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MT 48

AUDIO INTERFACE

Monitor Mission Manual

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Preface: Mission Statement

The MT 48 brings reference-class sound to your desktop. It is the first audio interface to unlock the full potential of Neumann microphones, studio monitors, and headphones as well as high class gear from other manufacturers. The MT 48 builds upon the knowledge and experience of our friends, partners and now colleagues from Merging Technologies, famous among recording professionals for state-of-the-art AD/DA converters and networked audio solutions. The MT 48 is the perfect marriage of Neumann sound quality and Swiss precision.

Analog-to-digital conversion in the MT 48 sets a new benchmark. With an enormous dynamic range of 136 dB, the MT 48 has four times the resolution of competing devices. Analog circuitry is on the highest level, too. The microphone preamps offer up to 78 dB of clean gain for capturing every detail from any microphone, be it high sensitivity condensers or low output ribbons. The same philosophy applies to the built-in headphone amplifiers, which are extremely powerful and ultra-low impedance to drive any headphones to their absolute best.

Despite this complexity, the MT 48 remains easy to use, thanks to an intuitive touchscreen user interface: Select Sources, adjust levels and select Monitors with the touch of a finger. No more shuttling between the audio interface and a controller app on your computer: All parameters can be set on the device itself.

The MT 48 is thus the ideal companion for self-recording musicians or engineers. It can handle large setups just as well, as it offers two expansion options, ADAT and AES67. While ADAT has long been a standard in project studios for adding up to eight I/O channels, AES67 is a modern open standard for networked audio with enormous capabilities. From the proverbial bedroom studio through location work and broadcast applications to professional recording, the MT 48 always offers outstanding performance. Whatever you're up to, the MT 48 is ready for it.

With the introduction to the Monitor Mission the MT 48 becomes a multichannel audio interface with the full feature set of an advanced Monitor Controller, including speaker alignment using EQ corrections, Trims, Delay, and more. The Monitor Mission a perfect solution for mixing and mastering in stereo, surround, and immersive formats.

Modular by software

A single product with multiple workflows. A Monitor controller that also controls your network. A Music recording hub that allows you to network a whole band or orchestra. A low latency mixer and processor with extraordinary audio quality.

The MT 48 currently supports two missions. Each will put you in control of the tasks you want to accomplish. Today a control room or an on-location monitor controller, tomorrow a music studio or live event interface, the day after, it could be something else altogether, always allowing you to succeed in your applications. Booting up between missions completely changes the user interface and the functionality of the MT 48.

The **Music Mission** oriented towards a music, recording, bands and studio projects, while the **Monitor Mission** supports multichannel and is the perfect Monitor Controller for mixing and mastering.

MONITOR MISSION KEY FEATURES

- Two Individual stereo main balanced XLR outputs with mono, dim, mute, level control and mixing possibilities. Can be used for Main monitor set.
- Two Individual stereo main balanced TRS outputs with mono, dim, mute, level control and mixing possibilities. Can be used for auxiliary monitors of additional Cue Mix
- Two independent headphones sockets with independent level control
- Two exceptional high-power headphone amps with dedicated DACs
- ADAT/SPDIF optical IO
- Mute switch for any outputs
- Adjustable Max, Ref, Dim levels
- Crossfeed for headphones. Recreate the stereo image heard from speakers.
- Instant access dedicated soft buttons.
- Benefit from existing Interfaces over ADAT IO as the MT 48 Monitor Mission outputs or inputs can be extended to the ADAT, meaning that you could have multichannel support over existing Line Outputs interfaces supporting ADAT.

Monitor Mission Specs

- Complete control over the volume level and source selection of any Merging RAVENNA Device on the network or device connected via ADAT/SPDIF
- Expandable I/O through Merging Hapi, Horus or any RAVENNA/AES67 devices as well as via ADAT/SPDIF
- Up to 8 Monitor sets capable of up to 22.2 (maximum 32 channels)
- 32 Inputs and 16 Outputs support over USB Data
- Up to 128 AoIP Sources capable of up to 22.2 (maximum 128 channels -2 dedicated to Talk-back)
- Up to 256 AoIP channels Analogue, MADI, AES3, SPDIF, Pro Tools HD I/Os via RAVENNA/AES67
- In-the-box I/O pairing management with Merging devices
- Any other RAVENNA/AES67 devices integration
- Downmix selector (from up to 22.2 to stereo or mono)
- Sources trim (exclusive and sum) selector
- 24 bands per EQ for speakers, with up to a total of 224 bands available
- Bass management
- 18 Save/Recall Internal Presets and unlimited external Presets Save/Recall.
- Mic/Pre DAW remote control
- Standalone operations. The MT 48 can serve as a multi-channel analog converter or headphone amp when disconnected from the computer.
- Access control: Protect settings and other parameters with a password.

Setup

Place the MT 48 on a hard surface. Make sure it stands on its rubber feet to allow airflow to the MT 48's bottom plate.

Connect the power supply to the USB-C port labelled "Power"

Connect the MT 48's USB-C port labelled "Data" to your computer using the supplied cables (USB-C to USB-C or USB-C to USB-A). The MT 48 uses the High-Speed protocol supported by USB 2.0 or higher ports. Should the MT 48 not work properly on a USB 3.0 (or higher) port, please use a USB 2.0 port. Some non-Intel USB 3.x chipsets are not fully backward compatible for use with audio devices.

Press the Power button on the MT 48. Booting takes about 60 seconds.

After a few seconds, the Neumann symbol of the MT 48 Agent in the taskbar/menu bar of your computer becomes solid to show that the MT 48 is connected and can be used.

Connecting Your Gear

The MT 48 includes a sophisticated mixer with the Music Mission and with the Monitor Mission the MT48 becomes an advanced monitor controller.

- Connect your main speakers directly to the Main Outs (XLR, balanced).
- If you have a secondary set of speakers, connect them to Line Outs 3+4 (TRS, balanced)
- Connect your headphones to the headphone outs 1 and 2 on the front. Both outputs can be addressed separately.
- Connect microphones or line devices to Mic/Line Inputs 1+2 (XLR/TRS combo, balanced) For microphones, use XLR cables only. For line sources use the TRS input.
- Connect your guitar or bass to Line/Instrument Inputs 3+4 (TRS) on the front. These inputs have a very high impedance (1 MΩ unbalanced, 2 MΩ balanced) to capture the tone of magnetic pickups without losses. But they can also be used for low impedance sources such as electronic keyboards, drum machines or line level studio gear.
- GPIO/MIDI: Per default these ports are set to MIDI mode. Connect Synths, drum machines and other MIDI gear using TRS to DIN5 adapters (sold separately). Alternatively, you can use these ports for various switching functions, e.g. to connect a footswitch for activating talkback.

Adding I/O via ADAT / S/PDIF and AES67

The MT 48 offers two ways for adding more I/O channels:

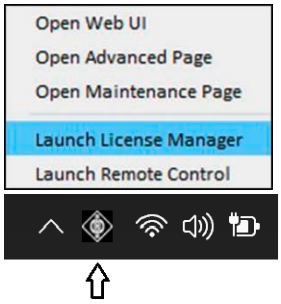
- **ADAT** is an established standard used predominantly in project studios. ADAT allows for up to 8 channels via optical connectors at sampling rates up to 48 kHz. At higher sampling rates the channel count reduces to 4 channels at double sampling rates up to 96 kHz and 2 channels at quad rates up to 192 kHz.
- Alternatively, the optical I/O can be used in **S/PDIF** mode, allowing for 2 channels at all sampling rates up to 192 kHz.
- **AES67** is an open standard for audio-over-IP networks which ensures interoperability between various audio network protocols such as DANTE, RAVENNA. AES67 was developed by the Audio Engineering Society (AES) and has been embraced by the broadcast market but is gaining more traction in recording environments as well. AES67 uses ethernet connections and can handle high channel counts even at high sampling rates. The AES67 port on the MT 48 is bidirectional, it can send and receive audio data simultaneously. Using a standard ethernet switch you could connect a Neumann AES67 loudspeaker and Merging converters at the same time. Note: The MT 48 supports the RAVENNA protocol, which is fully compliant with AES67 and SMPTE ST 2110.
- Included in all missions are tools that allows the user to Expand, Monitor, Mix and Route any I/O anywhere over your network with quick and simple solutions. What's even better is that all this can be done from the MT 48 and even be in operation with standalone devices interconnected.

Tools to facilitate the AoIP connectivity.

- **Peering** is a particularly convenient form of AES67/RAVENNA.
- With the MT 48 Peering feature you are a finger tap away from expanding your MT 48 network I/O's. Peering is supported with the MT 48 and devices by Merging Technologies (who are part of Neumann), such as Hapi, Horus, and Anubis. These high-end converters can be seamlessly integrated via Peering for I/O expansion. Once integrated you can mix those channels, remote controlling their preamps or monitors those I/O's from the MT 48. Refer to the Peering guide for all details.
- **UNITE** – With firmware 1.5.1 or newer, the MT 48 can be can also connect to your computer via network, just like the Merging Anubis. This allows for larger IO channel counts than over USB, even at high sampling rates. For network connection to your computer, you need to install Merging's VAD/MAD driver, available in the download section at merging.com. UNITE is an automatic AoIP Stream patching feature included in Merging's VAD/MAD Drivers that greatly facilitates connecting I/O streams between the MT 48 and the computer system without the need for any AoIP knowledge or additional application. Simply select the IO channels you want to connect, and you're ready to go.

Monitor Mission Selection

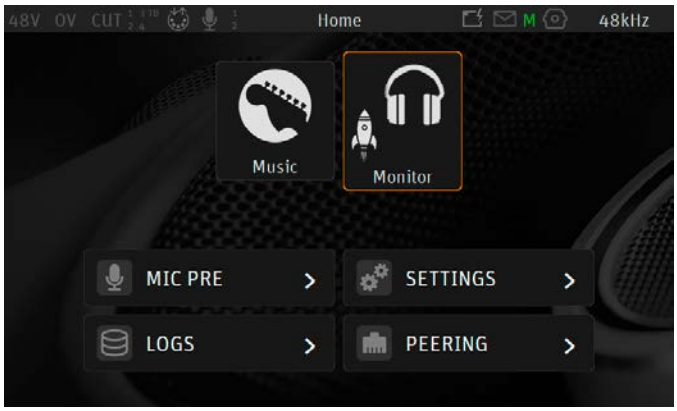
Before you can select and use the Monitor Mission on your MT 48, you must activate it using the License Manager available from the MT 48 Agent (i.e. the Neumann icon in the menu bar). For users registering their MT 48 before July 1, 2024, the Monitor Mission is free of charge. Once registered you can order an activation key for your device. This activation key must then be entered in the License Manager.



- Once the key activation is confirmed, long press the MT 48 Home button to access the Home page.

The Home page will show the Missions available, “Music” and/or “Monitor”, select the Mission that suits your needs. For the purpose of this Manual select the “Monitor Mission.”

MT 48 Home Page



Note: The Monitor Mission is officially available as of firmware 1.6.0 and above. We recommend that you update to the latest MT 48 Toolkit and Firmware. Procedure at the end of this manual Appendix.

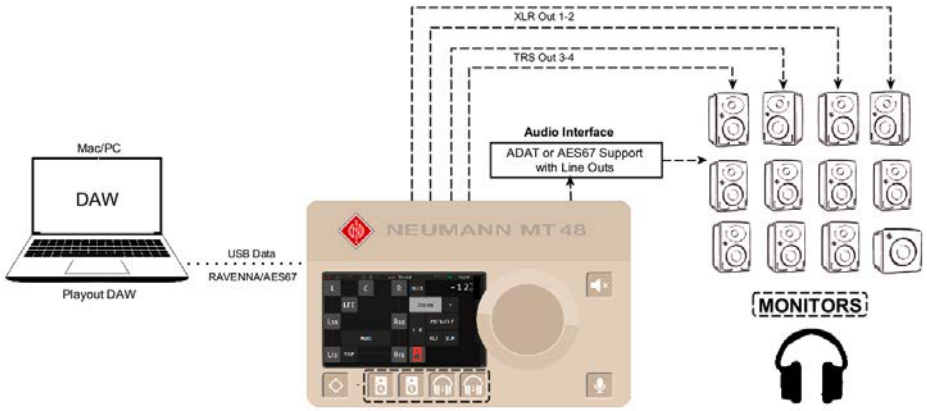
Understanding the Monitor Mission Structure

The Monitor Mission is designed for professional applications where superior monitoring capabilities are crucial. State of the art features have been carefully integrated, while unique and future-proof capabilities were specifically added to the feature set to meet the challenges of tomorrow.

The MT 48 Monitor Mission allows you to be in complete control of your monitoring: select sources and choose the required playback system – main monitors, nearfield monitors, headphones. The monitor mission supports any format, be it mono, stereo, surround, or immersive audio. Downmix allows for monitoring multichannel content in mono or stereo. In addition, the Monitor Mission offers tools for aligning your speaker set(s) to your listening position.

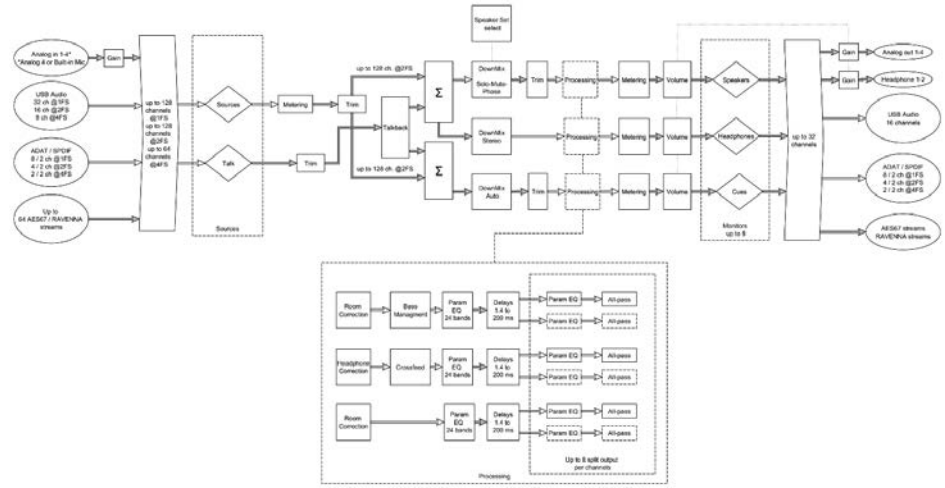
The Monitor Mission thus turns the MT 48 into a freely configurable monitor controller and audio interface with surround and spatial audio capabilities. Its extreme sound quality meets the requirements of the most exquisite control rooms and mastering studios. The Monitor Mission supports a large number of surround formats, its touchscreen interface makes it adjustable for any future developments. The MT 48's compactness and robustness makes it the ideal choice for location recording and live events.

Dolby Atmos 7.1.4 Monitor Control



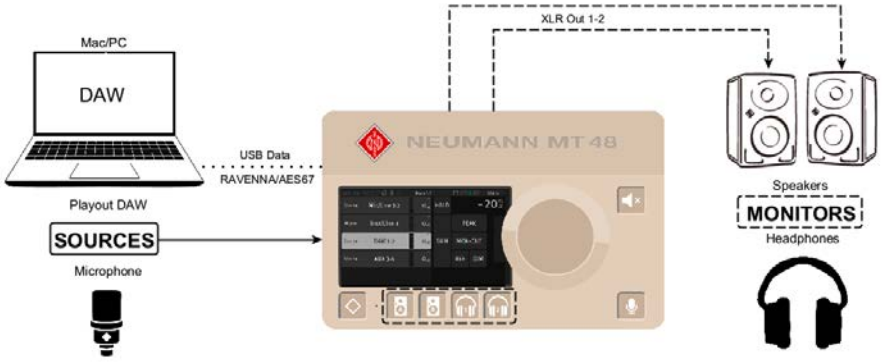
SIGNAL FLOW

PCM 44.1 kHz to 192 kHz (MT48)



Sources vs. Monitors Fundamentals

With the MT 48 Monitor Mission, it is important to understand Sources (Mixer inputs) and Monitors (Mixer outputs) as the basis of the MT 48 monitoring engine.



Different types of Sources and Monitors going through the Monitor Engine

Sources examples

- DAW Buses
- Any analog inputs (Mic/Line/Instrument)
- Peered Inputs from other Merging or Neumann devices (e.g. Hapi, Horus, Anubis, another MT 48)
- AES67 input streams

Monitors examples

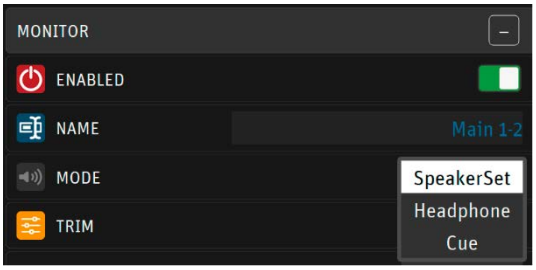
- Headphones
- Speakers via analog outputs
- S/PDIF connected speakers
- Neumann AES67 monitors
- Peered outputs to other Merging or Neumann devices (e.g. Hapi, Horus, Anubis, another MT 48)

Different Monitor Modes

The MT 48 Monitor Mission provides the operator with control over three Monitors Modes and can host up to 8 Monitors, capable of up to 22.2 (maximum 32 channels).

1. **Speaker Set** Recommended to be used for speaker sets (e.g. reference monitors).
2. **Headphones** Recommended to be used for headphones monitoring.

3. **Cue** Recommended to be used when a specific mix of Sources is needed for a chosen Monitor set (e.g. Binaural Monitoring Cue) or when recording to produce a low-latency Cue mix for the performer foldback.



Note: Each of the three modes of MT 48 Monitors have their unique set of features and possibilities. Refer to the table below for more details.

Monitor Modes – Features

	MT 48 MONITOR MODES		
Features	**Speaker set**	**Headphone**	**Cue**
Channel Controls - Solo/Mute/ Polarity	X		
Adaptative Downmix	X	X	X
Manual Downmix	X	X	X
Surround / Immersive	X		X
Crossfeed		X	
Bass management	X		
Mute (independent)	X	X	X
Volume (independent)	X	X	X
Ref	X		
Dim	X		
Max level	X		
Independent Source selection			X
Share Source selection	X	X	
Apply source sel. to Cues (Mon>Cue)			X
Colored indicator		X	X
Shared Outputs	X		
Multi-instance (running concurrently)		X	X
Source availability within a Monitor	X	X	X

Sources Types

MT 48 SOURCES TYPES		
Features	**Discrete**	**Stream listener**
Channel mapping	Fixed choices	Freely configurable
Physical inputs	Patchable	N/A
USB InputS	Patchable	N/A
AoIP streams	Patchable	Can be selected from the Source page
AoIP streams status	N/A	Shown in the Source page
AoIP stream filtering	N/A	Configurable via wildcards
AoIP Source discovering	No	Yes
ANEMAN required	Yes	No

Channels supported over USB connectivity

USB IO Support	Inputs	Outputs
1Fs (44.1-48kHz)	32	16
2Fs (88.2-96kHz)	16	16
4Fs (176.4-192kHz)	8	16

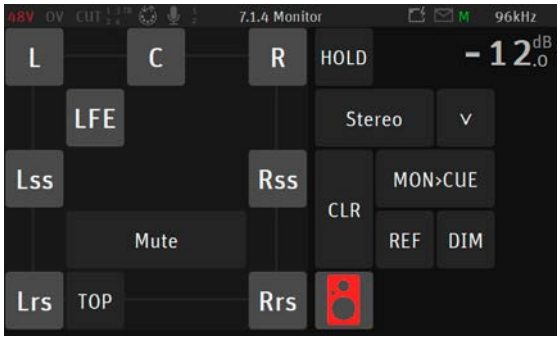
Maximum channels for Sources and Monitors (RAVENNA / AES67)

SOURCES AND MONITORS MAX CHANNELS		
	Sources	Monitors
1 FS (44.1-48 kHz)	128	32
2 FS (88.2-96 kHz)	128	32
4 FS (176.4-192 kHz)	64	32

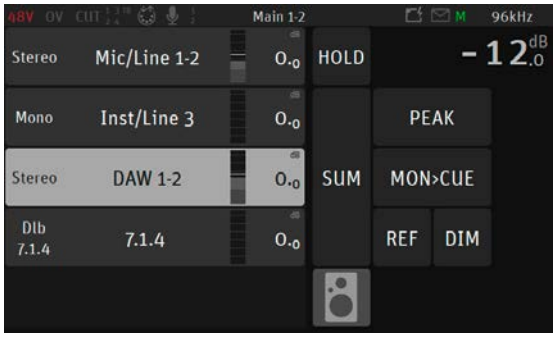
MAIN PAGES – MONITOR MISSION

The Monitor Mission has 3 main pages, press the MT 48 home button to cycle between those pages.

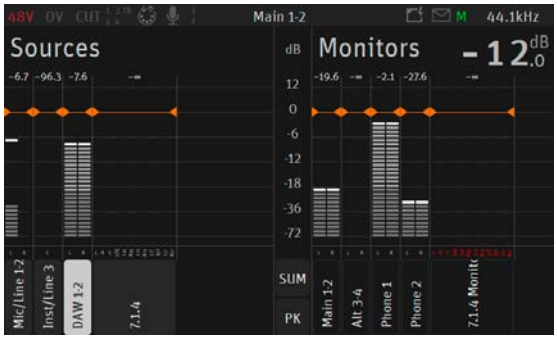
Monitor Page



Source page



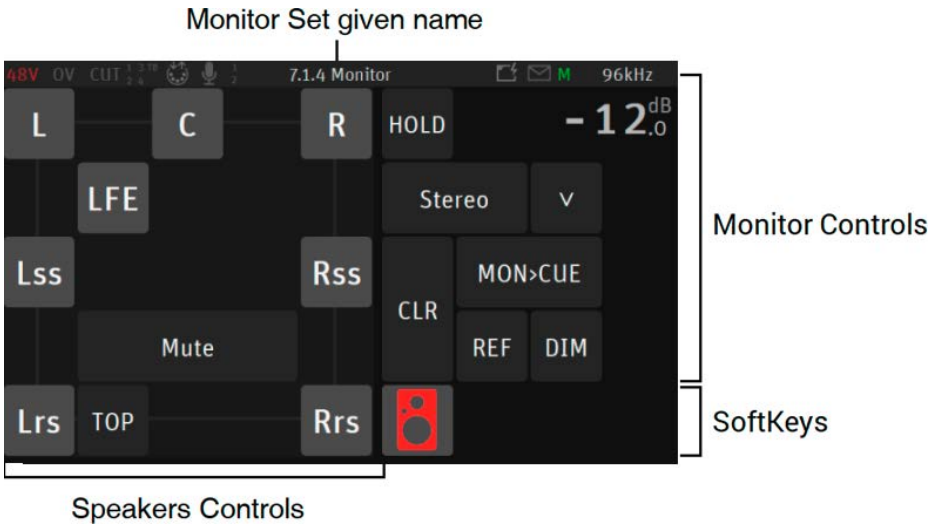
Meters page



- Single tap on the MT 48 Home button to cycle between the three Monitor Mission Pages. You can always return to the MT 48 Home page (Settings/Preamps) by long pressing the MT 48 Home button.

Monitor Page

The monitor page is from where you can control your monitoring setup. By default, MT 48 comes with some predefined Monitor Sets for use with a USB data connection. These can be used right away, or reconfigured, or overwritten with your own sets. Otherwise a Monitor Set will only appear once created in the MT 48 Settings, properly configured, and assigned to a specific button (hardware key or softkey). Refer to the Settings Sources and Monitors section for all details. Your speaker set will come into display once you select the key that it is assigned to.



Speakers Controls (left section)

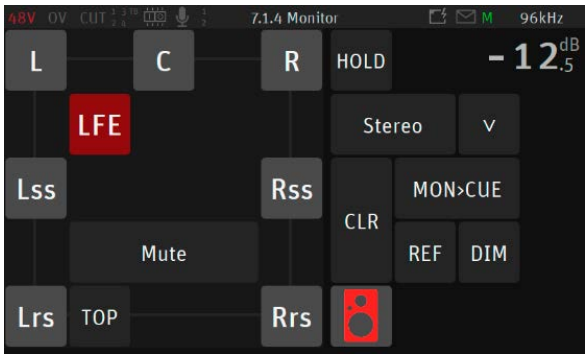
Each Speaker of a Monitor Set is represented by a button with the name of the speaker channel type. Typically, L (left) and R (right) for a Stereo Monitor Set. Multichannel Immersive sets with 3D elevation will be represented in layers. You can switch layers via the Mid, Top and Bottom layer viewing options.

Mid Layer **Top Layer** **Bottom Layer**

Example of a multichannel Monitor set

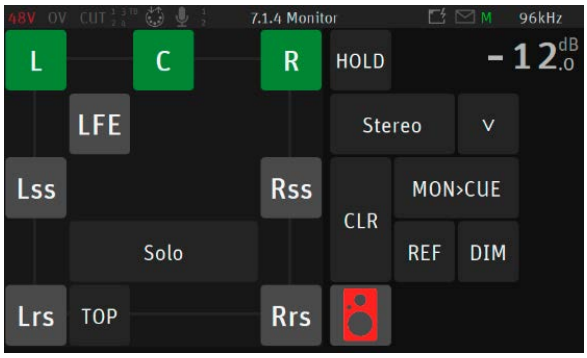
Tap the Speaker control box to open the dialog, for Speaker controls such as Mute, Solo, SoloX and Phase option controls. Those functions can be applied to the Speaker(s) of your choice.

Mute: Each speaker can be muted individually. Tap a speaker to cut its signal.



Example: Muting LFE

Solo: By choosing solo mode, you can listen to each speaker in your setup individually. Tap a speaker to solo its signal.

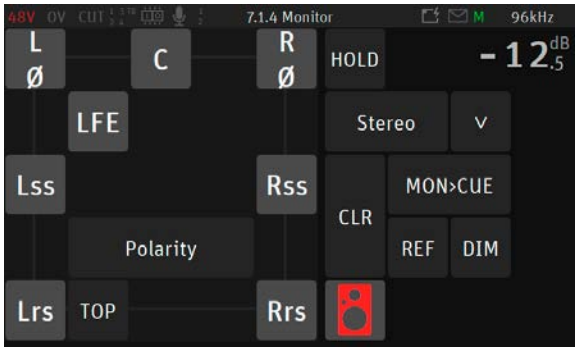


Example: Solo L, C and R channels

SoloX: Exclusive Solo function available for each speaker in your set up. Tap the speaker you wish to Solo exclusively, this will un-solo speakers that were previously soloed.

Example: Exclusive Solo of Center channel

Polarity: Invert the polarity of a chosen speaker in your set up. Tap a speaker to invert its polarity, this can be useful to check or fix phase cancellation problems. The polarity is a latching function that can be applied in addition to Mute/Solo or SoloX options.



Example: Polarity applied to L and R speaker channels

Clear

Use the Clear function to reset the Speaker controls, this will remove all applied controls to the speakers.

Monitor Controls (right section)

Volume Level 	The top right section of the Monitor Controls section indicates the level of the currently selected Monitor set. Note: All Speaker sets share the same global level (unless a Trim is applied). While Headphones and Cues each have their own independent level. To have different levels on your Speaker Set Monitors it is recommended to apply a Trim on any of the Monitor Set.
Hold 	The Hold option locks the volume control when enabled to avoid level calibration and reference change.
Downmix 	The Downmix layouts are available within the dropdown menu and allow the operator to Downmix to a subset of the Speaker Set. The available options depend on the Speaker set configuration. Please refer to the Downmix Table on the next page for the available downmix listing. Note: Each Speaker Set have their own Downmix selection. For surround 5.1 Downmix refer to the Surround Options under Settings>Monitor Level.
Mon > Cue 	Allows the operator to override the Cue Mix by sending the Speaker Set directly to the Cue listener. Only Speaker Set Monitor types can override cues. To prevent a Cue monitor set from being overridden, enable the inactive option under Settings>Monitors of the selected Cue.
Ref 	Select to recall your reference level, the default Reference level is set to -20 dB and can be configured from the MT 48 Settings>Monitor Levels.
Dim 	Turns the Main Monitor output dimmer on, the default Dim level is set to -20 dB and can be configured from the MT 48 Settings>Monitor Levels.

Clear CLR	Using the Clear function will reinitialize all parameters that were applied to the selected Speaker Control Section and removes all applied controls to speakers.
SoftKeys	A total of 4 Softkeys are available and can be used to control extra Monitor Sets, Cues or Headphones. The SoftKeys mapping must first be configured from the MT 48 Settings>Monitors under the Monitor Set settings. Tap a Softkey to activate its Monitoring just as you would with a Hardware button, giving you flexibility of local or network Web Access remote control.

Downmix Table

Monitor Channels - Types vs. Downmix formats available.

	Mono	1.1	Stereo	2.1	2.2	Stereo Srnd	3.0 LCR	3.1 LCR	3.0 Srnd	3.1 Srnd	4.0 Quadro	4.1 Quadro	4.0 Srnd	4.1 Srnd	5.0 LCR	5.1 LCR	5.2 LRC	5.0 ITU-B	5.1 ITU-B	6.0 LCR	6.1 LCR	6.0 LRC	6.1 LRC	7.0 LCR	7.1 LCR	7.0 ITU-I	7.1 ITU-I	7.0 SDDS	7.1 SDDS	7.0 ITU-C	7.1 ITU-C	8.0 LCR	8.1 LCR	9.0 LCR	9.1 LCR	9.0 ITU-D	9.1 ITU-E	11.0	11.1	Dolby 5.0	Dolby 5.1	Dolby 7.0	Dolby 7.1	Dolby 9.1	Dolby 5.1.2	Dolby 5.1.4	Dolby 7.1.2	Dolby 7.1.4	Dolby 7.1.6	Dolby 9.1.2	Dolby 9.1.4	Dolby 9.1.6	Sony RA 13.0	Sony RA 15.0	10.2 TMH	12.2 TMH	Auro 8.0	Auro 9.1	Auro 10.1	Auro 7.4	Auro 11.1	Auro 13.1	10.2 ITU-F	7/2/2004	22.2 ITU-H	Cube	Cube Mid	Cube C/F	Cube C/F/E	30.2
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9.1 ITU-E			X			O	X	X			O	O	X	X				O	X			O	O			X	X			X	X																																					
11.0			X			O	X				O		X		O					X				X				X		X		X		X																																				
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Dolby 5.0			X			X	X				X		X																																																								
Dolby 5.1			X			X	X	X			X	X	X	X																																																						
Dolby 7.0			X			X	X				X		X																											O																														
Dolby 7.1			X			X	X				X		X																											O	O																													
Dolby 9.1			X			X	X				X		X																											O	O	X	X																											
Dolby 5.1.2			X			X	X				X		X																											O	O	X	X																											
Dolby 5.1.4			X			X	X				X		X																											O	O	X	X		X																									
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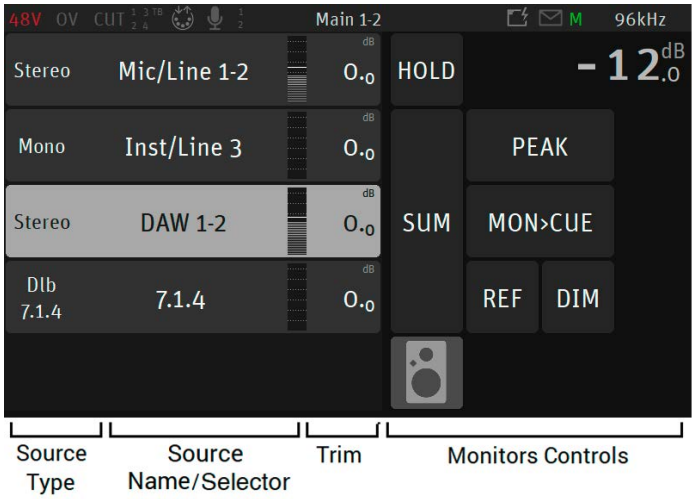
Dolby 9.1.2			X			X	X				X		X																											O	O	X	X	X	X		X																							
Dolby 9.1.4			X			X	X				X		X																											O	O	X	X	X	X	X	X			X																				
Dolby 9.1.6			X			X	X				X		X																											O	O	X	X	X	X	X	X		X	X	X																			
Sony RA 13.0			X												X	X				X	X			X	X																				X	X	X	X											X	X	X	X	X							
Sony RA 15.0			X												O	O				O	O			X	X																				X	X	X	X					X						X	X	X	X	X							
10.2 TMH			X			O	X	X			X	X	X	X	O	O				O	O			X	X			X	X	X	X	X	X	X	X																																			
12.2 TMH			X			O	X	X			X	X	X	X	O	O				O	O			X	X			X	X	X	X	X	X	X	X																				X																
Auro 8.0			X			X	X				X		X																																																								
Auro 9.1			X			X	X	X			X	X	X	X	X	X																																									O													
Auro 10.1			X			X	X	X			X	X	X	X	X	X																																									O	O												
Auro 7.4			X			O	X	X			O	O	X	X	O	O				O	O											X	X																								O	O												
Auro 11.1			X			O	X	X			O	O	X	X	O	O																																									O	O												
Auro 13.1			X			O	X	X			O	O	X	X	O	O																				X																					X	O	O	X	X									
10.2 ITU-F		X	X	X		O	X	X	X	X	O	O	X	X	O	O				O	O			X	X							X	X	X	X					O	O	X	X		X	X	X	X									O	O	O	X										
7.2.4		X	X		X	O	X				O		X																											O	O	X	X		X	X	X																							
22.2 ITU-H		X	X	X		O	X	X	X	X	O	O	X	X				X	X			X	X			X	X			X	X					X	X			O	O	X	X		X	X	X	X							X	X	O	O	O	X	O	X	X							
Cube																																																																							
Cube Mid			X								X																																																											
Cube C/F	X		X								X				X					X				X																																											O			
Cube C/F/E	X		X								X				X					X				X																																											O	X		
30.2		X	X	X		O	X	X	X	X	O	O	X	X	O	O		X	X	O	O	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	O	X	X		X	X	X	X							X	X	O	O	O	X	X	X	X		X	X	O	X	X	

X: Default Downmix

O: Surround Options to change the Downmix mapping (3 choices) available under the Settings>Monitor Level>Surround Options

Source Page

The Source page allows the operator to select the different input Sources to be monitored. Those can be summed (SUM enabled) or exclusively be selected (SUM disabled). The Sources page also displays a Monitor Controls section similar to the one found in the Monitor page.



Source Type

This first section on the left displays the source type, its name as well as a level meter, once this one has been configured and patched form the Settings>Sources.

Note: The meters peak level displays the max of all corresponding channels.

Source Monitor codec status icons.

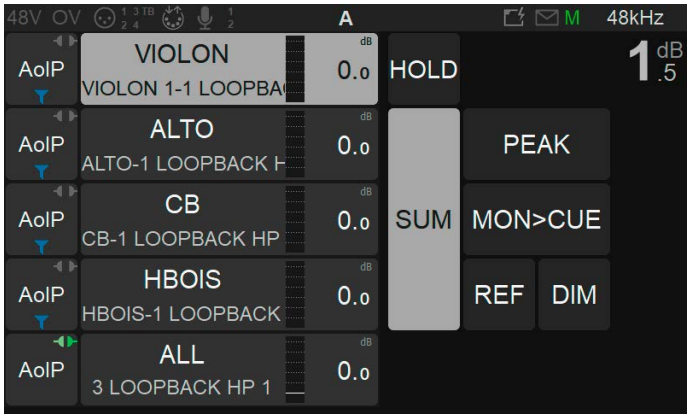
? Codec is unknown

∅ Source has no stream or is not patched

There are two types of Sources.

1. Standard Sources: Full control over Channel type and Speaker set, with a dedicated Source entry. Default Source can be directly connected over USB or configured manually. Sources can also be created and routed from the settings or from via ANEMAN (Ravenna/AES67 stream patcher software) if you are using the MT 48 in RAVENNA/AES67.

2. AoIP/Stream listeners: Used to monitor streams available over a RAVENNA/AES67 network only. Those must be created from the Settings>Sources and will then appear in the main Sources page. Available Streams are listed in the AoIP dialog once tapping in the AoIP selection area. From the dialog choose the AoIP/Stream source you wish to monitor.



Example: Stream Listener (AES67)

AoIP streams icons status

AoIP disconnected

AoIP partially connected

AoIP connection error

AoIP RTP Error

AoIP receiving

Stream listener Wildcard Filtering

Source Name/Selector

Name of the Source and selector. Tap the source you wish to monitor, this one will be highlighted when active, to select multiple Sources make sure you enable the SUM option, otherwise the selection is exclusive.

Note: Predefined Names are available under the Sources configuration Settings

Trim

Source Trims are applied to all monitors and can be adjusted by holding the finger on the Source name while turning the MT 48 Rotary knob. Turn the Rotary clockwise to increase a Trim value and turn the Rotary counter-clockwise to decrease a Trim value.

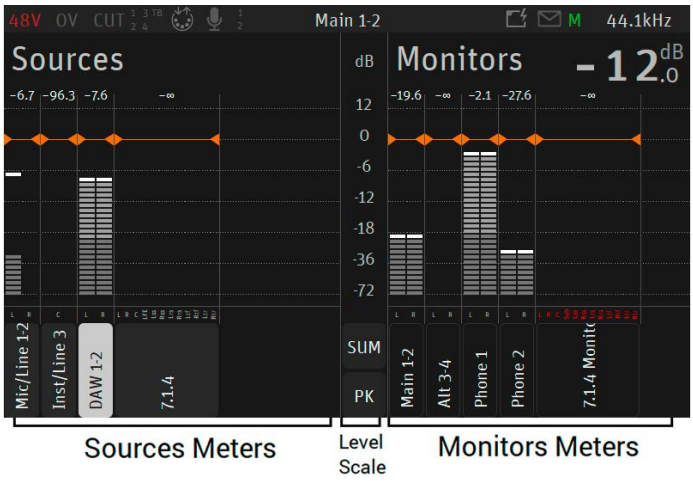
Note: The Trim value is displayed in orange during adjustments.

Monitors Controls section

Refer to the Monitor Page description

Meters Page

The Meters page provides the Sources and Monitors metering, along with some controls over the Sources and Monitors, such as selection and trim.

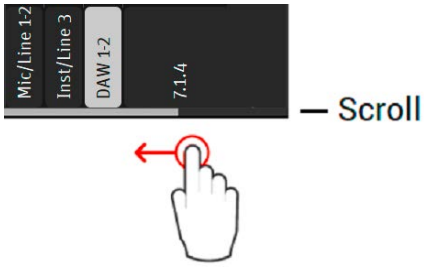


Sources Meters

Metering overview of all the Sources, each source with full details of peak-meters and type per channel.

The Meters display grayscale can be customized from the Settings>Meters page.

Note: If the Sources or Monitors content exceeds the current display zone, a horizontal scroll bar will be available, allowing the user to scroll and view the additional Sources and Monitors.



Level/Scale

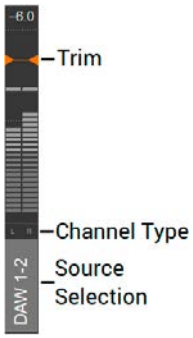
At the bottom of the dB level scale find the SUM and PK functions.

Sum

Enable the Sum option to select and sum multiple Sources. When disabled the source section will be exclusive.

PK

Tapping PK (Peak Reset) resets the meters peaks. By default, Peak Hold is enabled. Permanent Peak Hold can be disabled on the MT 48 >Settings>Meters page.



Trim

Trim the level of a Source or Monitor by first selecting it, while holding the meter region pressed, adjust the trim by turning the MT 48 Rotary knob. Trim range is -12dB to OdB

Note: The trim level value will be displayed in yellow when adjusted.

Channel Type

Each of the Source displays the listing of their channel type abbreviation.

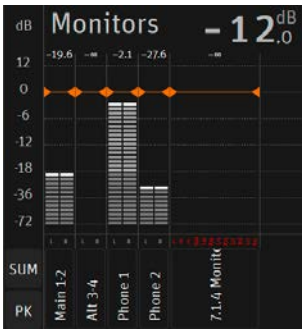
Note: Unpatched channels will be displayed in red.

Source Selection

Source selection section allows to select which source to monitor. When the Sum function is enabled, multiple Sources can be summed together.

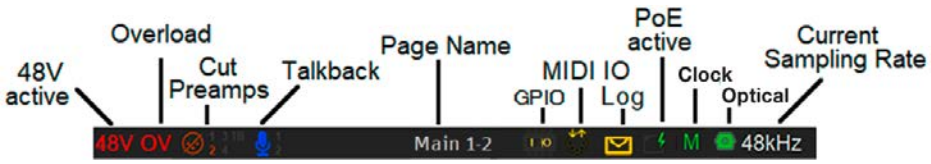
Monitors Meters

Monitors Metering is located on the right side of the Meters page. Monitors cannot be selected but do provide Trims support.



Status Bar

The Status Bar displays information and notifications about the MT48:



48V: Will light up red if 48 Phantom power is active on a preamp input channel

CLP: Clipping peak detected, clear the clipping by either tapping the meters section (PreAmps & Meters page) or use the Peak clear option available in the Meters page (PK) or in the Monitor Control section (refer to the Monitor Mission chapter)

OV: OV indicates overload in the MT 48 mixer. Clear the overload selecting the Peak reset

Input Cut: When lit it will indicate that one or more Preamp channel is cut (muted) 1-2-3-4-TB

Talkback: Built-in and/or routed input to the Talk 1 or 2. Active talkback will light up if engaged

Page title: Information related to the selected page

GPIO: GPIO indicator for input and output, will lit if GPIO is received or transmitted

MIDI IO: DIN5 symbol indicates MIDI activity

Log: Letter symbol lights up when a message or error has been received. View logs from Home Page.

Power Over Ethernet: (PoE) when active, the icon will be highlighted green

Synchronization status: Clock status: A green M indicates the MT 48 is Master, a green S indicates the MT 48 is slave. Yellow color indicates locking is in progress, red color indicates improper synchronization (check your setup!)

Note: If multiple MT 48 or network interfaces are connected over the same network (AoIP), one of them will be elected the PTP Master. A specific MT 48 can be imposed to be the PTP Master by enabling the PTP Master option in the MT 48 ›Settings›General. There is no guarantee it will be the Master as another device can have higher PTP priority/class.

Optical: Signal and Clocking indication of the ADAT or SPDIF status

Sampling Rate indication: 44.1/48/88.2/96/176.4/192 kHz are the available sampling rate

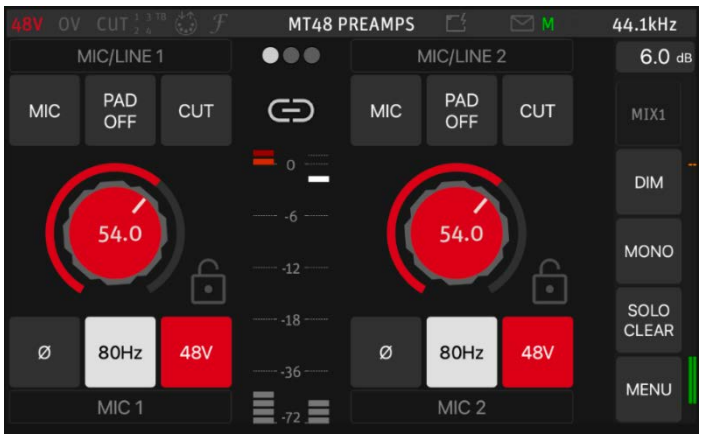
Preamp

Pressing the PREAMP entry on the home page will open the PREAMP controls.

Each preamp has a gain knob as well as several additional functions.

- MIC/LINE (Inputs 1+2) switches between Microphone and Line mode.
- INST/LINE (Inputs 3+4) switches between Instrument and Line mode.
- PAD (Mic mode only) allows to attenuate the input signal by 12 or 24 dB to accommodate high input levels.
- CUT mutes the input.
- Ø reverses the polarity of the input signal (often called “phase reverse”)
- 40/60/80 Hz activates a low cut filter to combat rumble below 40/60/80 Hz. Please note that the low cut filter always affects the recorded signal, even on the Pre-FX driver channels.
- 48V (Mic mode only) activates 48 Volts phantom power for condenser microphones (and other microphones with active electronics)
- GAIN is adjusted by selecting the gain knob and then turning the Rotary Controller. It’s good practice to leave at least 10 dB headroom. The Meter in the middle has a peak hold function, which can be reset by tapping the Meter section.

For stereo operation, two channels can be linked by pressing on the chain symbol above the level display. Any offset in the gain setting is maintained, which allows you to compensate differences in sensitivity.



Settings can be locked by clicking on the lock symbol next to the gain knob.

Tip: You can go to the neighboring channels’ preamp page by swiping to the left or right.

Split Channel

The MT 48 AD front-end topology gives also additional flexibility by offering a split channel functionality, where every input channel has a separate split gain control for sending them to different paths.

This feature is available in the Monitor Mission only.

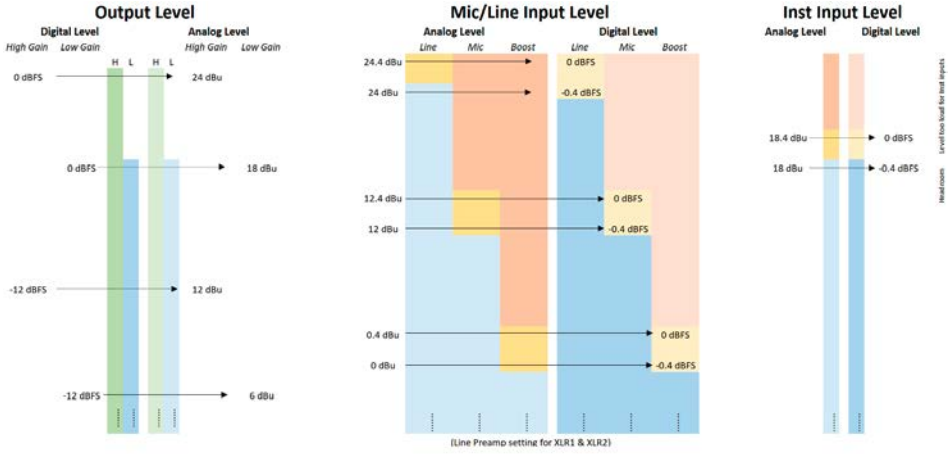
Split channels can be enabled from the Settings Input entry.

Use Case examples:

- Typically, an AD could be used for the recording device and have its split channel used for the FOH.
- Independently control the FOH & Monitoring Microphone Gains without any conflict
- The Split channel gives the operator the possibility to cut an input signal to the FOH while monitoring the same channel split that would be routed to another Monitoring set (e.g. Headphones). For signal check, changing a defective cable or searching for a proper sound or instrument FX, all this while muting the FOH feed.
- Possibility to record a duplicate of the input channel at a different input gain level (for backup or peak-safe recording)

Analog levels and Digital levels (after A/D conversion)

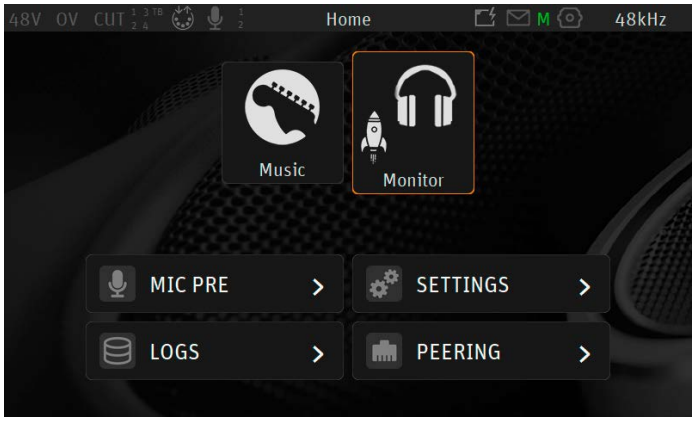
For Mic/Line and the Inst/Line inputs of an MT 48



Note: To match levels, when routing to the Mic/Line (1-2) and Inst/Line (3-4) simply switch the Line Outputs (under Settings›Audio Outputs›Output Max Level) of the MT48 from High (+24 dBu for 0 dBFS) to Low (+18 dBu for 0 dBFS).

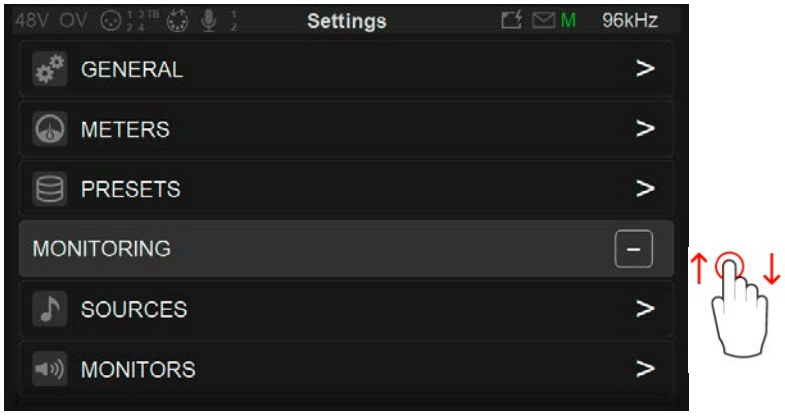
Settings

- The MT 48 Settings are accessible from the Home page. For access, long press the MT 48 Home button.



MT 48 Home Screen

- Select the Settings entry to open the Settings page



- Scroll up or down to navigate through the Settings

GENERAL SETTINGS

Sampling Rate

Sampling rates can be selected from a drop-down menu. Available rates are: 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz

Auto

Auto Sampling Rate mode only applies when the MT 48 is used in AoIP (RAVENNA/AES67 mode).

When enabled, it will make the MT 48 automatically follow the sampling rate given by a RAVENNA/AES67 source provided by either ASIO, Merging Audio Device (MAD) Virtual Audio Device (VAD), Merging MassCore or another interface with PTP clock. Enabled by Default.

Example 1: User using an external player (such as a DAW) can enable the Auto mode so that the MT 48 automatically changes its sampling rate according to the project settings.

Example 2: Auto setting is also useful in a network configuration following the RAVENNA/AES67, ASIO, Merging Audio Device (MAD) or Virtual Audio Device (VAD) settings, where the MT 48 will adapt its sampling rate automatically.

Both examples above are valid provided at least one RAVENNA ASIO, Merging Audio Device (MAD) or Virtual Audio Device (Core Audio) stream is connected to an MT 48 Source.

Note: If using ANEMAN with a Sampling Rate Zone, the device on the Crown will decide the Master sampling rate of all the devices present in the Zone.

In such a case it is recommended to disable the MT 48 Auto Sampling Rate mode to avoid fights over the sampling rate of the non-Crowned devices at a given moment, since those could potentially cause sampling rate flickering.

Frame Mode

Latency

The latency modes apply to AoIP RAVENNA /AES67 only. Available in samples: AES67 (6), AES67 (12), Ultra (16), Extra (32), AES67 (48)* & Low (64). The selected mode determines the device latency over a RAVENNA/AES67 network. When multiple RAVENNA/AES67 devices (e.g. MT 48) are connected over a network, they should be configured in order to adjust themselves to the lowest latency globally achieved.

* Ex-factory default mode for AES67 support

Clock

About the PTP Clock: The Precision Time Protocol (PTP) is a protocol used to synchronize clocks throughout a computer network. Also known as IEEE 1588 or IEC 61588, it is a protocol designed to synchronize real-time clocks in the nodes of a distributed system. RAVENNA/AES67 is based on and uses V2 of this IEEE standardized protocol. PTP Clocks allow for time resolution to the nanosecond.

PTP Master

If multiple AoIP devices are used in a network environment, the MT 48 will try to be elected as the PTP Master priority when enabling this setting, using the Best Master Clock Algorithm (BMCA):

Note: Some 3rd party devices might not consider the MT 48 as the PTP Master if clock is at higher priority.

PTP Status

Information on the MT 48 PTP status. Slave or Master indicator and Unlock, Locking and Lock status.

ASIO Clock

Auto: The ASIO clock will be generated by the MT 48 which will be PTP Master

On: The ASIO clock will always be generated by this MT 48, whoever the Master

Off: The ASIO clock is never generated

Note: Set to Off only if you are sure that no MT 48 will be PTP Master, or if you are configured for a Unicast (point to point) workflow.

Interface Controls

Brightness Display

Adjust brightness of the TFT display using the MT 48 rotary encoder to increase or decrease it.

Buttons Intensity

Adjust brightness of the MT 48 physical buttons by using the MT 48 Rotary Knob to increase or decrease the intensity.

Fan

Cooling Mode: Low, Mid or High affect the threshold at which the fan will start to operate, with reference to the temperature measured internally. The default setting is Low. In this setting the fan is inaudible except in very hot environments.

- **Low**: Fan starts in average above 52°C
- **Mid**: Fan starts in average above 42°C
- **High**: Fan starts in average above 32°C

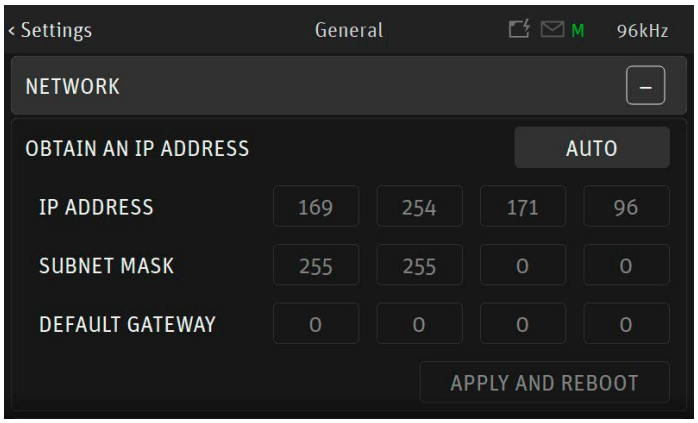
Note: The MT 48 will shutdown automatically as a precaution when reaching a temperature of 66°C.

Stop on Talk

Enabling the Stop on Talk option will stop the fan when engaging the MT 48 Talkback button. Once released, the fan will start back if it has to (depending on the measured temperature)

Network Settings

These parameters will only take effect when using the MT 48 network connection (RJ45) for either RAVENNA/AES67 usage or for Remote control needs.



Obtain an IP Address

Manual: Tap the address field you wish to edit and select the value using MT 48 Rotary Knob

Auto: The IP address will be automatically attributed using ZeroConf/Auto-IP mechanism (address range 169.254.x.x if no DHCP server is present)

Note: By default the MT 48 IP setting is set to “Auto” configuration mode.

IP address

Set the IP Address for the MT 48 unit by using box selection and changing the value using the MT 48 rotary knob. Available only with IP Settings = Manual

Default: 169.254.x.x

Subnet mask

Set the Subnet Mask (subdivision of an IP network) for the MT 48 unit by using box selection and changing the value using the MT 48 rotary knob. Available only with IP Settings = Manual

Default: 255.255.0.0

Default gateway

Computer network node using the Internet Protocol Suite that serves as the forwarding host to other networks when no other route specification matches the destination IP address of a packet

Default: 0.0.0.0

Apply & Reboot

Once changes have been made to this section, you must press this button to save the settings and power cycle the MT 48 unit, shutdown and reboot.

Date & Time

MT 48 includes a real-time clock that is battery powered even in the absence of external power.

TimeZone

Select your local timezone from the dropdown menu.

Date

Set the date by tapping each field (Day: Month: Year) one by one and using the MT 48 Rotary Knob.

Time

Set the date 24-Hours format by tapping each field (Hours: Minutes: Seconds) one by one and using the MT 48 Rotary Knob to adjust.

Note: The Date and Time changes will be saved once you exit the MT 48 Settings or if you save the current configuration from Settings→Exit→Save.

METERS Settings

Hot

Sets the metering level Hot range (white). If set to OdB this will mean clipping.

Range: -2dBFS to OdBFS

Default: -0.2dBFS

Note: When reaching a level of OdBFS (digital clipping) the meter top led will display a Red peak.

Alignment (reference level)

Sets the metering level Alignment range (light gray).

Range -24dBFS to OdBFS

Default: -18dBFS

Decay Integration Time

Sets the rate at which the level meter display decays after the level falls below the most recent Peak.

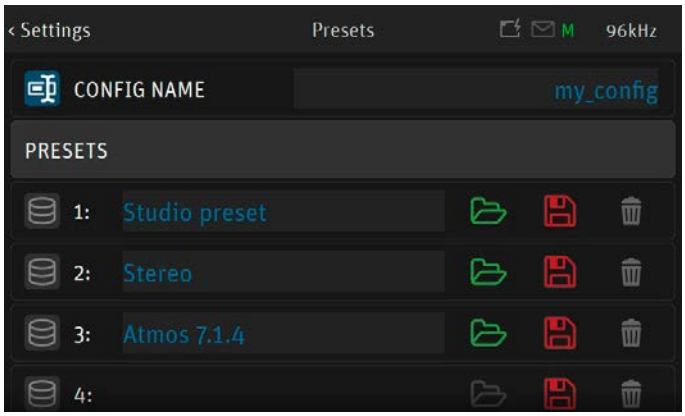
Choices: OFF - 25 ms/dB - 50 ms/dB - 75 ms/dB - 100 ms/dB

Default: 25ms/dB

Peak Hold

Enabling Peak Hold allows the meter to continue displaying the highest signal level permanently, until it is exceeded by an even higher peak. This is very useful, as it gives clear indication of where and how hot peaks are, but still allows monitoring of the current signal level.

PRESETS Settings



Preset Configuration Name. Identify your current configuration.

Full configuration save and recall for instant switching between various projects or configurations. MT 48 ex-factory comes empty of presets, gray folders

Load: 18* presets banks of different MT 48 configurations can be loaded.

Save: 18* presets banks of different MT 48 configurations can be stored.

Delete a preset by selecting the trash and confirming.

During the Preset loading the MT 48 Mute button will blink muting all monitors for a short period.

- **Rename** your Preset by using the MT 48 Virtual Keyboard. Simply tap on the Preset name entry to open the MT 48 Virtual Keyboard.

Note: An unlimited number of Presets can be saved and loaded from the Web App (external Disk).

Warning: A Reboot to Factory will reboot the MT 48 to the default factory settings, the current configuration will be lost, but all the saved Presets will be kept and can be reloaded.

MONITORING Settings

The Monitoring settings are the central part of the Monitor Mission, this is where you can configure the incoming Sources and outgoing Monitor sets and configure their routing.

SOURCES

The first step is to configure your Sources prior to deciding how you will monitor those. By default, the MT 48 comes with pre-created sources that consist of the current MT 48 physical inputs: Mic/Line (Back Panel Inputs 1-2) and INST/LINE (Front Panel inputs 3-4), with an additional DAW Source ready to listen to your DAW Playout.

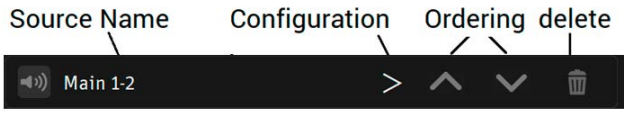
USB Audio IO

Sources can be connected over the USB channels immediately. Up to 32 inputs and 16 outputs are supported at 44.1/48kHz over USB.

RAVENNA / AES67 usage

Requires to first establish connections within ANEMAN or the advanced pages. The internal Sources will already be patched to the MT 48 mix engine, so that you can immediately use them for monitoring purposes.

Sources entry page details



Two different types of Sources can be created

Create New Source

Standard Sources: for example, for DAW playback, external multichannel device, physical inputs

Create New Stream Listener (for AoIP usage only)

To Monitor the streams available over a RAVENNA/AES67 network only, streams have to be compliant with RAVENNA or AES67. Once available, MT 48 will see those and allow to select them for monitoring purposes.

▶ Enter a Source configuration by tapping the Source line or the source name

Select to delete a Source upon confirmation in message dialog

Enable or disable a Source

Disabling a Source will hide it from the main MT 48 menu pages. Doing so will not delete the Source but simply hide it with a gray icon it can be re-enabled at any time.

Name

Name the Source by taping the text entry to open the Virtual Keyboard

Type

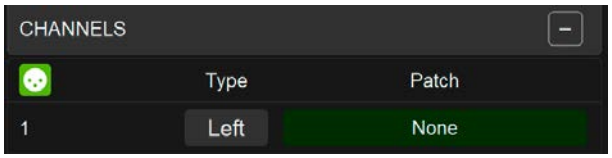
Select the source channel type in the drop-down list. Predefined sources are available from mono to 22.2 Channel mappings. Scroll to see all available entries.

Trim

Trim the level of an entire Source, apply a trim by turning the MT 48 Rotary Knob. Range: -36 dB to +12 dB

Note: Trim is after the initial analog gain stage, so if the channel input is clipping, Trim cannot fix it.

Channels



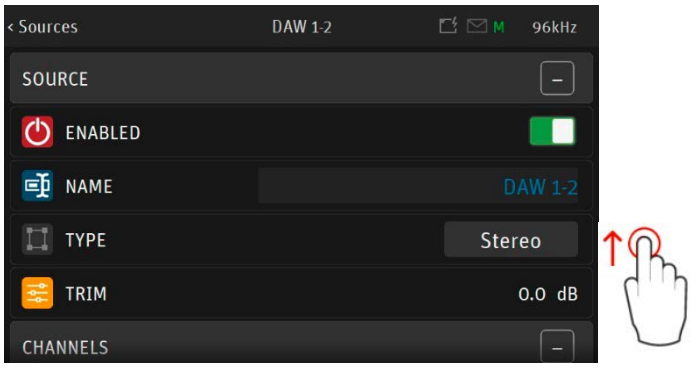
Number: Channel numbering of the Source

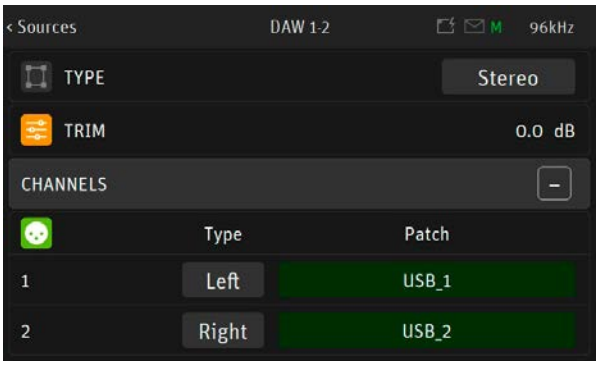
Type: The channel type is predefined in accordance with the selected Source Type
Patch: Configure the Source routing by patching each of the Source channels. The Patch numbering in the Patching dialog starts with the MT 48 hardware input sources followed by the external sources Streams, such as peered device streams from another MT 48, or an Anubis, Horus, Hapi, ASIO, MAD, VAD or MassCore streams. Scroll to view the entire listing.

Single Patches a single channel at a time.

Auto↓ Patches automatically the channels following the selected one (downwards). Quick way of patching multichannel Sources or Monitors.

Note: can be applied to None, to un-patch all channels.





Example: Patched Source over USB channels 1 - 2

Stream Listener Source (for AoIP usage)

Number of Channels:

2, 8, 16 channels are available for the Stream Listener.

Note: RAVENNA/AES67 channels Sources of lower channels count are accepted.

Channels Type:

Select the type for each of your channels. By default, the type is set to Center for each channel.

If a channel type is set to <None> the channel will be muted.

Wildcard Filter:

A stream filtering filter

c Any character representing itself apart from those mentioned below. Thus **c** matches the character c

? Matches any single character.

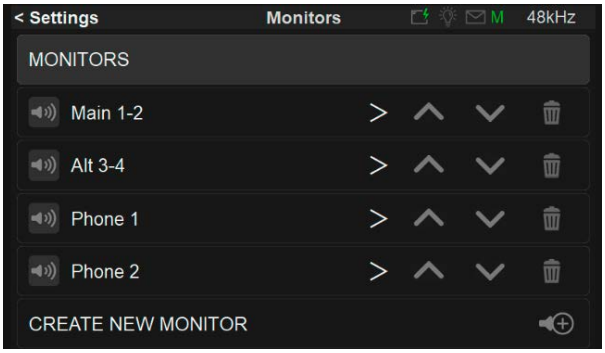
* Matches zero or more of any character.

[...] Sets of characters can be represented in square brackets.

Examples

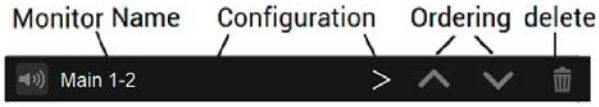
Wildcard	Streams name filter that	Example of Streams matching
Drum	Contains “Drum” anywhere	Drum OH; my Drum; Input Drum 5, …
MT 48*	Begins with “MT 48”	MT 48 42; MT 48 Mic 1; …
A?.HDMI	Begins with A followed by any single character followed by “.HDMI”	A3.HDMI; Ax.HDMI; …
Input_[1][1-4]	Begins with “Input_” followed by 11 or 12 or 13 or 14	Input_10; Input_14; …
*Cello?[123]	Contains “Cello” followed by any single character followed by 1 or 2 or 3	CelloA1; Cello_2; My Cello03; …

MONITORS



Configure your Monitoring sets, whether you plan to use the MT 48 hardware output sets for your Studio Monitor Speaker, Headphones, Cue Mix or to Remotely control the outputs of an external RAVENNA/AES67 compatible device (e.g. Merging Anubis, Horus, Hapi, or additional MT 48).

Monitor entry page details



Create new Monitor

Create a new Monitor set that can be customized for your needs.

For example, configure the MT 48 Main (1-2) outputs to control the volume of your DAW Source through the MT 48 monitoring engine.

- ▶ Enter a Monitor configuration by tapping the Monitor line or Monitor Name. Select the trashcan to delete a Monitor set.

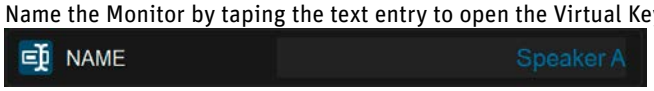
Enable or disable a Monitor

Disabling a Monitor will hide this one from the Main MT 48 menu pages. Doing so will not delete the Monitor but simply hide it with a gray icon; it can be re-enabled at any time.

A disabled monitor Set will show a Red muted speaker icon.

Name

Name the Monitor by taping the text entry to open the Virtual Keyboard.



Mode

Define your Monitor by selecting one of the 3 available Monitor Modes.

1. Speaker Set: Recommended to be used for speaker set playback (e.g. Stereo Monitors)

2. Headphones: Recommended to be used for headphones sets monitoring

3. Cue: Recommended to be used when a specific summation of Sources is need on a designated monitor set or when recording to produce a low-latency Cue mix for the performer foldback.

Important:

Monitor sets have different properties, refer to the Monitors Types and Features table here

Speaker Sets and Headphones will monitor the same Sources selection. In order to have an independent monitored Source selection it is mandatory to use a Cue. For more details refer to the table detailing the different Monitor mode possibilities and constraints, available in the Sources vs. Monitor section.

Note #1: Connecting only one input to a Stereo Source will hard pan this source monitoring to either the left or right channel depending of the input used and Monitor set. It is recommended to change the source type to Mono if using only one input to have this source monitored to center.

Note #2: In RAVENNA / AES67 usage, the Monitors must be selected on the MT 48 in order to see the IO connections in ANEMAN.

Mon to Cue inactive (only available for Cue mode)

By default inactive. When MON>CUE is enabled the CUE will listen to the same selected Sources as the Speakers and Headphones source selection.

When enabled for a chosen CUE Monitor set, it will prevent the operator from overriding the Cue Mix and so will not send the Speaker Set/Headphones Sources to Cue listener.

Note: When enabling Mon to Cue only the Sources selection will override the Cue Monitor. The Speaker Set controls: Mute, Solo, SoloX, Polarity, Downmix, Ref and Dim will not be applied in a Cue.

Trim

Trim the level of a Monitor set, apply by turning the MT 48 Rotary Knob. Range: -36 dB to 12 dB. An individual Channel Trim is available for each channel (refer to the Channel description below)

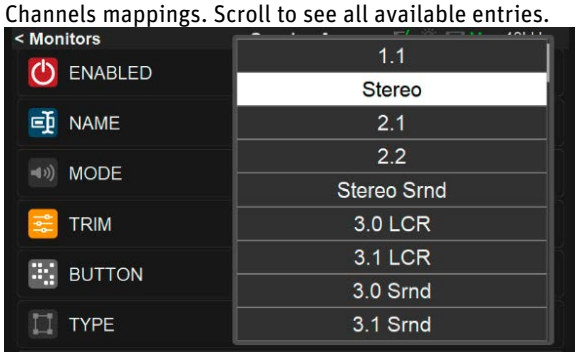
Note: The Trim can also be set directly from the Meters page. For example, if you trim a monitor to +3 dB, the max volume will be set to -3 dB for that monitor. On the same monitor if the trim on the L channel is +2 dB, the max volume will set to -5 dB.

Button

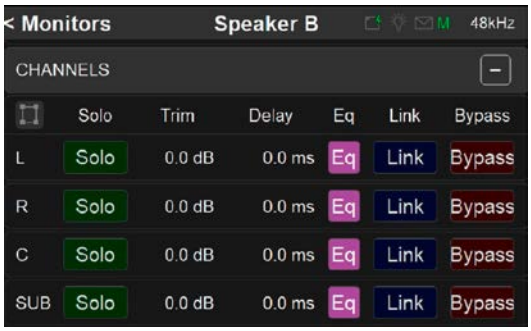
Assign a Monitor set to the button of your choice by selecting one entry from the drop-down dialog. You can choose between one of the MT 48 hardware monitoring buttons available: Speaker A, Speaker B, Headphones 1, Headphone 2. Or by choosing one of the 4 Virtual Keys available, a Virtual Key will then be added on the MT 48 TFT. Only one Button /Monitor can be chosen. If an already assigned Button is chosen, it will automatically set the Monitor selected to None.

Type

Select the Monitor set type. Predefined Monitors are available from mono to 22.2 Channels mappings. Scroll to see all available entries.



Channels



Type: The channel type is predefined in accordance with the selected Monitor Type

Solo: Solo the channel

Trim: A channel trim exclusive to each Monitor Set is available for speakers. Range: -12 dB to 0 dB.

Delay: Set a delay to the speaker of your choice. Apply by turning the MT 48 Rotary Knob.

Range: 0 ms to 150 ms by steps of 1 ms

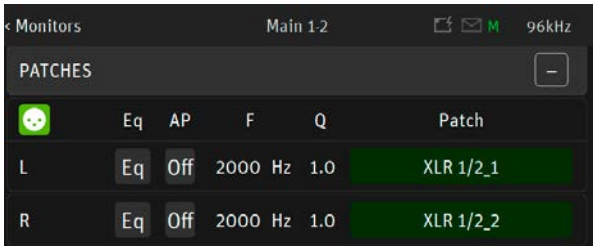
Note: Audio will cut on all delayed channels when enabling/disabling a delay on a channel. The delay incrementation value starts from 1.4ms.

EQ: Press the EQ button to access the EQ UI. Refer to the EQ chapter for more details.

Link: Link the EQ channels to apply the same parameters to the Linked channels.

Bypass: Bypass the EQ to monitor with or without EQ.

Patches



Type: The channel type is predefined in accordance with the selected Monitor Type.

EQ: Access to the parametric EQ page, the button is enabled when the EQ is active.

AP: All Pass Filter ON/OFF

F: Frequency target of the All Pass Filter

Q: Slope of the Phase on the All Pass Filter

Note: This EQ is recommended when using Speakers from different brands within a Monitoring setup to align the phase introduced by different types of transductors/filters.

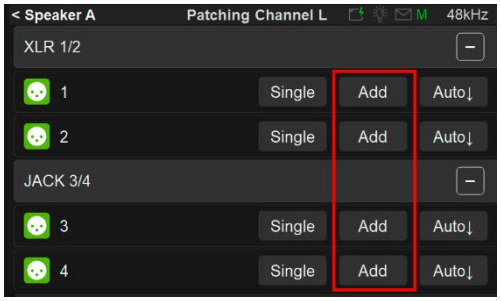
Patch: Configure the Monitor routing. Users can patch an MT 48 Hardware Output Monitor, USB channels, an external source such as Peered device (see peering) or a RAVENNA/AES67 Stream. The Patch list starts with the MT 48 Hardware inputs followed by the USB outputs or RAVENNA/AES67 Stream, the latter cannot be created from the MT 48. Use ANEMAN to do so. Scroll to view the entire listing.

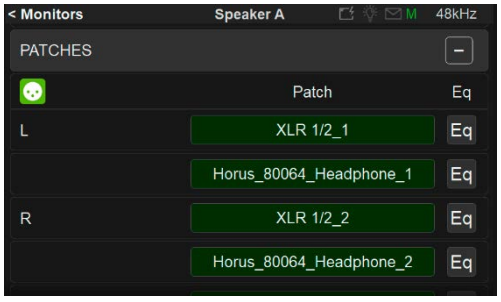
Single — Patches a single channel at a time.

Auto↓ — Patches automatically the channels following the selected one (downwards). Quick way of patching multichannel Sources or Monitors.

Output Duplication in Patches section

It is possible to Add additional outputs to a given Monitor output, the same control will apply to it.





EQUALIZER

24 bands of EQ supported

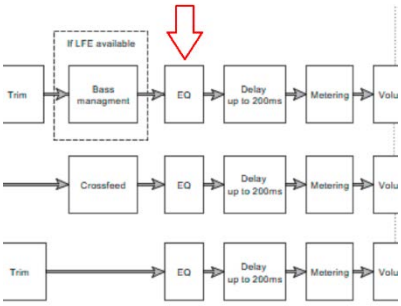
MT 48 EQ for Monitors

The MT 48 EQ is built on the existing and universally acclaimed quality of the Pyramix EQ-X and offers extreme definition filtering.

EQ support for Monitors is a 24 band fully parametric EQ with independent control of filter type, gain boost and cut, frequency, and Q factor (bandwidth) for each band. With notch, low cut, Hi Cut, peak and shelving filter types available. The state space filter design of this extreme definition equalizer has been specifically optimized to deal with the highest audio resolutions while still permitting very low noise & distortion, typically offering a THD+N of better than -110dB, throughout the entire audible (and even non-audible) range. Of course, this new digital filter's topography, while designed with high sample rate in mind, also offers the extra benefits and low noise at 1FS sample rates.

EQ can be applied to any monitors type (speakers set, headphones and cues). In the case of speaker sets, multiple speaker sets having the same routing with different equalization can be set. In that situation the EQ resources are not cumulated but shared. This provides a complex equalization for each speaker set (maximum total of 84 bands are available).

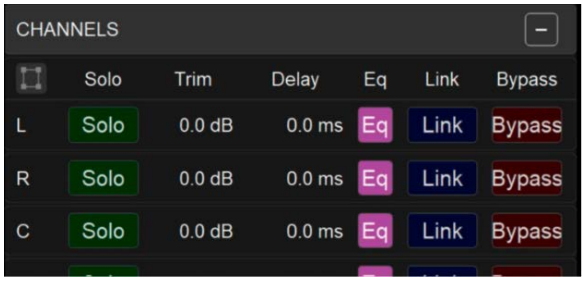
EQ SIGNAL FLOW



EQ FEATURES

- Up to 24* bands per channel with a total limit of 224 bands (in banks of 4), this applies per Monitor since only one monitor can be active at a time. Those 224 bands are distributed between: Room Correction, Bass Management, Channel/Patch Parametric EQ.
- The EQ is available from the Settings under Monitors → Channels

Note: If ever an action requires more band EQ than available a message will be displayed in the Logs page.



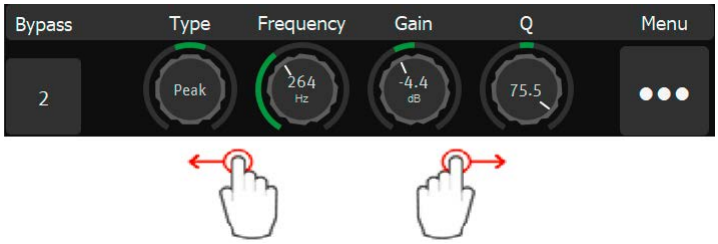
Eq Press the EQ button to access the EQ page.

Note: When an EQ is enabled, the color button will turn violet

Bands Activation

Tap the EQ UI in order to activate the first 1-4 EQ bands.

EQ PARAMETERS CONTROLS



Operation: Selected a parameter and use the MT 48 Rotary to change its value. Frequency and amplitude can also be changed by moving the band's dot with your finger on the touchscreen.

EQ Band selection: Tap the frequency band on the UI itself that you want to configure. Once a frequency band is selected, you can swipe to left or right on the Parameters control to access the adjacent band.

Bypass

All ALL: When no bands are selected, taping All with disable all EQ Bands and the EQ input will be directly routed to the output.

2 Band Channel number: When a frequency band is selected, taping this one under Bypass will Bypass that specific frequency only. (e.g. band 2)

Bypass Default Value: Disabled

Each band has four controls:

- Type: low cut, low shelf, peak, high shelf, high cut
- Frequency: 20 Hz ... 20 kHz
- Gain: ±24 dB
- Q: 1 (wide) ...100 (very narrow)

Adjust values by selecting a parameter on the touchscreen and turning the Rotary Control. The resulting curve is shown in the display.

Monitor Trim Level Fader and Meters

At the far left of the MT 48 EQ a Fader is available to control the Monitor Trim level of the selected channel. To operate, make sure no EQ band is selected, then select online the Gain encoder (white). Turn the rotary encoder to adjust the Monitor Trim level.

Metering indicators legend at bottom of the faders

I Input peak meter pre-EQ

Δ Input and Output peak level difference with indicator ◆

O Output peak meter post-EQ

Peak Column selector: Available at the top of the Monitor Level meter. Tap to toggle between the **I** or **O** peak meters you want to display.

Note: Peak Reset can be achieved by tapping in anywhere in the Meter area.

EQ Settings menu

Add bands 5-8: Select if you need more bands. Once you have added Bands 5-8 you can add another four bands and so on up to to 24 bands per EQ.

Remove bands 1-4: Select and confirm to delete the current bands 1-4. If you added additional bands, you can delete them in banks of four.

Flat: Reset the bands set the bands to peak mode and gain set to OdB

Copy: Copy the current EQ bands parameters, copy can be used to eventually duplicate the EQ parameters for a second EQ Monitor Channel where you could paste the bands, to start from the same EQ setting.

Paste: Paste EQ parameters copied from another channel.

Note: the EQ "BM" indicator stands for Bass Management EQ, that is a fixed low cut filter type with frequency range from 20 to 200 Hz.

SUB SETTINGS (BASS MANAGEMENT)

The Sub Settings (Bass Management) are available for Speaker Set Monitor sets with at least one SUB channel type. Based on the ZMAN MT 48 board that offers built-in high-quality filters directly processed in the FPGA. Those will apply a crossover frequency from all channels (except LFE and LF2) and route low frequency information to the SUB channel(s).

The Monitor Mission uses these filters to achieve complete bass management for speaker set-ups having one or two SUB channels and thus support standards such as 5.1 or 7.1 and beyond with support for 10.2 or even 22.2 formats. This ensures long term compatibility for upcoming immersive standards which use a high channels count.

Bass Management Settings

LFE Boost

Optional +10 dB LFE boost

When using a Monitor Set configured with 2 LFE channels, those will be processed stereo-wise.

Note: The LFE channel Boost will only be effective if the monitored Source itself includes an LFE channel, as per Signal Flow diagram below.

LFE Low Pass Filter

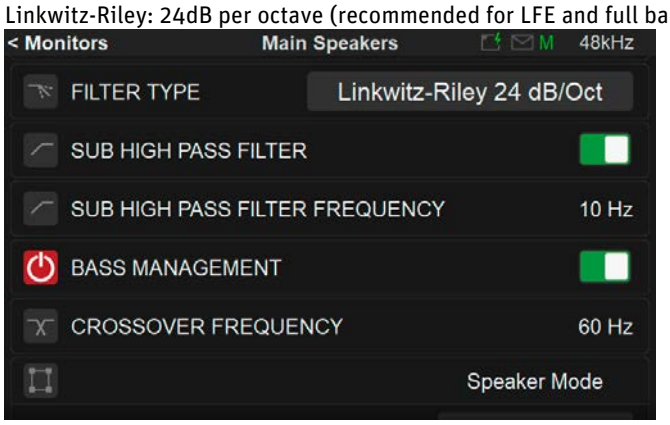
Apply filter on LFE channel, at the same frequency as the crossover value

Filter Type

EQ-X: 12dB per octave (original)

Linkwitz-Riley: 12dB per octave

Linkwitz-Riley: 24dB per octave (recommended for LFE and full band channels)



Sub High Pass Filter

Apply high pass filter to cut the ultra-low frequency of the Sub channel (s)

Sub High Pass Filter Frequency

Set the high pass filter frequency of the Sub channel (s)

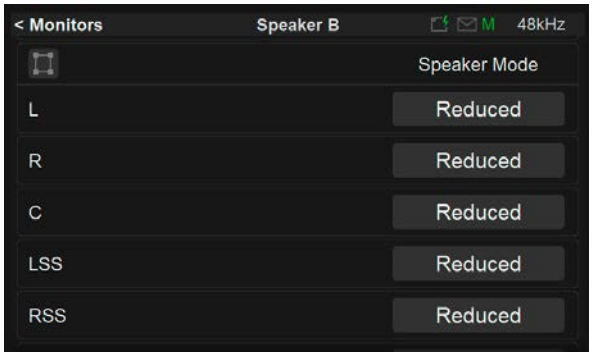
Bass Management

Enable the Bass Management for a Speaker Set which includes at least one SUB channel type.

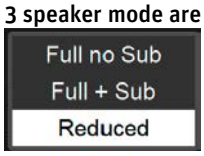
Crossover Frequency

Adjustable crossover frequency, from 20 Hz to 200 Hz

Speaker Mode



3 speaker mode are available



Full No Sub

All the low frequency content of the channel is not sent to the Sub (bypass).

Typical use: For full band speakers.

Full + Sub

Keeps the low frequency within the channel and in addition the low frequency content is sent to the Sub.

Typical use: For additional bass frequencies.

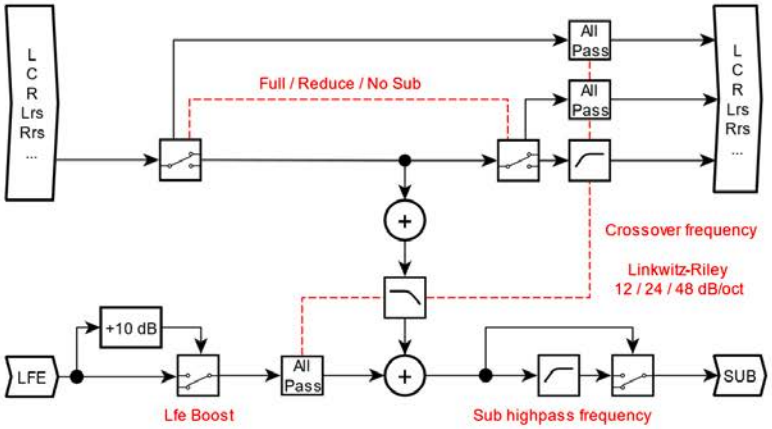
Reduced (default)

Cut the bass content to the channel and route it to the Sub channel.

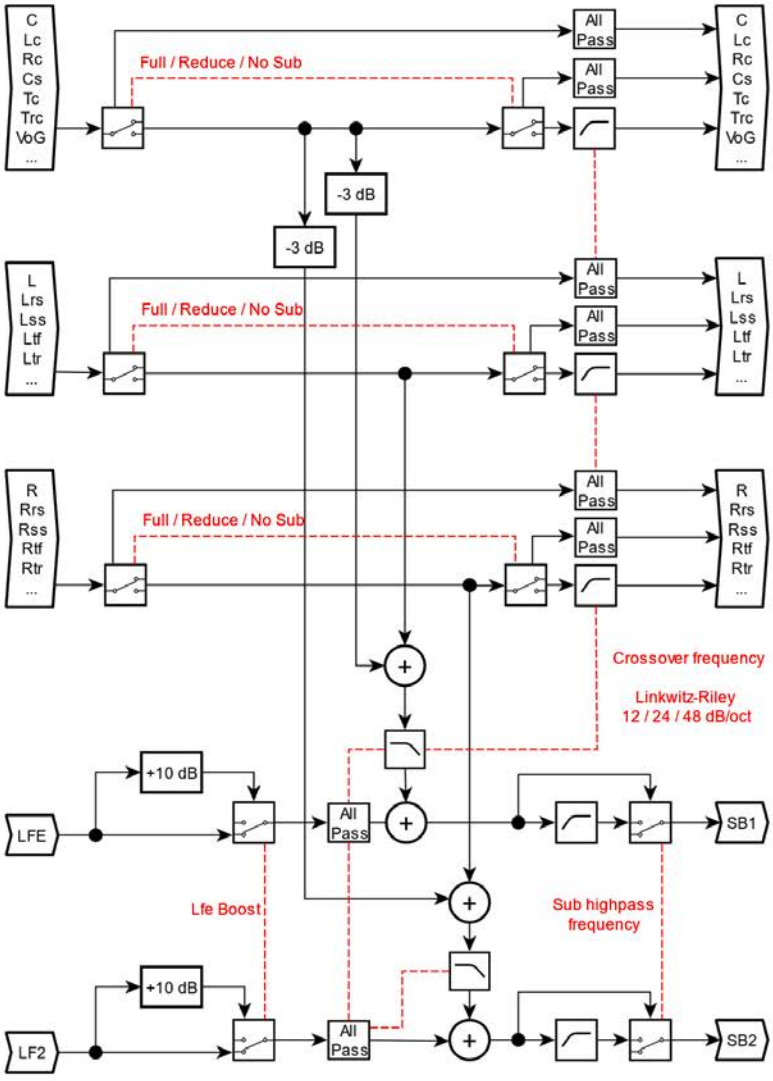
Typical use: Crossover for speakers with limited bass response.

Bass Management Signal flow

Single channel bass managment



Dual channel bass managment



Crossfeed

When listening on headphones, the signal on the left channel will only reach the left ear, and the signal on the right channel will only reach the right ear. With loudspeakers this is not the case: The signal on the left speaker will also reach the right ear and the signal on the right speaker will also reach the left ear.

This can be simulated via crossfeed: Part of the left channel is also fed to the right ear cup, and part of the right channel is fed to the left earcup. Listening on headphones thus becomes more like listening on loudspeakers. The amount of crossfeed can be adjusted from 0% (no crossfeed) to 100% The default setting is 0%. Go to Settings Monitors Phone 1 (or Phone 2) and scroll down to Crossfeed.

Talkback

It is recommended that you first configure your Talkbacks from the Settings Talks page.

Once having configured Talk 1 and/or Talk 2, those settings will determine if and which Talker will be inserted into the selected Monitor Set, Headphones or Cue when engaged.

Sources Dim: When talkback is engaged all the listening sources feeding the monitor are dimmed to the value selected. Example: To Dim the DAW playback source when talking to a musician.

Talker Dim: Apply a Dim attenuation to the talkback Mic when engaged. Example: To avoid feedback in a studio control room when engaging the talkback while monitoring speakers and the talkback simultaneously or to allow to make a pleasant balance between music listening and talking (without needing to change the monitor volume each time somebody is talking).

Talk A: Select a Talk source available, in order to inject this source when selected in this Cue or Monitor set Note: Talks must first be configured in the Settings>Talks.

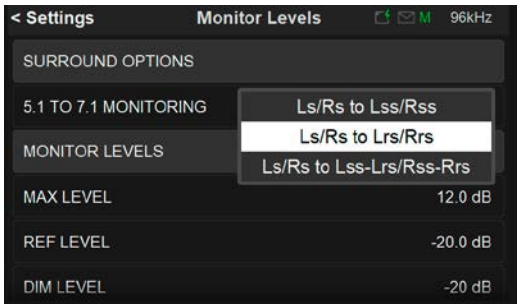
Talk B: If you need a second talkback, select a Talk source available, in order to inject this one when engaged in this Cue or Monitor set Note: Talks must first be configured in the Settings>Talks.

Available Sources

At the bottom of the Monitor Settings, you can enable which existing Sources should be visible for a given Monitor Set. A disabled Source will be hidden in the listing.

Monitor Levels

The Monitor Levels settings are in relation to the Monitor Control section of the Main pages and can be recalled from this section.



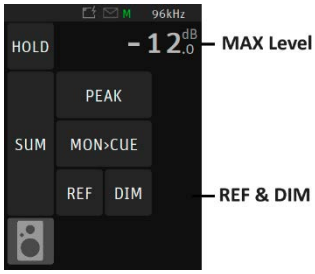
Surround Options

5.1 TO 7.1 MONITORING**:** Surround options for 5.1 with various choices of speaker layouts

Ls/Rs to Lss/Rss: Can be used if the Sides positions are set to 110 degrees

Ls/Rs to Lrs/Rrs**: D**efault/legacy compatibility.

Ls/Rs to Lss-Lrs/Rss-Rrs: The surround 5.1 will be redistributed to the Sides and Rear speakers. This results in a phantom speaker corresponding to the 5.1 mapping speaker's placement.



MAX Level:

Set the Maximum volume level boundary, use the MT 48 Rotary Knob to set the value.

Range: -36dB to +12dB

REF Level:

Determine the Reference listening level you wish to establish when recalled. Set the level by using the Rotary Knob.

Range: -36dB to +12dB

DIM Level:

Set the desired Dim level value by using the Rotary Knob. The Dim attenuation is applied to the current volume value of a Speaker Set (Dim does not apply to Headphones or Cues Monitors). Apply the Dim from the Main Pages Monitoring controls.

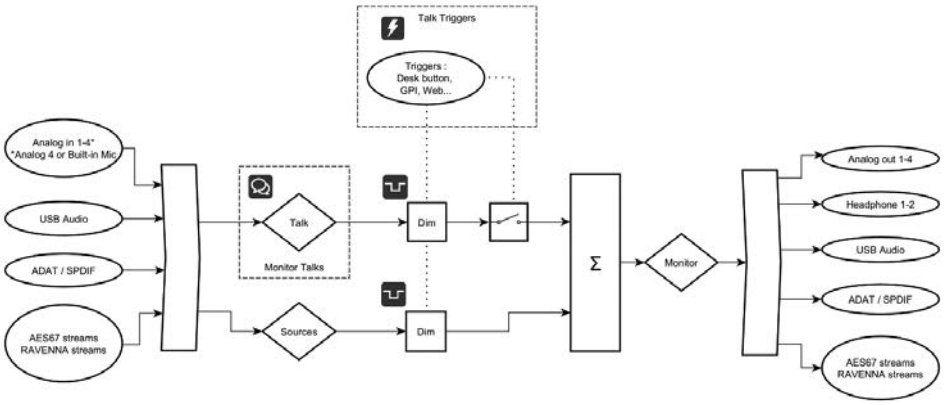
Range: -60dB to 0dB

Note: Ref and Dim only apply to Speaker Set Type of Monitor Modes

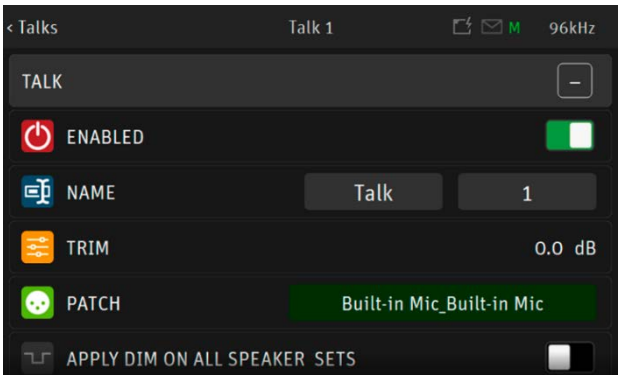
TALKS Settings

The MT 48 Talkback logic is not restricted to the built-in mic but is able to use any other microphone (including phantom powered condenser mics) as well. Two Talkback or Listen mics can be sent to different Speaker Sets/Headphones monitors.

Talkback Circuitry



The TALKS settings have similarities to the Sources settings.



Enable: Enable or disable the Talk sources

Name: Select the Talk name from the pre-defined names listing**Trim**: Apply a trim value to the Talk source

Patch: Patch the Talk source: You can choose the local Built-in Mic, any MT 48 input where you would connect a Microphone or an AoIP Stream that could be a Microphone connected to another RAVENNA/AES67 compliant device.

Apply Dim to all Speaker Sets: When enabled if the talkback is engaged it will Dim the Speaker Set levels to the configured Dim level configured under Settings→Monitoring›Monitors→MONITOR-NAME→Talkback Sources Dim value. This setting can be configured for each Speaker Set, to have different Dim levels applied when engaging the Talkback.

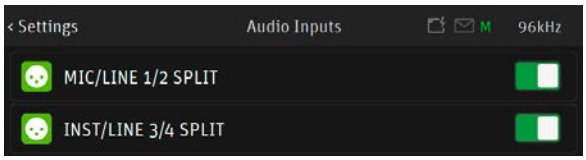
Triggers

The operator can define how the Talkback is triggered. That can be from either the MT 48 Talk Button or from GPI (footswitch), a trigger can engage multiple Talkbacks at the same time. Refer to the GPIO Settings for more details.

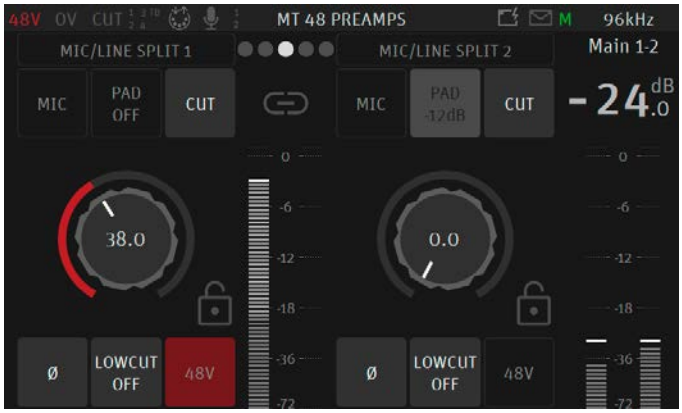
AUDIO INPUTS Settings

Split channel settings. The MT 48 AD front-end topology offers split channel functionality, where every input channel has a separate split gain control for sending them to different paths.

Enable the Split channel option for the MT 48 Preamps channels pair of your choice. XLR Combo 1/2 inputs or the Jack 3/4 inputs.



When enabled, within the MT 48 Preamps pages a second pair of Preamps will appear for each Split Channel pair. Allowing you Split control over: Gain, Polarity and Low Cut parameters.



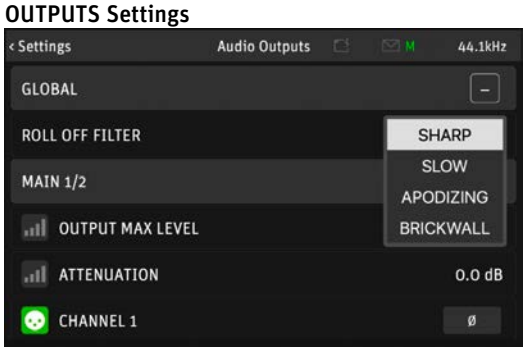
About Recording the Preamps inputs:

The Monitor Mission inputs can be recorded over AoIP/AES67 using ANEMAN for streams connectivity along with the Merging VAD (macOS) or Merging MAD (Windows OS) drivers.

Procedure are documented on the Merging Knowledge Base.

Recording over USB data with the Monitor Mission the inputs for the moment can only be recorded by using the Advanced Pages IO Router page. Refer to the Releases Notes for all details. The support for USB recording with the Monitor Mission is planned in the next version (post 1.6.2 ›). We recommend for now using the MT 48 Music Mission for recording purposes.

OUTPUTS Settings

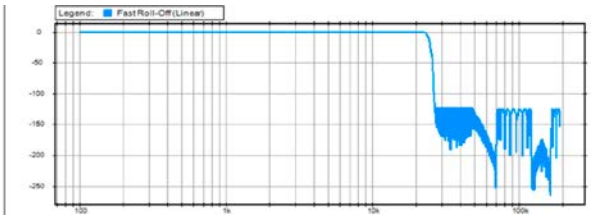


Global Outputs Setting

Roll Off Filter:

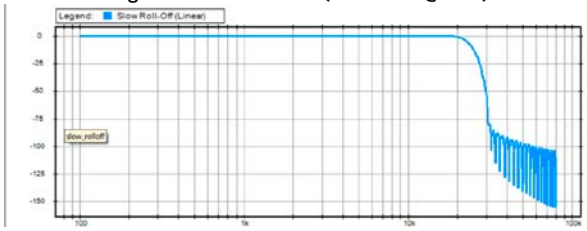
Sharp: Offers a flat frequency response with an attenuation of 3 dB at 0.484 x FS (23.2 kHz @48k), which has the tradeoff of 35 samples latency.

Fast Roll-Off, Linear Phase Filter (dB)



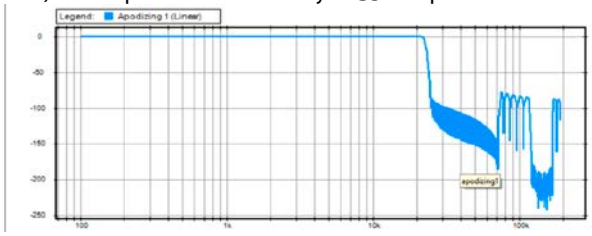
Slow: Offers the lowest latency of 9 samples, with the tradeoff of a gentle frequency response attenuation reaching -3dB at 0.45 x FS (21.6 kHz @48k)

Slow Roll-Off, Linear Phase Filter (dB)



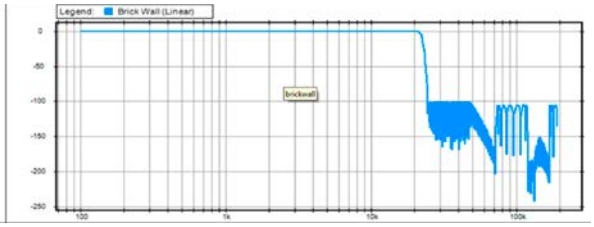
Apodizing: Fast Roll-Off filter, Linear phase filter. Latency of 35 samples

Apodizing, Fast Roll-Off, Linear Phase Filter (dB)



Brickwall: Ensures rejection of more than -100dB at Nyquist (0.50 x FS, 24 kHz @48k). Latency of 35 samples

Brickwall Filter (dB)



XLR 1/2: Line output level of the physical XLR outputs 1 and 2 located at the back of the MT 48

Max Output Level: +18dBu or +24dBu

Attenuation*: +0dBu or -36dBu

Channel 1: Polarity setting

Channel 2: Polarity setting

JACK 3/4: Physical TRS jack outputs 3 and 4 located at the back of the MT 48

Same parameters as above (XLR 1-2)

HEADPHONE 1:

Max Output Level: +8 dBu or +16 dBu

Attenuation*: +0 dB to -36 dB

Channel 1: Polarity setting

Channel 2: Polarity setting

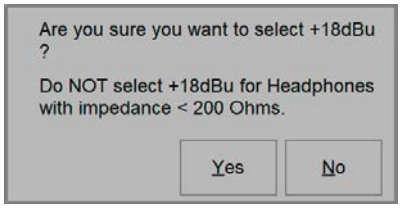
HEADPHONE 2:

Same parameters as above (Headphones 1).

The MT 48 digital to analog converters are designed to drive high or low impedance headphones at high levels with significant audio output power without distortion.

Be attentive to the impedance and sensitivity of your headphones and set the MT 48 Max Output level accordingly.

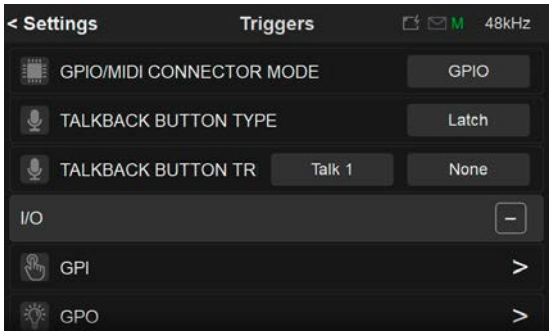
⚠ Warning: It is not recommended for headphones with an impedance below 200 Ohms to select an Output Level of +18dBu. As a preventive measure, a warning message will be displayed each time the Headphones Output Level is changed from +8 dBu to +16 dB



⚠ Warning: The MT 48 Headphones output level can make your headphones very loud if it is turned up too high, which could cause permanent hearing damage. Please be careful with your ears when using the +18 dBu setting.

TRIGGERS Settings

MIDI or GPIO Selector: Switch between GPIO or MIDI (default)Users can select either MIDI or GPIO and cannot combine one with the other.



Talkback button type: Select the behavior of the MT 48 Talkback button.

No Latch: Keep pressed to Talk and release to end the discussion

Latch: Press to Talk and press again to end the discussion

Auto-Latch (default): Auto-Latch (default): Act as No Latch if keep pressed after 333 ms otherwise act as a Latch.

Note: When engaged the MT 48 Talkback button will be blinking

Talkback button trig: Define which of the Talks the MT 48 physical Talkback button will trigger, either the Talk 1, the Talk 2, or both.

MIDI Mode

In MIDI mode, the MT 48 can receive and send MIDI information. Connect synths, drum machines and other MIDI gear using TRS to DIN5 adapters (sold separately).

MIDI Setup procedure over a network connection:

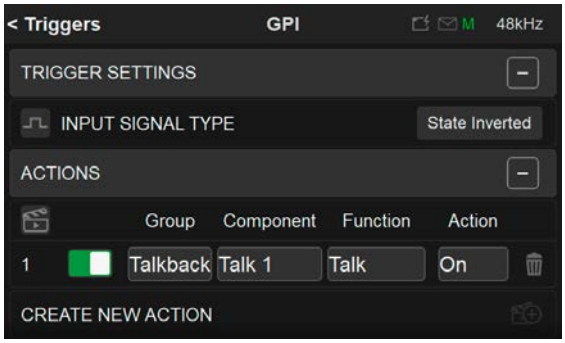
The MIDI ports are also supported over the MT 48 AES67 network port. To operate MIDI over a network connection it requires that the Merging Drivers (MAD/PC or VAD/Mac) are installed on your system. Refer to the Merging documentation for all details.

GPIO Functions

The general-purpose input/output is an uncommitted digital signal pin on an integrated circuit or electronic circuit board whose behavior—including whether it acts as input or output—is controllable by the user.

Typically used by example with a footswitch (GPI) that would trigger a second Talkback whom status would be reflected (GPO).

- ▶ Enable the GPIO mode in order to use those I/O (located at the back of the MT 48), by doing so two new entries, GPI and GPO will appear in the Triggers Settings.



GPI = General Purpose Input; GPO = General Purpose Output

GPI Settings

Enter the GPI page to configure the GPI triggering function type and triggering modes.

Pulse: Action is executed when the (foot)switch moves from closed to open state.

State: Action is executed when the (foot)switch moves to open state. Actions in Toggle mode will reflect the state as follow: open = on, closed = off

State Inverted: Action is executed when the (foot)switch moves to closed state. Actions in Toggle mode will reflect the state as follow: open = off, closed = on

Create a new GPI action:

Determine what will be the action triggered

Created actions are by default enabled, but users can disable an Action at any time

Select to delete an action

Group: A fixed list of Group options is available.

Component: Will vary with the Group option selected.

Function: Will vary with the Component option selected.

Action: Toggle: Action will toggle between ON and OFF
On: Action will be turned ON (only)
Off: Action will be turned OFF (only)
Trig: Applies the action at every triggering

Note: In the example here above a footswitch will trigger the Preamps Cut option On/Off in order to use this one as a cough pedal.

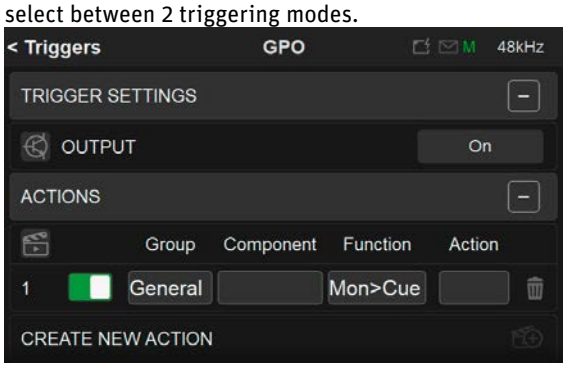
GPI: State/Pulse table

Group	Component	Function	Action	Description
General	n/a	Sum	On/Off/Toggle	
	n/a	Mon>Cue	On/Off/Toggle	
	n/a	Peak reset	Do	
Monitor	<Monitor name>	Mute	On/Off/Toggle	Do not work if Monitor is a Speaket Set. Use Speaker set instead
	<Monitor name>	Downmix	On/Off/Toggle	
SpeakerSet	n/a	Mute	On/Off/Toggle	
	n/a	Dim	On/Off/Toggle	
	n/a	Ref	Do	
Select	<Monitor name>	<Source name>	On/Off/Toggle	Limitation: Multiple sub-sequent select on a given Monitor do not work yet
Talkback	<Talk name>	Talk	On/Off/Toggle	
Preamp	<Input name>	Cut	On/Off/Toggle	
	In [1/2/3/4]	Highpass	On/Off/Toggle	
Presets	Recall	Preset [1,2,3,4,5]	Do	
Transport	n/a	Stop/Rec	Toggle	n/a
	n/a	Play/Stop	Toggle	n/a

	n/a	Punch In/Out	Toggle	n/a

GPO Settings

Enter the GPO page to configure the GPO triggering function type, where you can select between 2 triggering modes.



On: When the Action (or the action condition) is true, the transistor is in On state. Action is applied.

Off: When the Action (or the action condition) is true, the transistor is in Off state. Action is not applied.

Create a new GPO action:

Determine what will be the action triggered

Created actions are by default enabled, but users can disable an Action at any time

Select to delete an action

Group: A fixed list of Group options are available

Component: Will vary with the Group option selected.

Function: Will vary with the Component option selected.

Action: No action parameter

GPO: On/Off table

Group	Component	Function	Action	Description
General	n/a	Summed	n/a	
	n/a	Mon>Cue	n/a	
	n/a	Clipping	n/a	
Monitor	<Monitor Name>	Muted	n/a	
	<Monitor Name>	Downmix	n/a	
	<Monitor Name>	Sel. Speakerset		Under development
SpeakerSet	n/a	Dimed	n/a	
	n/a	Is Ref	n/a	
Talkback	<Talk name>	Talking	n/a	
Preamp	In [1/2/3/4]	Clipping	n/a	Under development
Transport	n/a	Recording		n/a
	n/a	Playing		n/a
	n/a	Stopped		n/a

⚠Warning: Inserting a cable Jack ¼ in the MT 48 GPI or GPO connectors could trigger a GPIO event. It is recommended to disable the GPIO actions prior to connecting a Jack ¼ in the connectors.

Pedal switch types that can be used for GPIO

Momentary switch: Remains in its “on” state only as long as it is being pressed. Once the user releases the switch, the device is no longer on. An everyday example of a momentary switch is an electric drill; it rotates only as long as its switch is pressed. With such a pedal Talkback can be engaged only when the pedal is pressed.

Latching switch: Needs to be pressed once for ON and again for OFF. An everyday example for this is a light switch. Once you flick the switch, the lights are on and remain so until you flick the switch again.

With a latching switch, press to activate Talkback (ON) and press again set Talkback OFF.

ACCESS CONTROL Settings

Apply security access to a list of parameters (items) in order to prevent some operators to have full access, you can thus limit those with password protection. Locks are independent of the Presets to guarantee full protection at all times.

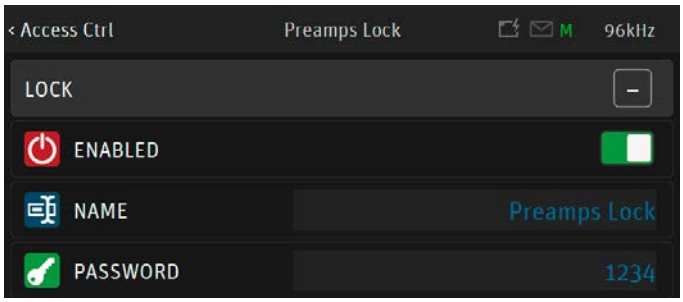
Procedure

- ▶ Enter the Access Control entry
- ▶ Select “Add a new lock”
- ▶ A new Lock entry will be added.

Lock:

- ▶ Name: Rename the lock accordingly (e.g. Preamps Lock)
- ▶ Password: Apply the password for protection, the password will be linked to the Lock entry

- ▶ Scroll down to see the list of items that you can lock.
  In the example here we enable a Settings lock that will require the password 1234



- ▶ Accessing the locked item is denied until a valid password is entered.
  You can delete the Lock entry by selecting the trashcan.

To reinitialize the applied Locks:

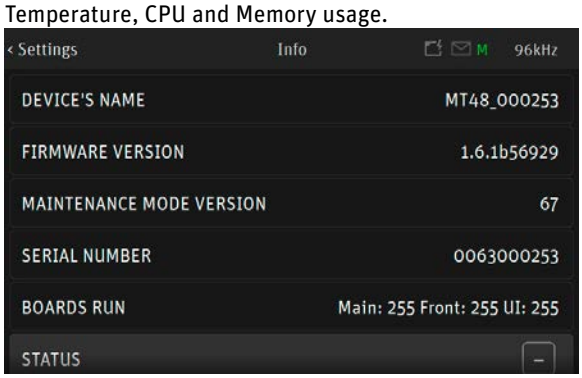
- ▶ Save the current Preset
- ▶ Open the MT 48 Settings
- ▶ Go to the Exit page
- ▶ Select Reboot to factory

Warning: This will reinitialize all the applied Locks Settings.

INFO Settings

Info

Find all information about the MT 48 Name, Type, Firmware version, Maintenance mode and Serial Number along with additional information on the MT 48 status: Temperature, CPU and Memory usage.



Note: It's important to update to the latest firmware to benefit from the latest improvements and fixes.

EXIT Settings

Reboot

Reboot the MT 48

Note: To turn OFF the MT 48, press on the POWER button.

Save

Save the current MT 48 configuration, note that an auto-save runs every two minutes.

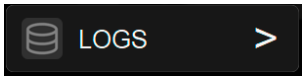
Reboot to Factory

Reboot to factory will initialize your MT 48 to the default factory settings.

Note: the saved Presets will not be erased. However, we recommend that you first back up your configuration by saving a Preset.

LOGS MESSAGES

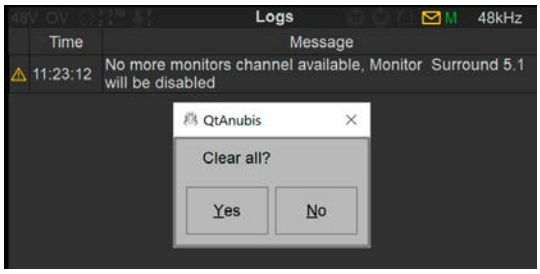
Important events, warnings and errors that occur during MT 48 operations are kept in the Logs page, which can be accessed from the MT 48 Home page. The reported messages in the logs page are intended primarily to assist the user in case of operation issues.



When a message is available the MT 48 taskbar envelope will light up. 

View the Logs messages by opening the Logs page from the MT 48 Home page.

You can clear the errors logs by selecting the message line and confirming its removal.



Example: The error reported above indicates that the total of Monitoring channels has been exceeded.

Solution: Disable some of your Monitors to have sufficient channels for a given Monitor Set.

Log messages listing

Message ID	Severity	Log
-2000	Warning	Filter slope for speaker set <MONITOR NAME> cannot be applied due to some resource's limitation. Effective slope will be <X> dB/octave (can also apply to EQ bands)
-2001	Warning	No more talk channel available, Talk <TALK NAME> will be disabled
-2002	Warning	No more monitors channels available, Monitor <MONITOR NAME> will be disabled
-2060	Warning	Route from <SOURCE NAME> to <MONITOR NAME> cannot be achieved
-2100	Warning	An unexpected behavior has occurred. Proper operation of the software cannot be guaranteed. Please contact the Merging support by providing the Debug Report.
-2800	Warning	Bass management filter slope X dB/oct can't be recalled, to prevent an inaccurate result a 12dB/oct slope is applied instead.
-2005	Warning	Channel X of monitor X cannot be fully compensated. Add EQ on this channel to solve delay alignment
-2040	Info	Channel: <CHANNELS> of monitor <MONITOR NAME> has a bass management phase incoherency. Select a Linkwitz-Riley 24/48 dB/oct to solve the issue.
-2041	Info	LFE channels present in some sources may produce a phase incoherency with the bass management. Select a Linkwitz-Riley 24/48 dB/oct to solve the issue.

Using the MT 48 in RAVENNA/AES67 AoIP mode

When the MT 48 is used in AES67 mode, we recommend using the Merging ANEMAN software for connecting AoIP Streams. Refer to the ANEMAN guide available on the Merging website along with the RAVENNA / AES67 Drivers for Mac (VAD) and PC (MAD) support.

Monitor Mission Engine Routing

1. Bypassing Monitoring Engine

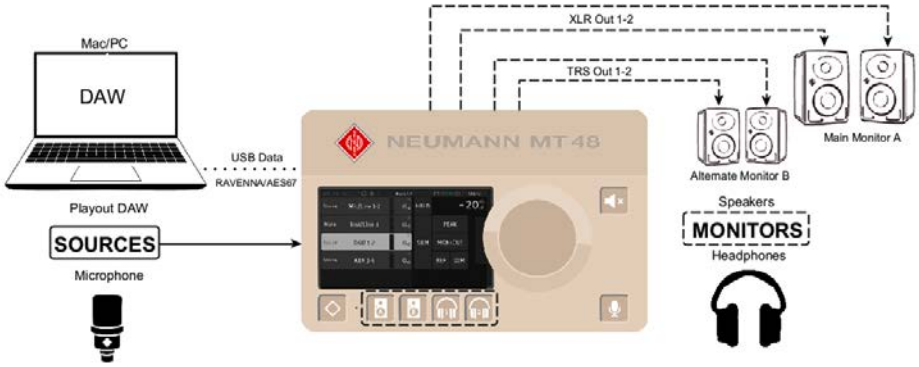
2. Properly Routed for Monitor Mission

Bypassing the MT 48 monitoring engine will prevent control over Volume (Rotary), Trim, Mute and more. Such connection could be desired for direct IO use and for connecting for example, an A/D directly to a D/A for effect inserts usage. For monitoring control purposes this is it not recommended.

Signal path going through the monitoring mix engine, for monitoring control over the MT 48 monitoring feature set, with the use of Sources and Monitors.

More details in the Merging ANEMAN, MAD or VAD manuals.

BASIC MONITORING SETUP



Setup

MT 48 running the Monitor Mission that controls 2 x Monitors sets and Headphones over a USB IO connection.

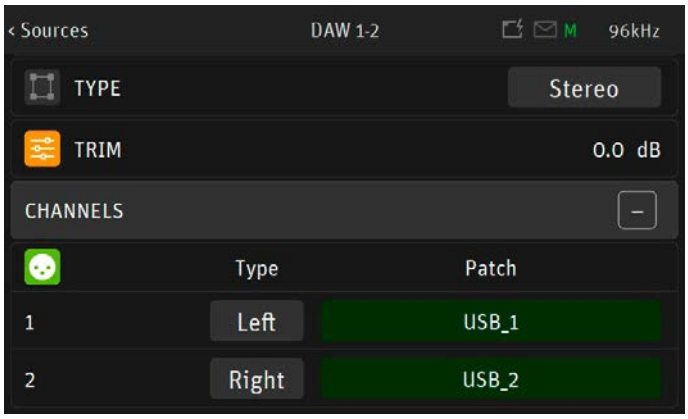
Prerequisites

An MT 48 running the Monitor Mission

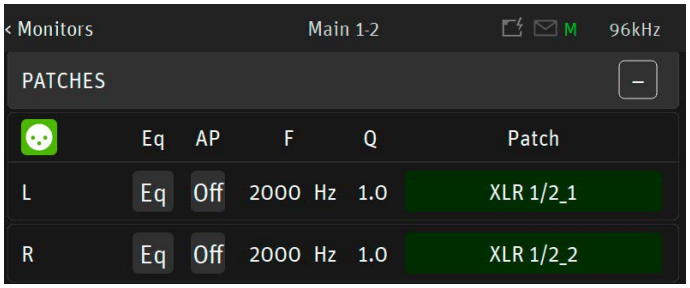
Installation of the MT 48 Toolkit is recommended for macOS and mandatory for Windows OS

Procedure

- By default the MT 48 DAW 1-2 Source is connected to the USB channels 1-2, make sure this is the case under the Settings Sources → DAW. This can be changed if needed, depending on your setup.

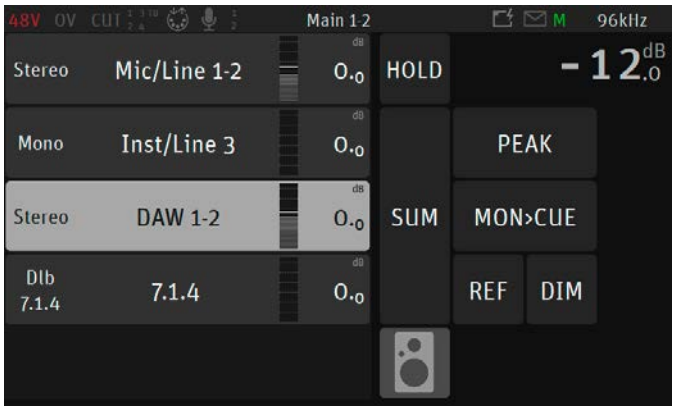


- Connect your MT 48 with USB cable to your system and make sure that the system DAW outputs preferences are configured to be used with the MT 48. The DAW output bus, once connected, should go to the USB output channels 1-2.
- Patch your Monitor Set in MT 48. By default, Main 1-2 is patched to XLR 1-2 channels and assigned to the Monitor A button while the Alternate 3-4 should be patched to TRS 3-4 channels assigned to Monitor B button. Headphones 1 and 2 should already be patched to their respective physical outputs. This can be verified and changed if desired in the Settings→ Monitors Patch section.



Note: The default patch can be changed to the desired Monitoring setup.

- Go to the Main Anubis Source page to select which Source you will monitor (e.g. DAW 1-2). Then select the Monitor Set (e.g. Speaker A, B or Headphones button) which you wish to monitor.



Monitor Speaker Set A

Monitor Speaker Set B

- To monitor multiple sources simultaneously enable the SUM option and sum your Sources selections. To control the Headphones volume, simply select the Headphone 1 button and use the MT 48 Rotary knob to adjust its Volume, the same applies to Speakers buttons.

Note: The Speakers Set mode and Headphones mode listen to the same Sources selection. In order to listen to different Sources, a Monitoring Cue must be configured (refer to the Settings → Monitors Cue mode section)

You are ready to start your MT 48 Monitor Mission and have full control over your DAW monitoring.

Web Control

The MT 48 can also be controlled via a web interface in your browser. Click on the Neumann logo in your computer's taskbar/menu bar and select Open Web Control.

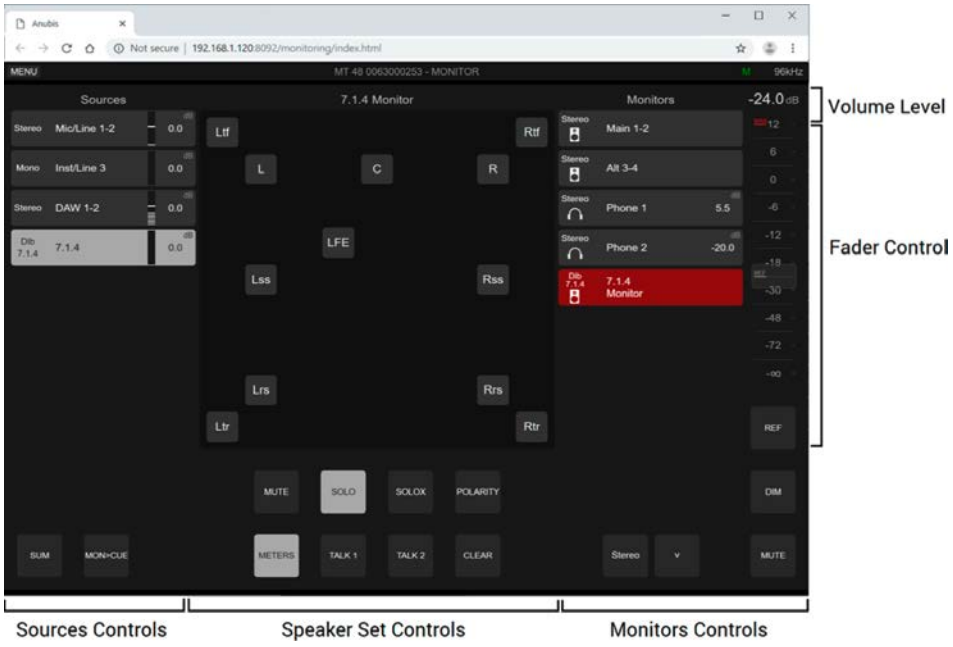
Controlling the MT 48 from your Tablet

The Web Control can be used to remote control the MT 48 from another computer. However, this requires the MT 48 to be part of your home network.

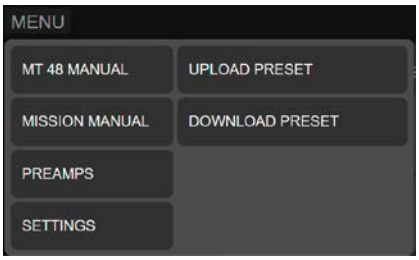
A typical use case would be to remote control mixes from one or more tablet computers so the artist(s) can adjust their own monitor mix.

- To accomplish this, connect the MT 48's AES67 port to your WiFi router via an CAT5 or CAT6 ethernet cable. If that's not possible, you can also connect the MT 48 to a WiFi extender with an ethernet port.
- To find out the web address of your MT 48, go to the MT 48 Agent, i.e. the Neumann logo int the menu bar/taskbar of your computer and select Open Web Control. The web address in your browser window will work on any web device within your network.

Web User Interface Page



▶ Click on  at the top left corner to display the Menu options.



MT 48 User Manual

Selecting this entry will open the MT 48 User Manual that is embedded into the MT 48.
Make sure you have a PDF program or extension installed to view the manual.

Mission Manual

Will open the Monitor Mission Manual.

Preamps

Select in order to view the preamps remote control display.

Settings

Opens the Settings of the MT 48 remote settings.

Upload Preset

Select “Chose File” to load externally saved presets (.NeuMon). Browse and select the MT 48 preset.

Download Preset

Download and save an MT 48 preset to an external drive. Browse and select the folder to save a preset.

Note: Monitor Mission presets file extensions are .NeuMon while Music Mission Snapshots are .NeuMi files

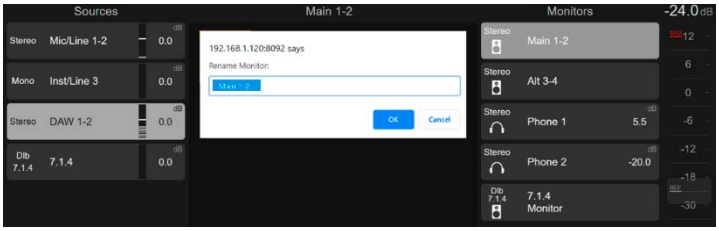
Web Access Source and Monitor Renaming

Rename Sources and Monitoring is feasible from the MT 48 Web Access and not from the MT 48 itself where there are predefined Sources and Monitors names.

Procedure

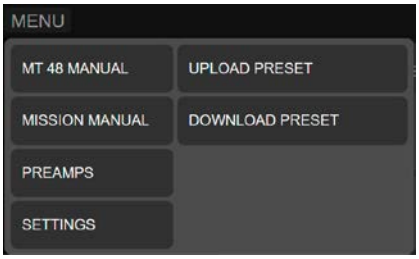
▶ Open the MT 48 Web Access Page from ANEMAN or MT Discovery
▶ Make sure that the Web Access displays the Sources and Monitors set, otherwise use the Toggle view option from the Web Access Menu
▶ Double click on the Source or Monitor Set you wish to rename.

This will open a dialog window where you can rename and confirm the new given name



Web Access Preamps Remote Control

▶ To access, select Preamps from the Menu options

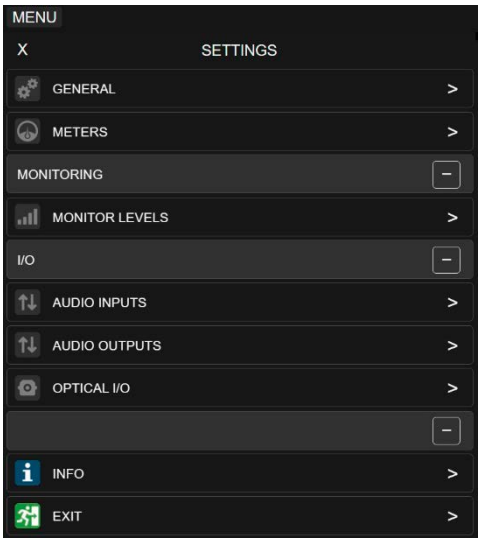


MT 48 Preamp Remote Control

- Full remote control of the MT 48 Preamps from your browser (Chrome recommended)
- Support for up to 8 groups

▶ Select one of the groups, and then select the inputs numbering/name section to add them to a group.

Web Access Settings



The Web Access provides remote control of the MT 48 main Settings.

▶ Select Show Settings from the menu option in order to open the Settings remote layout.

▶ Click on the setting entry line to open a specific setting. All changed parameters will be reflected on the MT 48 itself.

Note: Sources and Monitors settings management are not available in the Web Access pages, those can be configured from the MT 48 itself or from the MT 48 Remote App.

APPENDIX

FIRMWARE UDPATE

Prerequisites

- The MT 48 Toolkit. Download from https://www.neumann.com/en-en/file-finder/
- An internet connection

Procedure

▶ To find out if your MT 48 is on the newest firmware, go to MENU → SETTINGS → INFO

Updating requires the MT 48 driver/agent to be installed on your computer system. The firmware update procedure is easy:

▶ Download the newest MT 48 toolkit software, unzip and locate the firmware file.

With the MT 48 connected to your computer, go to the Neumann logo in the menu bar (Mac)/ taskbar(Windows) to open the drop-down menu of the MT 48 Agent

▶ In the menu, select “Show Available Updates”

A Window page will open

▶ If updates are available, select “Update All” in order to update both the Toolkit/Drivers and the Firmware

Once complete you will be asked to reboot the MT 48 unit.

⚠ Warning: Never abort an ongoing firmware update

Update from the Maintenance Page (alternative)

It is also possible to update the firmware from the Maintenance Page. This is supported over a USB connection (via the MT 48 Agent) or from a network RAVENNA/AES67 connection via the MT Discovery utility that can be downloaded from the Neumann support site.

▶ OPEN MAINTENANCE PAGE from the MT 48 Agent menu or from the MT Discovery; right click menu

A browser window opens. Click SELECT FILE and locate the firmware file you downloaded.

▶ Click UPDATE and wait for the procedure to end. Make sure your computer does not enter sleep mode during the update process. The updating procedure takes about 10 minutes. Don’t panic if the process appears to get stuck. Do not abort, just wait.

▶ Once the update is completed, the message REBOOT DEVICE appears. Confirm.

After rebooting the device, your MT 48 is on the latest firmware.

⚠ Warning: Never abort an ongoing firmware update