

# NTP TECHNOLOGY

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AUDIO ROUTING SOLUTIONS



## Installation Guide

### Penta 721s Modular Audio Router & Interface

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## IMPORTANT SAFETY INSTRUCTIONS

### READ AND KEEP THESE 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.



The garbage bin with a cross is intended to alert the user that the product may not be disposed of by regular garbage, but as electronic equipment.

**WARNING** – when using electric products, basic precautions should be followed, including the following:

Read all of the safety and installations instructions and explanation of graphic symbols before using the product.

- 1 Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-110 to 125V type plug according to UL 817 and CSA C22.2 no. 42. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11 Only use attachments/accessories specified by the
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14 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.

### DANGER

Improper connection of the equipment-grounding can result in a risk of electric shock. Do not modify the plug provided with the product – if it will not fit the outlet have a proper outlet installed by a qualified electrician. Do not use an adapter which defeats the function of the equipment-grounding conductor. If you are in doubt as to whether the product is properly grounded, check with a qualified serviceman or electrician.



The product must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with a power supply cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet which is properly installed and grounded in accordance with all local codes and ordinances.

**WARNING**

- ☐ This product, either alone or in combination with an amplifier and speakers or headphones, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
- ☐ The product should be located so that its location or position does not interfere with its proper ventilation.
- ☐ The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time. When unplugging the power supply, do not pull on the cord, but grasp it by the plug.
- ☐ Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

**SERVICE**

- ☐ Do not attempt to service the product beyond that described in the user maintenance instructions. All other servicing should be referred to qualified service personnel.
- ☐ The product should be serviced by qualified service personnel when:
  1. The power supply cord or plug has been damaged, or
  2. Objects have fallen, or liquid has spilled into the product, or
  3. The product has been exposed to rain, or
  4. The product does not appear to be operating normally or exhibits a marked change in performance, or
  5. The product has been dropped, or the enclosure damaged.





## General description.

The Penta 721s Modular Audio Router & Interface is a 19" wide, 1RU high modular multi-format router and interface unit for Digital Audio signals compliant to the formats: AES3, MADI (AES10) and IP audio based on Dante™. Penta 721s has a total of 8 AES3 I/O (16 mono) channels, two MADI BNC connectors for 64 channels of I/O, and optionally two SFP modules for either optical or coax MADI connections providing a total of 192 I/O channels on MADI. The Dante IP audio technology is available on the two Ethernet connectors and provides 64 mono channels of I/O which can be redundant on two connectors. Penta 721s has one expansion slot for installation of a Penta card. All cards for AX32 and Penta 720 can be installed in Penta 721s.

The digital patch bay of Penta 721s is based on a digital router matrix which can handle the up-to 400 possible input channels, which individually can be patched to any one or more output channels. The matrix can operate on all standard sample rates up-to 192 kHz and the matrix will interface data with the sample-rate to which the Penta 721s is synchronized. The unit is based on synchronous routing so all digital signals must have the same basic sample-rate. Sample rate conversion is available for the I/O the digital Penta cards.

Penta 721s is installed with Pro|Mon functionality, which enables low latency (<100 micro seconds) monitoring and summing with 256 input and 32 output channels.

As standard the basic chassis is equipped with redundant power supplies.

All installation guides and more documentation can be downloaded from [www.ntp.dk](http://www.ntp.dk)



## Operation

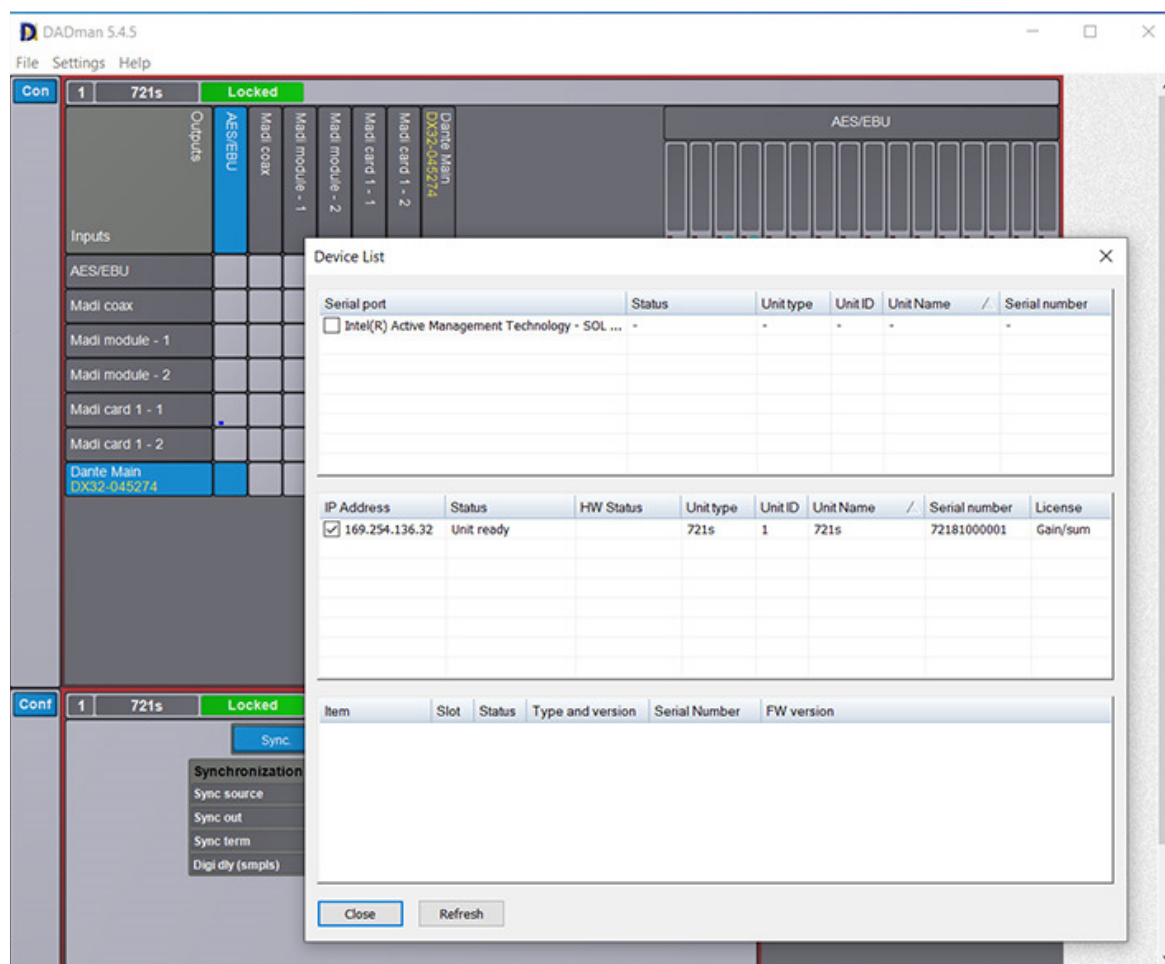
The Penta 721s is operated via the Network port using the DADman or Penta manager control program, or via the NTP Router Control System RCCore, when the unit is a part of an integrated routing system. On the front panel there are LED indicators showing the status of the unit, and on the rear panel there is “reconfig” button by which the unit can be set into certain pre-configured modes.

## Control software

### DADman

For description of the DADman software please refer to the software user guide. DADman can be installed on Windows or Mac OS X. In order to control the Penta 721s, DADman needs to be connected network-wise to the unit. When opening the device list you will always be able to see the Penta 721s connected to the network, along with all other NTP/DAD products if present. You have to make sure that the network configuration is correct in order to actually control the unit via DADman. You can manage all the network settings for the unit by right clicking on the unit in the device list

Below is a screen dump of the device list view of the DADman software for Windows. Note that operation will first be possible when the units has correct IP and Subnet address.

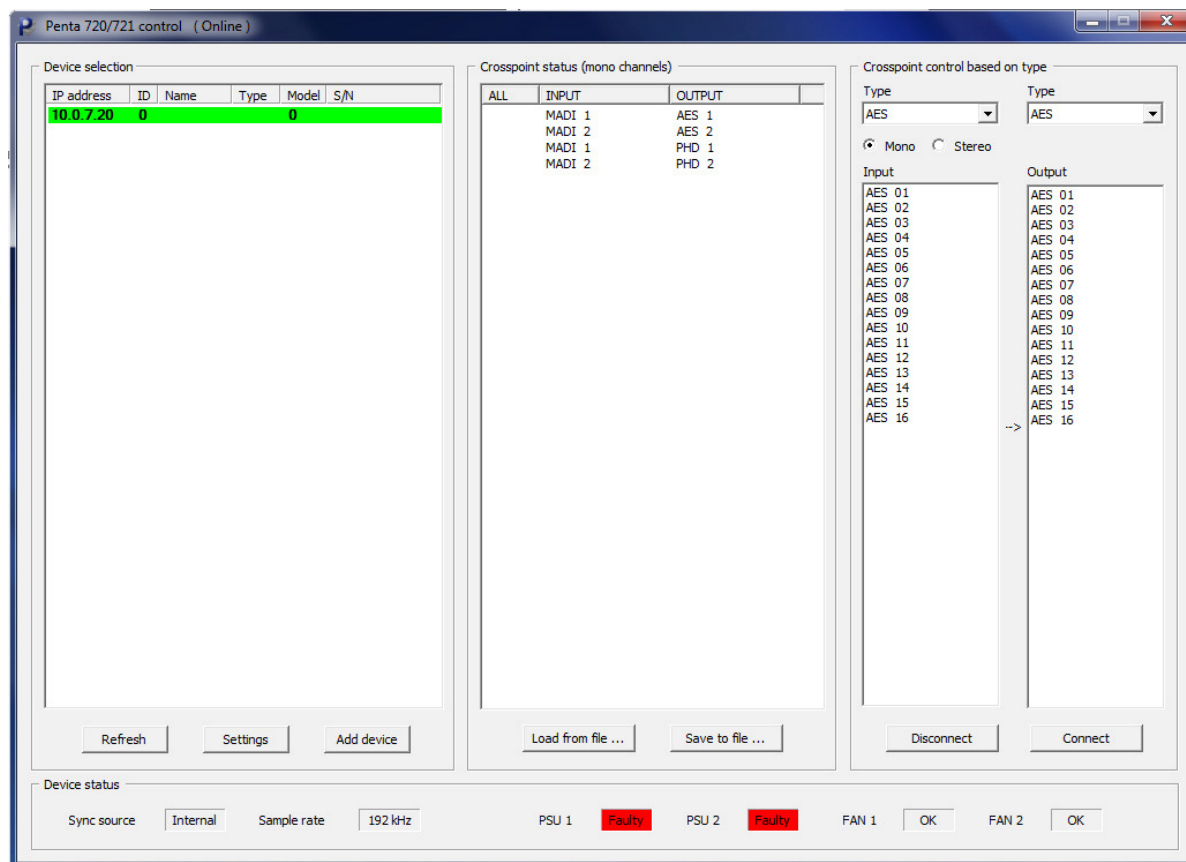


### Pentaman

For description of the Penta manager software please refer to the Pentaman software user guide. Note that when the Penta 721s is a part of an NTP router system, all management of the unit is handled by the control system.



Below is a screen dump of the basic/opening control window of the Penta manager software.



### Front panel LED's

Penta 721s has 3 LED indicators on the front panel. The indicators are **Ready**, **Error** and **PSU OK**. The function of the indicators are described below.



#### **Ready ON**

Green LED indicates that the unit is operative, and all software is loaded and OK.

#### **Ready BLINK**

Green LED blink indicates that the unit is in reconfig mode

#### **Error ON**

Red LED indicates a hardware error on the unit. This could be an I/O card that is not working, a fan fault or a PSU error. A detailed indication will be in device list for the unit in the DADman software or in the alarm view section of the Pentaman control software. In normal operation the LED is off.

#### **PSU OK ON**

Green LED indicates that the power supplies are OK.

#### **PSU OK BLINK**

Green LED blink indicates that one of the two power supply is not OK or absent.



## Reconfig button

The “*reconfig*” button is accessed via a hole in the rear panel using a pen or a similar pointed item. Through the hole a green LED is visible, which will light up indicating the various reconfig modes of the Penta 721s as a result of the activation of the “*reconfig*” button. When Penta 721s is in recovery mode the **Ready** Led on the front panel of the unit will blink.

### Recovery mode



“*reconfig*” push while the unit is powering up

Green LED turns ON

The Penta 721s enters a recovery mode. In this mode only a basic boot code is operative in the unit, and new code can be downloaded by the NTP download software. This mode is used if the software on the platform for some reason is not operative.

The IP address of the unit is the one currently used and stored in the internal EERPOM

“*reconfig*” short push while the unit is in reconfig mode and Green LED is on

Green LED turns OFF

The Penta 721s remains in reconfig mode as described above.

The IP address of the unit is however **the default address 10.0.7.20**, and IP discovery is set to DHCP which will change the IP address if a DHCP server is available in the network

The selection of either of the two recovery modes are fixed after selection. The purpose of the recovery mode is to download new firmware to the unit running only the fixed internal boot code in a simple default configuration if download of firmware is not working in normal operating mode of the unit. By enabling recovery mode with default IP address and network configuration the unit can always be identified on a network via the default setup. Once download is completed the unit will enter normal operation. Alternatively the unit has to be re-powered.

**Note that the IP address referred to is the IP address of the controller/management interface of the unit. This is not the IP address of the IP audio interface if a such is installed. This IP address can not be managed locally on the unit.**

### Restore defaults



“*reconfig*” long push 10 sec. while the unit is in normal operation.

Release *reconfig* button

Green LED OFF

The Penta 721s enters a restore default mode. In this mode all setting of the unit is initialized to the factory programmed defaults.

The IP address of the unit is the one currently used and stored in the internal EERPOM

When the “*reconfig*” button is released the firmware of the unit restarts with the factory default settings and enter normal operation automatically.



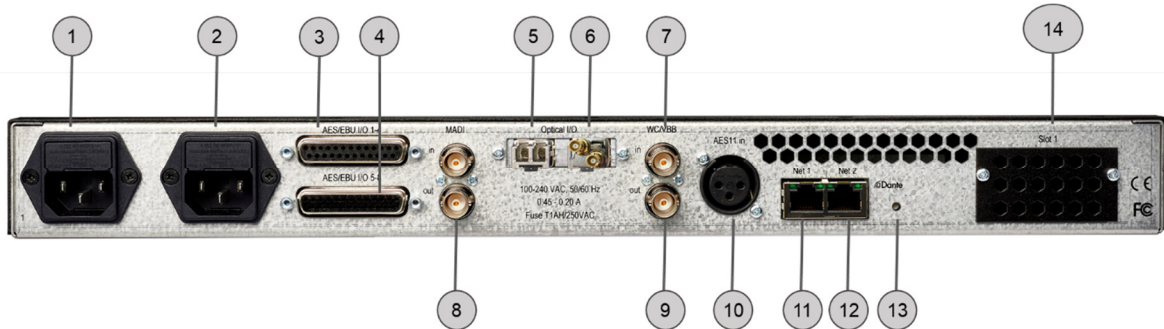
**Rear panel layout.**

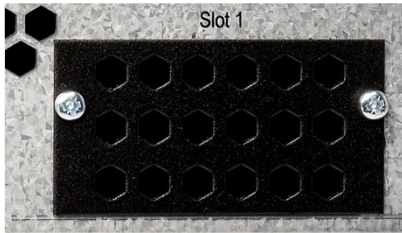
Figure 1

Rear panel layout (Figure 1).

1. Mains inlet 1.
2. Mains inlet 2.
3. 4 x AES/EBU input and output. 25 pole D-sub female connector with TASCAM pin-out.
4. 4 x AES/EBU input and output. 25 pole D-sub female connector with TASCAM pin-out.
5. SFP slot for optional MADI SFP module.
6. SFP slot for optional MADI SFP module.
7. Sync input for Word Clock, Video Black Burst or Trilevel (configurable)
8. Coax MADI input and output, 2 BNC connectors
9. Word Clock sync output, BNC connector
10. AES11/AES3 sync. input XLR female connector
11. Network port for Control and for Dante AoIP, primary port, RJ45 connector
12. Network port for Dante AoIP, redundant port, RJ45 connector
13. Reconfigure/initialize switch
14. Slot for optional Penta card



## Slot for optional Penta Card



One Penta card can be installed in the Penta 721s

1. Remove the top cover of the unit
2. Remove the internal Bracket and the rear Cover plate
3. Slide the Bracket onto the card, and then carefully insert the card in the backplane connector.
4. Fasten the 2 nuts for the bracket at 2 screws for the panel on the card
5. Put the top cover back on the unit

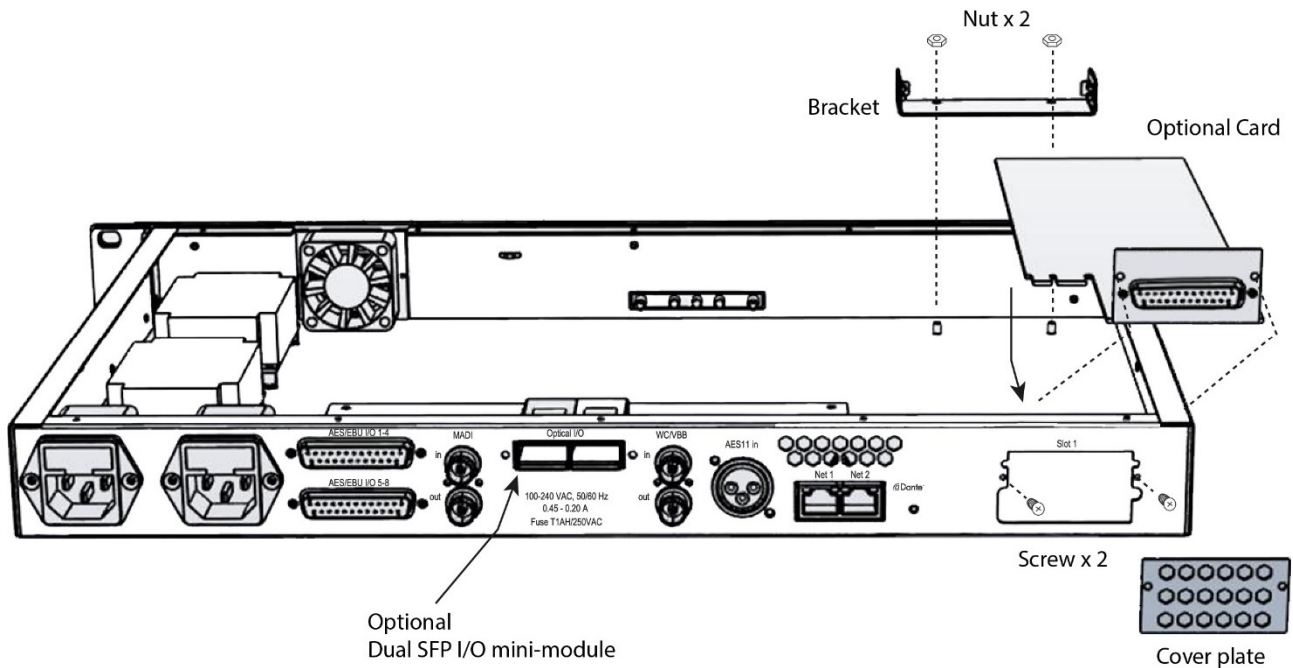
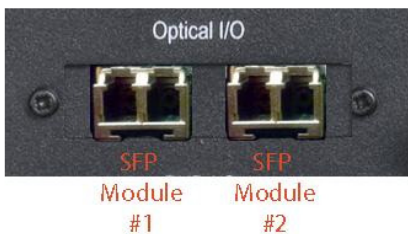


Figure 2

## Dual SFP I/O mini-module



The Dual SFP optical module, can be installed with one or two “Small form-factor pluggable” (SFP) transceiver modules.

The SFP modules are standard types which support various types of optical interfaces with LED or Laser diodes and various wave lengths, as well as MADI via mini HD BNC connectors..

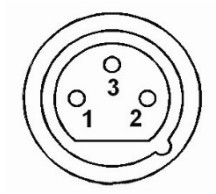
Each SFP module has a receiver and a transmitter part, and can be used for MADI audio I/O or the NTP Dual MADI format called “Hotlink” (only optical).

The right part of the SFP connector is the receiver and the left part is the transmitter.



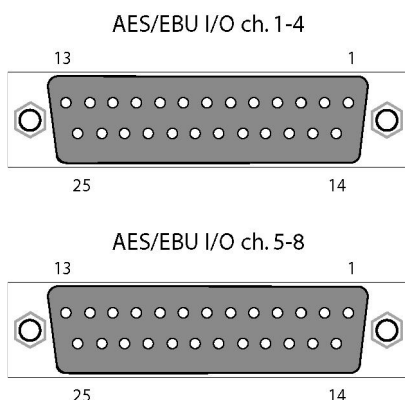
## Terminal Connections.

### AES11 sync input XLR connector



Pin 1. TX. +  
 Pin 2. TX. –  
 Pin 3. RX. +

### AES/EBU input/output 25 pole D-sub connectors.



Female connector for AES/EBU input and output connections

The top connector provides the connection for the first 4 AES/EBU input and output channels. The lower connector provides the connection for the last 4 AES/EBU input and output channels, providing a total of 8 AES/EBU I/O channels.

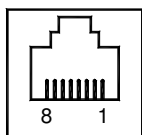
Below is listed the connection for the combined input and output 25 pole D-sub connector. The pinning is according to the proprietary standard by the company **Tascam**.

#### Female connectors

#### Connections channel 1-4 i.e. channel 5-8

Pin no	Func.	Pin no	Func.
1	DOUT 4/8 +	14	DOUT 4/8 -
2	GND	15	DOUT 3/7 +
3	DOUT 3/7 -	16	GND
4	DOUT 2/6 +	17	DOUT 2/6 -
5	GND	18	DOUT 1/5 +
6	DOUT 1/5 -	19	GND
7	DIN 4/8 +	20	DIN 4/8 -
8	GND	21	DIN 3/7 +
9	DIN 3/7 -	22	GND
10	DIN 2/6 +	23	DIN 2/6 -
11	GND	24	DIN 1/5 +
12	DIN 1/5-	25	GND
13	N.C.		





### Ethernet, RJ45 connector

Pin 1.	TX. +
Pin 2.	TX. –
Pin 3.	RX. +
Pin 4, 5, 7, 8.	NC
Pin 6.	RX -

## Electrical specifications.

Power consumption, no card installed.....	15 VA max.
Power consumption, w. Penta card installed.....	30 VA max.
Input voltage .....	90 – 260 VAC
	100 – 240 VAC Nominal, 47 - 63 Hz
Mains fuse, mounted in IEC connector.....	1 A, T1AH/250V
Safety compliance .....	EN 60950-1:2006/IEC 62368-1

Power supply cord must be min. light sheathed flexible cord according to IEC60227 (designation 60227 IEC 52) and include a protective earth conductor having a green-and-yellow insulation. Cross-sectional areas min. 3x0.75mm<sup>2</sup>

#### Mains line plug type

#### Correct type acc. to standard

110-125V

UL817 and CSA C22.2 no 42

220-230V

CEE 7 page VII, SR section 107-2-D1/IEC 83 page C4.

240V

BS 1363 of 1984. Specification for 13A fused plugs and switched and unswitched socket outlets

## Mechanical Dimensions:

Chassis standard .....	19", 1 RU
Chassis depth, without connectors mounted.....	33,0 cm
Chassis body width .....	43,5 cm
Weight, not including optical modules or card .....	2 kg

## Environment specifications.

Operating Temperature .....	0 – 45 °C
EMC compliance.....	EN 55103-1, part 1: emission
	EN 55103-2, part 2: Immunity
	FCC 47 CFR part 15 (B): emission