# 7800EMR-HYDRA2

## User Manual

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# IMPORTANT SAFETY INSTRUCTIONS

| | |
|---|---|
| ⚡ | The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "Dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. |
| ! | The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product. |

- Read these instructions
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water
- Clean only with dry cloth.
- Do not block any ventilation openings.  Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug.  A polarized plug has two blades with one wider than other.  A grounding-type plug has two blades and a third grounding prong.  The wide blade or the third prong is provided for your safety.  If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel.  Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 

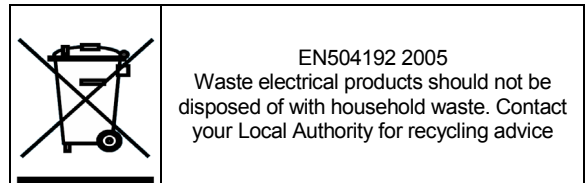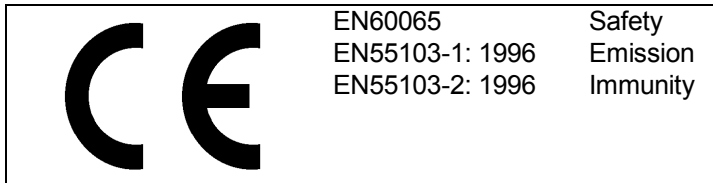| |
|---|
| **WARNING**<br>TO REDUCE THE RISK OF FIRE OR ELECTRIC – SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE |
| **WARNING**<br>DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT |
| **WARNING**<br>TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE |
| **WARNING**<br>THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE |

# INFORMATION TO USERS IN EUROPE

## NOTE

### CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive.  These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.  This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.  Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

| CE | EN60065 | Safety |
|---|---|---|
| | EN55103-1: 1996 | Emission |
| | EN55103-2: 1996 | Immunity |

| | EN504192 2005 Waste electrical products should not be disposed of with household waste. Contact your Local Authority for recycling advice |
|---|---|

# INFORMATION TO USERS IN THE U.S.A.

## NOTE

### FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.  These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.  This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.  Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference.  Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

# REVISION HISTORY

| REVISION | DESCRIPTION | DATE |
|----------|-------------|------|
| 1.0 | First Release | Apr 2020 |

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# 1. OVERVIEW

The 7800EMR-HYDRA2 interface module provides 7800EMR existing and new EMR audio systems the ability to integrate directly to Calrec Hydra2* audio systems, by means of a seamless bidirectional translation between Evertz TDM and Calrec Hydra2. Featuring primary and secondary Hydra2 paths that are capable of 512 bidirectional audio channels (at 48kHz), primary and secondary TDM paths all are monitored and provide an automatic failover mechanism, in addition there is a licensable feature to allow for name transfer, from a Magnum Unified Control System to the Calrec Hydra 2 system for the appropriate audio labels.

The 7800EMR–HYDRA2 interface module just makes sense, it simplifies system wiring, configuration and overall management of the audio signals, monitoring and name transfers, not to mention it provides path redundancy as well as saving rack and module slots space. When we compare this to a traditional or equivalent system one would require multiple MADI lines to interlink the systems via numerous MADI conversion boxes on both ends, which to a key point do not have an inherently incorporated path redundancy as seen with Hydra2/TDM Audio paths, and then names would be handled in a separate protocol translator card with additional complicated configuration required.

## *Features & Benefits*

- Compact 2 Slot design
- 512 mono channels
- Main and Redundant paths with auto fail over or dual path
- Reference Via Frame or external connection
- High Availability, 24/7 Design
- Full modular design
- Hot swappable
- Passive I/O rear plate
- Redundant Frame power supply
- Comprehensive system monitoring bus
- VistaLINK® PRO SNMP monitoring of I/O modules
- Supports Backwards compatibility to 7700FR

*\* Hyrda2 is a Trade Mark of Calrec Audio Ltd.*
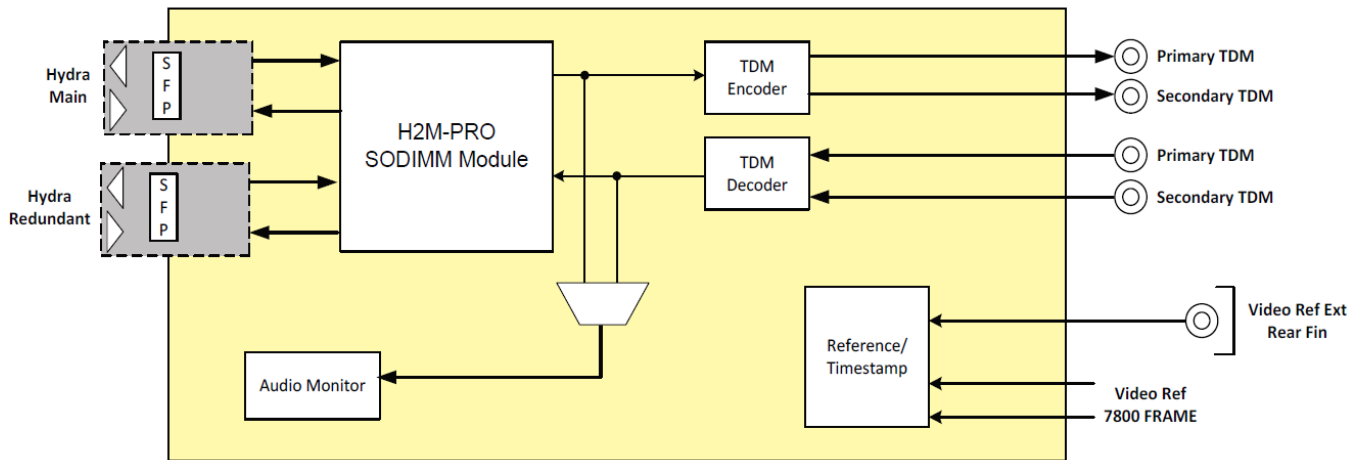
**Figure 1-1 : 7800EMR-HYDRA2 Block Diagram**



**Figure 1-2 : 7800EMR-HYDRA2 Top View**

## 2. SPECIFICATION

### 2.1. ORDERING INFORMATION

**7800EMR–HYDRA2**      TDM to Hydra2 bi–directional interface module ** Calrec Hydra2 Daughter Card to be purchased from Calrec

#### 2.1.1. Rear Plate Suffix

**+3RU**      3RU Rear Plate for use with 7700FR-C or 7800FR Multiframe

#### 2.1.2. Enclosures

**350FR**      3RU Portable Multiframe which holds up to 7 single slot modules
**7800FR**      3RU Multiframe which holds up to 15 single slot modules
**7801FR**      1RU Multiframe which holds up to 4 single or 2 dual slot

#### 2.1.3. Ordering Options

**+NAMES**      License to enable name transfer from the MAGNUM Unifi ed control system to the Calrec Hydra 2 system

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## 3. INSTALLATION

Before handling the card, it is important to minimize the potential effects of static electricity. It is therefore recommended that an ESD strap to be worn.

7800EMR-HYDRA2 module must have minimum 1 slot vacant in the frame. Each rear plate can house one 7800EMR-HYDRA2 module.

### 3.1. Installation of 7800EMR-HYDRA2 on 7800FR Frame

**Step 1:** Install the 7800EMR-HYDRA2 rear plate to the 7800 Frame with screws provided and make sure the orientation of the card as is shown in Figure 3-1.
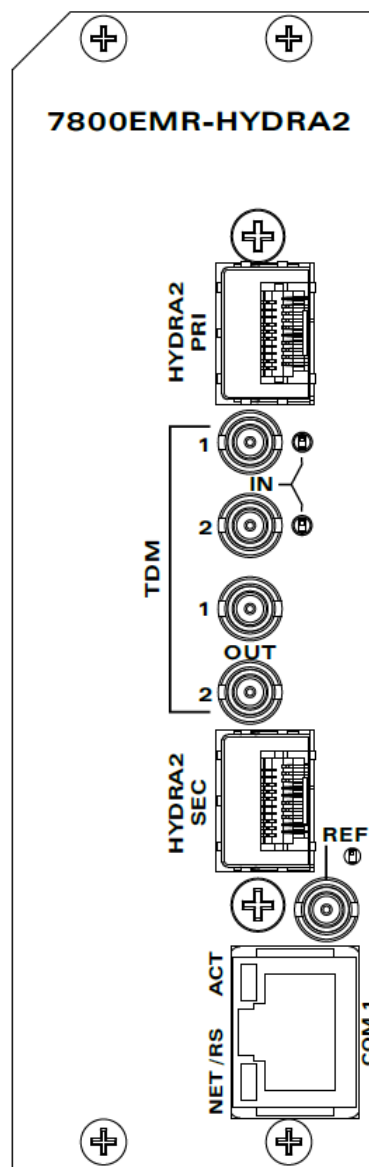


**Figure 3-1 : 7800EMR-HYDRA2 Rear Panel**

**Step 2:** Insert the 7800EMR-HYDRA2 card in the 7800 Frame and make sure the orientation of the card will be as is shown in Figure 3-2.



**Figure 3-2 : Illustration of 7800EMR-HYDRA2 card in 7800 Frame**

### 3.2. FRONT CARD EDGE CONTROLS AND LEDS

The 7800EMR-HYDRA2 front card edges have some key controls and indicators that can help in the installation and debugging processes. Figure 3-3 shows the card edges and Table 3-1 describe the expected behaviour of each component. When applied relevant signal to the card, the following card edge LED's should light up.



**Figure 3-3: 7800EMR-HYDRA2 Card Edge**

| Component | Description | |
|---|---|---|
| TDM Present LEDs | LD8 Green | TDM input 1,TDM signal present |
| | LD2 Green | TDM input 2,TDM signal present |
| Reference LED | LD6 Green | Video PLL Status is locked |
| | LD6 Red | Video PLL Status is unlocked |
| Ethernet Speed LED | LD11 Green or Off | Depending on speed |
| Ethernet Activity LED | LD12 Flashes Green | Activity |
| Rotary Switch | Switches the display to view firmware version, IP address and | |

**Table 3-1: Description of 7800EMR-HYDRA2 Card Edges**

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# 4. SERIAL CONFIGURATION

## 4.1. NETWORK CONFIGURATION

This section allows the user to configure the IP address, Netmask address, Gateway, Broad cast address and DHCP mode.



**Figure 4-1 : Network Configuration**

## 4.2. AUDIO CONFIGURATION

This section allows the user to configure and view Audio settings. To view the audio input packets and audio input status, Go to options 1) Video Audio Input Packets Table and option 2) View Audio Input Status Table



**Figure 4-2 : Audio Configuration**

## 4.3. HID ADDRESS

This section allows the user to check the HID address of H2M module. Go the menu (3) Audio Configuration, then (4) Hydra Module Options, then (10) Send HID request to Hydra module.

HID address is used to communicate with the Calrec.

If H2M module not plugged in to the Hydra2 card, there will be no communication between Calrec and Hydra2 card. HID should not be detected.



**Figure 4-3 : H2M Module**



**Figure 4-4 : HID Address**

### 4.4. SFP SETUP

This should detect the SFP and report back with a Vendor name (Avago, for instance).
Go to option 6) Show SFP setup -> 1) Show SFP status,



**Figure 4-5 : SFP Status**

### 4.5. PUSHING NAMES FROM MAGNUM

**Note:** +Names Option Available for Mono mode only

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<u>Setting up Calrec's Test Rack</u>

Secondary SFP should configured same as Primary SFP only difference will be control and router SFP location (Use Secondary SFP location)

1. Calrec rack IP address is set to 192.1.1.0, to change this please refer to Calrec's initial setup for Evertz document or the label on top of the chassis. Set your test pc's 2$^{nd}$ network adaptor IP address to 192.1.134.0 and Netmask 255.255.0.0 and MAC address to 000D07FF8600 (also called the locally administered address).

2. Insert the two Eoptolink Copper SFP's provided, one into the CONTROL card's Surface port 1 or 2 and the other into any of the ROUTER card's Hydra2 ports. Also plug a PAL/NTSC video reference into Video 2 Sync input on the central RESET card – see picture below.

⚠ **CAUTION: Do not hot plug SFPs into the Calrec Rack**



**Figure 4-6 : Carlec Setup**

3. Plug the Control CAT5 cable into the test pc's 2$^{nd}$ network connection and power cycle the Calrec Rack. Wait 30 seconds until Active and Module OK leds both on for CONTROL and ROUTER cards. Confirm that you can ping 192.1.1.0.

Open Chrome and type in the following URL http://192.1.1.0:8080 This will be up the login screen for Calrec's H2O interface. Log in with the following:

Username = admin

Password = admin1

Once logged in you should see the following tabs below:
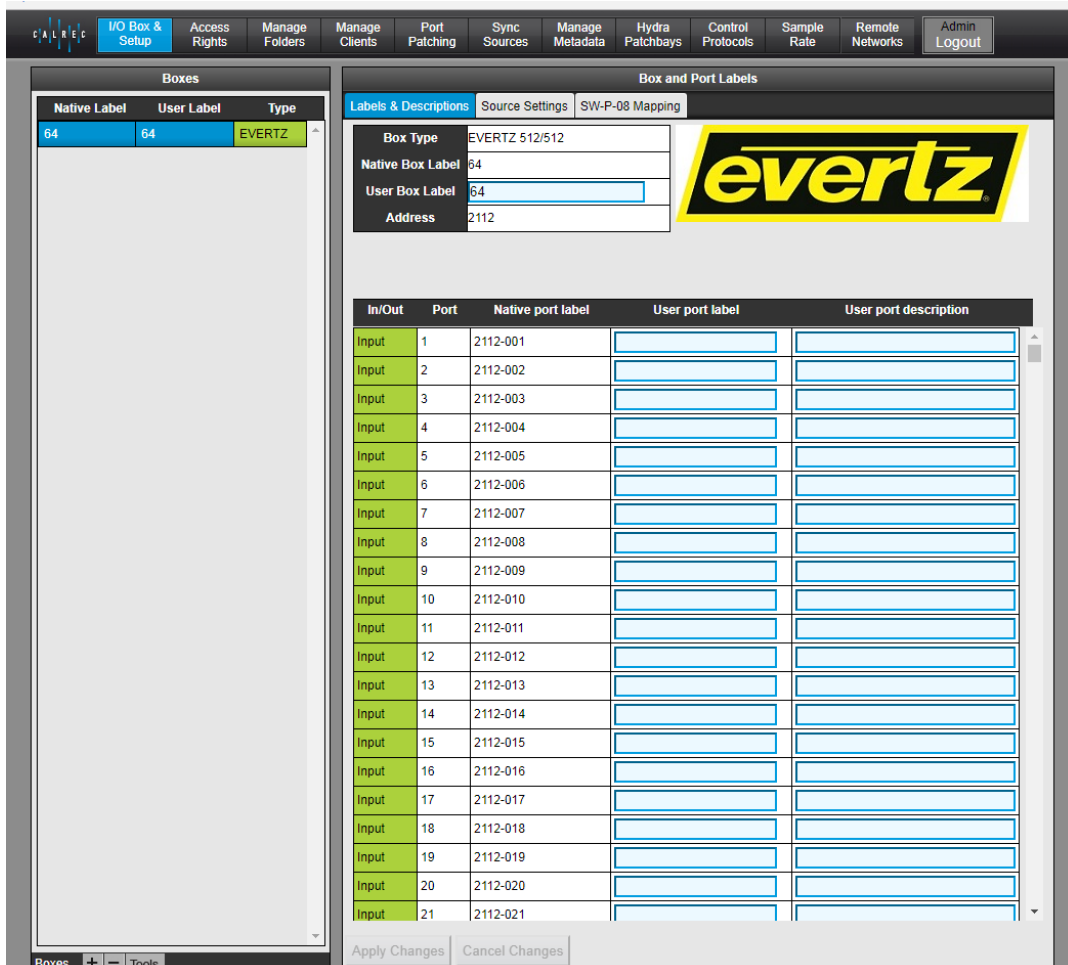
**Figure 4-7 : Calrec Webpage**

4. Plug a third Copper SFP (SFPTR-RJ45-SER-AV) into the HYDRA2 PRI or secondary port (depending on testing port) on the rear plate and insert the CAT5 Hydra cable here. The Primary port is used as the Calrec ROUTER card is currently plugged into the primary half of the rack labelled as ROUTER1. To test the secondary Hydra2 port plug, power down the rack and plug the ROUTER card into the secondary side labelled ROUTER2 on the chassis.
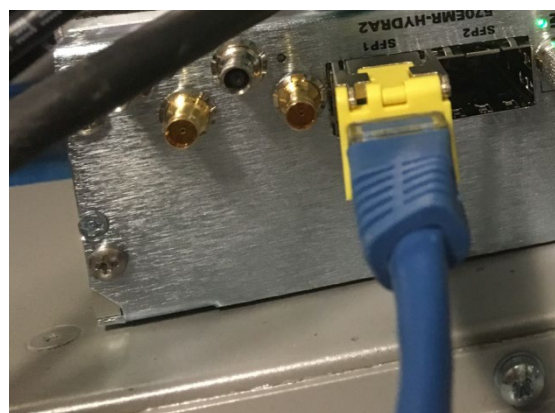


**Figure 4-8 : Hydra2 Card SFP**

5.  Now refresh H2O from the browser and check that under the I/O Box & Setup tab there should be an entry for the H2M module

6.  Go to the Manage Folders tab and under Port Folders click '+' at the bottom and add a folder with a name 'Hydra2_Mod-64-inputs'. Add a second folder in the same way for the outputs. I have chosen 64 as that is the HID of my Hydra module.

7.  Select the new input folder and under Boxes select the Hydra2 module and highlight all 512 inputs and press the Ports button at bottom LH corner to transfer all input channels into the new folder. Repeat the process for the new outputs folder.

8.  We are now ready in H2O for port patching across the Hydra2 network. Now for Hydra2 port patching. In H2O go to the Port Patching tab and under Sources select port folder 'Hydra2_Mod-64-inputs' or whatever you called it. Do the same under Destinations and select the port folder 'Hydra2_Mod-64-outputs'. As shown in the picture below you can then patch
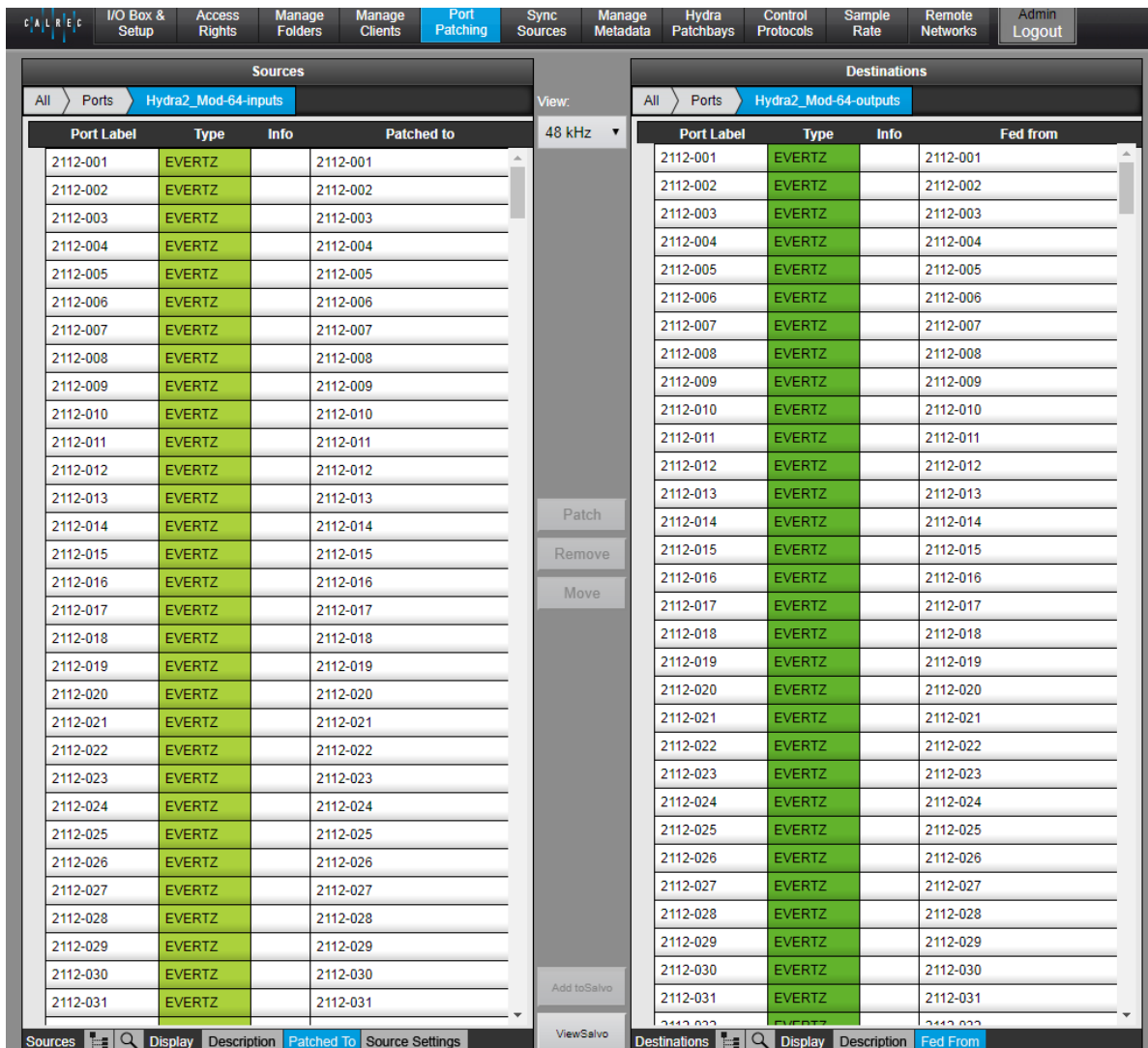


**Figure 4-9 : Patching**

1. Login Client Host with admin/admin and select "interfaces" tab and choose "Quartz"

2. Add Hydra2 with Port "4000" or available Port
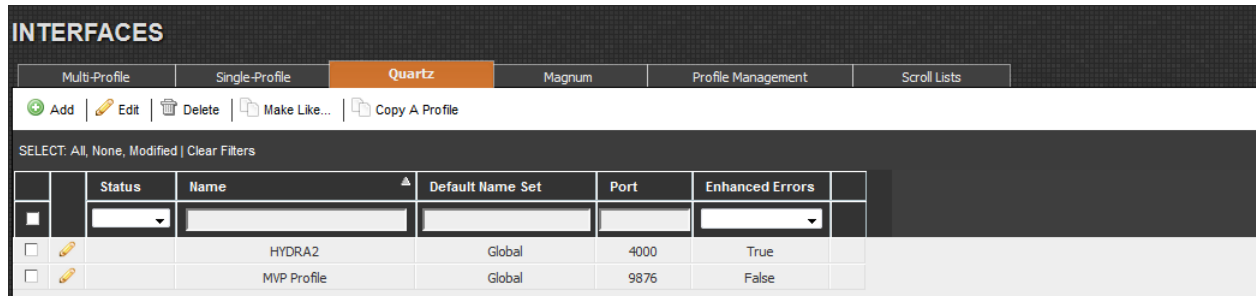


**Figure 4-10 : MAGNUM Interfaces**

3. Add Device under the Devices tab and Add Hydra2 sources and destinations.

4. Go to "Source Availability" Tab and make the sources and destinations available.

5. Once you finish making sources and destination names, Save the changes

6. Go to "Names" Tab and change the names that will update on serial menu of the Hydra2 card

7. Route the Hydra2 card destination to the particular source for Example: Channel1

8. You should be able to view the update names that have come from Magnum in the 7800EMR-Hydra Module through serially or telnet into the card.

     Menu using options:
             (3) Audio Configuration
                (4) Hydra Module Options
                    4) View Output sources (This views updated Names from Magnum)

9. Check Calrec should update updated Names from Hydra2 module

**Note:** Please be aware that the config transferred to the card can only transfer names with a length of 10 characters – so if magnum has longer names it will shorten them.

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# 5. VISTALINK® PRO CONFIGURATION

This chapter assumes that the VistaLINK® PRO server and client are already configured for your network and user must have basic knowledge of the VistaLINK® PRO interface. It also assumes that the user or network administrator has already added the appropriate jar file to the server, and both the client and server applications have been restarted. 7800EMR-HYDRA2 can communicate to VLPro using the control port of the card and appropriate Jar file. Open VistaLINK® PRO and click on the refresh tree icon. Select the IP address of 7800EMR- HYDRA 2 and right click to "View Configuration..." Depending on which mode the 7800EMR- HYDRA 2 is set to, the tab menu options in VistaLINK® PRO differ slightly.

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## 6.    UPDATING VLPRO SERVER JAR FILE

Products from Evertz are constantly evolving and new features are often added. It is therefore important to update the JAR files in use to provide access to all the latest features or enhancements. It will also necessary to add JAR files for new products. If your new product has not appeared even after waiting a few minutes for the Ethernet switch negotiation to complete then it is possible that your JAR file may be old or missing.

To perform a JAR update, ensure that all VLPro clients are closed (those clients which are not closed will automatically be disconnected as soon as the VLPro server is restarted). Maximize the VLPro Server window from the Windows task bar, select *Help →Apply Update → Product* from the menu
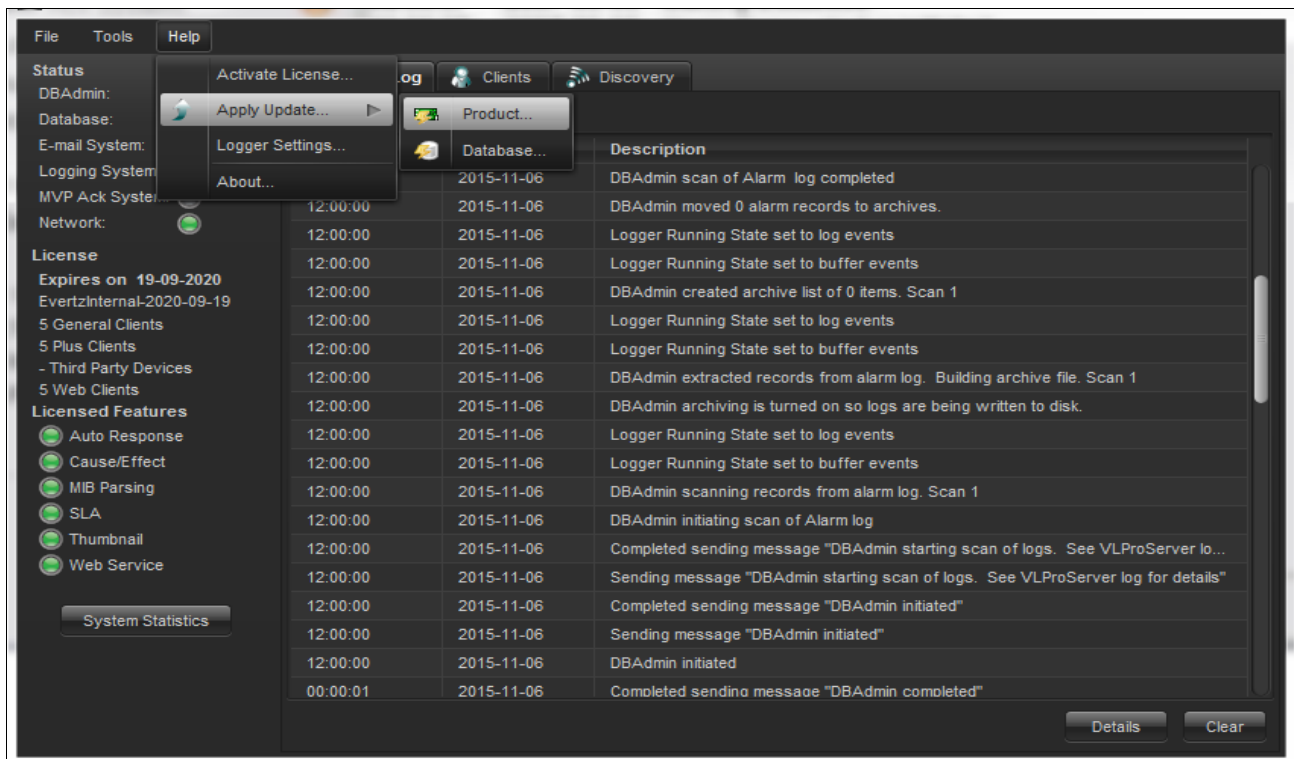


**Figure 6-1 : VistaLINK® PRO Server**

A window will appear, as shown in Figure 6-2, simply navigate to the location of the new JAR file and select the file by double clicking. The window will automatically close and the update will be applied in the background.
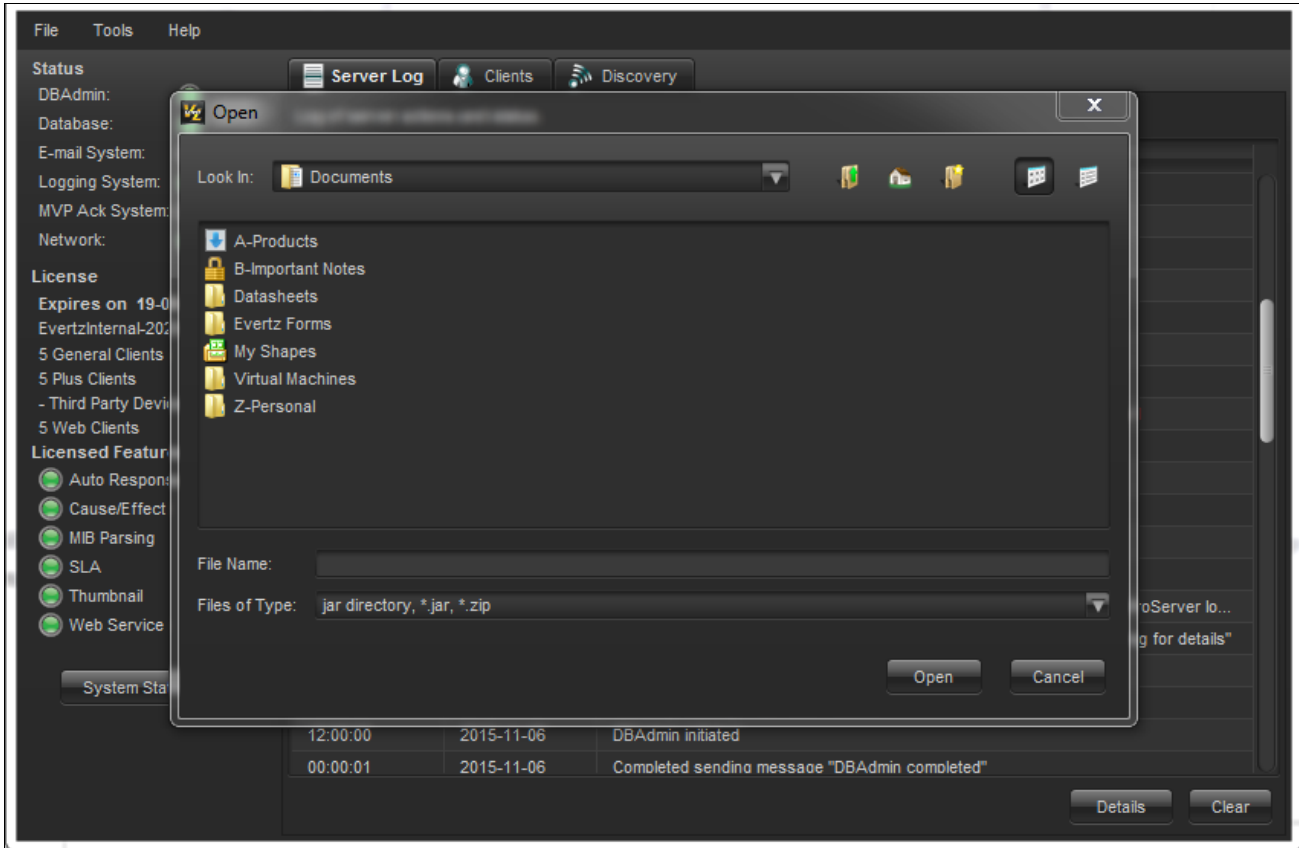
**Figure 6-2 : VistaLink® PRO – Applying JAR Updates**

You will be prompted to restart the server to enable the change to take effect. Apply as many JAR updates as required before restarting the server.
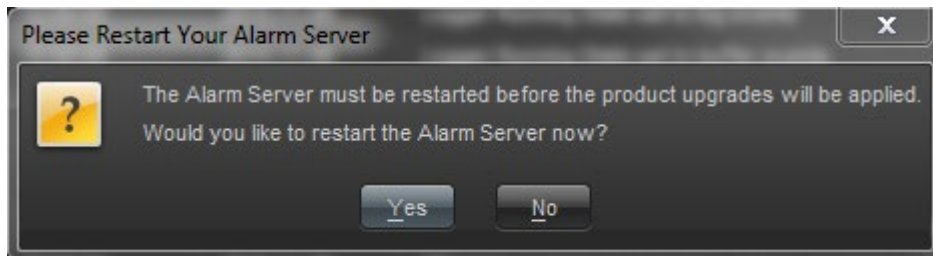


**Figure 6-3 : VistaLink® PRO – Restart You Alarm Server**

By clicking *Yes*, server will automatically restart, but it is normal for the startup to take marginally longer while each individual update is being applied. Once complete, you may restart the VLPro Clients. As the clients restarts you will experience a short delay while the update is applied. A prompt will appear confirming that the updates have been applied.

# 7. UPGRADING THE FIRMWARE ON 7800EMR-HYDRA2 THROUGH FTP

1. Identify and confirm the IP Addresses of the module and PC/laptop, and ensure that they are on same subnet.

2. Obtain the new firmware and copy to any directory on your computer. (C:\temp)

3. Open a DOS window by selecting **Start → Run**, and typing "**cmd**" in the window that appears,
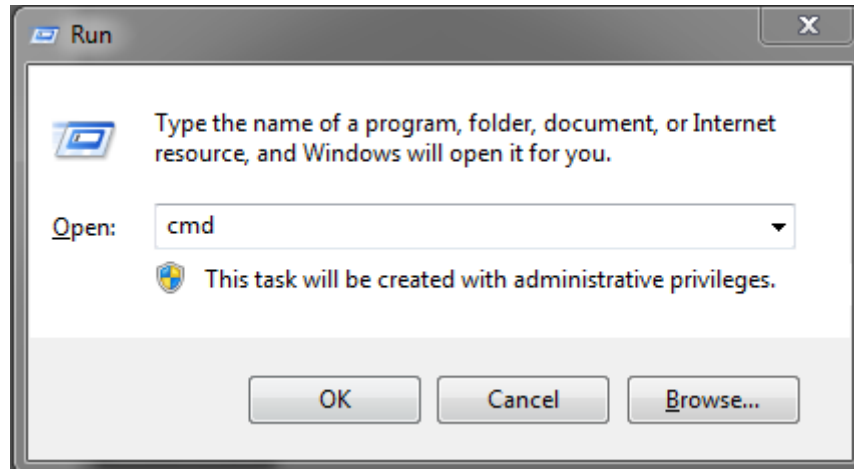


**Figure 7-1 : Run Window for FTP Access**

4. In the DOS window type: ***ftp xxx.xxx.xxx.xxx*** (where the x's represent the module's IP Address)

5. Press <ENTER> when prompted for a "**Username**". And again when prompted for a "**Password**"

6. At the "**ftp>"** prompt, type "**hash**", toggles number sign (#) printing for each data block that is transferred.

7. At the "**ftp>"** prompt, type "**put x.bin**", where x represents the name of the firmware (.bin)

> **Note:** If the firmware file is not local to where you are performing the FTP, then include the path with the name:
> (eg: "put c:\temp\hydra2\firmware.bin")

8. Once the upgrade is complete, send the command ""bye" to exit ftp connection (see Figure 7-2) and the module will reboot itself. Don't remove the module during this process or it could corrupt the firmware code.

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```
Administrator: C:\windows\system32\cmd.exe

Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users>ftp 172.21.1.25
Connected to 172.21.1.25.
220-Evertz FTP Server.
    Copyright 2001 Evertz Microsystems Ltd.  All rights reserved.
220 Type QUOTE HELP for information.
User (172.21.1.25:(none)):
331 User name okay, need password.
Password:
230 User logged in, proceed.
ftp> hash
Hash mark printing On  ftp: (2048 bytes/hash mark) .
ftp> put C:\temp\alink2\7800ALINK2_et.60_Rev_A.bin
200 PORT command successful.
150 Opening data connection.
###############################################################################
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226 Transfer complete.
ftp: 7179604 bytes sent in 2.36Seconds 3048.66Kbytes/sec.
ftp> bye
221 Goodbye.

C:\Users>
```

**Figure 7-2 : Sample FTP Upgrade Window**