AVRed-ES
USER'S MANUAL

Version 1.2 December 2005

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1- WELCOME!

Thank you for purchasing AuviTran's AVRed-ES. We hope you will enjoy using it. This product will help you building secure redundant EtherSound networks. AVRed-ES guarantees that your digital EtherSound connection is secured by a second path. In case of cable failure or even only data errors, the AVRed-ES boxes will automatically switch on the best cable.

AVRed-ES is currently the fastest ever built redundancy system that will switch on the best cable in less than 100µs and 3.2µs pass-thru latency.

The AVRed-ES boxes offer full network and/or local control of all parameters as well as constant network status monitoring, making it ideal for live professional audio applications

You will find herewith the necessary instructions to use your product. Please read them carefully as misuse of this device might cause serious damage to you and your environment.

2- ELECTRICAL AND ELECTRONIC INTERFERENCES RISKS

This Product uses high frequency digital circuits that might interfere with electrical or electronic devices placed in your working environment. Please make sure this kind of device (television, radio device, cell phones) is removed in order to ensure a proper functioning of each device.

3- LIMITATION OF LIABILITY

In no case and in no way, the provider of this Product (AuviTran, the distributor or reseller, or any other party acting as provider) shall be liable and sued to court for damage, either direct or indirect, caused by and to the user of the board and which would result from an improper installation or misuse of the Product. "Misuse" and "improper installation" mean installation and use not corresponding to the instructions of this manual.

Please note that graphics given in this manual (drawings and schemes) are only examples and shall not be taken for a real vision of your own equipment configuration.

AuviTran is constantly working on the improvement of the products. For that purpose, the products functionalities are bound to change and be upgraded without notice. Please read carefully the User's manual as the new functionalities will be described therein.

4- TRADEMARKS

All trademarks listed in this manual are the exclusive property of their respective owners. They are respected “as is” by AuviTran. Any use of these trademarks must receive prior approval of their respective owners. For any question, please contact the trademark’s owner directly.

5- COPYRIGHT

6- AUVITRAN WEBSITE / MORE INFORMATION

Please visit our website for any question of further inquiry concerning our product range. Updates will also be posted when available.

http://www.auvitran.com

7- PACKAGE CONTAINS

- 1 AVRed-ES
- 1 IEC Power Cord.

8- PRECAUTIONS

Do not modify, open or disassemble the Product. The guarantee shall be null and void in that case. Do not apply excessive pressure on connectors or any other part of the board. Do not touch the metallic sharp parts (pins) of the product. This product is electrostatic sensitive; make sure you check this before touching or using it.

9- TECHNICAL SPECIFICATIONS

General	
Size	483 x 253 x 44mm (19' rack / 1U Height)
Power Consumption	<25 Watts
Power Supply	100-240VAC 50/60Hz 47W Max
Storage: Temp/Humidity	- 5°C to 70°C / 0% to 95% (non-condensing)
Operating: Temp/Humidity	0°C to 50°C / 5% to 90% (non-condensing)
Front Panel	Network and links Rx and Tx Activities; Active link running ; Quality Status of both Links A and B ; In or Out Mode selected for device ; Power On Display
Rear Panel	1 IEC Power inlet; 4 Neutrik Ethercon RJ45 ; 3x3 poles Euroblock Connector Dip switches for Modes setting; Network activity LEDs

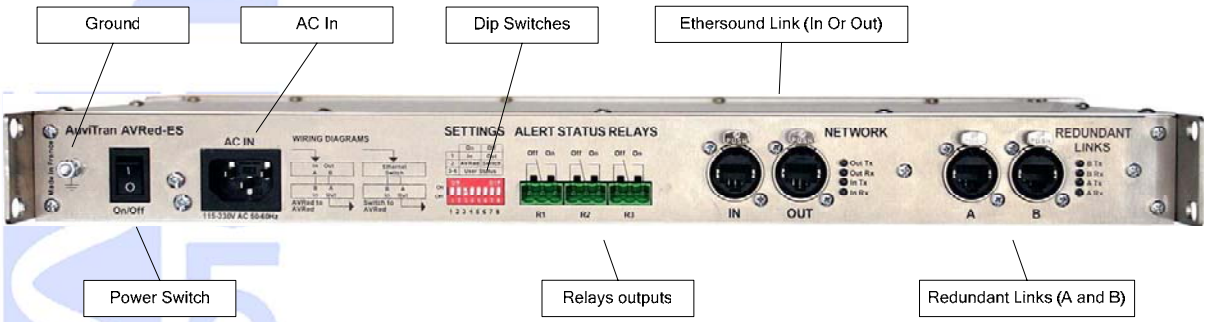
AVRed-ES Features	
3 Operating modes set by external dip switch	• Mode IN: EtherSound Input to 2 resilient links • Mode OUT on AVRed-ES: 2 resilient links coming from an AVRed-ES module to one EtherSound Output Port • Mode OUT on Switch: 2 resilient links coming from an Ethernet Switch to one EtherSound Output Port
EtherSound I/O	IN or OUT port depending of operating mode selected
Resilient Link	A and B with automatic selection of best link
Pass-through Latency	2.8µs in AVRed-ES – AVRed-ES Mode Approx 22µs in Switch – AVRed-ES Mode
Link Switching latency	4 samples (83µs at 48 kHz)
Clock	Provides 48 kHz clock when Primary Master

Output Relays Specifications	
Type	3x2 Poles Relays on 3x3 poles Euroblock connectors
Operating range	24V / 1A
4 status modes set by external dip switch	• Link A Status / Link B Status / PSU Status • Link A Status / Link B Status / Link Used • Link A Status / Link B Status / User Set Relay • 3 User Set Relays Drive By Remote Application Via EtherSound

Temp / Fan monitoring	
Temp Monitoring	Network Monitoring of Temperature inside the Box
4 Fan Control modes set by external dip switch	• Automatically Controlled by internal Temperature • Software set (via ES Monitor) • Full speed • Off

Development and Integration Environment	
OS Supported	Windows XP
ES-Monitor	ES-Monitor enables to remotely set, control and monitor an EtherSound network and provides enhanced property pages to manage the AVRed-ES specific parameters.
Remote Network Management	Links status, Relays status and Temperature monitoring Fan remote control and Relays remote control (if remote mode selected on dip switch)

10- Rear Panel Description



1- Power switch : switch on or off the unit

2- AC In : refer to tech specs for AC range

3- Ground : If needed, connect chassis to ground

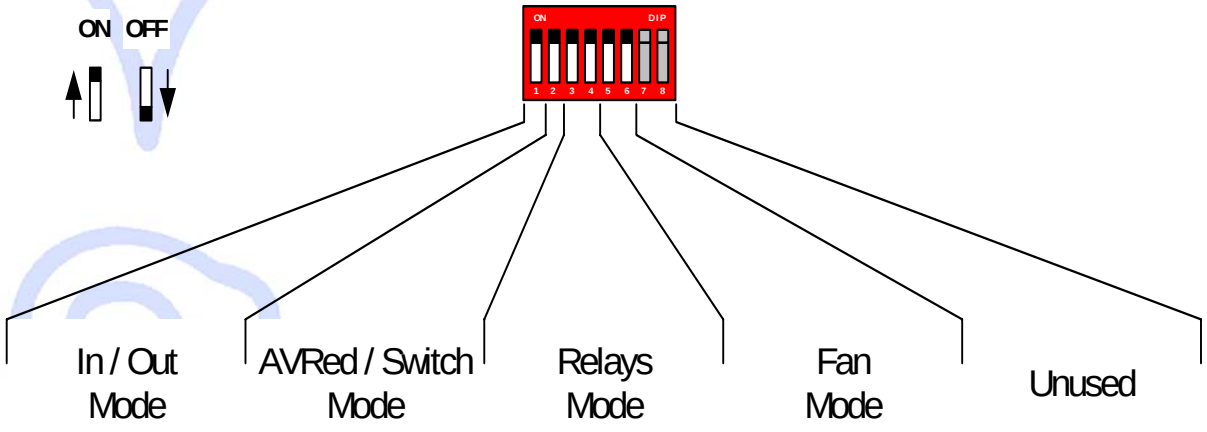
4- Dip switches : setup the device (described below)

5- Relays outputs : local status of the device

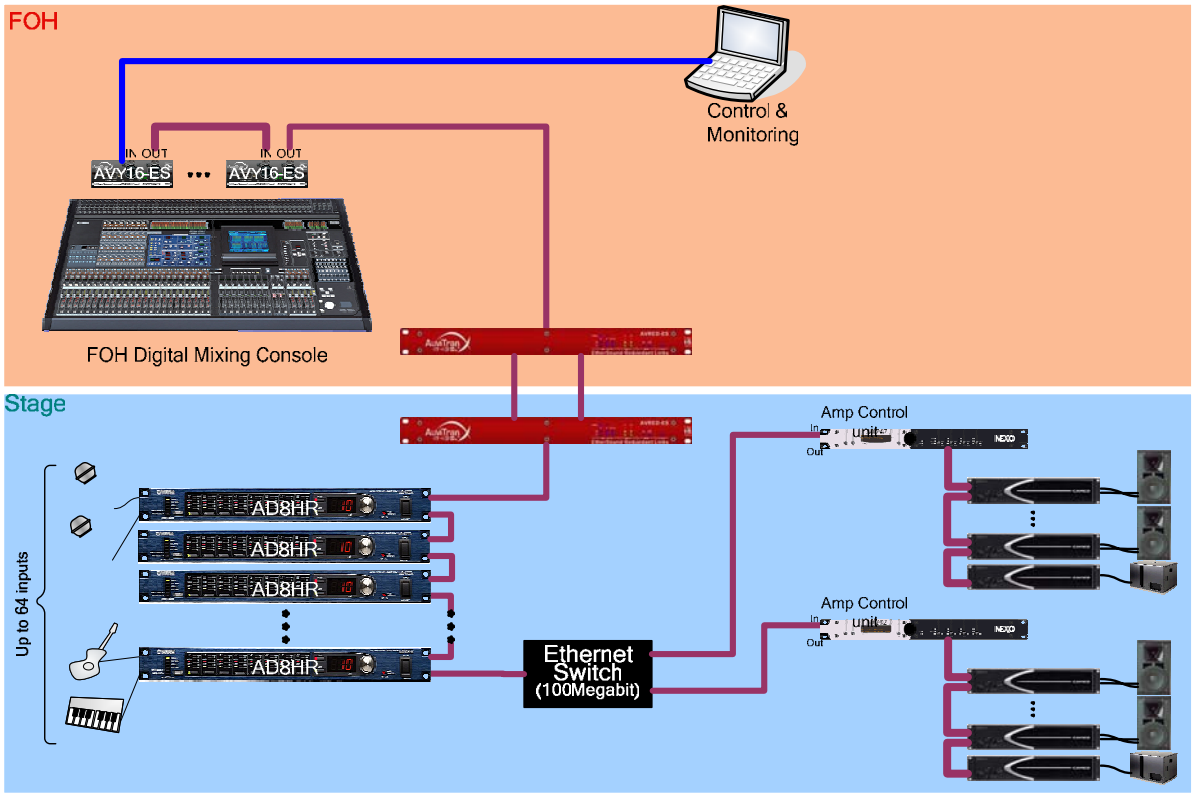
6- EtherSound link : Link to EtherSound network

7- Redundant Links : double cat5 redundant link

Here is the detailed description of the dip switches. Every setup will be explained below.



11- Architecture using AVRed-ES

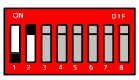
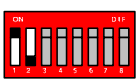


A pair of AVRed-ES boxes will build a redundant link composed of 2 cat5 cables (or fibres). If one link breaks down, AVRed-ES will quickly switch on the second one. The status of both links will display on ESMonitor software and on front panel.

12- AVRed-ES Modes

AVRed-ES is able to work in 3 different modes that are set up with dip switches on the back of the box

12-1 Dip switches Mode setting

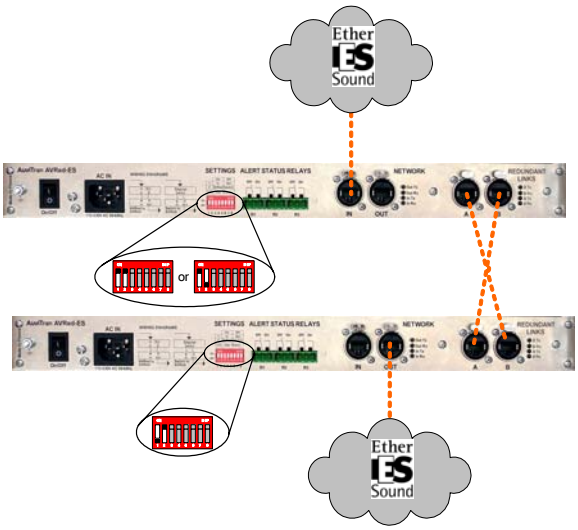
Dip Switches Position	AVRed-ES Mode	ESMonitor
	Mode Out Switch / AVRed	
	Mode Out AVRed / AVRed	
	Mode In AVRed / AVRed	
		

12-2 Connection schematics

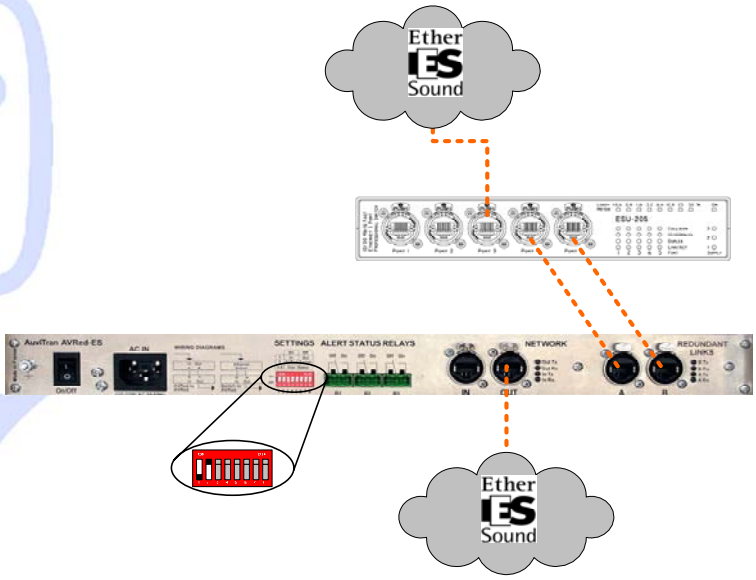
12-2-1 AVRed-ES / AVRed-ES mode

Please note that Plug A of input module is connected to Plug B of the output module, and Plug B of input module is connected to Plug A. This is because Plug B of both modules are crossed and Plug A is straight. In order to use straight cables which are much more commonly used, you must connect a straight plug on a crossed one.

For this reason, we will talk about “the link connected to Plug A” instead of “link A”.



12-2-2 Switch / AVRed-ES mode



12-3 Why using AVRed-ES in Pair instead of with a switch

When using a combo of 2 AVRed-ES Boxes instead of switch + AVRed-ES, the evaluation of link status is more precise and allows more accurate switching between links. The Switch / AVRed-ES Mode combo will only detect cable disconnection, whereas AVRed-ES / AVRed-ES Mode will detect cable failure including quality status.

The AVRed-ES / AVRed-ES mode allows the system to precisely analyse the status of each pair of cables. Therefore, the system can choose the best pair for both upstream and downstream signals. Consequently, if errors occur on both links, the system is able to use one cable for upstream and the other for downstream provided this gives better results. This feature is not possible on Switch / AVRed-ES Mode.

Last but not the least, the AVRed-ES / AVRed-ES Mode proves better results (by ten times superior) in terms of latency for the redundant link than the Switch / AVRed-ES Mode.

13- Relays outputs

AVRed-ES has 3 Relays outputs that can show different information, depending of dip switches configuration. This will allow you to use alert systems like lights or flashes when events happen in the system.

Please refer to technical specification for relays electrical specifications.

Relays switching can be automatic (Link A, link B, Link in Use, PSU) or user set (GPO).

Dip Switches Position	R1	R2	R3	ESMonitor
	Link A	Link B	PSU	
	Link A	Link B	User GPO	
	Link A	Link B	Link In Use	
	User GPO	User GPO	User GPO	

14- Fan modes

AVRed-ES Boxes are fan cooled. This fan can be set in 4 different modes as described below:

Dip Switches Position	Fan Mode	ESMonitor
	Automatic	
	Manual Full Speed	
	Software Controled	
	Manual Off	

In Automatic mode, the fan speed varies depending of the temperature in the box. If the box is cool enough, the fan will stop.

The fan can also be set manually, if you choose to force the fan in full speed for example.

For noise critical environment, you can force the fan off. **PLEASE NOTE AUVITRAN SHALL NOT BE HELD RESPONSIBLE OF ANY DAMAGE CAUSED BY OVERHEATING IF FAN HAS BEEN SWITCHED OFF**.

In Software mode, the fan is controlled by ESMonitor software. You can choose the speed of the fan or to set it as automatic. (more details in ESMonitor interface description)

15- AVRED-ES IN ESMONITOR SOFTWARE

15-1 Software Installation

Please visit our website to download the latest version of our EtherSound Monitor Software called ESMonitor (http://www.auvitran.com) and save the file on your hard disk. ESMonitor requires Windows 2000 or XP to function.

You are now ready for installation. Refer to the ESMonitor documentation for installation.

When ESMonitor is installed on your PC, you can run ESMonitor and manage any AVRed-ES devices connected to an EtherSound network. Refer to ESMonitor documentation for generic EtherSound device management such as Enumeration of EtherSound devices.

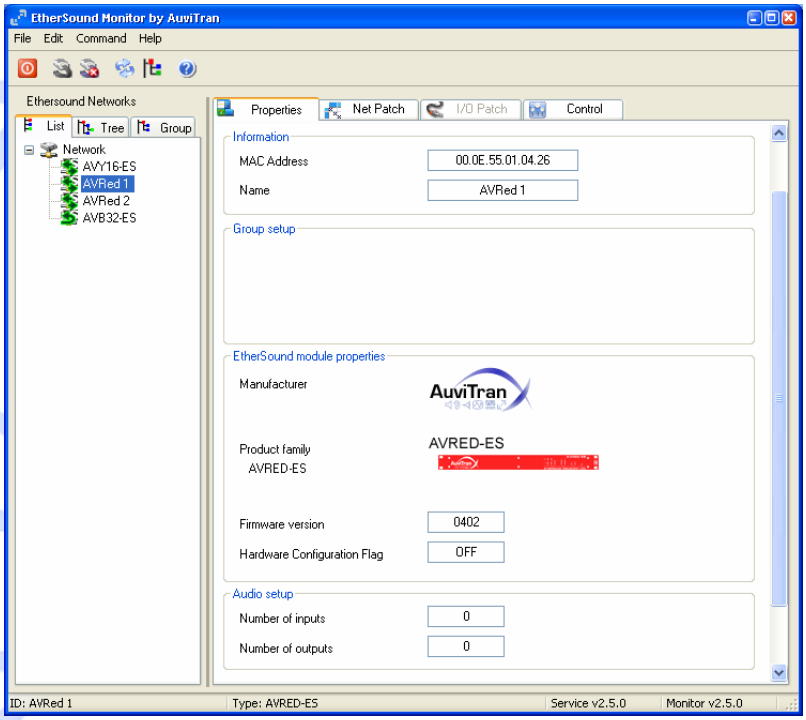
15-2 Getting Started with AVRed-ES and ESMonitor Software

The computer on which the EtherSound Monitor is installed should now be connected to the primary master of the EtherSound network. The primary master must be the first EtherSound-based device of the network.

After running the ESMonitor, Select an AVRed-ES device on the device list or tree list.

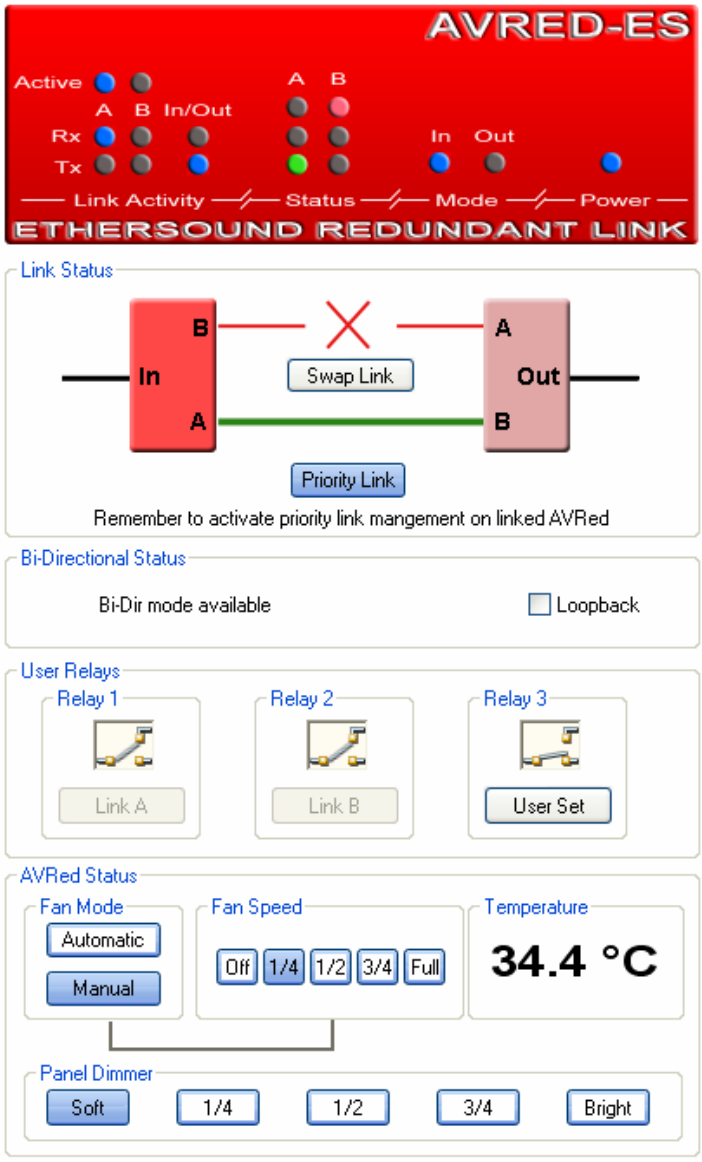
15-3 AVRed-ES Properties Page in ESMonitor

When selecting the properties page, ESMonitor will display the following information:



15-4 AVRed-ES Control Page in ESMonitor

If the Control page is selected, ESMonitor will display following information:



All standard parameters of the AVRed-ES can be seen or changed in this control page.

You can now start the configuration of your network and enjoy the functionalities of AuviTran's AVRed-ES.

15-4-1 AVRed-ES Mode

The scheme below shows the current mode of your the AVRed-ES:

1- Mode Output from Switch:

2- Mode Output from AVRed-ES:

3- Mode Input:

15-4-2 Links Options

Swap Link

Swap link button allows user to swap active link if possible.

Priority Link

When available on device, priority link management allows device to automatically select first « A to B » link. To activate priority link management, button must be selected.

Note: Option must be set on both side of redundant link (i.e. selected on both AVRed-ES control page).

15-4-3 Links Status

The link status is shown with colours:

Green for a good link.

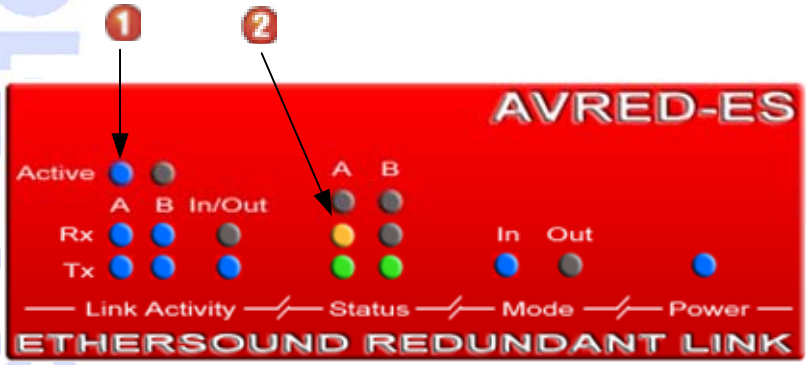
Orange for a link with errors.

Red for a broken link.

The active link is in Bold.

Remember that a link is connected between A and B or between B and A. For this reason, we must talk of “the link connected to A” or “the link connected to B” instead of link A or link B.

The front panel (on box and in ESMonitor) shows the active link (1) and the error memory (2). As errors are sometimes too fast to be seen on Leds or because you were away when the error occurred, Error memory is blinking during 20s.



15-4-4 Relays Status

The User Relays box will display:

- The information shown by the relay
- The status of the relay

When one or more relays are shown as “user set” relays, you can change their status by pressing the “user set” button.

15-4-5 Fan Status

The Fan box shows temperature in the box and fan setting.

Fan Mode

The fan mode shows the control mode of the fan.

When the button is grey, it is set by hardware and shows the active state.

When the button is blue, it is selected by the software and can be changed.

Fan Speed

As fan Mode, blue or grey colour show if the setting is hardware or software controlled.

In software Manual mode, the speed of the fan can be set by the user.

In automatic mode, the speed shown is automatically set depending of the box temperature.

Temperature

The temperature is measured by a sensor inside the box. This information helps the regulation of the fan when in speed automatic setting.

Panel Dimmer

The panel dimmer sets the brightness of the front panel leds.

16- Front Panel Connectors Option

For users who choose to connect there redundant links directly on front panel avoiding patch panel in the rack, AUVITRAN proposes for sale a front panel Option. Please contact your local distributor for more information.