

Installation Guide

Penta 721 digital I/O



NTP TECHNOLOGY

A DAN TECHNOLOGIES COMPANY

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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.
2. Clean only with dry cloth.
3. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
4. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
5. 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.
6. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
7. Only use attachments/accessories specified by the manufacturer.
8. 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.
9. Unplug this apparatus during lightning storms or when unused for long periods of time.
10. 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.

WARNING — Hazardous moving parts. Keep fingers and other body parts away.



General description

The PENTA 721 Digital I/O is a 19" wide, 1RU high digital patch bay and interface unit for Digital Audio signals compliant to the formats: AES3, MADI (AES10), IP audio based on Dante™, and Digilink interface compliant with Pro Tools™ | HD/HDX by the company Avid. PENTA 721 has a total of 8 AES3 I/O (16 mono) channels, two MADI BNC connectors for 64 channels of I/O, and optionally additionally one ST optical connector or two SFP optical connectors for a total of three MADI I/O connectors providing 192 I/O channels. 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. There are two Digilink primary ports, which each has 32 channels of I/O for a total of 64 channels in and out to Pro Tools.

The digital patch bay of PENTA 721 is based on a digital router matrix with 400 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 721 is synchronized. The unit is based on synchronous routing so all digital signals must have the same basic sample-rate. No sample rate functionality is available.

As standard the basic chassis is equipped with one power supply. Optionally two power supplies can be installed.

All installation guides and more documentation can be downloaded from www.ntp.dk

Operation

The Penta 721 is operated via the Network port using the Penta manager control program, or via the NTP Router Control System RCore, 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.

Front panel LED's

Penta 721 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 report will be in the alarm log of the control software. In normal operation the LED is off.

PSU OK ON

Green LED indicates that the power supplies are OK.

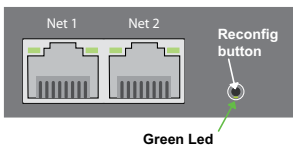
PSU OK BLINK

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. Trough the hole a green LED is visible, which will light up indicating the various reconfig modes of the Penta 721 as a result of the activation of the “reconfig” button. When Penta 721 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 721 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

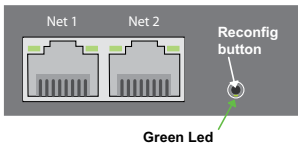
The Penta 721 remains in reconfig mode as described above.

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

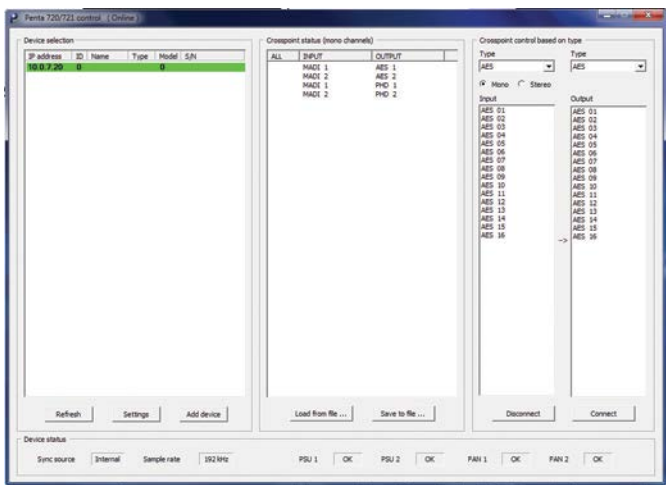
The Penta 721 enters a *restore default* mode. In this mode all setting of the unit is initialized to the factory programmed defaults.

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.

Penta manager software

For description of the Penta manager software please refer to the software user guide. Note that when the Penta 721 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.

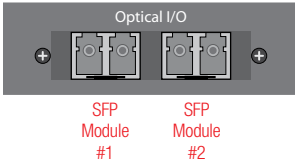


Rear panel layout



1. Mains inlet 1. The base unit is equipped with one power supply unit mounted with two redundant power supplies. Each power supply is connected to its own power inlet. Both mains inlets must be connected to either the same mains supply or to two individual supplies for fully redundant operation.
2. Mains ON/OFF switch or Mains inlet 2 if two power supplies are installed
3. Mini module slot
4. AES/EBU input and output. 25 pole D-sub female connector. AES/EBU I/O channel 1-4
5. AES/EBU input and output. 25 pole D-sub female connector. AES/EBU I/O channel 5-8
6. MADI input and output BNC connector, MADI I/O number 1
7. Dig Link interface port for Pro Tools HDX, Primary port
8. Dig Link interface port for Pro Tools HDX, Primary port or Secondary port (configurable)
9. Word Clock or Video Black Burst sync. input BNC connector (configurable)
10. Word Clock sync. output BNC connector
11. AES11/AES3 sync. input XLR female connector
12. Ethernet control and IP audio Primary port (net 1) RJ45 connector
13. Ethernet control and IP audio Secondary port (net 2) RJ45 connector
14. Reconfigure/initialize switch

Dual SFP optical I/O mini-module, 720-150



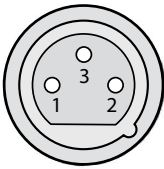
The Dual SFP optical module, can be installed with one or two “Small form-factor pluggable” (SFP) transceiver modules.

The SFP modules are standard types which support various types of optical interfaces with LED or Laser diodes and various wave lengths.

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”.

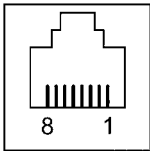
The right part of the SFP connector is the receiver and the left part is the transmitter.

Terminal Connections



AES11 sync input XLR connector

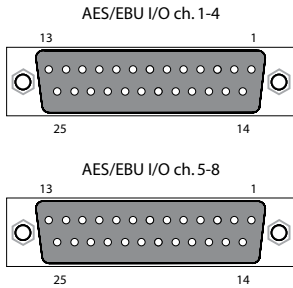
Pin 1.	TX. +
Pin 2.	TX. -
Pin 3.	RX. +



Ethernet, RJ45 connector

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

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.		

Electrical specifications

Power consumption	52 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

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. 3x0.75mm²"

<u>Mains line plug type</u>	<u>Correct type acc. to standard</u>
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	26,0 cm
Chassis body width	43,5 cm
Weight, not including optical modules	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

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