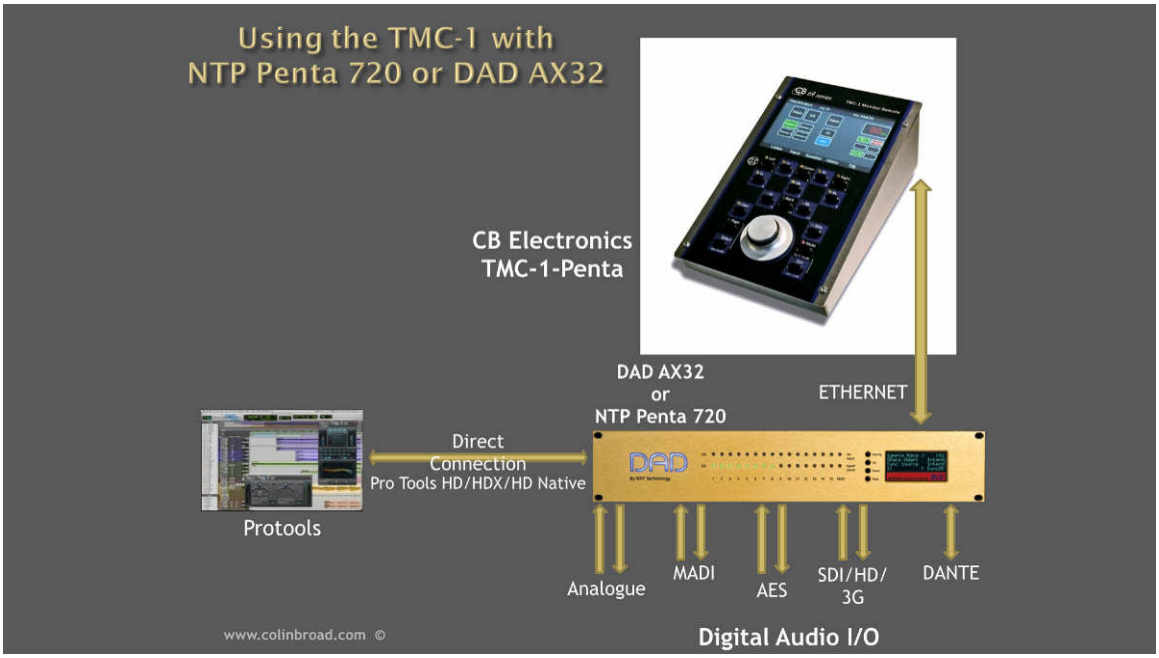
CB Electronics
TMC1-Penta Monitor Remote

Use with the TMC-1Guide

Version 4.0



Contents

NTP Penta/DAD AX32

TMC-1-Penta User guide

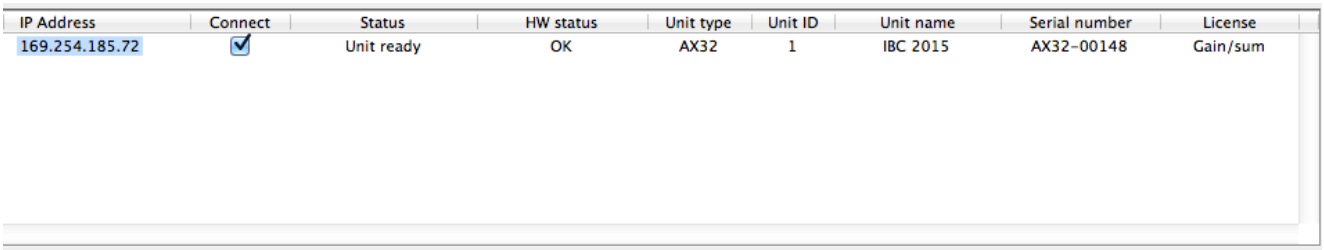
This document only describes the Ethernet connections of the TMC-1 and the Mac/Windows setup software and should be used with the TMC-1 Reference available from the TMC-1-penta web page.
http://www.colinbroad.com/cbsoft/tmc1/tmc1penta.html

Notes:

1) The TMC-1-Penta is not a remote for DAD|Man but communicates directly to the DAD AX/DX32 or NTP Penta 720/721. Controlling the same ports on the DAD/Penta with both will give unpredictable results. The TMC-1 and DAD|Man may both be connected and controlling different ports and cross points.

DAD/Penta Gain/Sum License

The DAD AX/DX32 or NTP Penta 720/721 must have the Monitor and PPM option installed to work correctly with the TMC-1 - See image below.



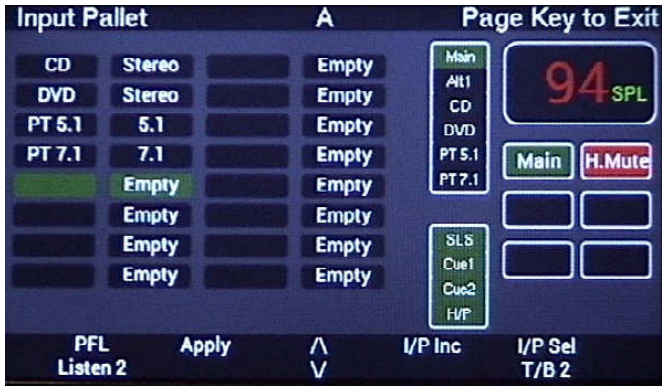
IP Address	Connect	Status	HW status	Unit type	Unit ID	Unit name	Serial number	License
169.254.185.72	☑	Unit ready	OK	AX32	1	IBC 2015	AX32-00148	Gain/sum

TMC-1 XMon/Penta Comparison

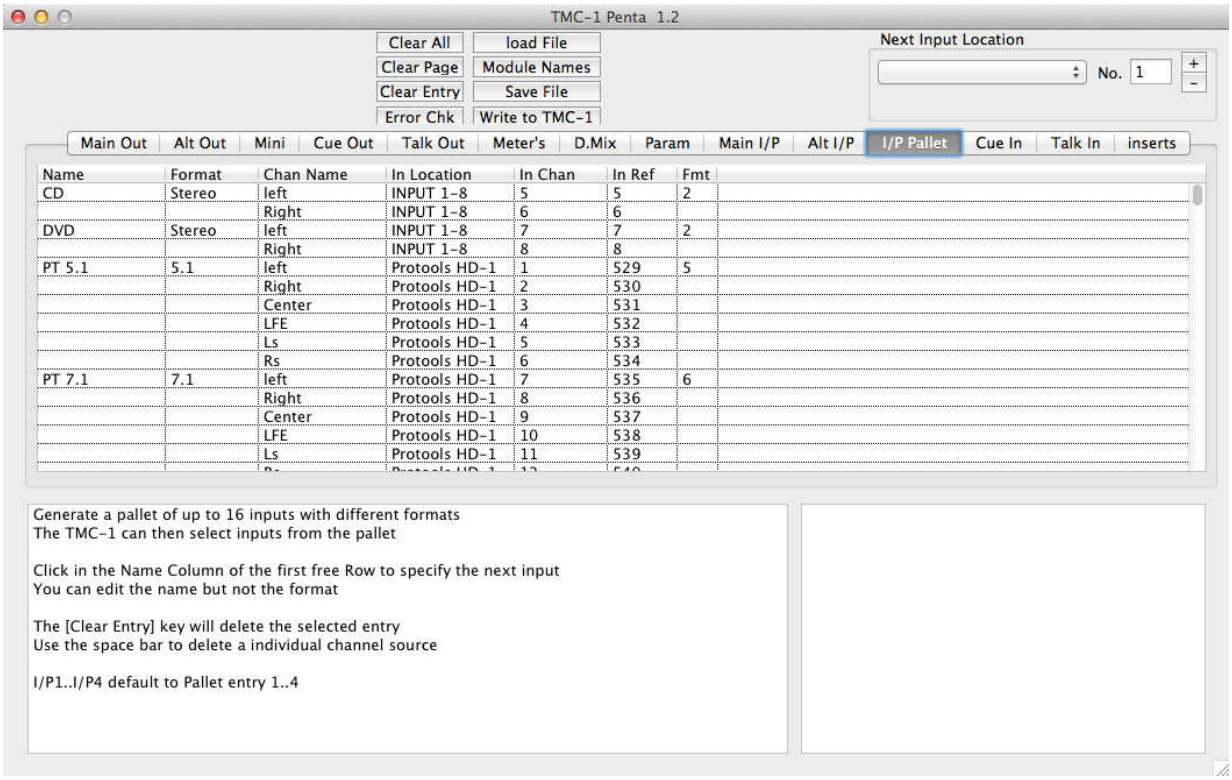
The TMC-1 Penta has a number of improvements to the TMC-1 XMon, the functionality of the XMon is defined by the hardware, the DAD AX/DX32 or NTP Penta 720/721 is configured by the TMC-1. The TMC-1 uses a predefined framework, you use the TMC1-Penta2 Software on mac or windows to define as many input and outputs as you require. You may also define the Input, output and channel names.

Input pallet

The TMC-1-Penta has the same number of inputs as the TMC-1-XMon but where the XMon inputs are fixed (two 8 channel inputs and four Stereo inputs) the Penta version has two 64 channel inputs and four 12 channel inputs which may be selected from a pallet of 16 inputs. For systems with a maximum of 12 outputs a menu option allows the two 64 channel inputs to be selected from the 16 input Pallet. The pallet can be accessed from the I/P select page using the [Pallet] key.



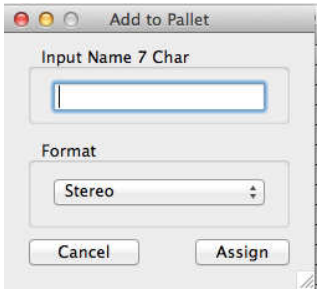
The Pallet selection is defined in the TMC1-Penta2 program



Adding an input to the pallet

Click in the name box of the first unused row to add a new input, this will display the Add to pallet window. You can then enter the name and select the format. Click on assign to add.

You can then assign the individual inputs as normal by clicking in the location box.



Main and Alt Input

The Main and Alt inputs can be up to 64 channels wide and are assigned separately. Where there are no sources with more than 8 channels there is an option In the Setup Menu to select the Main and Alt inputs from the Pallet.

I/P1, I/P2, I/P3 and I/P4

These can be up to 12 channels wide and can be assigned to any input from a pallet of 16 inputs. Each input on the pallet can be a different format; the monitor output is set to the correct format when the input is selected. Where the maximum number of monitor channels is eight or less the Main and Alternate inputs may also be selected from the pallet.

Mic/Line Input Controls

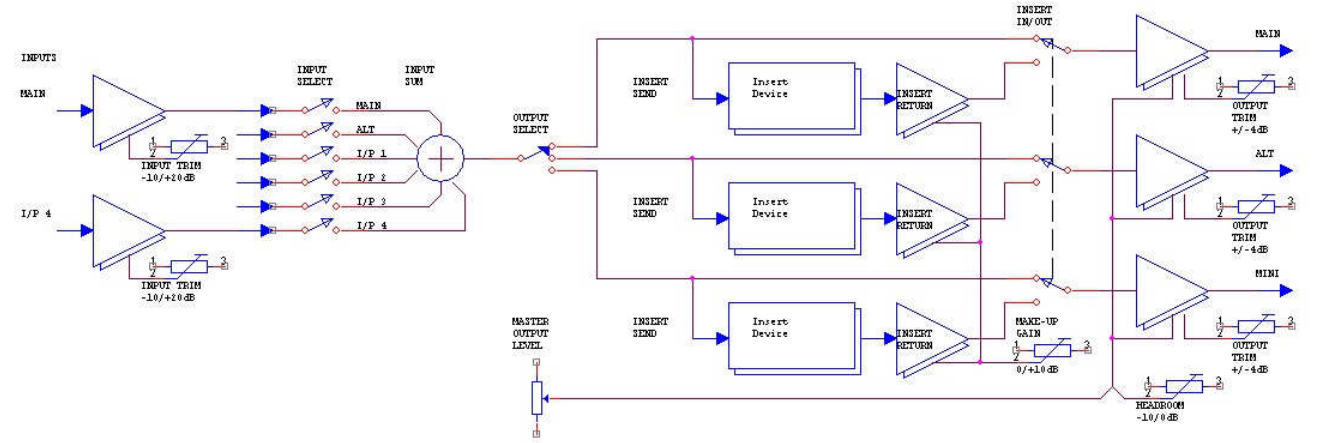
The DAD AX32 or NTP Penta 720 can be fitted with analogue input card(s) each with 8 Microphone or Line inputs. The TMC-1-Penta MicLine page allows you to meter the digital levels, control the Gain, select between Microphone or Line Input, and enable/disable Mute, phase reverse and Phantom Power. The meters on the Mic/Line page show the Mic/Line digital input levels and the PFL (Pre Fade Listen) key switches the selected input to the monitoring. To select the Mic/Line page you have to assign one of the user keys.

Talkback Mic Input Gain

If you are using the Analog input cards on the DAD/Penta then use the Micline user key as described above to set the Mic input Gain.

Inserts

By default a maximum of 16 inserts may be defined (Let me know if you need more!) and be assigned to any combination of Main, Alt or Mini speakers. The block diagram below show how they are connected. The Make-up gain is set in the menu and applies to all inserts. The Headroom setting is also set in the advanced Menu and applies to all outputs.

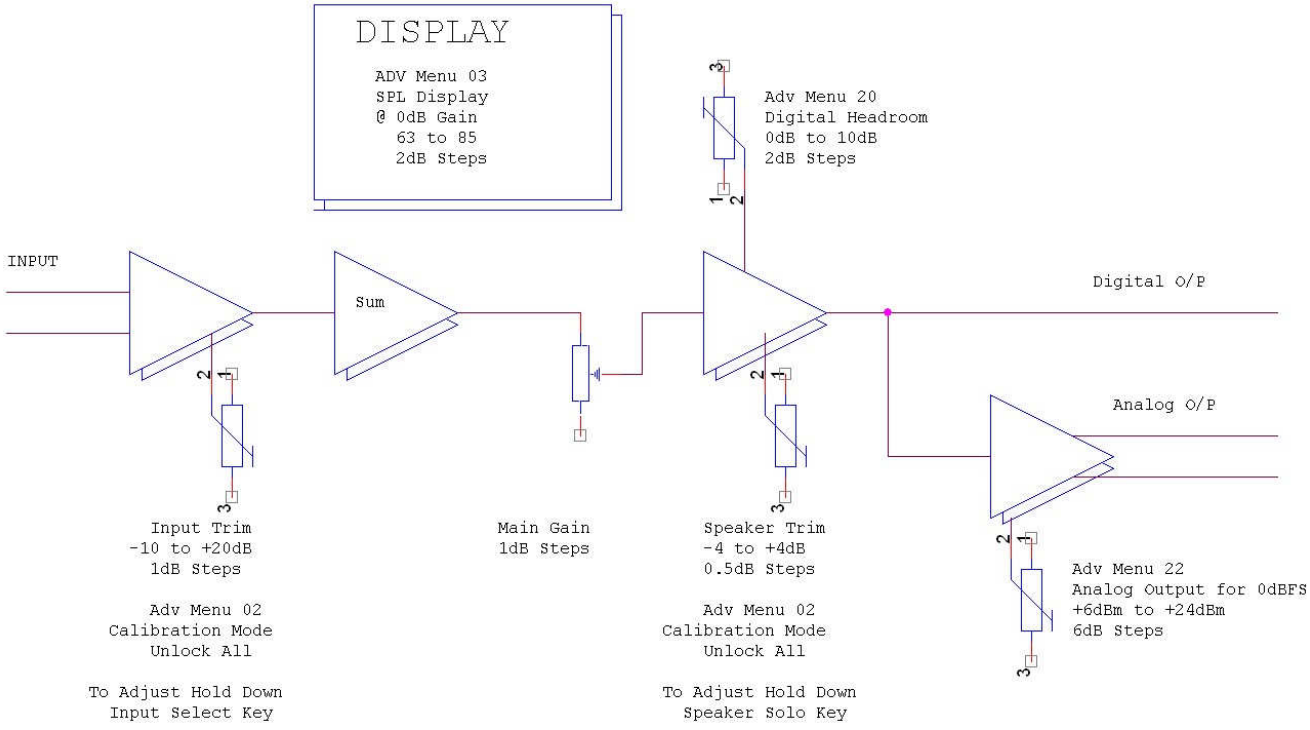


Monitor Signal path with Inserts, Input/Output trims, Make-up gain, headroom and Master gain control. When all trims set to 0dB and 0dB Headroom a master gain to 85 SPL will result in 0dB gain.

Digital Headroom

Internally the DAD has 40dB of headroom but this is not available on the outputs. The Digital Headroom Adv Menu is used to set the digital Headroom on the outputs especially when using equalisers on the inserts or a Dolby RMU with makeup gain.

TMC-1-Penta Gain Structure



Analogue Output Level Control

In addition to the Digital headroom the Analogue Output Level Adv. Menu is used to set the signal level for 0dBFS on all analogue outputs.

Ethernet Connection

The TMC-1 communicates to the Penta via Ethernet, when connected to the network it will discover any connected Penta's and display them. If it has been paired with a Penta and recognised the Serial number it will select the paired Penta.

To check the Ethernet connection depress [Select] and [Page] together to enable the Page select menu. From the Page select menu depress the [E-Net] key to display the NTP Penta/DAD AX-32 pages. Use the [<] and [>] keys to step through.

Note 1: Although discovery is not dependant on the sub-net address all further commands are. The TMC-1 supports DHCP, when DHCP is not enabled the subnet address of the selected Penta/DAD is copied when selecting it on the NTP Units page.

IP Address

Depending on your Ethernet setup it may be necessary to set the subnet address on the TMC-1 for discovery to work when using the TMC1-Penta2 program. You can use the TMC-1 program to set the IP address of the TMC-1 via the USB port. Care should be taken that the IP address selected does not conflict with any other device on the network. By default the TMC-1 address is xxx xxx xxx 250, where xxx xxx xxx is the subnet address.

New Engineer Phones O/P

The Engineers Headphone output allows the engineer to monitor inputs, cue inputs and cue outputs without disturbing the main monitor output. A window has been added to display the current headphone source. The following user keys are provided for the TMC-1-Penta Engineers phones O/P:

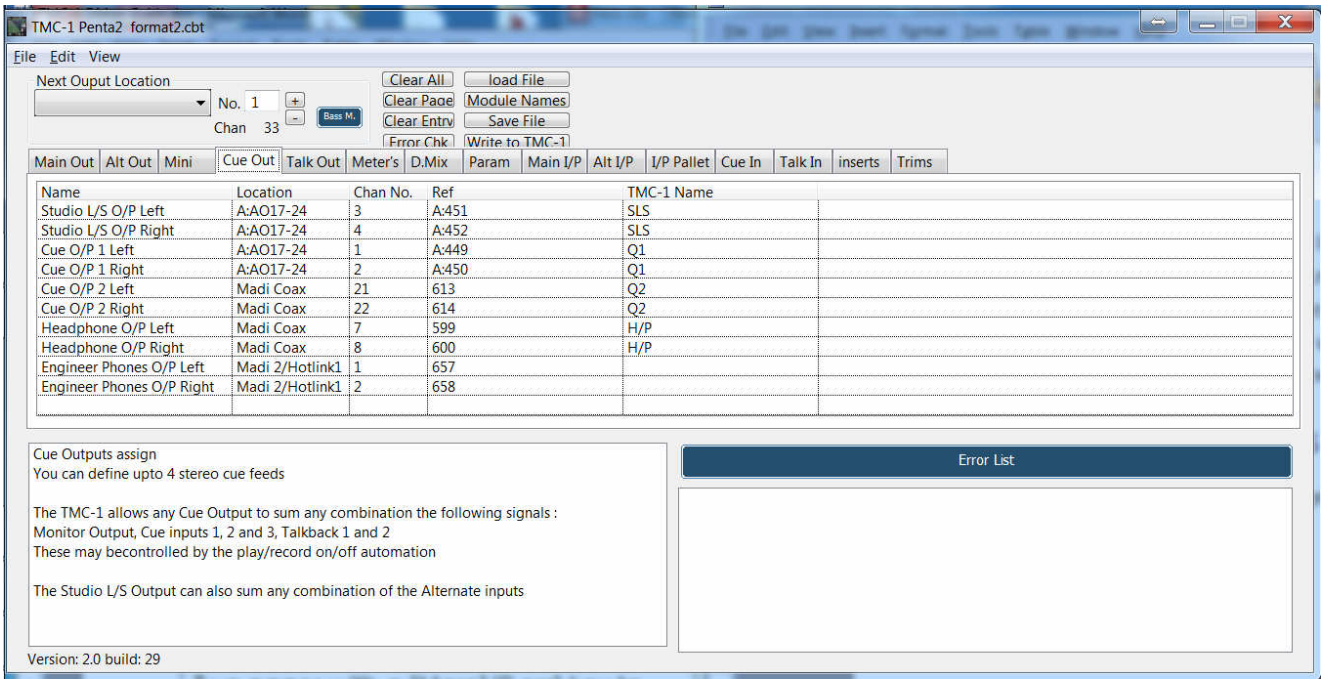
[Phones]:
Engineer Headphone Enable, hold down and use knob to adjust gain

[Ph Source]:
Access the Phones source selection pages, two pages are available with a [More/Less] key to switch between the pages.

[Ph Follow]:
Headphones follow output selection, (hold down and use knob to adjust phones gain)
This key also allows you to A/B between the current monitor output and the selected source.

[PFL->Ph]:
Route AFL/PFL to Phones – Phones Enable/Disable will drive this function

Define the output on the Cue out page as shown below



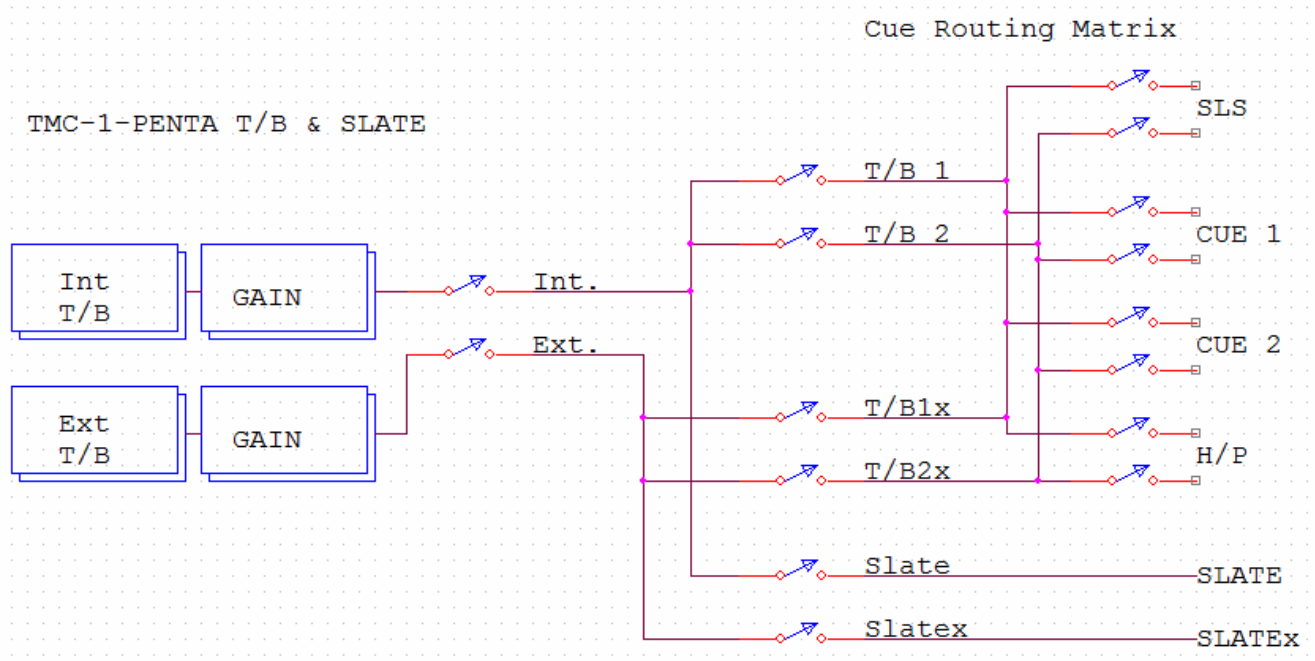
Talkback

TMC-1 Microphone

You can use the Microphone in the TMC-1 as the internal microphone by connecting it to an analogue input on the NTP/DAD/MTRX. The microphone output can be found on the 15pin "XMon" connector on the Rear of the TMC-1. When using the TMC-1 microphone with the switches on the TMC-1 the mechanical coupling causes a click on turn off. There are a number of solutions to this

1) Use an external switch connected to the GPIO input on the TMC-1
2) Connect an external Mic to the 3.5mm jack on the rear of the TMC-1 or directly to the NTP/DAD/MTRX
3) Use the Auto-mute commands to disable the Talkback on entering Play and/or Record.

Talkback and Slate routing



Internal T/B O/P = Slate O/P
External T/B O/P - Slatex O/P

Listen Back Microphones

Use Omni-directional microphones for listen back, PZM or Boundary effect microphones should work well.

Headphone Jack

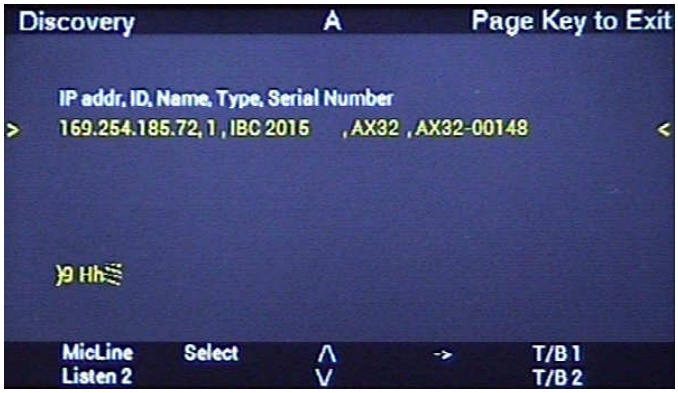
The headphone jack is connected directly to the 15 pin "XMon" connector. The input is unbalanced with two ground returns.

Penta E-Net Pages

Discovery Page:

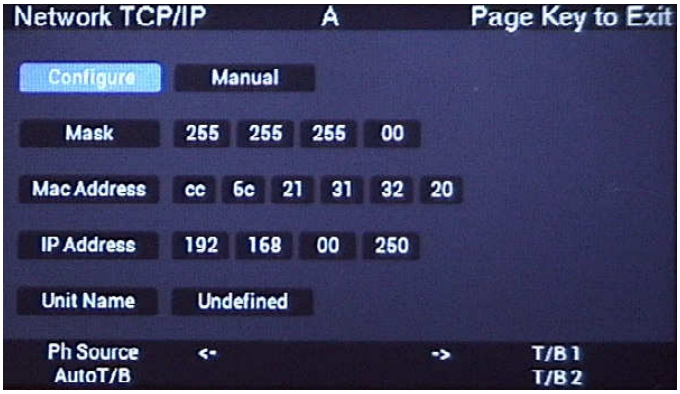
This page displays the NTP units discovered by the TMC-1 (Max 4). The unit highlighted in Yellow is the currently connected unit. To select, use the [^] and [v] keys and then depress the [Select] key.

[->] Will display the following Page



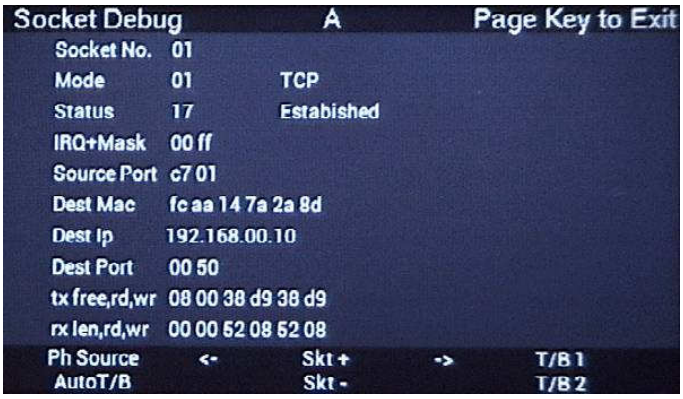
Network Page:

This Page shows the current setup of the Network connection. The TMC-1 copies the subnet address from the selected Penta on the NTP Units page, the last number (250 in the image) may be defined from the "TMC1-Penta" program on Mac or Windows with the Unit Name.



Socket Debug Page:

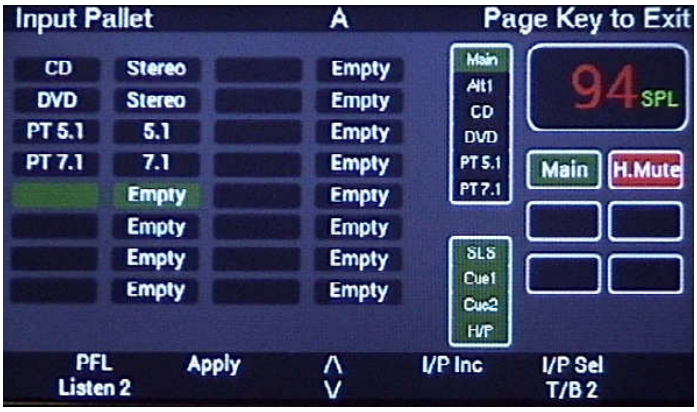
Used to debug systems, You can change the socket number using the [+] or [-] keys.
Socket 00 = Discovery and setup
Socket 01 = Penta Control
Socket 02 - Meters



Other Penta Pages

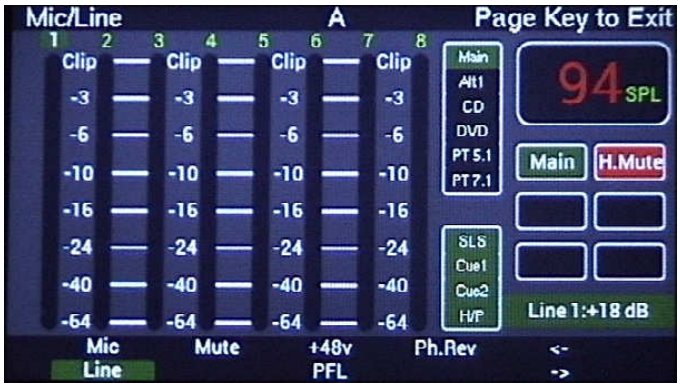
Input Pallet:

The TMC-1-Penta provides a pallet of 16 user definable inputs from which you can select. To access first select the Input Select Page and select [Pallet]. Use the [^] and [v] keys to select the input, use the [I/P Inc] key to select the input and depress [Apply] to assign. Note: The Input format is also displayed.



Mic/Line Input:

The MicLine input screen allows you to configure a analog input card. To select the input use the [<-] and [->] keys. To change the Mic Gain hold the [Mic] key depressed, to change the Line Gain hold the [Line] key depressed.



Cue Sends Page:

[Enable] mutes/unmutes the selected output.

[PFL] will root the selected cue to the current monitor output

[^] and [v] are used to select the cue send output

Depressing the [Select] key will enable the source selection and gain for the selected cue output.

## Phones Source Page Access using the [Ph Source] key Two pages with a [More]/[Less] key to select between the pages	

HD15 Connector (XMon)

The XMon connector is available on the TMC-1-Penta for the following

Talkback Microphone and Headphone

The TMC-1 provides a analogue Talkback Microphone with preamp and Headphone connection which are connected to the HD15 connector. To use connect to Analogue Inputs and outputs on the D-Mon

Internal Talkback Microphone

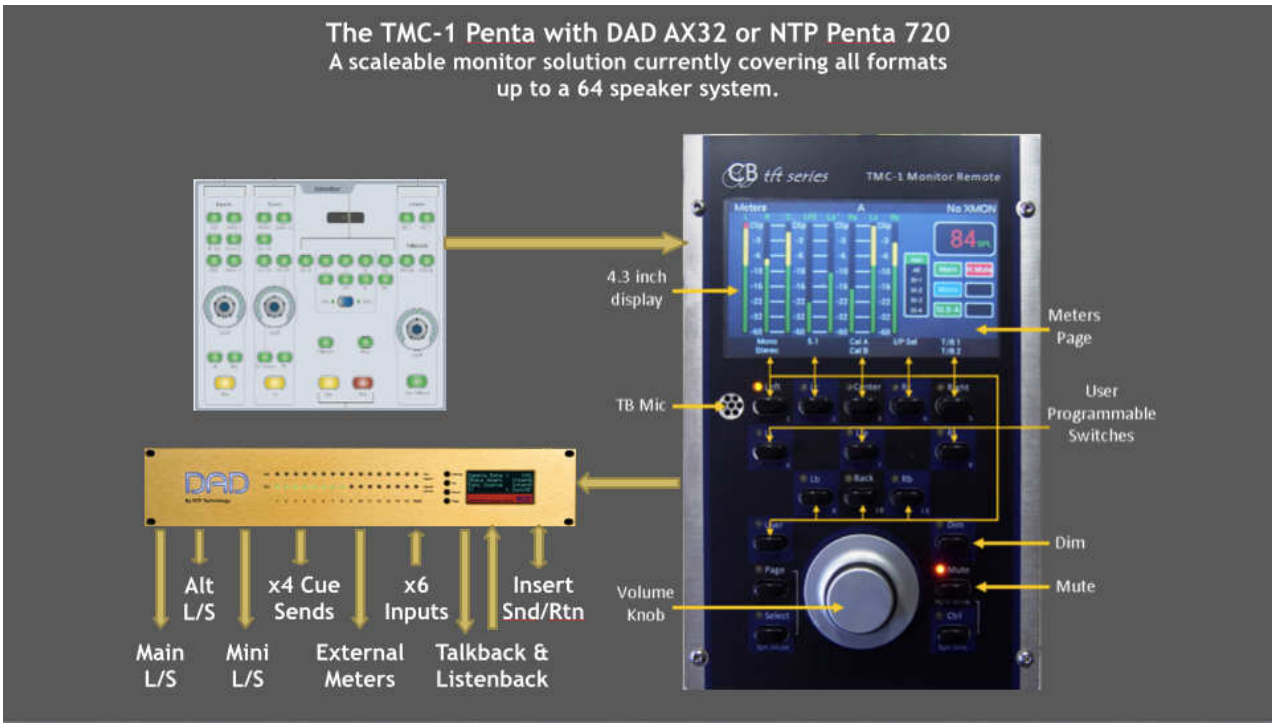
An electret mic amplifier is provided on the TMC-1, normally connected to the internal microphone. A 3.5mm Jack on the rear is provided to that a suitable external "Laptop Mic" may be used. The mic output is on the HP15 pin connector and may be configured with a balanced or unbalanced output.

Headphone Jack

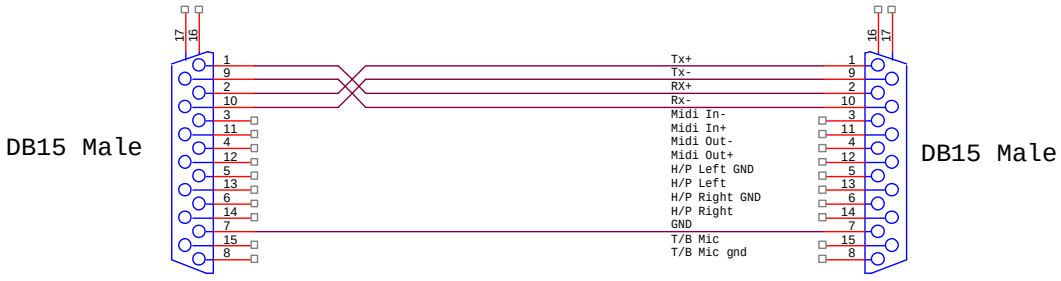
The headphone jack is connected directly to the HD15 pin connector. The input is unbalanced with two ground returns.

Connecting to a Icon Console

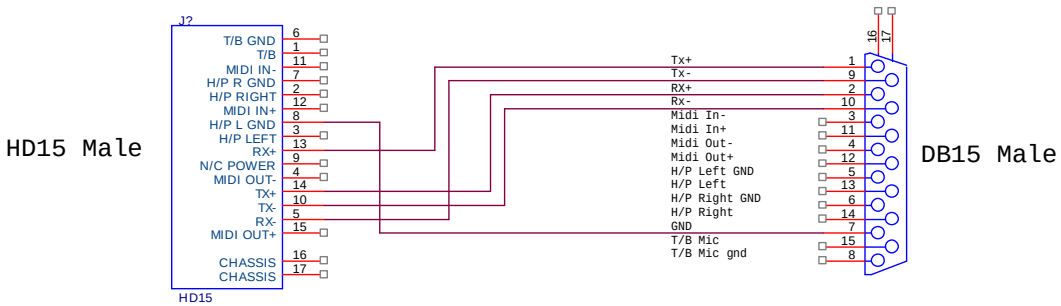
The D-Control or D-Command monitor control may be used to control the TMC-1-Penta using a special cable. The Icon monitor control panel has no tally back from the XMon so that although the TMC-1 will display all changes made by the Icon monitor control any changes made on the TMC-1 will not be displayed on the Icon Monitor Control display!



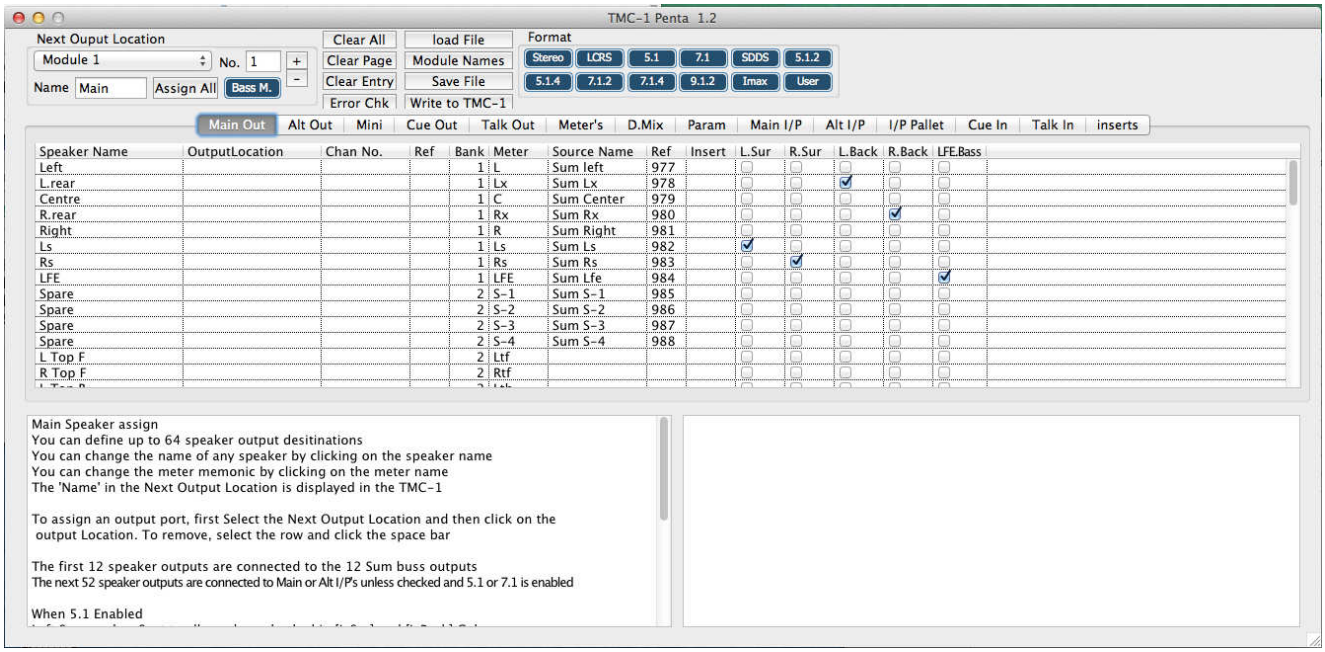
ICON/D-COMMAND/D-CONTROL CABLE
MIDI OVER RS422
USING Original DB15 Connector on TMC-1



USING New HD15 Connector on TMC-1



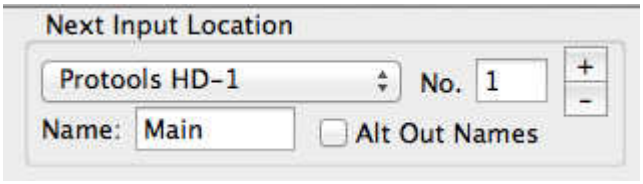
TMC1-Penta2 Software

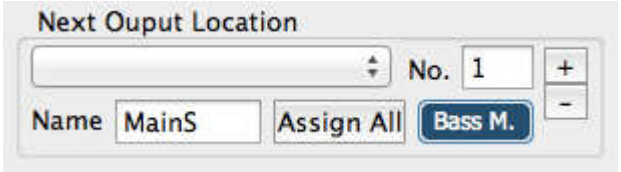


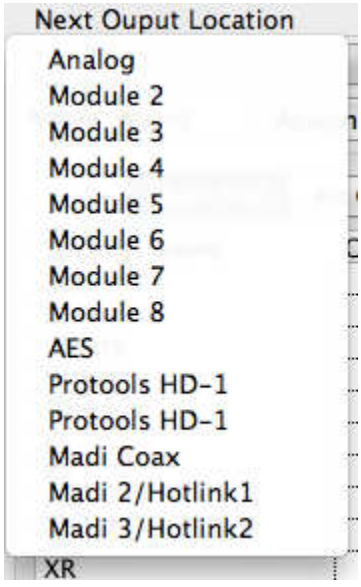
When you open the TMC1-Penta software you will see the screen above (Windows Version) The Lower Left box indicates the function and possibilities of each page. The Lower Right box is used to display any errors found by the error check routine.

The DAD/Penta has a selection of different outputs and inputs, each of which can handle a number of channels. The drop down box in the Output Location and input Location groups is used to select the input or output location.

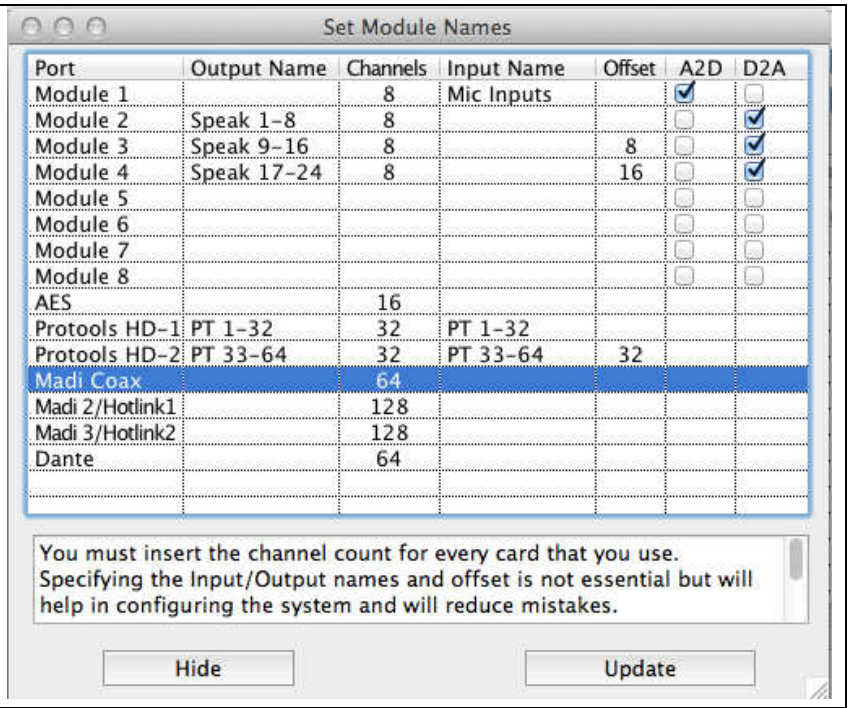
The channel number can then be selected.







For convenience you can rename the Modules and fixed inputs/outputs using "View/Port Names" from the menu.



Input/output Name: The Input and Output Location groups have separate names; this allows you to set the name displayed on the TMC-1 Input and outputs.

Channels: You can define the maximum number of channels for each card to avoid errors

Offset: If you define an offset, this is added to the channel number to improve readability

A2D: Checking this box will assign the mic line input card, the default is module 1

D2A: Checking this box will allow the TMC-1 to set the nominal output level for 0dBFS

Note: all inputs defined as analogue will be prefixed with A:

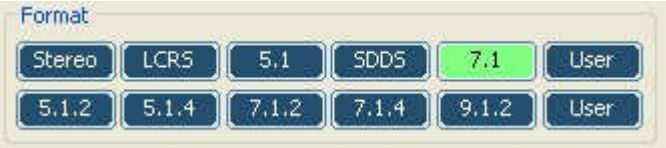
example A:129 for Module 3, Analog input 1.

The Next Output Location group has two extra controls.

1) **[Bass M.]** This key will enable the Rear Bass Management, This sums the surround left and surround right and outputs and adds them to the list of available sources for the main, alt and mini outputs.

2) **Assign All** This key will assign any unassigned Main output in the range 'x1…x48 Out' to the corresponding Main Input 'x1…x48 in' where they have been defined!

Format Group



Clicking on any format key will assign the names to the Input/Output channels. They are assigned in the TMC-1 sequence which is the same as XMon. The external input and output layout is a user selection. When an Input channel is set to 5.1 any channel assigned to the Left/Right surround will be duplicated on the left and right rear surrounds.

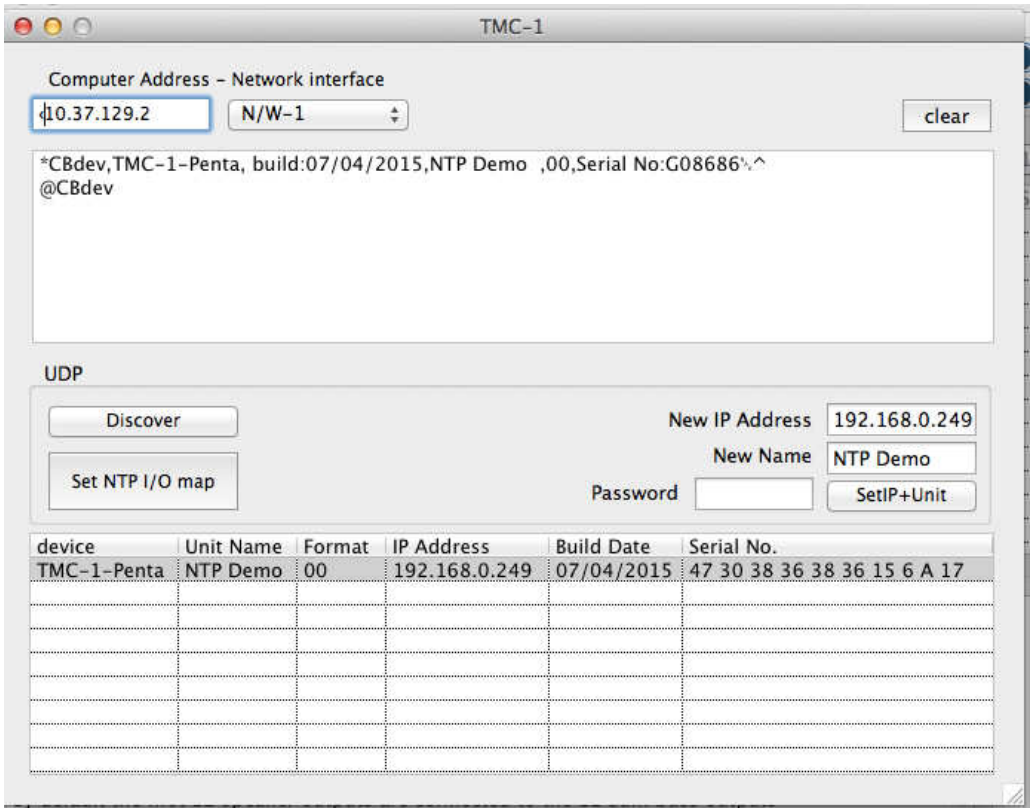
Use the program to specify the output destinations and input sources.

Once the in/out map is specified it should be saved and then transferred to the selected TMC-1. The TMC-1 does not have to be disconnected from the network for this.

Tip: The speaker, talkback, listen and cue send layout will not change as often as the project layout, save the speaker layout as a template file.

To communicate with the TMC-1 click on [Write to TMC-1] and the Window shown below will open [Mac Version].

The TMC-1 is connected by Ethernet and the first action is to discover the Penta/AX32. If setting up the TMC-1 for the first time the network address and unit name should be specified.



Note 1: The TMC-1 does not support DHCP, we recommend using high IP numbers, the default IP of the TMC-1 is 192.168.00.250.

Note 2: The TMC-1 serial number is unique to each unit and is used to define the destination instead of the IP address. This allows the IP address on the TMC-1 to be defined by this program.

Note 3: Both the TMC-1 and it's NTP Penta or DAD AX32 must be on the same sub-net. If you have setup the IP address of the NTP unit, when you select the DAD/NTP Penta the subnet address of the NTP Penta or DAD AX32 will be copied to TMC-1 (the first three numbers for example 192.168.00). The Copy IP key on the 'NTP Units' page of the TMC-1 will copy the subnet address and set the unit address to 250 in this example 192.168.0.250.

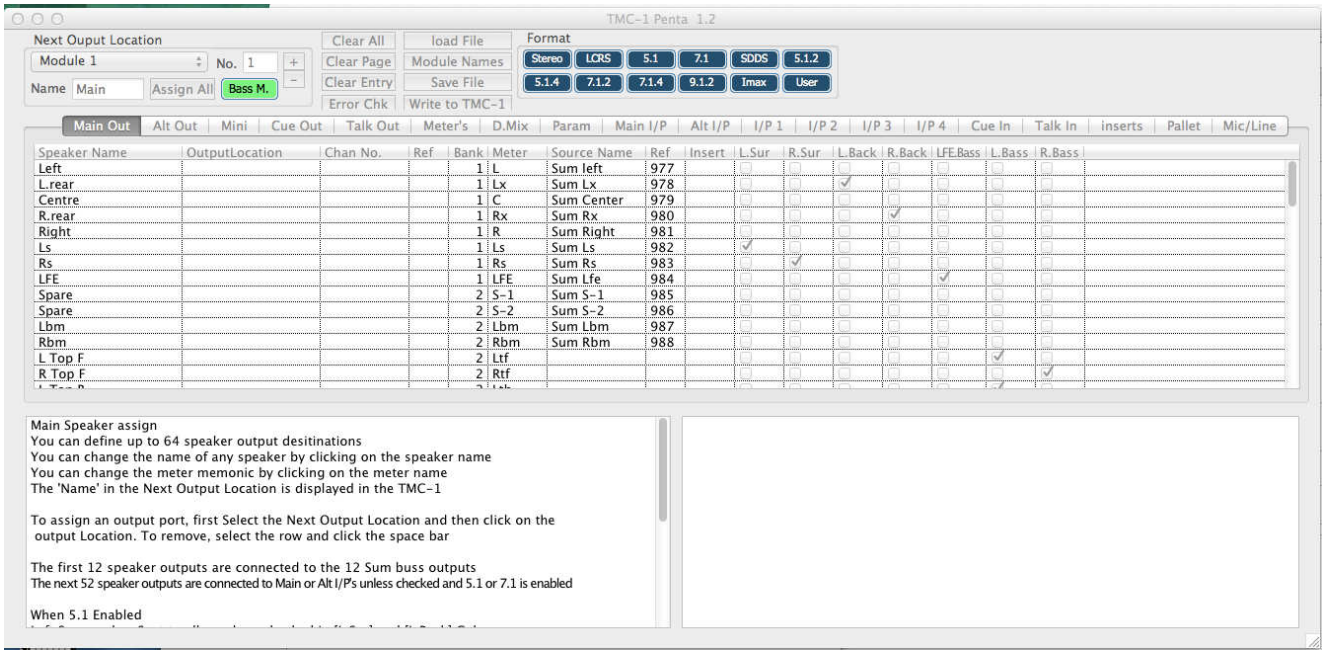
Note 4: Although the computer does not need to be on the same local network but it may require modification to the firewall to allow it to communicate.

Note 5: The TMC-1 may be connected directly to the NTP Penta/AX32 using a 1:1 Cat 5 or Cat 6 cable.

Bass Extension

Bass extension is handled in the TMC-1-Penta2 setup program, you can add any combination of channels to the LFE channel and to two further Bass Extension channels (L.Bass and R.Bass) when selecting the Main or Alt outputs. The L. Bass and R.Bass are enabled in the Next Output Panel.

Checking the boxes in the appropriate columns will add the selected channel(s) to the LFE, L.Bass or R.Bass outputs.



Note: the bass extension outputs should be filtered as required, the DAD AX32/NTP Penta 720 does not have any filtering. Digital filtering can be included using the Inserts

Surround Switching

Immersive sound systems normally require all the speakers to be driven individually, but in traditional 5.1 and 7.1 systems the speakers are arranged in groups. The check boxes for L.Sur, R.Sur, L.Back and R.Back are provided to define these groups.

Note. You can adjust the surround gain separately for 5.1 and 7.1. Enable calibration and hold the 5.1 or 7.1 key depressed to adjust.

DAD|Mon Names

To facilitate the use of TMC-1-Penta and DAD | Mon at the same time the TMC-1-Penta names all the inputs and outputs used. The Table below defined the names used for the different input and output groups.

Note1: All names assigned by the TMC-1 start with "T".

Note 2: If inputs and outputs are changed you must reset the DAD/Penta to clear all original routing and names.

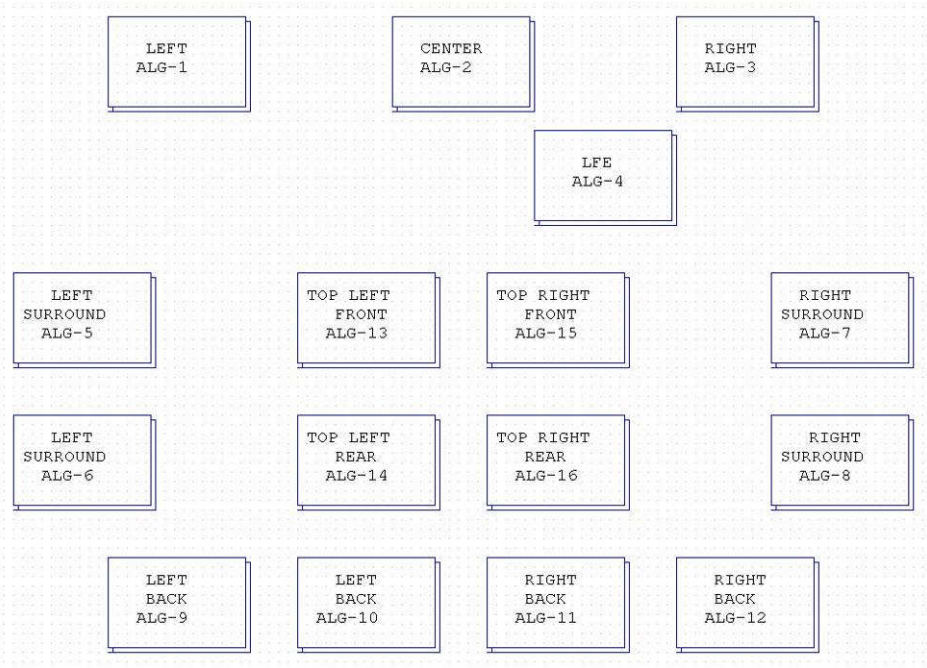
Group	Name	Chanel Suffix	Example
Main Output	7 Characters of Name	Meter Names	T-Atmos L
Alt Output	7 Characters of Name	Meter Names	T-Alt-out C
Mini Output	7 Characters of Name	Meter Names	T-Mini R
Main Input	7 Characters of Name	Meter Names	T-PTMain Ls
Alt Input	7 Characters of Name	Meter Names	T-PTAlt Rs
Pallet Inputs	TP	Pallet Channel	TP-1
SLS Outputs	T-SLS	L or R	T-SLS L
Cue outputs	T-Q1, T-Q2, T-Q3, T-Q4	L or R	T-Q1 L
Cue Inputs	T-Q1, T-Q2, T-Q3	L or R	T-Q1 L
Insert Inputs	TI	Insert Number	TI-1, TI-2…
Insert Outputs	TI	Insert Number	TI-1, TI-2…
Talkback O/P	T-Int T/B and T-Ext T/P		T-Int T/B, T-Ext T/B
Listen I/P	T-Listen	1 or 2	T-Listen 1
AFL I/P	T-AFL	L or R	T-AFL R
Meter O/P	TM	Number	TM-01
DownMix	T-Down	Meter Names	T-Down Lb
Stereo Downmix	T-St-Down	L or R	T-St-Down L

Case Study: 7.1.4 System

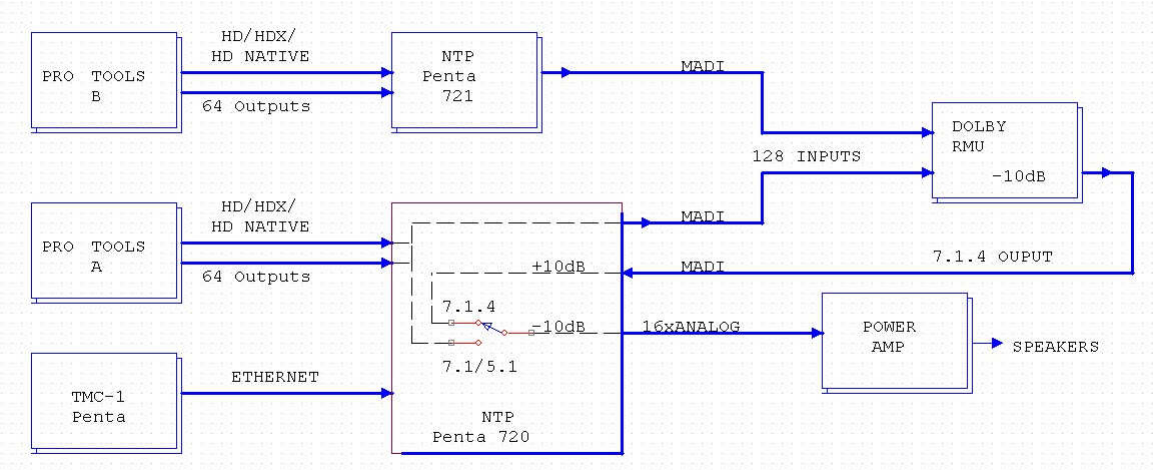
The TMC1-Penta provides a framework to build your own monitor system, to design your system you will need to specify the input/output data and the speaker groups.

Generating a TMC1-Penta configuration file for 7.1.4 system

1) Map out the speakers

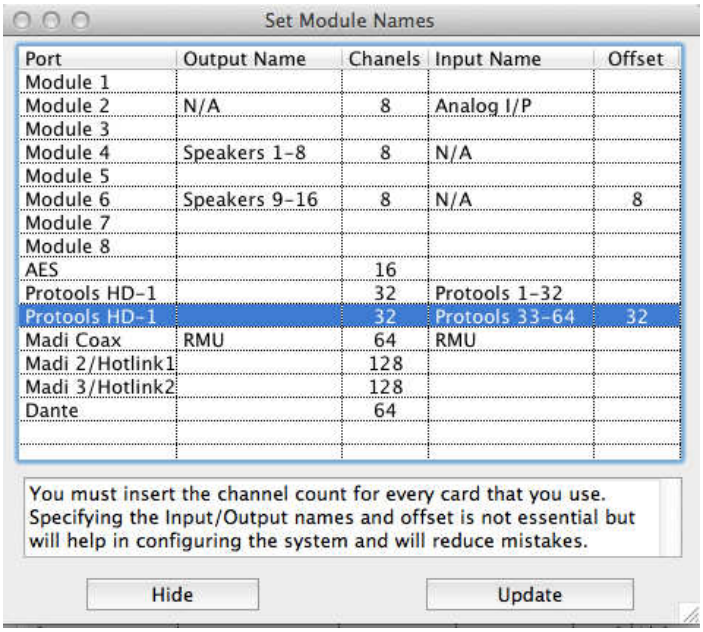


2) Map out the Input and Output connections

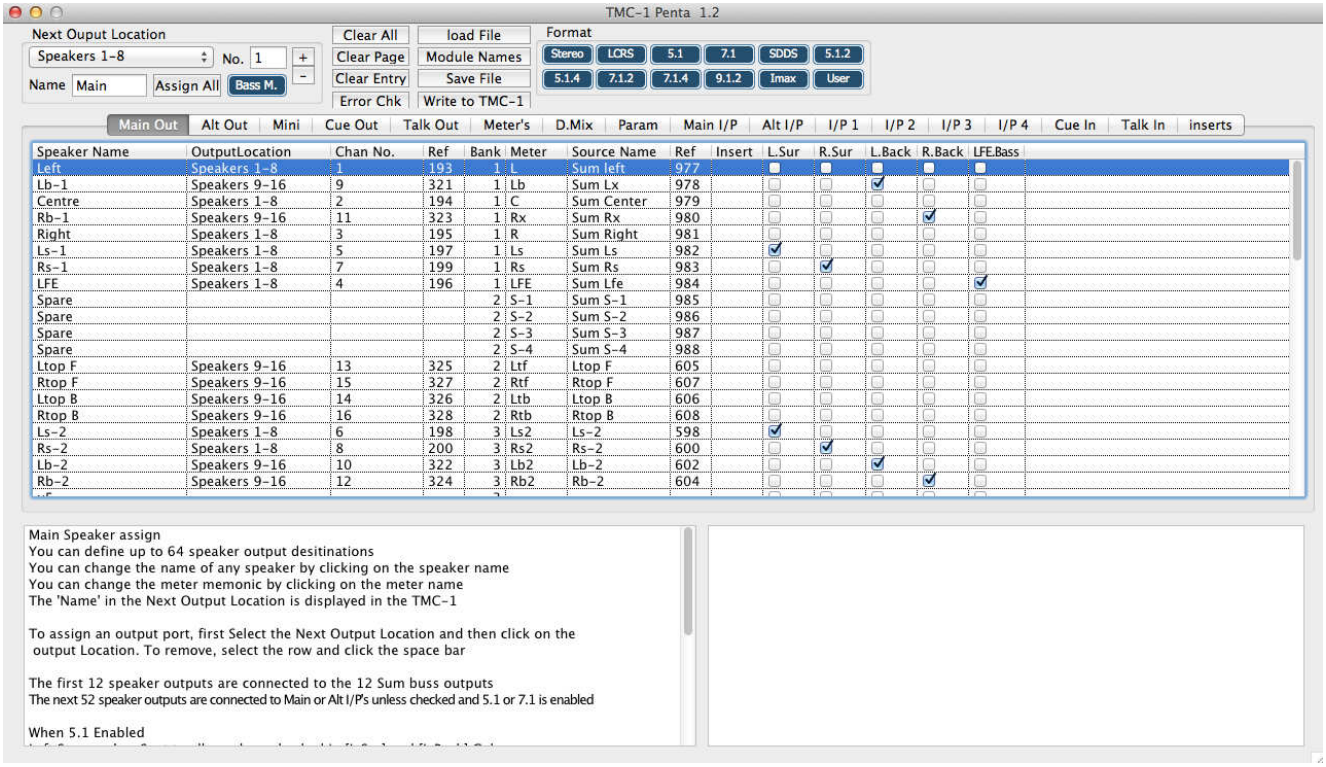


Note: the +10dB gain on the Dolby Return to remove any Level differences between monitoring direct or through the RMU

3) Label modules in TMC1-Penta program and set Maximum channel count if not defined. As an option you can add the Offset for each input

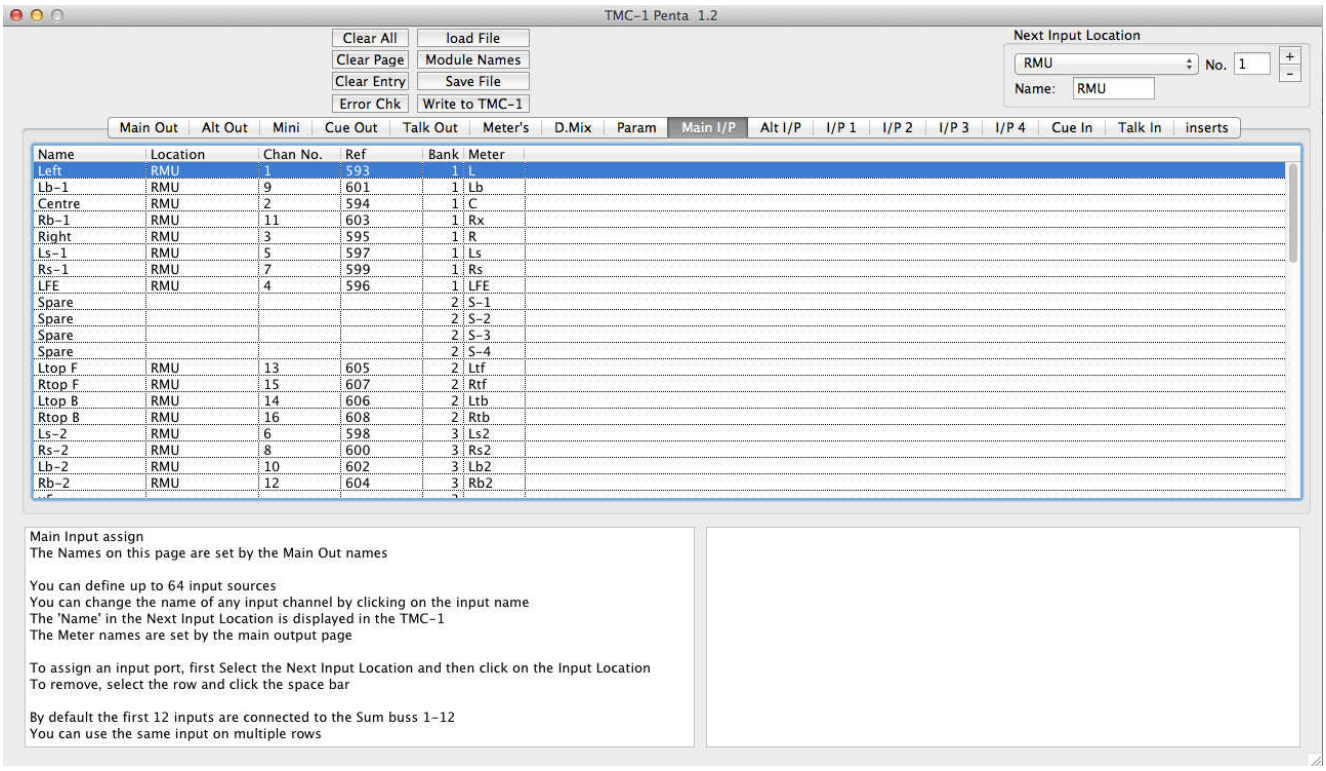


4) Label Speakers and assign channels

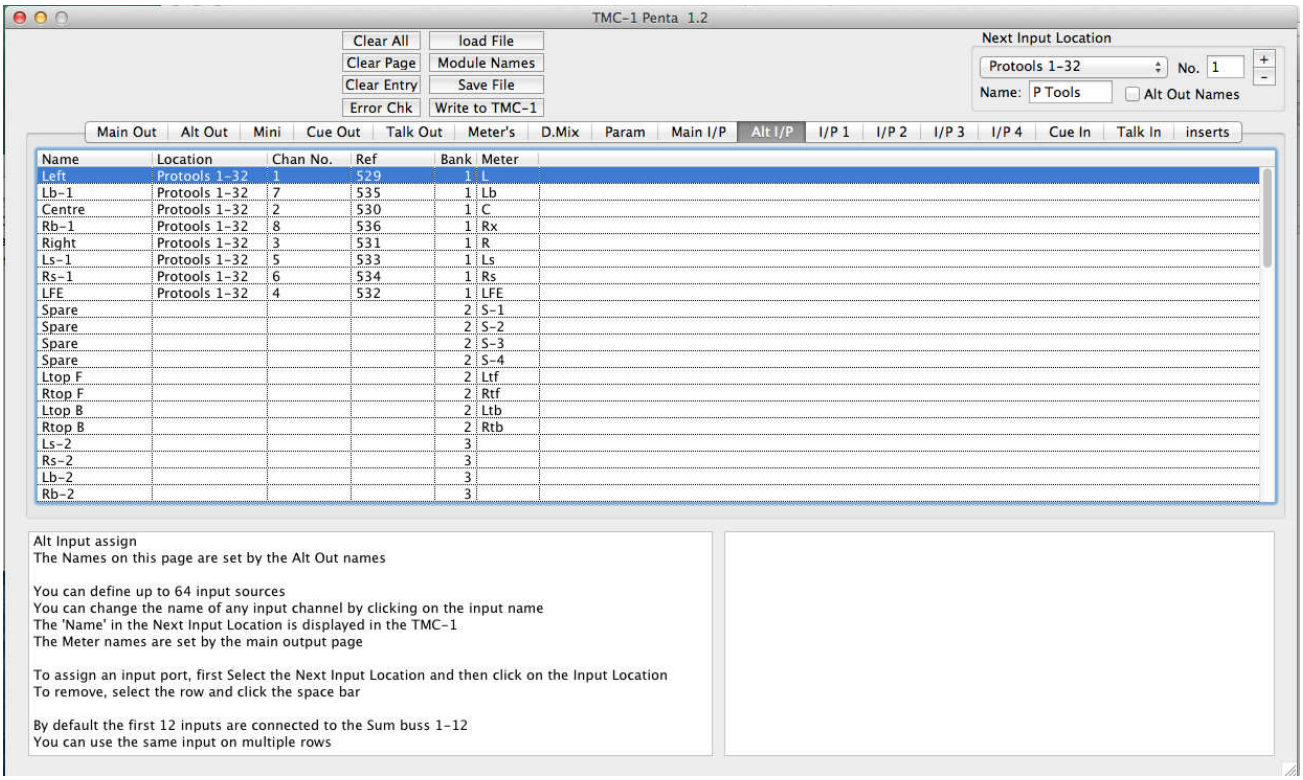


Note: The surround channels are checked in the corresponding Surround Column. This allows the speakers to be assigned to the correct source when 7.1 or 5.1 are selected. To use the LFE as a bass extension to the surround channels check the appropriate output in the LFE column.

5) Assign Input name and channels for RMU 7.1.4 Outputs. Every surround speaker is individually assigned

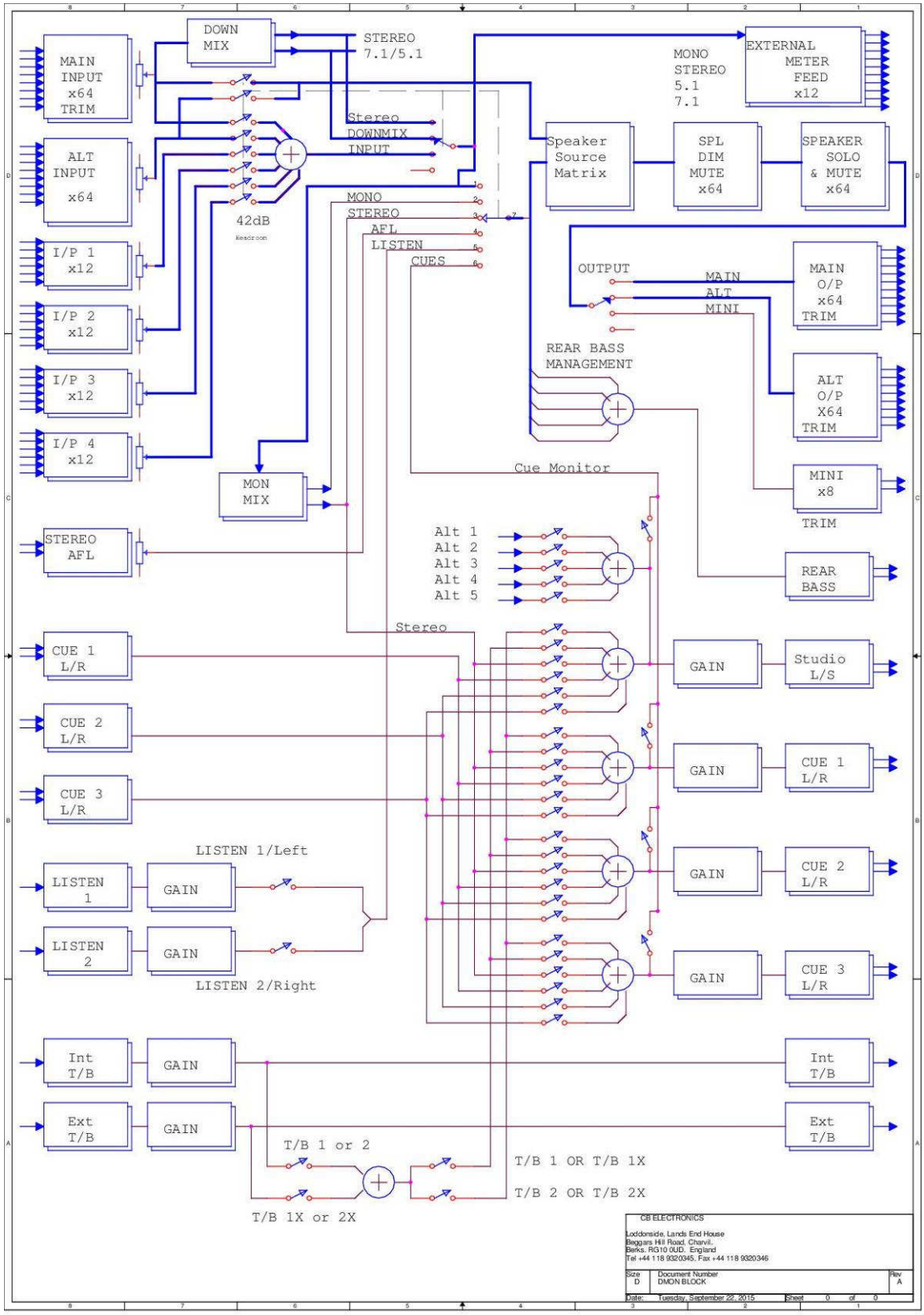


6) Assign Input name and channels for direct 5.1 and 7.1 outputs from Pro Tools,



Note: Only the main surround feeds have to be defined

TMC1-Penta Framework



TMC-1 Software Update

The software is updated via the USB port using our MIDIUPD program which is available from the TMC-1-Penta or TMC-1-XMon web page.

http://www.colinbroad.com/cbsoft/tmc1/tmc1penta.html

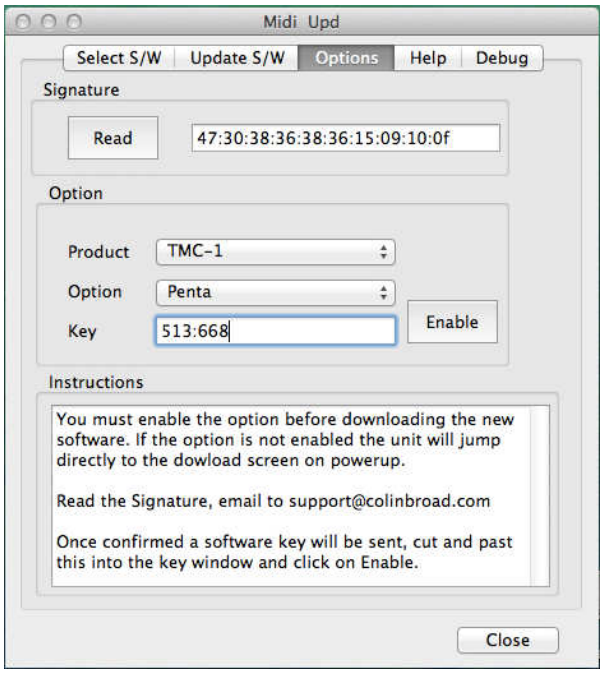
Note. When upgrading from TMC-1-Xmon to TMC-1-Penta an upgrade key must be purchased and the Penta Option enabled before the Penta software is installed. If you install without enabling the Penta Option the TMC-1 will jump directly to the software Installation page.

Installing the Penta Option

Connect to the TMC-1, (you may have to select the in and out ports). Read the Signature (47:30:38:36:38:36:15:09:10:0f in this example) from the chip.

E-Mail to support@colinbroad.com

Once confirmed you will receive the software key (513:668 in this example) by email, cut and paste this into the key window and click on Enable.



Frequently asked questions

How are the Internal and external talk back mics connected to the AX32/Penta	The Internal talkback mic is an amplified analog signal on the TMC-1 HD15 'XMon' connecter that can be connected to an analog input on the AX32. The External talkback mic is connected directly to the AX32, external talkback enable switches 1 & 2 are connected to the 15 'D' GPIO connector on the TMC-1. Alternatively use Dante Mics for internal and external T/B.
Is the headphone output available when used with the AX32?	The Headphone jack is connected to the HD15 'XMon' connector on the rear and should be connected to an analog output on the AX32. Alternatively use a 2 in 2 out Dante interface for T/B and Phones

TMC-1 Fault Finding

Fault	Cause
No Audio or Metering	Check that the "Gain/Sum" license is installed on the DAD/Penta
Talkback only worked when adjusting volume	Internal and External Talkback connected to the same source
[Mono], [L-R] and Micline [PFL] not working	If a Centre Speaker is specified in TMC1-Penta2, check that it is enabled and fitted!

Bass Extension Not Working	Check that the correct boxes are checked in TMC1-Penta and that the TMC-1 Bass-X user key is enabled
Missing Inputs or outputs / No control of gain	Check the Module slot assignment on the rear of the DAD or NTP Penta. Note by default the i/p and o/p audio cards are in slots 1 & 3.
No communications over Ethernet from TMC1-Penta2 software	On a Mac disable the Wifi connection If there are multiple Ethernet cards in the computer it may be necessary to set the IP address on the TMC-1 The TMC-1 has a 100Mbps Ethernet connection and does not auto-switch, on older hubs check that the network switch is set correctly. The TMC-1 does not support DHCP
Stereo Down mix not correct No Output when Mono enabled	Check the stereo down mix parameters on the Parameter page of TMC1-Penta 2
Output missing after changing the channel setup or odd levels	1) Factory reset the TMC-1 to set the default input and output trims. 2) Reset the DAD/Penta from the TMC-1 Advanced Menu, then reselect from the E-Net Page.
Unexpected audio routing	Reset the DAD AX32/Penta 720 to defaults from Advance Menu Wait while DAD AX32/Penta Resets Reselect from E-Net page
Unexpected peak meter display	Check Level settings or power cycle the DAD AX32/Penta 720
Input names not displayed after loading configuration	Check Adv Menu 18 – Pallet I/P Selection
Unexpected mutes when changing playback state	Check the Auto mute page
T/B Not working	1)Try a Factory reset 2) Set the Talkback Mic Gain/Mute using the Mic/Line user key