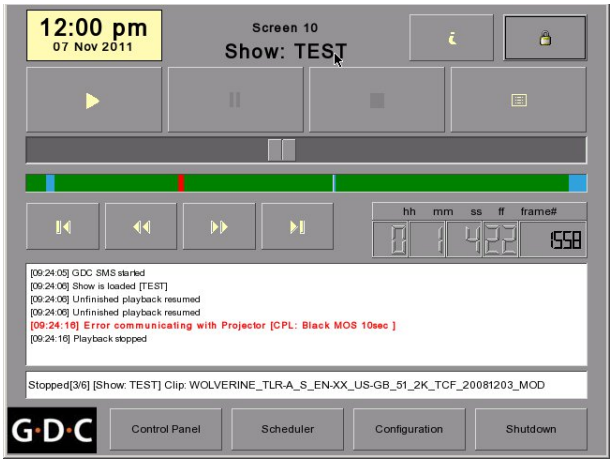


Figure 8.5.1A

3. Tap on the "Configuration" button and select "Maintenance Access", **Figure 8.5.1B** shows the login screen.

Figure 8.5.1B

4. The "Maintenance" screen is shown in the **Figure 8.5.1.C**.

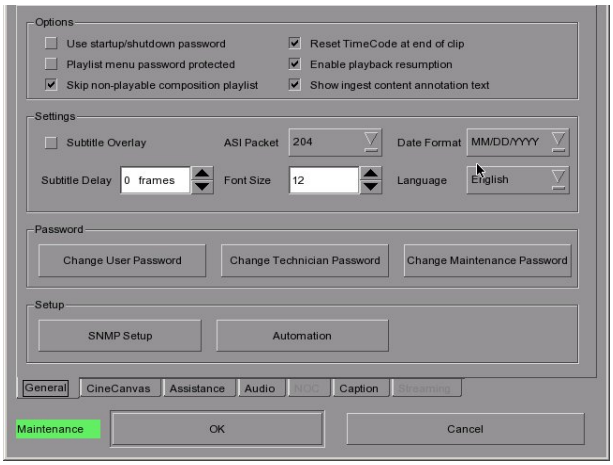


Figure 8.5.1C

5. Click on the "Automation" button to go to the Automation screen, **Figure 8.3.1D**.

Figure 8.5.1D

6. Select "Devices" tab to access the "Devices" screen, **Figure 8.5.1E**.

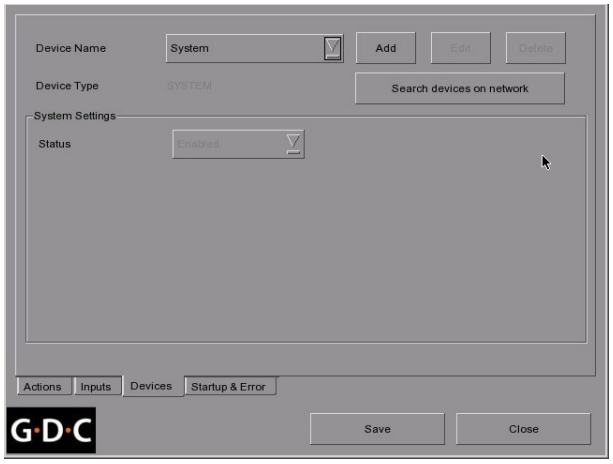


Figure 8.5.1E

7. Click on the "Add" button to configure the PAA20+. Write down PAA20+ in the "Name" field and select and select "NETWORKSOCKET" on the "Type" selection tab. Save setting pressing the OK button. **Figure 8.5.1F**.

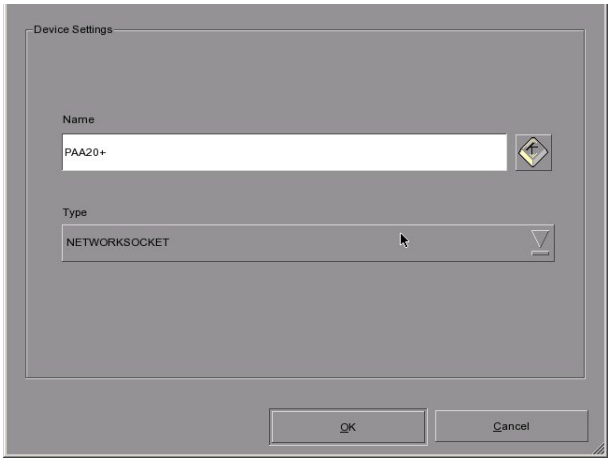


Figure 8.5.1F

8. Once the PAA20+ is added, you need to configure the network and the cues in the "Devices" screen. To configure the network you need to fill in these fields:
    - **IP address**: The IP of the PAA20+, configured in WebAdmin interface. The PAA20+ factory default is 10.0.0.180. The PAA20+ must be in the server's sub-network.
    - **Port**: The TCP/IP port used by the PAA20+ to listen the server messages. It can be configured on the PAA20+ using the WebAdmin interface. The PAA20+ factory default is port 10001.
    - **Local Port**: The server TCP/IP port used to listen to PAA20+ messages. It can be configured in the PAA20+ using the WebAdmin interface. By default is port 13200.
    - **Status**: Selection tab used to Enable or Disable the communication with the configured device.
    - **Transport**: Must be set to TCP.

- **Linefeed Type**: Sets the message termination character. Selection tab only available in GDC software versions higher than 7.8.0, for older versions the message termination character is set to **LF** by default. Options:
    - **CR**: Carriage Return, Hex 0D (\r).
    - **LF**: Line Feed, Hex 0A (\n).
    - **CRLF**: Carriage Return + Line Feed (Intro, \r\n).

If you have a GDC software version lower than 7.8.0, you must set the "Output Message Terminator" to \n on the PAA20+ WebAdmin to ensure the PAA20+ message reception

Figure 8.5.1G shows the device network settings to connect to a factory default PAA20+ for a 7.7b –rc17 and older versions for the GDC software:

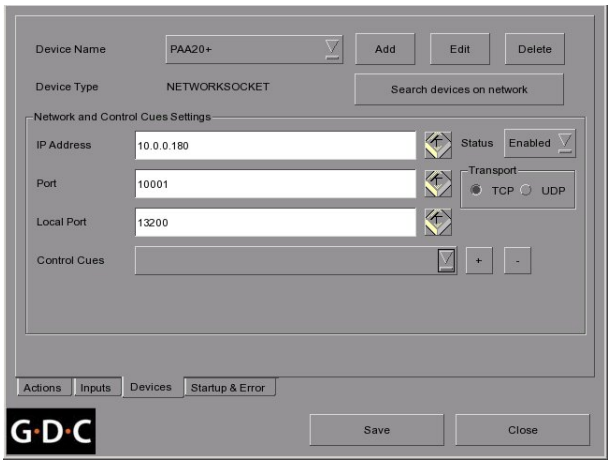


Figure 8.5.1G

Figure 8.5.1H shows the device network settings to connect a factory default PAA20+ for a 7.8.0 and higher GDC software versions:

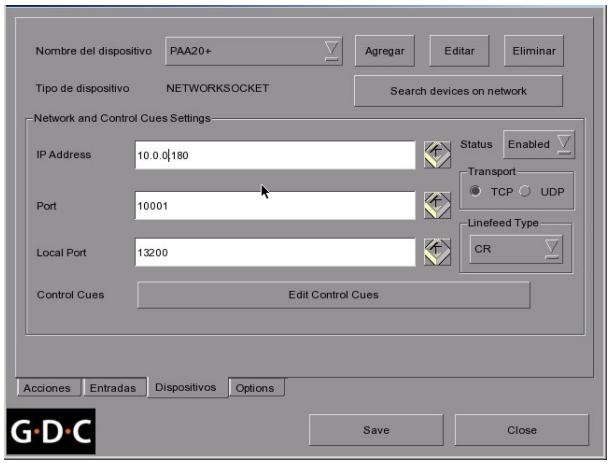


Figure 8.5.1H

9. Set the PAA20+ cues:
    - To set the cues for the PAA20+ using a GDC software version older than 7.8.0, click on the "+" button on the right side of the "Control Cues" selection tab and write the cue string in the "Enter new string" form (**Figure 8.5.1I**), then press the "Enter" button. Repeat this step for every cue you want to add.

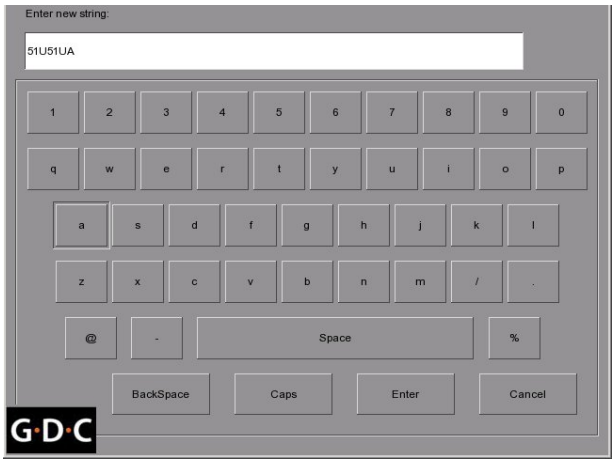


Figure 8.5.1I

- These older software versions, allows you to see the cues created for the PAA20+ expanding the "Control Cues" selection tab, as shown in **Figure 8.5.1J**.

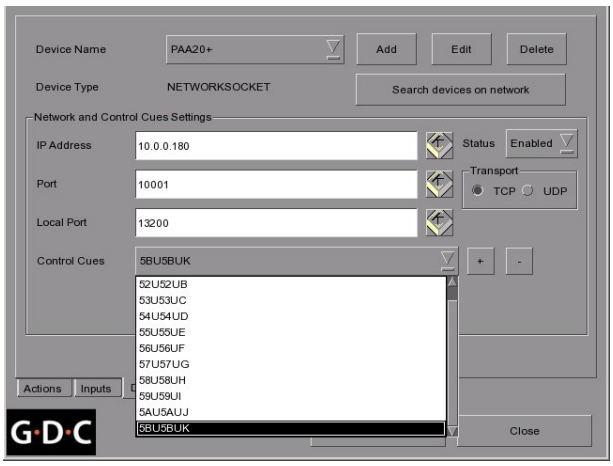


Figure 8.5.1J

- To remove any created cue, select it using this selection tab an press the "-" button located on the right side of this selection tab.
- To set the cues for the PAA20+ using a GDC software 7.8.0 and higher, click on the "edit control cues" button and write the cue name and value in the showing "Edit Control Cues" screen, **Figure 8.5.1K**.

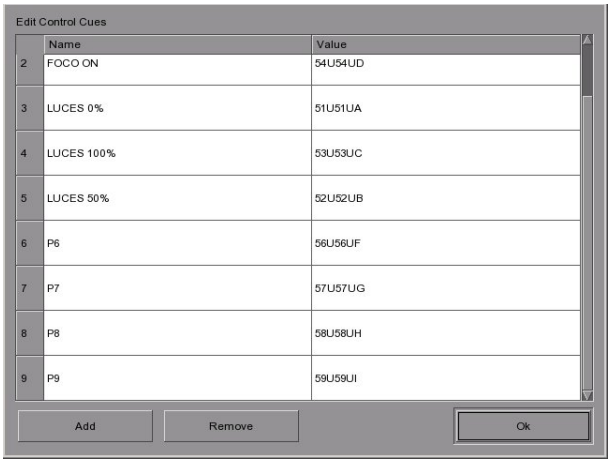


Figure 8.5.1K

- Chick on the "Add" button to add new cues and on the "Remove" button to remove existing ones. Once the cues are created, click on the "Ok" button to return to the previous window.
- **IMPORTANT**: When setting the input cues, the "Name" field must have the same character string as the "Value" field.
- Valid message strings are listed in **APPENDIX E: COMMANDS FOR GDC SERVERS**.

10. Click on the "Save" button to store all the settings for the "Devices" screen.

11. Once the PAA20+ is added in the GDC server, it can be used to create actions or inputs in the server automation system, in the same way it could be done with other automation devices. You can see an example of a PAA20+ action in the **Figure 8.5.1L**.

Figure 8.5.1L

8.6 QUBE SERVER SET-UP.

This manual is based on the 2.5.5.7 Qube software version, other versions may differ.

Up to this version the PAA20+ is only compatible with the Qube XP-D servers using serial interface connection.

To perform Qube servers automation configuration it is mandatory to modify some Qube system files, you must modify this files carefully to prevent system failure. It is recommended to backup these files before modification.

You need "Support" privileges to modify the automation and system files. If you need the Support user password contact your Qube dealer.

8.6.1 Adding the PAA20+ to the Qube server: serial interface.

To add the PAA20+ as a serial device in the GDC server software follow these steps:

1. Turn on the server.
2. Log out and log in as Support.
3. Open the folder C:\Program Files\Qube Cinema\XP. **Figure 8.6.1A**.

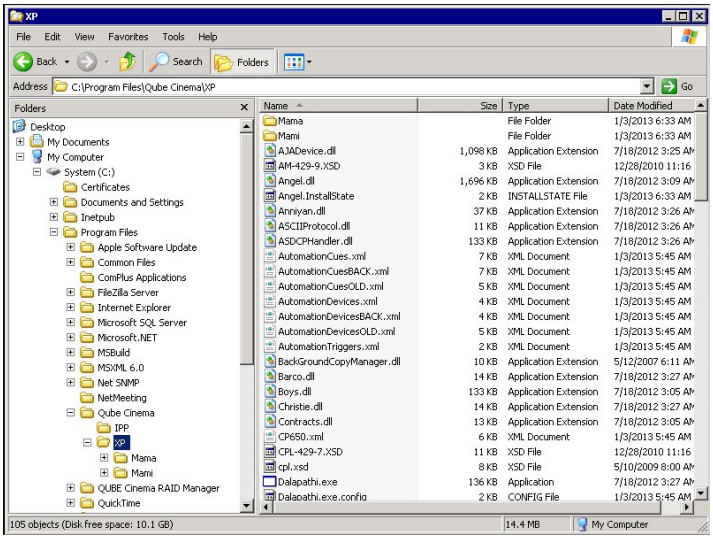


Figure 8.6.1A

4. Backup the following files:
    - AutomationCues.xml
    - AutomationDevices.xml
5. Download the PAASERIES.xml available in the FTP: ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+, and copy it in the XP folder.
6. Edit the **AutomationDevices.xml**, this file contains the definitions and settings for all the devices the Qube server can handle. To add the PAA20+ insert this text as a device tag:

```
<Device name="PAASERIES" class="Qube.Automation.StreamDevice.Serial" enable="true">
    <Configuration>
        <Key name="File" value="PAASERIES.xml" />
        <Key name="Settings" value="COM1,9600,n,8,1" />
    </Configuration>
</Device>
```

7. Edit the **AutomationCues.xml**, this file contains the definitions of the output automation cues used by the Qube Software to control external devices and internal actions. Adding new cues for the PAA20+ could be done inserting new cue tags suche as the next example:

```
<Cue name="NameOfTheCue">
    <Actions>
        <InvokeMethod name="Name" device="PAASERIES"/>
    </Actions>
</Cue>
```

8. On the previous example xml code, you have to change the **"NameOfTheCue"** field for the character string that will be shown on the Qube Graphical User Interface (GUI) as the name of the automation cue. You have to change the **"Name"** attribute on the third line for the name associated to the output number and type according to the table in **APPENDIX F: COMMANDS FOR QUBE SERVERS**.

9. Repeat steps 7 and 8 for every cue you want to add. Once all the cues are added, save the XML file.
10. Edit the **Dalapathi.exe.config** file found in the same folder and change the ASCIIProtocolSerial baudrate value from "COM1,115200,n,8,1" to "COM1,9600,n,8,1":
    - Original line:

```
<add key="ASCIIProtocolSerial" value="COM1,115200,n,8,1"/> <!--Portname,baudrate,parity,databits,stopbits-->
```

    - Modified line:

```
<add key="ASCIIProtocolSerial" value="COM1,9600,n,8,1"/> <!--Portname,baudrate,parity,databits,stopbits-->
```

11. After saving the modified files, logout from Windows session and login again. Check on "logs" menu "qube" tab on Qube GUI the PAASERIES device should have been added successfully.
12. After performing these steps, automation cues can be selected on the Qube GUI.

On **APPENDIX G: QUBE AUTOMATION FILES EXAMPLES** you can see an example of the xml automation files extracted from a Qube XP-D server.

8.6.2 Configure the Qube inputs on the PAA20+.

It is possible to send some commands to a Qube XP-D server to control the loaded show: Play, Pause and Stop. Using the WebAdmin interface of the PAA20+ it is possible to configure three inputs to activate each trigger of the Qube server. The **Figure 8.6.2A** shows the ”Automation Input Configuration” screen:

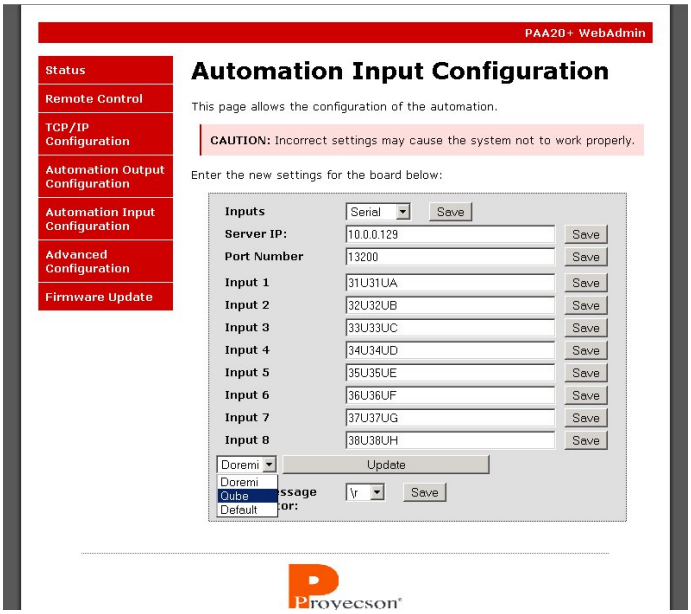


Figure 8.6.2A

Select Qube from the pull down menu. Click then the Update Button. Items 1 through 3 will be automatically filled in with the default values. Click on each Save button for every input you want to configure. You will need to update this form for every default input you want to set.

Figure 8.6.2B shows the inputs 1, 2 and 3 configured for the PLAY, PAUSE and STOP functions of the Qube server:

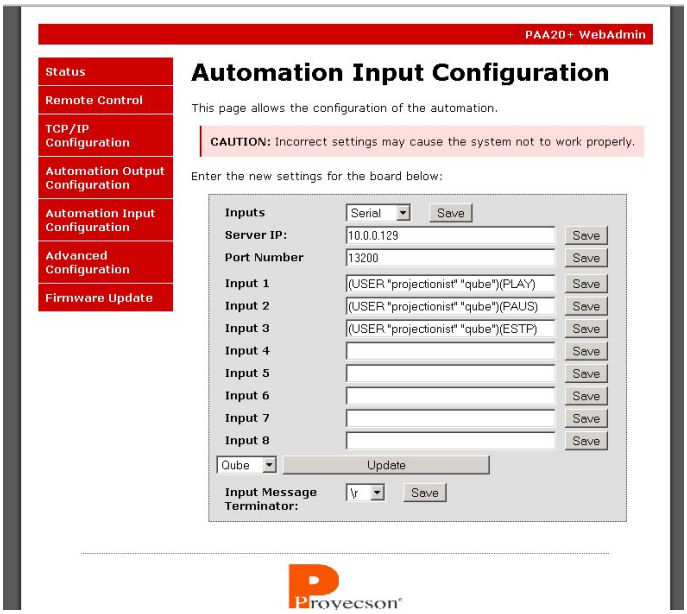


Figure 8.6.2B

8.7 DATASAT SERVER SET-UP.

THE PAA20+ IS COMPATIBLE WITH THE DATASAT DC20 SERVER USING SERIAL INTERFACE, BUT THE SERVER SET-UP WILL BE AVAILABLE IN FUTURE VERSIONS OF THIS MANUAL.

IF YOU NEED INFORMATION ABOUT HOW TO SET-UP A DATASAT SERVER, PLEASE CONTACT PROYECSON AT THE ADDRESS: proyecson@proyecson.com.

8.8 CHRISTIE IMB S2 SERVER SET-UP.

For using the Proyecson PAA20+ automation adapter with the Christie IMB S2 server it is not necessary to configure it as an automation device.

It could by done using the "Serial String" type of the "IMB Automaiton" device.

8.8.1 Configure the Christie IMB S2 automation for the PAA20+.

- Login with manager or service privileges on the projector GUI.
- Open the "*Menu -> Christie IMB → System"* window. **Figure 8.8.1A**.

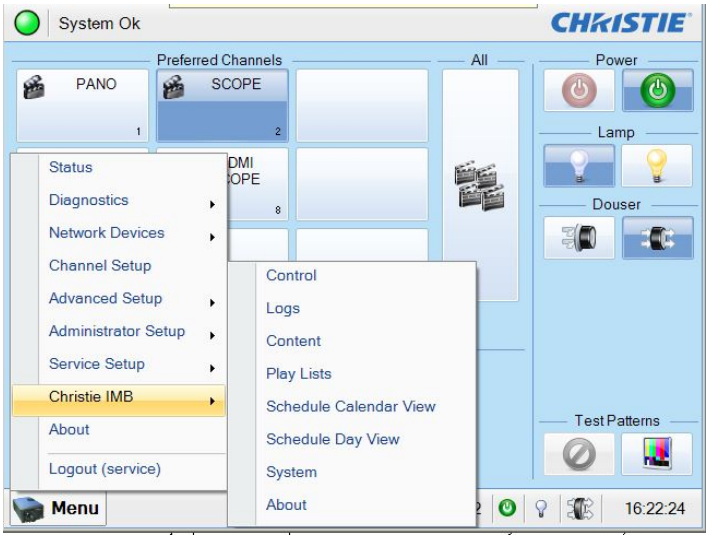


Figure 8.8.1A

- On the System window, select the "*Automation*" menu.
- Once in the automation menu, select the "*Macros*" tab. **Figure 8.8.1B**.

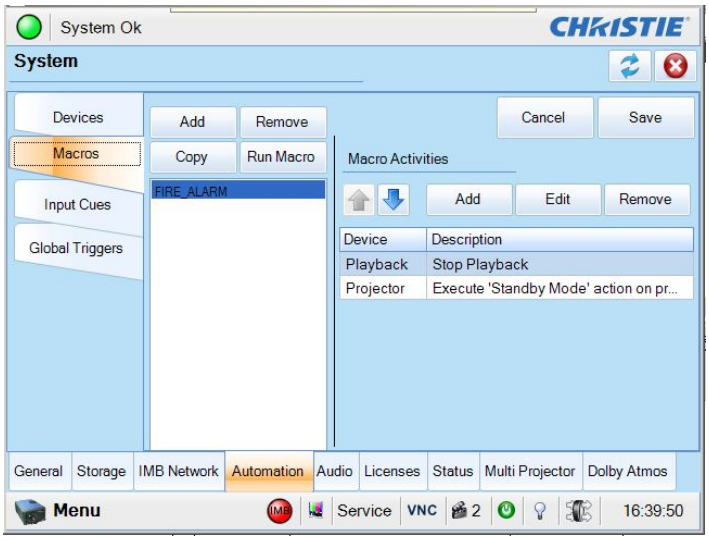


Figure 8.8.1B

- To create a Macro click on the "*Add*" button of the "*Macros*" tab.
- A virtual keyboard pop-up window called "*Enter Macro Name*" will appear, write then name of your new macro and click on the "*Enter*" button. **Figure 8.8.1C**.

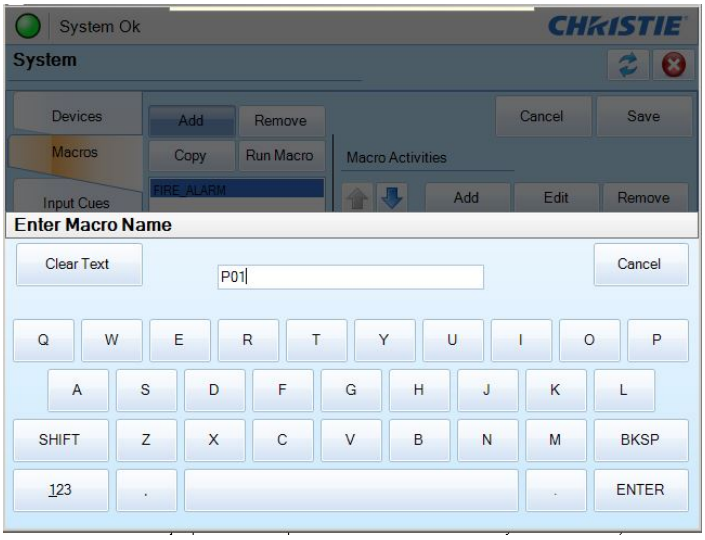


Figure 8.8.1C

- Once the macro is created, click on the "*Add*" button of the "*Macro Activities*" menu to associate an action to the new macro. **Figure 8.8.1D**.

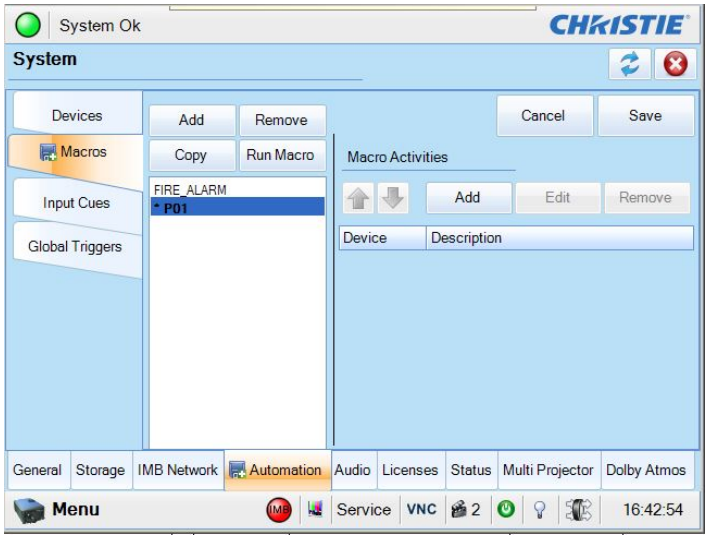


Figure 8.8.1D

- Fill up the appearing "Activity Properties" pop-up window:
  - *Automation Device*: IMB Automation.
  - *Activity type*: Serial String Output.
  - *Serial String*: ASCII string to send to the PAA20+. It is possible to use the factory string described on the **APPENDIX H: COMMANDS FOR BARCO ALCHEMY (ICMP) AND CHRISTIE IMB S2**. or to configure your own string following the procedure described in this manual.
  - *IP Address*: TCP/IP IP address of the PAA20+ to send the serial string commands. Factory default is 10.0.0.180/24 but it is possible to change it using the PAA20+ web GUI.
  - *Port*: TCP/IP port to sent the serial string commands. Factory default is 10001 but it is possible to change it using the PAA20+ web GUI.
- After that click on the "Accept" button to confirm. **Figure 8.8.1E**.

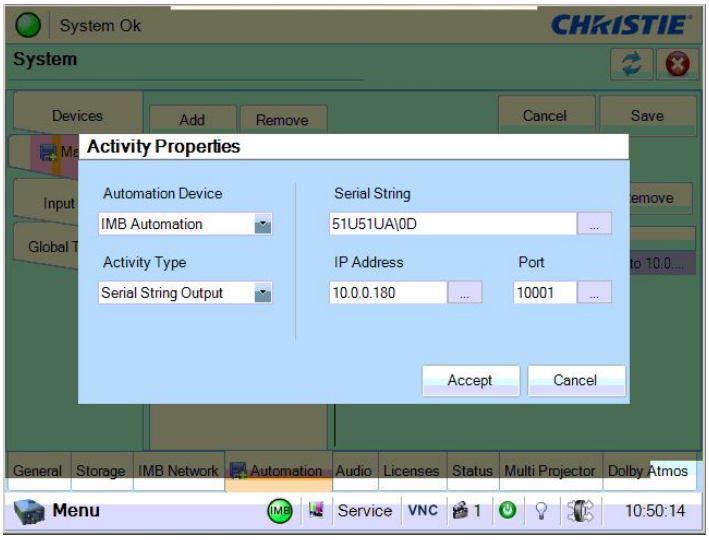


Figure 8.8.1E

- Repeat the previous two steps for every Action you want to include in every macro.
- Click on the "*Save*" button of the "*System*" window to save the Marcros configuration. **Figure 8.8.1F**.

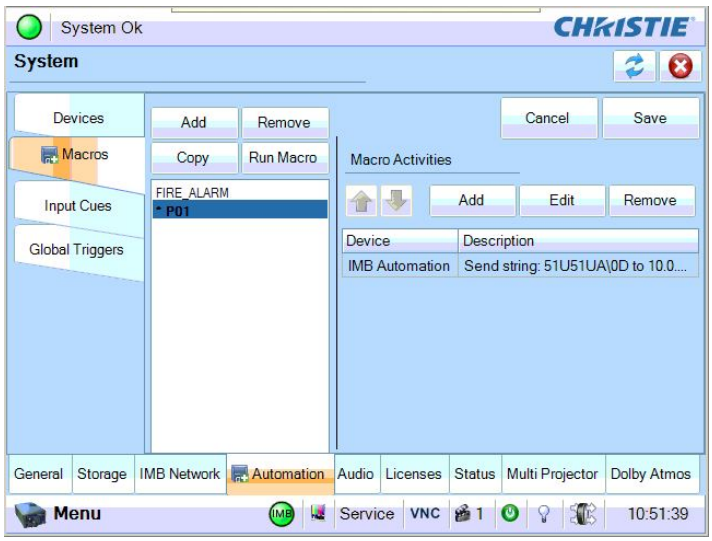


Figure 8.8.1F

9. OUTPUTS / INPUTS OF THE PAA20+

The contacts order in the connectors and the internal circuitry of the PAA20 + outputs as shown on the following schemes and pictures:

9.1. OUTPUT 1 CONNECTOR:

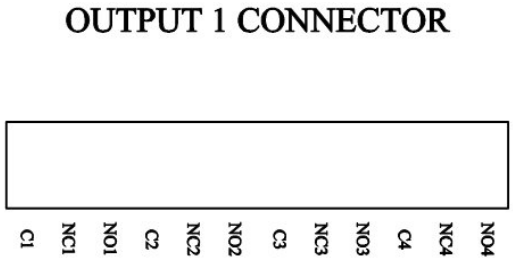


Figure 9.1A

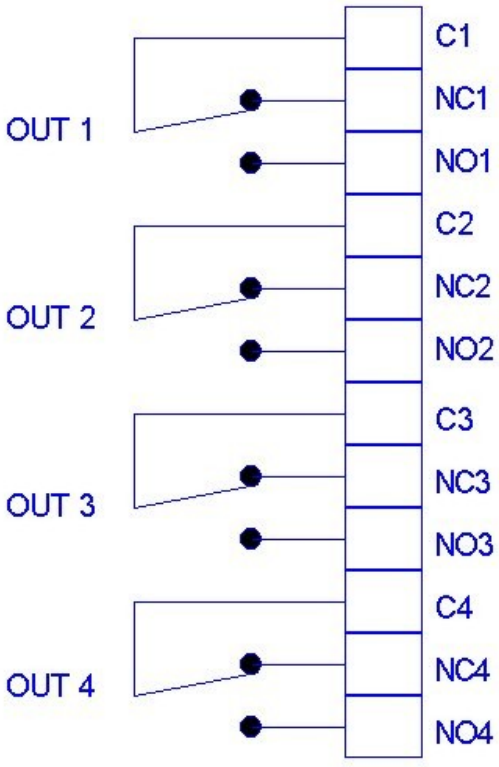


Figure 9.1B

9.2 OUTPUT 2 CONNECTOR:

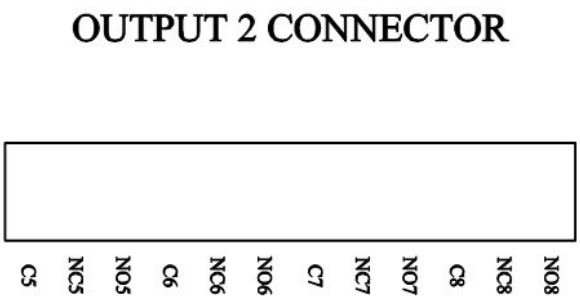
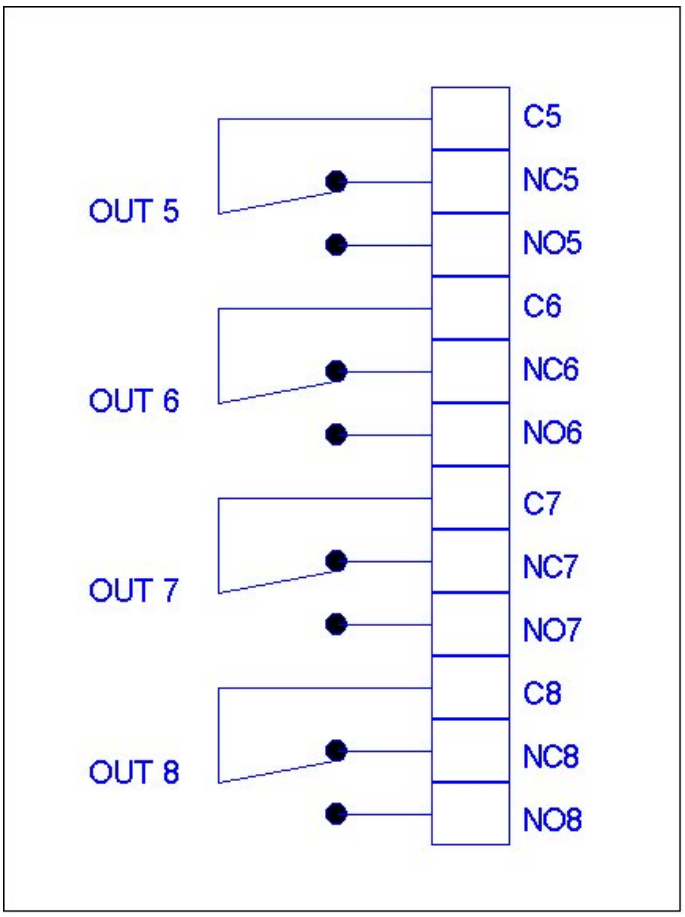


Figure 9.2A



Picture 9.2B

9.3 OUTPUT 3 CONNECTOR:

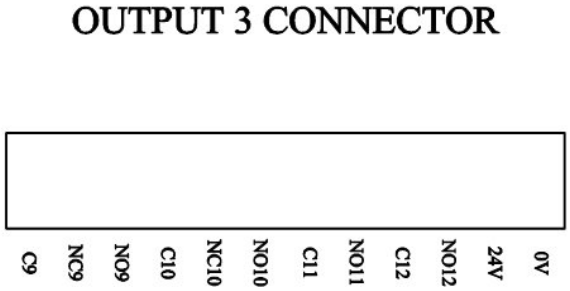


Figure 9.3A

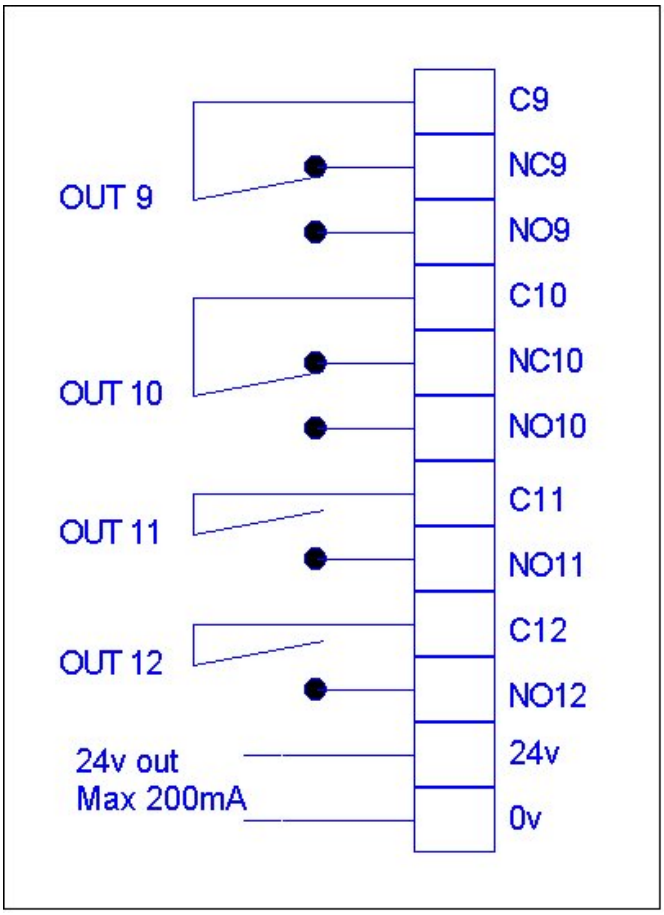


Figure 9.3B

9.4 INPUT CONNECTOR:

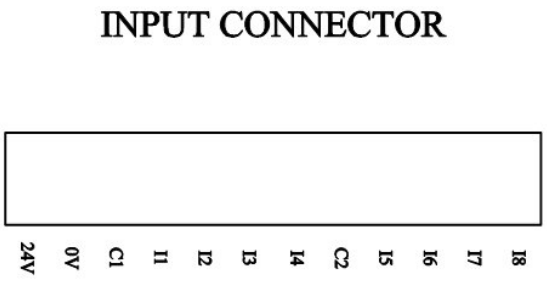
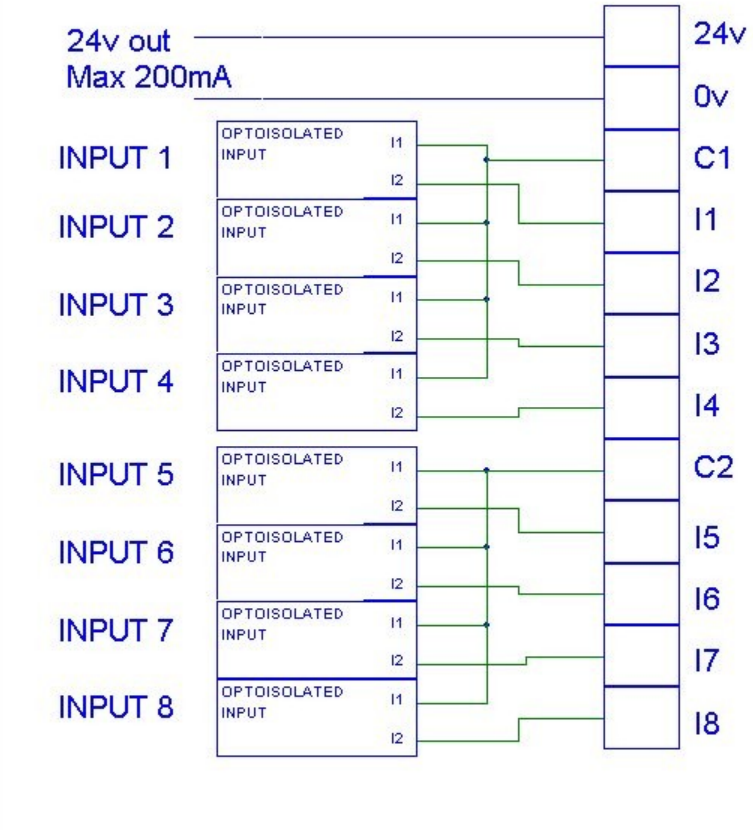


Figure 9.4A



Picture 9.4B

9.5 EXAMPLES OF INPUT CONNECTION:

Digital inputs are divided in two groups; each group shares a common independent cable. The first group includes inputs I1 through I4 and in the second one inputs from I5 to I8.

9.5.1 INPUT WITH A NEGATIVE COMMON:

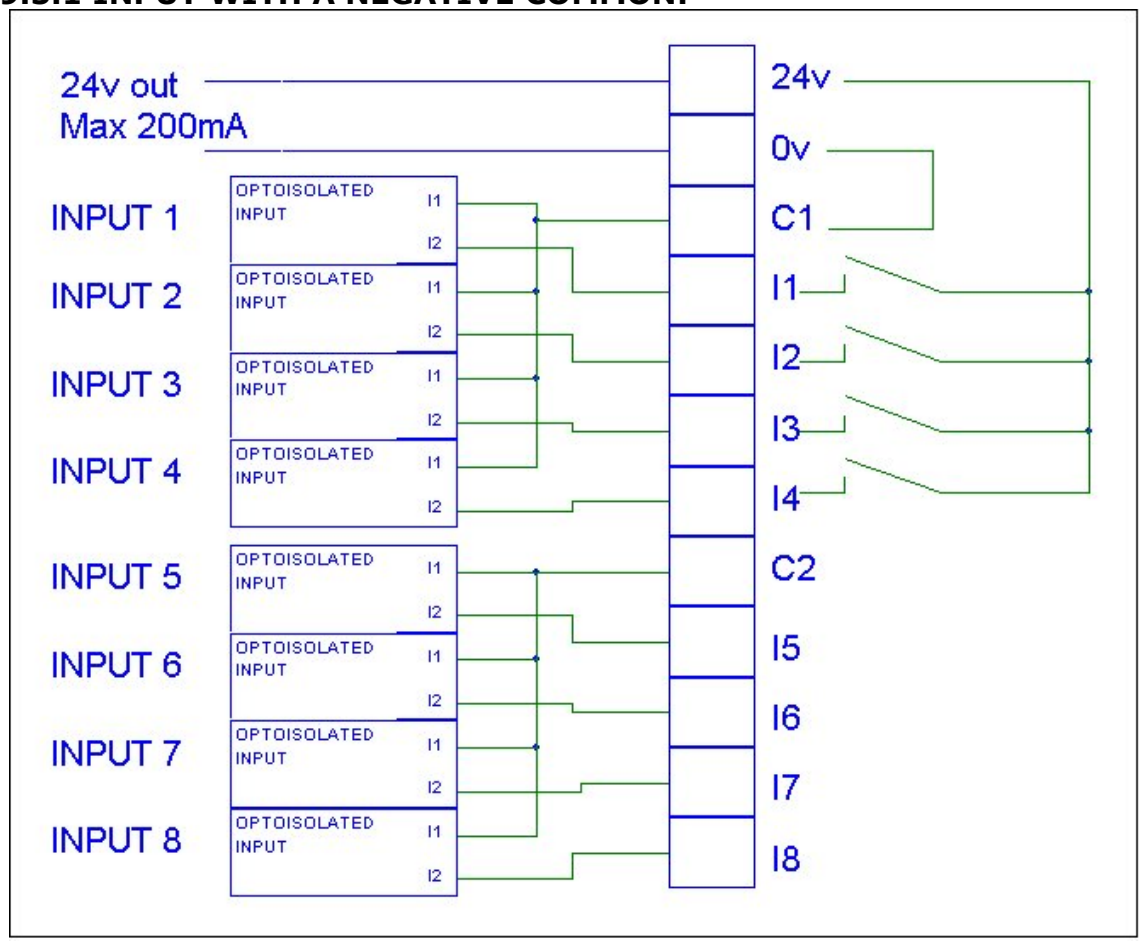
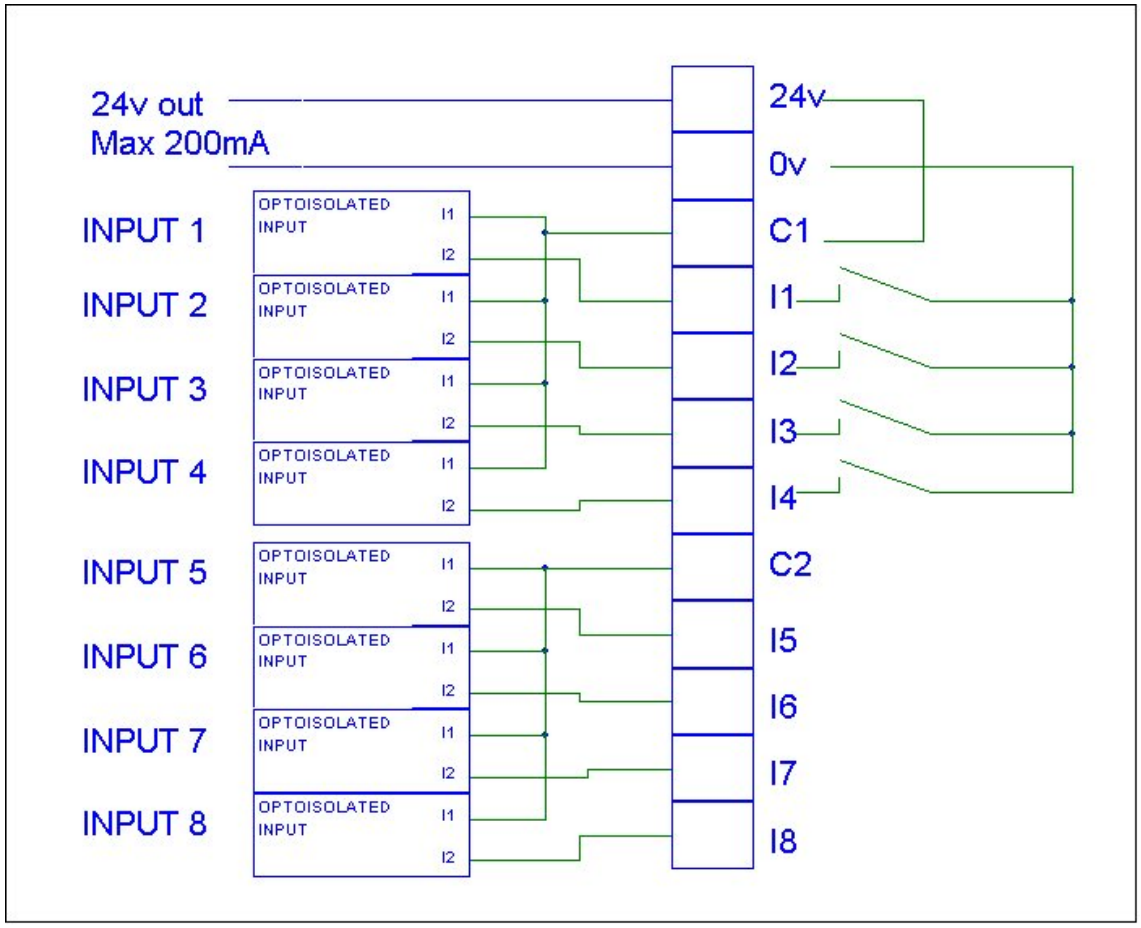


Figure 9.5.1A

9.5.2 INPUT WITH A POSITIVE COMMON:



Picture 9.5.2A

9.6 SERIAL PROT PIN-OUT.

Serial port connector is a DB9 Female.

Voltage levels in the TX and RX pins are RS232 compliant.

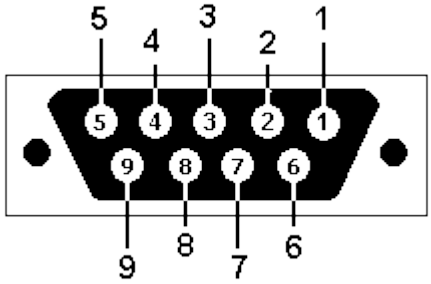


Figure 9.6A.

PIN	FUNCTION
1	N/C
2	TX
3	RX
4	N/C
5	GND
6	N/C
7	N/C
8	N/C
9	N/C

Table 9.6A

10 FIRMWARE VERSIONS

- **PAF O.1**:
  - Fully compatible with Dolby servers using serial port.
  - Fully compatible with the Doremi servers automation using serial port and Ethernet connection.
  - Fully compatible with the Qube XP-D and Datasat DC-20 servers automation using serial port. *
  - Fully compatible with GDC servers automation using Ethernet connection.

- **PAF 1.0**:
  - Individual time setting for all the relay pulse outputs.
  - Different message terminators for inputs and outputs.
  - Remote update function.
  - Tester and Programmer software.

- **PAF 1.1**:
  - Serial number and firmware version visible in the WebAdmin.
  - **First Production Version Release**.

- **PAF 1.1b**:
  - It is possible to configure output pulses up to 65 s.
  - **Known issue**: Backup/Upload doesn't work.

- **PAF 4.2.x**:
  - GUI redesigned.

- It is possible to select the rising/falling edge detection for the inputs.
- New button to "Reboot the device" in the "Firmware Upgrade" menu.
- It is possible to check the input/output status via ASCII commands.
- **Known issue**: Backup/Upload doesn't work.

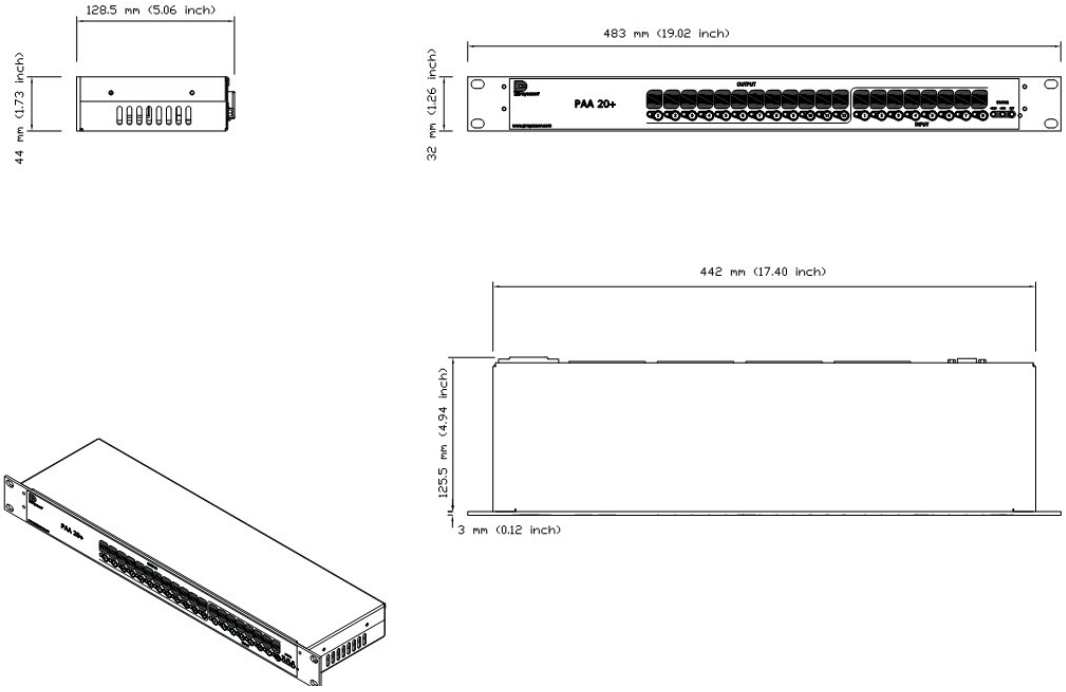
- **PAF 4.3.x**:
  - Ethernet connection improved to communicate with Barco ICMP
  - Fix a bug in the Backup/Upload function.

11. ELECTRICAL REQUIREMENTS

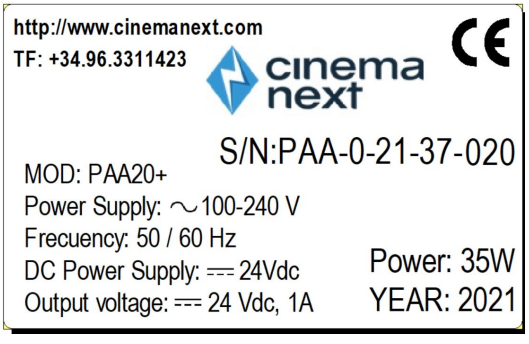
Power Requeriments
• 100-240 VAC, 50-60 Hz • Alternative 24VDC, 35 W • 35 W

12. TECHNICAL DRAWS, LABELS, DIMENSIONS AND WEIGHT

Dimensions and Weight
Dimensions: 483 x 128.5 x 44 mm.
Weight: 2 kg.



Example of device identification and power requirements label:



APPENDIX A: SERIAL COMMANDS FOR DOLBY

Category	Type	Name	Command	Action	I/O hard
Input	Other	Play	31U31UA	Start Show	Input 1
Input	Other	Pause	32U32UB	Pause Show	Input 2
Input	Other	Stop	33U33UC	Stop Show	Input 3
Output	Lights	P01	51U51UA	Pulse	Output 1
Output	Lights	P02	52U52UB	Pulse	Output 2
Output	Lights	P03	53U53UC	Pulse	Output 3
Output	Lights	P04	54U54UD	Pulse	Output 4
Output	Other	P05	55U55UE	Pulse	Output 5
Output	Other	P06	56U56UF	Pulse	Output 6
Output	Other	P07	57U57UG	Pulse	Output 7
Output	Other	P08	58U58UH	Pulse	Output 8
Output	Other	P09	59U59UI	Pulse	Output 9
Output	Other	P10	5AU5AUJ	Pulse	Output 10
Output	Other	P11	5BU5BUK	Pulse	Output 11
Output	Other	P12	5CU5CUL	Pulse	Output 12
Output	Lights	H01	61U61UM	On	Output 1
Output	Lights	H02	62U62UN	On	Output 2
Output	Lights	H03	63U63UO	On	Output 3
Output	Lights	H04	64U64UP	On	Output 4
Output	Other	H05	65U65UQ	On	Output 5
Output	Other	H06	66U66UR	On	Output 6
Output	Other	H07	67U67US	On	Output 7
Output	Other	H08	68U68UT	On	Output 8
Output	Other	H09	69U69UU	On	Output 9
Output	Other	H10	6AU6AUV	On	Output 10
Output	Other	H11	6BU6BUW	On	Output 11

Output	Other	H12	6CU6CUX	On	Output 12
Output	Lights	L01	71U71UY	Off	Output 1
Output	Lights	L02	72U72UZ	Off	Output 2
Output	Lights	L03	73U73U0	Off	Output 3
Output	Lights	L04	74U74U1	Off	Output 4
Output	Other	L05	75U75U2	Off	Output 5
Output	Other	L06	76U76U3	Off	Output 6
Output	Other	L07	77U77U4	Off	Output 7
Output	Other	L08	78U78U5	Off	Output 8
Output	Other	L09	79U79U6	Off	Output 9
Output	Other	L10	7AU7AU7	Off	Output 10
Output	Other	L11	7BU7BU8	Off	Output 11
Output	Other	L12	7CU7CU9	Off	Output 12

APPENDIX B: COMMANDS FOR DOREMI AND IMS SERVERS.

Category	Name	Command	Action	I/O hard
Output	P01	51U51UA\r	Pulse	Output 1
Output	P02	52U52UB\r	Pulse	Output 2
Output	P03	53U53UC\r	Pulse	Output 3
Output	P04	54U54UD\r	Pulse	Output 4
Output	P05	55U55UE\r	Pulse	Output 5
Output	P06	56U56UF\r	Pulse	Output 6
Output	P07	57U57UG\r	Pulse	Output 7
Output	P08	58U58UH\r	Pulse	Output 8
Output	P09	59U59UI\r	Pulse	Output 9
Output	P10	5AU5AUJ\r	Pulse	Output 10
Output	P11	5BU5BUK\r	Pulse	Output 11
Output	P12	5CU5CUL\r	Pulse	Output 12
Output	H01	61U61UM\r	On	Output 1
Output	H02	62U62UN\r	On	Output 2
Output	H03	63U63UO\r	On	Output 3
Output	H04	64U64UP\r	On	Output 4
Output	H05	65U65UQ\r	On	Output 5
Output	H06	66U66UR\r	On	Output 6
Output	H07	67U67US\r	On	Output 7
Output	H08	68U68UT\r	On	Output 8
Output	H09	69U69UU\r	On	Output 9
Output	H10	6AU6AUV\r	On	Output 10
Output	H11	6BU6BUW\r	On	Output 11
Output	H12	6CU6CUX\r	On	Output 12
Output	L01	71U71UY\r	Off	Output 1
Output	L02	72U72UZ\r	Off	Output 2

Output	L03	73U73U0\r	Off	Output 3
Output	L04	74U74U1\r	Off	Output 4
Output	L05	75U75U2\r	Off	Output 5
Output	L06	76U76U3\r	Off	Output 6
Output	L07	77U77U4\r	Off	Output 7
Output	L08	78U78U5\r	Off	Output 8
Output	L09	79U79U6\r	Off	Output 9
Output	L10	7AU7AU7\r	Off	Output 10
Output	L11	7BU7BU8\r	Off	Output 11
Output	L12	7CU7CU9\r	Off	Output 12

APPENDIX C: TABLE FOR TCP/IP CHANGES ANNOTATION.

DATE	DHCP y/n	IP Address	Gateway	Subnet Mask	DNS

APPENDIX D: PAA20+ TESTER AND PROGRAMMER SOFTWARE.

The Tester and Programmer software for the PAA20+ is a utility to tests the input and output capabilities of the device and to update the firmware.

The software may be downloaded from this link:

ftp://manual:proyecson@ftp3.proyecson.com/manual/paa20+

AP D.1 HARDWARE REQUIREMENTS.

- PC or Laptop with Ethernet connection.
- Windows XP or higher.

AP D.2 INSTALLATION

The program is an executable that does not need installation. You only need to copy the PAA20TP.exe and TFTPClient.dll files inside a folder in your PC and execute then the former one. You can see these files inside a folder in the **Figure AP.DA**.

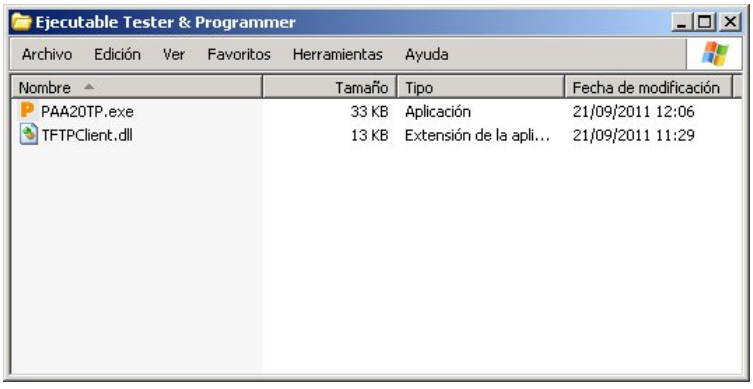


Figure AP.DA

AP D.3 USE.

The interface of the program is shown in the **Figure AP.DB**. It is divided in three parts: Programming, Detection and Test.

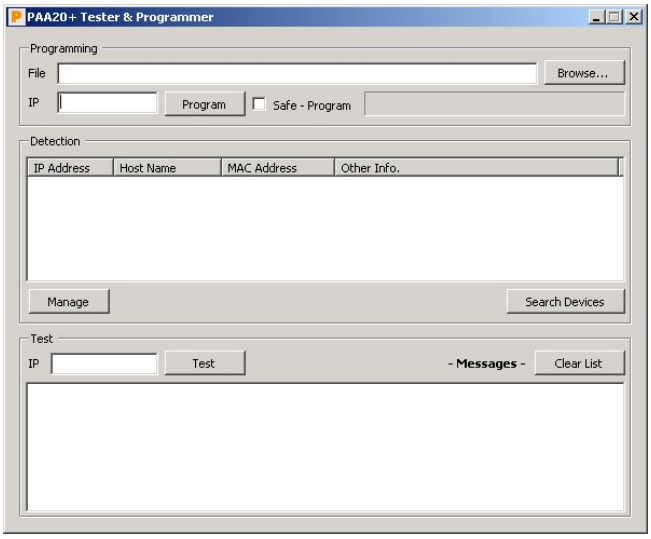


Figure AP.DB

AP D.3.1 DETECTION

The detection feature is designed to search for the PAA20+ in the same IP subnetwork you PC or Laptop is located.

To use this feature, you must have your computer IP address in the same subnet you have the PAA20+. Then press the "Search Devices" button and wait for the searching process. **Figure AP.DC** shows the program interface with a PAA20+ detected. The interface shows the IP address, the host name and the MAC address of the device.

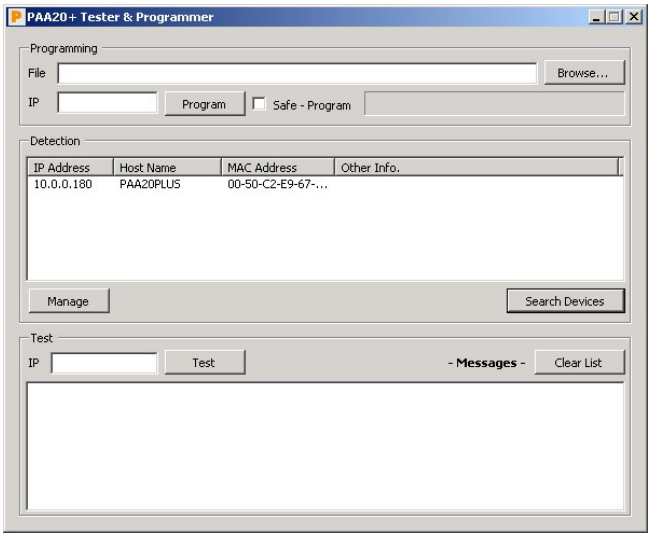


Figure AP.DC

If you select the PAA20+ in the detection list and press the "Manage" button, the WebAdmin page for this device will be opened in your default web browser.

If you double click on a PAA20+ detected, the IP fields of "Programming" and "Test" will be filled with this device IP. **Figure AP.DD** continues with the example started in previous step.

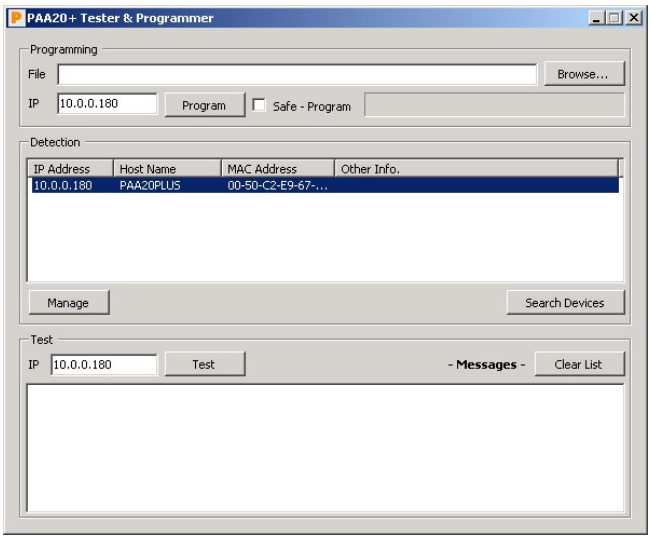


Figure AP.DD

AP D.3.2 TEST

The Test feature was first designed only for input/output test proposes during quality test in factory, but now is available for the end user to check the PAA20+ correct functioning.

To use the Test feature you must be in the same subnetwork of the PAA20+, once the device IP is in the IP field you can press the "Test" button to check the activation and deactivation of the outputs. When pressed, a sequence of ON/OFF messages are sent to the PAA20+ from output 1 to output 12.

Configure the output interface as Ethernet, Port Number as 10001 and Output Message Terminator as \r on the PAA20+ WebAdmin interface.

In addition, if the "Server IP" address on the "Automation Input Configuration" page of the PAA20+ WebAdmin matches with the IP address of your PC and the "Input Message Terminator" is set to "\r\n", you will be able to check the inputs of the PAA20+. Pressing each button of the PAA20+ inputs on the front side of the device, a message will be shown in the "Tester & Programmer software" as you can see in the **Figure AP.DE**.

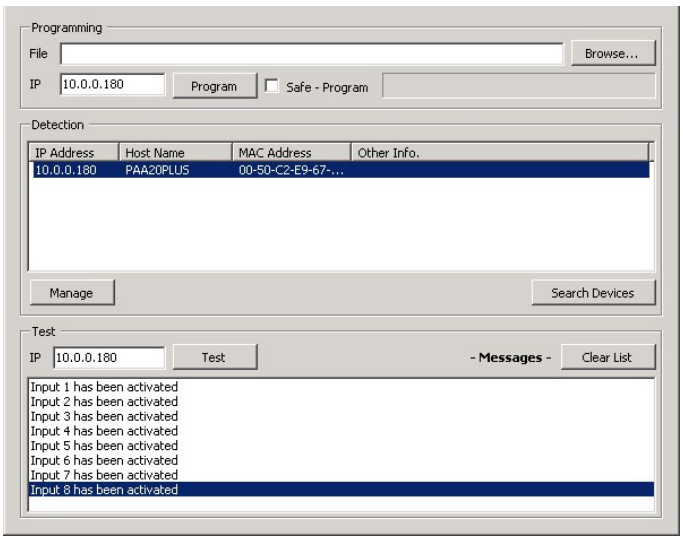


Figure AP.DE

AP D.3.3 PROGRAMMING

The programming feature is only for Proyecson's certified personal. If you are not trained by Proyecson do not use this feature.

AP D.3.3.1 ABSTRACT:

PAA20+ firmware is composed by three modules:

1. Bootloader: it manages the device boot and let the upgrade by Ethernet.
2. Main program: Once bootloader finishes, The PAA20+ program starts and works normally (.hex file)
3. Website: Web pages saved in an external memory which the user can config and test the device. (.bin file)

The writing order in the different memories of the device is the one in the previous list.

The only way

AP D.3.3.2 REQUIREMENTS:

The following tools are needed to do it:

1. A computer connected directly to the device and configured at the same subnetwork. (The IP in the BootLoader PAA20+ will be always 10.0.0.180)
2. An Ethernet cable.
3. *.hex y *.bin needed files to upgrade.

APPENDIX E: COMMANDS FOR GDC SERVERS.

Category	Name	Command	Action	I/O hard
Output	P01	51U51UA	Pulse	Output 1
Output	P02	52U52UB	Pulse	Output 2
Output	P03	53U53UC	Pulse	Output 3
Output	P04	54U54UD	Pulse	Output 4
Output	P05	55U55UE	Pulse	Output 5
Output	P06	56U56UF	Pulse	Output 6
Output	P07	57U57UG	Pulse	Output 7
Output	P08	58U58UH	Pulse	Output 8
Output	P09	59U59UI	Pulse	Output 9
Output	P10	5AU5AUJ	Pulse	Output 10
Output	P11	5BU5BUK	Pulse	Output 11
Output	P12	5CU5CUL	Pulse	Output 12
Output	H01	61U61UM	On	Output 1
Output	H02	62U62UN	On	Output 2
Output	H03	63U63UO	On	Output 3
Output	H04	64U64UP	On	Output 4
Output	H05	65U65UQ	On	Output 5
Output	H06	66U66UR	On	Output 6
Output	H07	67U67US	On	Output 7
Output	H08	68U68UT	On	Output 8
Output	H09	69U69UU	On	Output 9
Output	H10	6AU6AUV	On	Output 10
Output	H11	6BU6BUW	On	Output 11
Output	H12	6CU6CUX	On	Output 12
Output	L01	71U71UY	Off	Output 1
Output	L02	72U72UZ	Off	Output 2

Output	L03	73U73U0	Off	Output 3
Output	L04	74U74U1	Off	Output 4
Output	L05	75U75U2	Off	Output 5
Output	L06	76U76U3	Off	Output 6
Output	L07	77U77U4	Off	Output 7
Output	L08	78U78U5	Off	Output 8
Output	L09	79U79U6	Off	Output 9
Output	L10	7AU7AU7	Off	Output 10
Output	L11	7BU7BU8	Off	Output 11
Output	L12	7CU7CU9	Off	Output 12
Input	I01	31U31UA		Input 1
Input	I02	32U32UB		Input 2
Input	I03	33U33UC		Input 3
Input	I04	34U34UD		Input 4
Input	I05	35U35UE		Input 5
Input	I06	36U36UF		Input 6
Input	I07	37U37UG		Input 7
Input	I08	38U38UH		Input 8

APPENDIX F: COMMANDS FOR QUBE SERVERS.

Category	Name	Command	Action	I/O hard
Output	Pulse1	51U51UA&#13	Pulse	Output 1
Output	Pulse2	52U52UB&#13	Pulse	Output 2
Output	Pulse3	53U53UC&#13	Pulse	Output 3
Output	Pulse4	54U54UD&#13	Pulse	Output 4
Output	Pulse5	55U55UE&#13	Pulse	Output 5
Output	Pulse6	56U56UF&#13	Pulse	Output 6
Output	Pulse7	57U57UG&#13	Pulse	Output 7
Output	Pulse8	58U58UH&#13	Pulse	Output 8
Output	Pulse9	59U59UI&#13	Pulse	Output 9
Output	Pulse10	5AU5AUJ&#13	Pulse	Output 10
Output	Pulse11	5BU5BUK&#13	Pulse	Output 11
Output	Pulse12	5CU5CUL&#13	Pulse	Output 12
Output	On1	61U61UM&#13	On	Output 1
Output	On2	62U62UN&#13	On	Output 2
Output	On3	63U63UO&#13	On	Output 3
Output	On4	64U64UP&#13	On	Output 4
Output	On5	65U65UQ&#13	On	Output 5
Output	On6	66U66UR&#13	On	Output 6
Output	On7	67U67US&#13	On	Output 7
Output	On8	68U68UT&#13	On	Output 8
Output	On9	69U69UU&#13	On	Output 9
Output	On10	6AU6AUV&#13	On	Output 10
Output	On11	6BU6BUW&#13	On	Output 11
Output	On12	6CU6CUX&#13	On	Output 12
Output	Off1	71U71UY&#13	Off	Output 1
Output	Off2	72U72UZ&#13	Off	Output 2

Output	Off3	73U73U0&#13	Off	Output 3
Output	Off4	74U74U1&#13	Off	Output 4
Output	Off5	75U75U2&#13	Off	Output 5
Output	Off6	76U76U3&#13	Off	Output 6
Output	Off7	77U77U4&#13	Off	Output 7
Output	Off8	78U78U5&#13	Off	Output 8
Output	Off9	79U79U6&#13	Off	Output 9
Output	Off10	7AU7AU7&#13	Off	Output 10
Output	Off11	7BU7BU8&#13	Off	Output 11
Output	Off12	7CU7CU9&#13	Off	Output 12
Input	I01			Input 1
Input	I02			Input 2
Input	I03			Input 3
Input	I04			Input 4
Input	I05			Input 5
Input	I06			Input 6
Input	I07			Input 7
Input	I08			Input 8

APPENDIX G: QUBE AUTOMATION FILES EXAMPLES.

AutomationDevices.xml:

```
<?xml version="1.0" encoding="utf-8" ?>
- <Devices xmlns="http://schemas.qubecinema.com/Automation/Devices/2008-01-26">
- <Device name="sp" class="Qube.Automation.StreamDevice.TCP" enable="true">
- <Configuration>
  <Key name="File" value="CP650.xml" />
  <Key name="Address" value="10.0.0.132" />
  <Key name="Port" value="61412" />
  <Key name="KeepAlive" value="OFF" />
    </Configuration>
    </Device>
- <Device name="PAASERIES" class="Qube.Automation.StreamDevice.Serial" enable="true">
- <Configuration>
  <Key name="File" value="PAASERIES.xml" />
  <Key name="Settings" value="COM1,9600,n,8,1" />
    </Configuration>
    </Device>
- <Device name="projector" class="Qube.Automation.Barco.TCP, Barco" enable="true">
- <Configuration>
  <Key name="File" value="Barco.dll" />
  <Key name="Address" value="10.0.0.129" />
  <Key name="Port" value="43728" />
  <Key name="KeepAlive" value="OFF" />
    </Configuration>
    </Device>
  <Device name="Me" class="Qube.Automation.SMS, Dalapathi" enable="true" />
    </Devices>
```

AutomationCues.xml:

```
<?xml version="1.0" encoding="utf-8" ?>
- <Cues xmlns="http://schemas.qubecinema.com/Automation/Cues/2008-01-26">
- <Cue name="Encender Lampara">
- <Actions>
<InvokeMethod name="Pause" device="Me" />
<InvokeMethod name="LampOn" device="projector" />
<Sleep duration="30" />
<InvokeMethod name="Play" device="Me" />
</Actions>
</Cue>
- <Cue name="Apagar Lampara">
- <Actions>
<InvokeMethod name="LampOff" device="projector" />
<Sleep duration="2" />
<InvokeMethod name="ShutterClose" device="projector" />
</Actions>
</Cue>
- <Cue name="Abrir Pala">
- <Actions>
<InvokeMethod name="ShutterOpen" device="projector" />
<Sleep duration="3" />
</Actions>
</Cue>
- <Cue name="Cerrar Pala">
- <Actions>
<InvokeMethod name="ShutterClose" device="projector" />
</Actions>
</Cue>
- <Cue name="PANORAMICO 2D">
- <Actions>
<InvokeMethod name="ShutterClose" device="projector" />
<InvokeMethod name="Pause" device="Me" />
- <InvokeMethod name="ExecuteMacro" device="projector">
<Parameter name="MacroName" value="PANORAMICO 2D" />
</InvokeMethod>
<Sleep duration="20" />
<InvokeMethod name="Play" device="Me" />
<InvokeMethod name="ShutterOpen" device="projector" />
</Actions>
</Cue>
```

```
- <Cue name="SCOPE 2D">
- <Actions>
  <InvokeMethod name="ShutterClose" device="projector" />
  <InvokeMethod name="Pause" device="Me" />
- <InvokeMethod name="ExecuteMacro" device="projector">
  <Parameter name="MacroName" value="SCOPE 2D" />
    </InvokeMethod>
  <Sleep duration="20" />
  <InvokeMethod name="Play" device="Me" />
  <InvokeMethod name="ShutterOpen" device="projector" />
    </Actions>
    </Cue>
- <Cue name="PANORAMICO 3D 1998">
- <Actions>
  <InvokeMethod name="ShutterClose" device="projector" />
  <InvokeMethod name="Pause" device="Me" />
- <InvokeMethod name="ExecuteMacro" device="projector">
  <Parameter name="MacroName" value="PANORAMICO 3D 1998" />
    </InvokeMethod>
  <Sleep duration="20" />
  <InvokeMethod name="Play" device="Me" />
  <InvokeMethod name="ShutterOpen" device="projector" />
    </Actions>
    </Cue>
- <Cue name="SCOPE 3D 2048">
- <Actions>
  <InvokeMethod name="ShutterClose" device="projector" />
  <InvokeMethod name="Pause" device="Me" />
- <InvokeMethod name="ExecuteMacro" device="projector">
  <Parameter name="MacroName" value="SCOPE 3D 2048" />
    </InvokeMethod>
  <Sleep duration="20" />
  <InvokeMethod name="Play" device="Me" />
  <InvokeMethod name="ShutterOpen" device="projector" />
    </Actions>
    </Cue>
- <Cue name="PANORAMICO 3D 1920">
- <Actions>
  <InvokeMethod name="ShutterClose" device="projector" />
  <InvokeMethod name="Pause" device="Me" />
- <InvokeMethod name="ExecuteMacro" device="projector">
  <Parameter name="MacroName" value="PANORAMICO 3D 1920" />
    </InvokeMethod>
```

```
  <Sleep duration="20" />
  <InvokeMethod name="Play" device="Me" />
  <InvokeMethod name="ShutterOpen" device="projector" />
    </Actions>
    </Cue>
- <Cue name="SCOPE 3D 1920">
- <Actions>
  <InvokeMethod name="ShutterClose" device="projector" />
  <InvokeMethod name="Pause" device="Me" />
- <InvokeMethod name="ExecuteMacro" device="projector">
  <Parameter name="MacroName" value="SCOPE 3D 1920" />
    </InvokeMethod>
  <Sleep duration="20" />
  <InvokeMethod name="Play" device="Me" />
  <InvokeMethod name="ShutterOpen" device="projector" />
    </Actions>
    </Cue>
- <Cue name="DIGITAL">
- <Actions>
  <InvokeMethod name="U1" device="sp" />
    </Actions>
    </Cue>
- <Cue name="NON-SYNC">
- <Actions>
  <InvokeMethod name="NS" device="sp" />
    </Actions>
    </Cue>
- <Cue name="Volumen 3.0">
- <Actions>
  <InvokeMethod name="Volumen 30" device="sp" />
    </Actions>
    </Cue>
- <Cue name="Volumen 3.5">
- <Actions>
  <InvokeMethod name="Volumen 35" device="sp" />
    </Actions>
    </Cue>
- <Cue name="Volumen 4.0">
- <Actions>
  <InvokeMethod name="Volumen 40" device="sp" />
    </Actions>
    </Cue>
- <Cue name="Volumen 4.5">
```

```
- <Actions>
  <InvokeMethod name="Volumen 45" device="sp" />
    </Actions>
    </Cue>
- <Cue name="Volumen 5.0">
- <Actions>
  <InvokeMethod name="Volumen 50" device="sp" />
    </Actions>
    </Cue>
- <Cue name="Volumen 5.5">
- <Actions>
  <InvokeMethod name="Volumen 55" device="sp" />
    </Actions>
    </Cue>
- <Cue name="Volumen 6.0">
- <Actions>
  <InvokeMethod name="Volumen 60" device="sp" />
    </Actions>
    </Cue>
- <Cue name="LIGHT 100%">
- <Actions>
  <InvokeMethod name="Pulse 1" device="PAASERIES" />
    </Actions>
    </Cue>
- <Cue name="LIGHT 50%">
- <Actions>
  <InvokeMethod name="Pulse 2" device="PAASERIES" />
    </Actions>
    </Cue>
- <Cue name="LIGHT 0%">
- <Actions>
  <InvokeMethod name="Pulse 3" device="PAASERIES" />
    </Actions>
    </Cue>
    </Cues>
```

AutomationTriggers.xml:

```
<?xml version="1.0" encoding="iso-8859-1" ?>
- <Triggers
    xmlns="http://schemas.qubecinema.com/Automation/Triggers/2008-01-26"
    xmlns:actions="http://schemas.qubecinema.com/Automation/Cues/2008-01-26">
- <Trigger name="EmergencyStop" device="Elexol" event="OnHigh07">
- <Actions>
  <actions:InvokeMethod name="Stop" device="Me" />
    </Actions>
    </Trigger>
- <Trigger name="Play" device="Elexol" event="OnHigh00">
- <Actions>
  <actions:InvokeMethod name="Play" device="Me" />
    </Actions>
    </Trigger>
- <Trigger name="Pause" device="Elexol" event="OnHigh01">
- <Actions>
  <actions:InvokeMethod name="Pause" device="Me" />
    </Actions>
    </Trigger>
- <Trigger name="Stop" device="Elexol" event="OnHigh02">
- <Actions>
  <actions:InvokeMethod name="Stop" device="Me" />
    </Actions>
    </Trigger>
- <Trigger name="Toggle" device="Elexol" event="OnHigh03">
- <Actions>
  <actions:InvokeMethod name="Toggle" device="Me" />
    </Actions>
    </Trigger>
    </Triggers>
```

PAASERIES.xml:

```
<?xml version="1.0" encoding="utf-8" ?>
- <StreamDevice name="PAASERIES"
    xmlns="http://schemas.qubecinema.com/Automation/StreamDevice/2008-
    01-26">
- <Method name="On 1">
- <Instructions>
  <Send>61U61UM</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 1">
- <Instructions>
  <Send>51U51UA</Send>
    </Instructions>
    </Method>
- <Method name="Off 1">
- <Instructions>
  <Send>71U71UY</Send>
    </Instructions>
    </Method>
- <Method name="On 2">
- <Instructions>
  <Send>62U62UN</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 2">
- <Instructions>
  <Send>52U52UB</Send>
    </Instructions>
    </Method>
- <Method name="Off 2">
- <Instructions>
  <Send>72U72UZ</Send>
    </Instructions>
    </Method>
- <Method name="On 3">
- <Instructions>
  <Send>63U63UO</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 3">
- <Instructions>
```

```
  <Send>53U53UC</Send>
    </Instructions>
    </Method>
- <Method name="Off 3">
- <Instructions>
  <Send>73U73U0</Send>
    </Instructions>
    </Method>
- <Method name="On 4">
- <Instructions>
  <Send>64U64UP</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 4">
- <Instructions>
  <Send>54U54UD</Send>
    </Instructions>
    </Method>
- <Method name="Off 4">
- <Instructions>
  <Send>74U74U1</Send>
    </Instructions>
    </Method>
- <Method name="On 5">
- <Instructions>
  <Send>65U65UQ</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 5">
- <Instructions>
  <Send>55U55UE</Send>
    </Instructions>
    </Method>
- <Method name="Off 5">
- <Instructions>
  <Send>75U75U2</Send>
    </Instructions>
    </Method>
- <Method name="On 6">
- <Instructions>
  <Send>66U66UR</Send>
    </Instructions>
    </Method>
```

```
- <Method name="Pulse 6">
- <Instructions>
  <Send>56U56UF</Send>
    </Instructions>
    </Method>
- <Method name="Off 6">
- <Instructions>
  <Send>76U76U3</Send>
    </Instructions>
    </Method>
- <Method name="On 7">
- <Instructions>
  <Send>67U67US</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 7">
- <Instructions>
  <Send>57U57UG</Send>
    </Instructions>
    </Method>
- <Method name="Off 7">
- <Instructions>
  <Send>77U77U4</Send>
    </Instructions>
    </Method>
- <Method name="On 8">
- <Instructions>
  <Send>68U68UT</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 8">
- <Instructions>
  <Send>58U58UH</Send>
    </Instructions>
    </Method>
- <Method name="Off 8">
- <Instructions>
  <Send>78U78U5</Send>
    </Instructions>
    </Method>
- <Method name="On 9">
- <Instructions>
  <Send>69U69UU</Send>
```

```
    </Instructions>
    </Method>
- <Method name="Pulse 9">
- <Instructions>
  <Send>59U59UI</Send>
    </Instructions>
    </Method>
- <Method name="Off 9">
- <Instructions>
  <Send>79U79U6</Send>
    </Instructions>
    </Method>
- <Method name="On 10">
- <Instructions>
  <Send>6AU6AUV</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 10">
- <Instructions>
  <Send>5AU5AUJ</Send>
    </Instructions>
    </Method>
- <Method name="Off 10">
- <Instructions>
  <Send>7AU7AU7</Send>
    </Instructions>
    </Method>
- <Method name="On 11">
- <Instructions>
  <Send>6BU6BUW</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 11">
- <Instructions>
  <Send>5BU5BUK</Send>
    </Instructions>
    </Method>
- <Method name="Off 11">
- <Instructions>
  <Send>7BU7BU8</Send>
    </Instructions>
    </Method>
- <Method name="On 12">
```

```
- <Instructions>
  <Send>6CU6CUX</Send>
    </Instructions>
    </Method>
- <Method name="Pulse 12">
- <Instructions>
  <Send>5CU5CUL</Send>
    </Instructions>
    </Method>
- <Method name="Off 12">
- <Instructions>
  <Send>7CU7CU9</Send>
    </Instructions>
    </Method>
    </StreamDevice>
```

Dalapath.exe.config:

```
<?xml version="1.0" encoding="utf-8" ?>
<configuration>

  <appSettings>
    <add key="Database" value="Database=Qube;Server=.\SQLExpress;Integrated Security=SSPI"/>
    <add key="BackupsInMediaFolder" value="true"/>

    <add key="AutoPlay" value="false"/>
    <add key="AutoResume" value="false"/>

    <add key="VMRType" value="VMR9"/>
    <add key="IgnoreTitleValidity" value="advertisement"/>
    <add key="TaskExecutionWhilePlayback" value="false"/>

    <add key="AutomationDevicesFile" value="AutomationDevices.xml"/>
    <add key="AutomationCuesFile" value="AutomationCues.xml"/>
    <add key="AutomationTriggersFile" value="AutomationTriggers.xml"/>

    <add key="ASCIIProtocolTCP" value="5000"/>
     <add key="ASCIIProtocolSerial" value="COM1,9600,n,8,1"/> <!--Portname,baudrate,parity,databits,stopbits--
>

    <add key="LogMode" value="default"/> <!--default, verbose-->

     <add key="TCGenAudioRenderer" value="DirectSound: IDT Audio1"/> <!--Display Name of the Audio Renderer
to be used for TCGen-->

    <!--<add key="3DConfigFile" value="Dolby3D.config"/>-->
    <!--<add key="3DConfigFile" value="RealD.config"/>-->

    <add key="EthernetTimecode" value="false"/>
    <add key="EthernetTimecodeOffset" value="0"/>
  </appSettings>

</configuration>
```

APPENDIX H: COMMANDS FOR BARCO ALCHEMY (ICMP) AND CHRISTIE IMB S2.

Category	Name	Command	Action	I/O hard
Output	P01	51U51UA\0D	Pulse	Output 1
Output	P02	52U52UB\0D	Pulse	Output 2
Output	P03	53U53UC\0D	Pulse	Output 3
Output	P04	54U54UD\0D	Pulse	Output 4
Output	P05	55U55UE\0D	Pulse	Output 5
Output	P06	56U56UF\0D	Pulse	Output 6
Output	P07	57U57UG\0D	Pulse	Output 7
Output	P08	58U58UH\0D	Pulse	Output 8
Output	P09	59U59UI\0D	Pulse	Output 9
Output	P10	5AU5AUJ\0D	Pulse	Output 10
Output	P11	5BU5BUK\0D	Pulse	Output 11
Output	P12	5CU5CUL\0D	Pulse	Output 12
Output	H01	61U61UM\0D	On	Output 1
Output	H02	62U62UN\0D	On	Output 2
Output	H03	63U63UO\0D	On	Output 3
Output	H04	64U64UP\0D	On	Output 4
Output	H05	65U65UQ\0D	On	Output 5
Output	H06	66U66UR\0D	On	Output 6
Output	H07	67U67US\0D	On	Output 7
Output	H08	68U68UT\0D	On	Output 8
Output	H09	69U69UU\0D	On	Output 9
Output	H10	6AU6AUV\0D	On	Output 10
Output	H11	6BU6BUW\0D	On	Output 11
Output	H12	6CU6CUX\0D	On	Output 12
Output	L01	71U71UY\0D	Off	Output 1

Output	L02	72U72UZ\0D	Off	Output 2
Output	L03	73U73U0\0D	Off	Output 3
Output	L04	74U74U1\0D	Off	Output 4
Output	L05	75U75U2\0D	Off	Output 5
Output	L06	76U76U3\0D	Off	Output 6
Output	L07	77U77U4\0D	Off	Output 7
Output	L08	78U78U5\0D	Off	Output 8
Output	L09	79U79U6\0D	Off	Output 9
Output	L10	7AU7AU7\0D	Off	Output 10
Output	L11	7BU7BU8\0D	Off	Output 11
Output	L12	7CU7CU9\0D	Off	Output 12
Input	I01	31U31UA\0D		Input 1
Input	I02	32U32UB\0D		Input 2
Input	I03	33U33UC\0D		Input 3
Input	I04	34U34UD\0D		Input 4
Input	I05	35U35UE\0D		Input 5
Input	I06	36U36UF\0D		Input 6
Input	I07	37U37UG\0D		Input 7
Input	I08	38U38UH\0D		Input 8

APPENDIX I: COMMANDS FOR BARCO ALCHEMY (ICMP) REMOTE PLAYER MANAGEMENT.

- PLAYER and PROJECTOR are factory defined devices in an Alchemy (ICMP) server.

Device	Command	Action
PLAYER	PLAYER.Play;	Plays loaded show
PLAYER	PLAYER.Pause;	Pauses current playback
PLAYER	PLAYER.Stop;	Stops current playback
PLAYER	PLAYER.Pause (seconds),s;	Pauses playback during "s" seconds
PLAYER	PLAYER.Resume;	Resumes current playback
PLAYER	PLAYER.Emergency Stop;	Sets an error, forces the manual mode, stops the player and triggers automation events associated with Emergeny Stop
PLAYER	PLAYER.Enable Schedule;	Sets the schedule mode on
PLAYER	PLAYER.Disable Schedule;	Sets the schedule mode off
PROJECTOR	PROJECTOR.Close Dowser;	Close the projector dowser
PROJECTOR	PROJECTOR.Open Dowser;	Open the projector dowser
PROJECTOR	PROJECTOR.Turn Lamp On;	Turn the projector lamp on
PROJECTOR	PROJECTOR.Turn Lamp Off;	Turn the projector lamp off
PROJECTOR	PROJECTOR.Execute Macro,"M";	Executes the "M" macro on the projector.