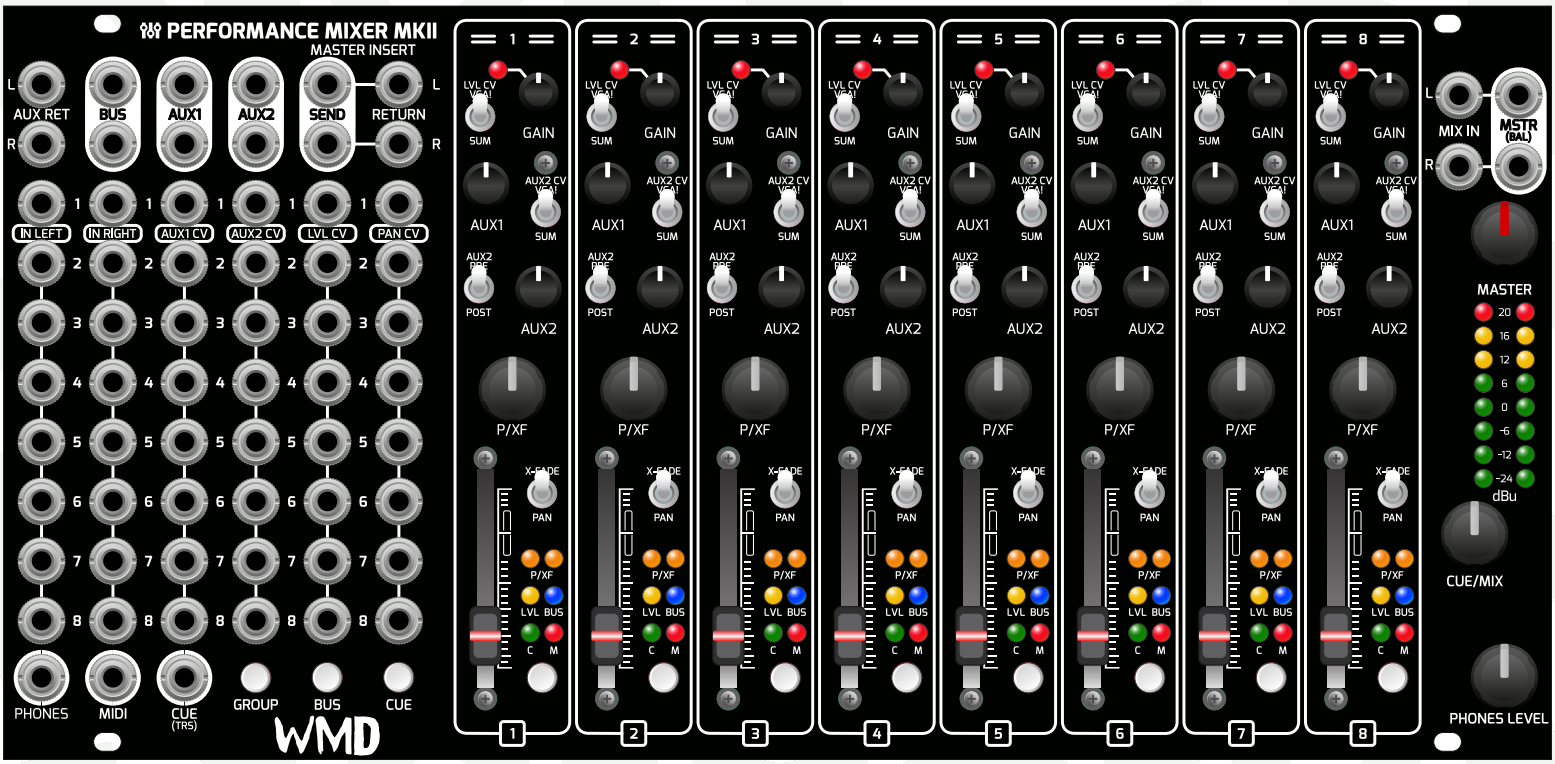
PERFORMANCE MIXER MKII
USER MANUAL



Manual Version 1.04
Firmware Version R17

WMD

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A NOTE FROM WILLIAM

Wow, what a journey to get this mixer finally into your rack! First, thank you for supporting my creative endeavors and for helping me make a living producing art and music. I'm continuously stoked and humbled to be making hardware that touches so many people.

The first Performance Mixer was released in 2016 after a hefty development cycle and was an overwhelming success. WMD could never keep up with production, and we were constantly backlogged. A great problem to have. The original PM solved a lot of problems for artists at a time when modular performance cases being flown all over the world for shows. It was really cool to see so many of them in the wild!

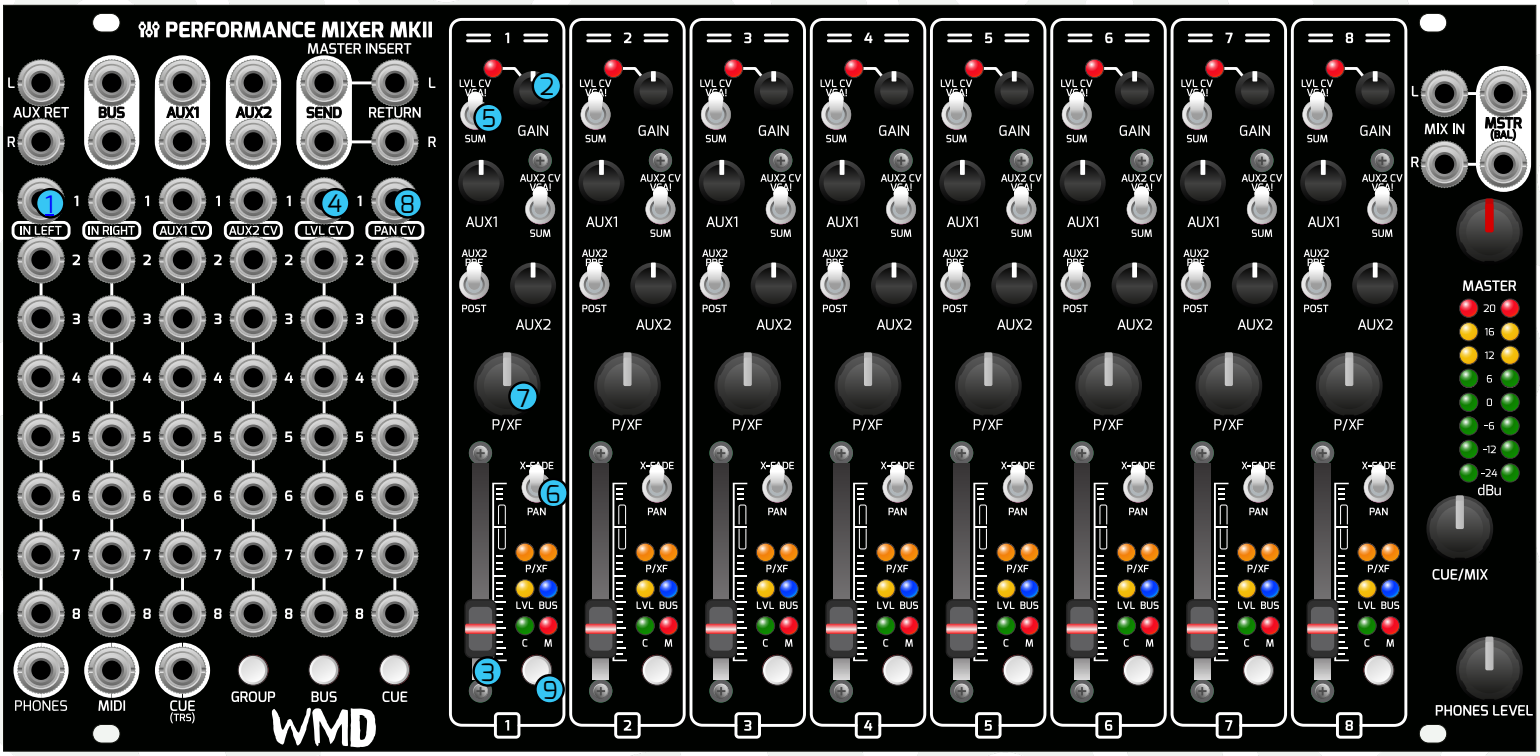
And then some crap would get into the fader, and it was a major bummer to us and the artist when they had to send "the heart of their rack" back to us for a seemingly simple repair. After doing a few hundred fader replacements I'd had enough, and conceptualized the PM MKII with replaceable parts a la many pro DJ mixers.

It took a very long time of development, testing, and research to figure out exactly what the PM MKII needed to be in a shifting marketplace. I had some false starts and showings, and some personal drama during the development cycle that slowed down the release. So much of my life over the past five years has gone into this suite of products, but I couldn't be more proud of how it turned out, how good it sounds, and how easy it is to repair in the field.

I hope you find joy in using the Performance Mixer MKII, and find the experience as seamless and intuitive as it's designed to be. Now its time to make some music, and share it with the world!

-William Mathewson

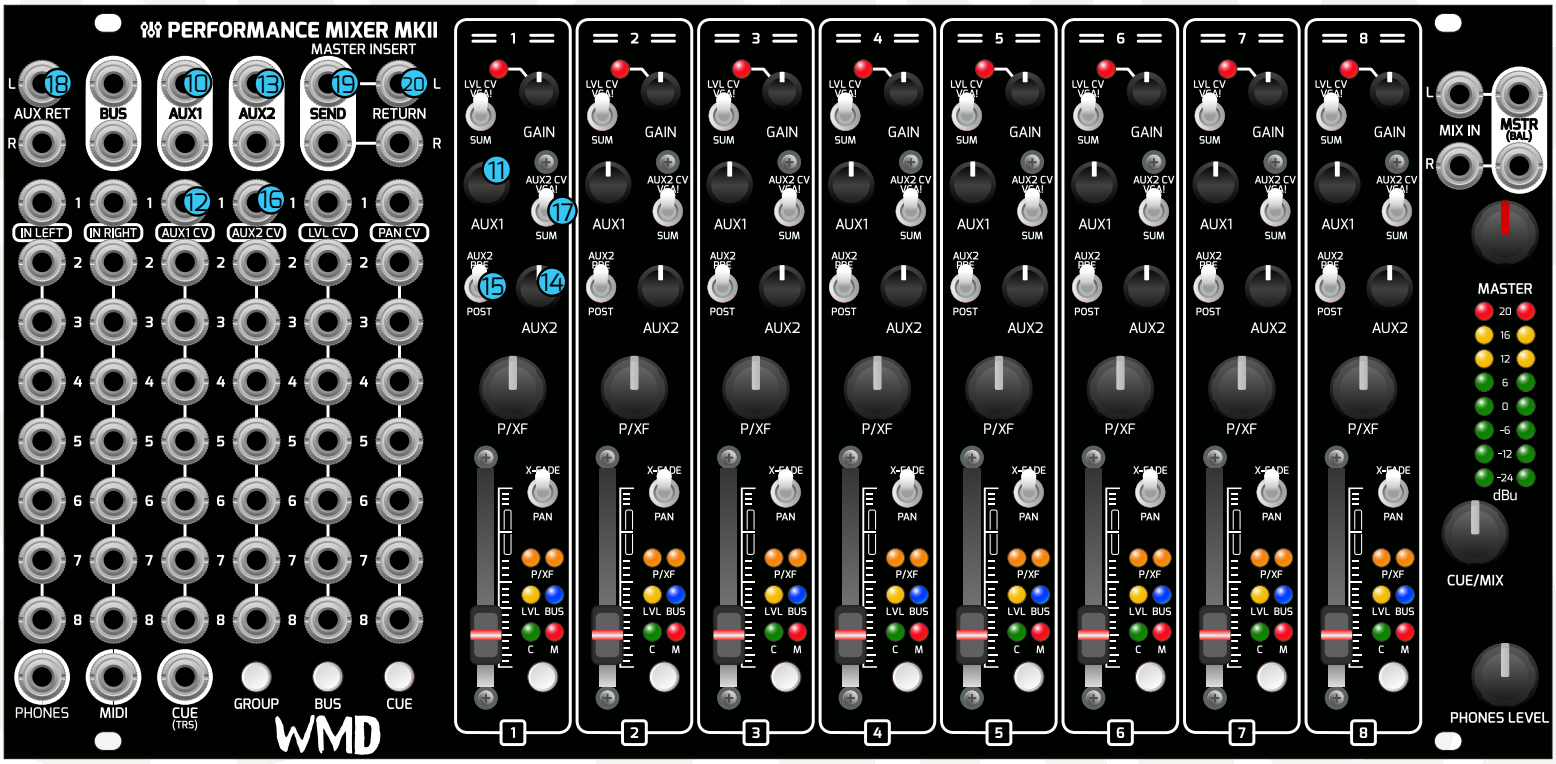
CHANNEL INPUTS | LEVEL | AND PANNING



1. **CHANNEL INPUTS -** Stereo or dual mono audio inputs for the channels. Left normals to Right for mono signals. Can be switched to dual mono operation with a switch (see items 6 & 7)
2. **GAIN KNOBS -** Input gain for the channel. Attenuation and boost from -12dB to +20dB. Clip LED lights just before the waveform begins to clip.
3. **FADERS -** Direct control over the channel's level.
4. **LVL CV INPUTS -** CV control over the channel level.
5. **LVL CV SWITCH -** Direct control over how LVL CV and Fader interact.
   - VCA! MODE (up) - Makes the fader require an input voltage on the LVL CV Jack, and the fader will attenuate that voltage.
   - SUM MODE (down) - CV is summed with the fader position. This should be your default position for this switch.
6. **PAN/X-FADE SWITCH -** Sets the behavior of the P/XF Knob.
   - X-FADE - Crossfade between input one and two. Both inputs go to mix center panned. - X-Fade is only noticeable in Post-Fade outputs (Aux 1, Aux 2 Post, Master Mix, Bus Mix).
   - PAN - Traditional panning control. Left/Right channels go to their respective sides on the mix bus. Left input normals to right so mono signals can be panned with P/XF Knob.
7. **P/XF KNOB -** Direct control over panning or crossfading for the channel. - 3dB centered pan law.
8. **PAN CV INPUTS -** Bipolar CV inputs for controlling Pan or X-FADE. Accepts -5V to +5V signals. Pan knob always sums with CV.
9. **CHANNEL BUTTON -** Normally, this is MUTE toggle. MUTE LED (M) lights red when a channel is muted.
   - Hold CUE and press the Channel Button to toggle CUE send. CUE LED (C) lights green when cue is active.
   - Hold BUS and press the Channel Button to change the BUS routing. BUS LED lights BLUE or PURPLE to show bus status. (see bus mode in Mixer Settings for more info)

If the LVL (yellow) LED isn't lighting when you move the fader, the LVL CV switch is probably in VCA! Mode.

AUXILIARY SENDS & RETURNS | MASTER INSERT



10. AUX 1 OUTPUT - Stereo Output for Auxiliary Send 1. Use these to send to mono or stereo effects.

- Aux 1 outputs are post-fader & post-pan only, meaning sound will only come out of these when the AUX 1 Knob and the Channel Fader are turned up. Same Fader Curve as the LVL fader.

11. AUX 1 KNOB - Direct control over auxiliary send 1 level amount per channel.

12. AUX 1 CV INPUTS - CV control over auxiliary send 1 level. AUX 1 CV sums with the Aux 1 Level Knob.

13. AUX 2 OUTPUTS - Stereo outputs for auxiliary send 2. Use these to send to mono or stereo effects.

14. AUX 2 KNOB - Direct control over auxiliary send 2 level amount per channel.

15. AUX 2 PRE/POST SWITCH - Set aux 2 to be sent Pre or Post fader with this switch. Pre Fader signal is also before Pan/X-Fade.

- PRE - The signal will be sent to AUX 2 output regardless of the fader position. Pre-pan / XF.
- POST - The signal will only be sent to AUX 2 output when fader level is up. Post-pan.

16. AUX 2 CV INPUTS - CV control over auxiliary send 2 level.

17. AUX 2 CV VCA!/SUM SWITCH - Set the CV behavior of AUX 2 with this switch.

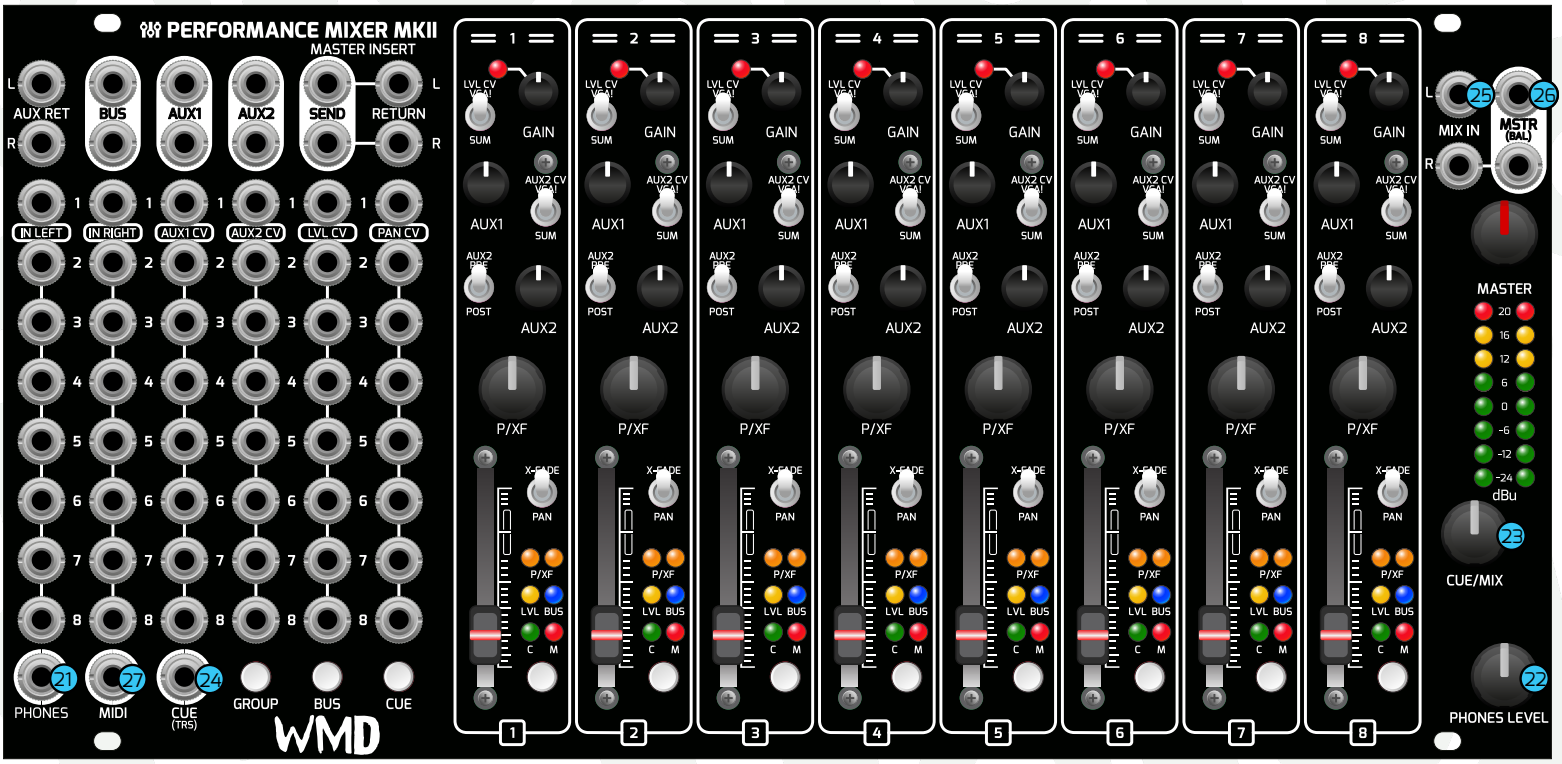
- VCA! (up) - Makes AUX 2 require an input voltage on the LVL CV Jack. The Aux 2 knob will attenuate that voltage.
- SUM MODE (down) - CV is summed with the Aux 2 knob position. This should be your default position for this switch. Same fader curve as the LVL fader

18. AUX RETURN INPUTS - Stereo unity gain inputs that directly sums to the master outputs. Use these inputs to return a stereo effect signal. Left input is normalled to right for mono return signals.

19. MASTER INSERT SEND - Stereo outputs for adding effects to the master bus. ie. stereo filter, compressor, eq etc.

20. MASTER INSERT RETURN - Unity gain inputs for master insert. Replaces the signal on the master outputs.

PHONES | CUE | MIX IN | MASTER | MIDI



21. PHONES OUTPUT - Stereo TRS output for monitoring with with headphones.

22. PHONES LEVEL KNOB - Attenuator for the headphone amplifier.

- The headphone amplifier can get very loud. Take care when monitoring with headphones!

23. CUE/MIX KNOB - DJ style cue mixing! Cue is always pre-fader and pre-Pan/X-Fade.

- CUE/MIX to the left will listen to the stereo cue bus.
- CUE/MIX to the right will listen to the main mix.

> Use the cue bus to listen to channels with the fader down before bringing it up in the master bus. This is a great live performance tool as you can make new sequences, tune oscillators, or any other action that you need to do in headphones before letting your audience hear it!.

24. CUE OUTPUT - TRS stereo output of the unity gain sum of the cue bus. Tip is Left, Ring is Right.

- Can be used as yet another stereo send track!

25. MIX INPUTS - Stereo return that bypasses the MASTER INSERT and sums directly to the Master Output. Can be used as a 2nd stereo aux return, however, it will bypass the MASTER INSERT.

- Great for collaboration, chaining two mixers together, or adding a stereo sub mix.

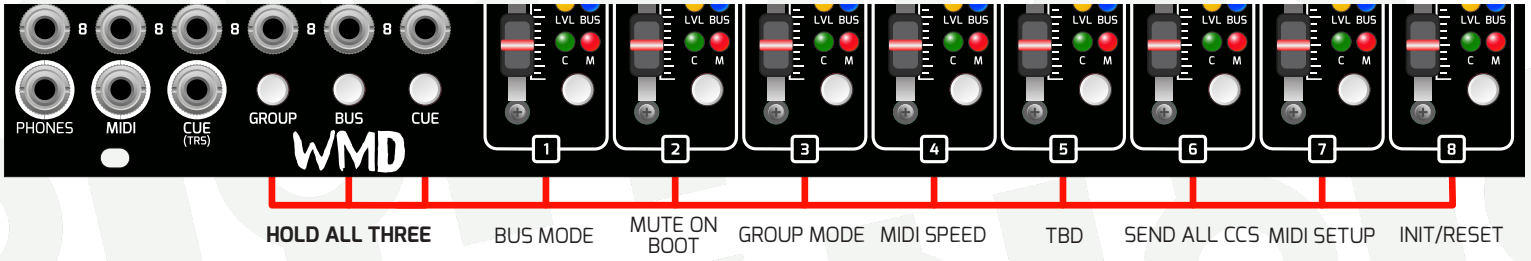
26. MASTER OUTPUTS - Balanced TRS outputs. Attenuated by the master level knob. Use these to go directly into FOH for a live set, your audio interface for recording, or powered speakers for monitoring.

- TS Cables are okay to use, but TRS to TRS or TRS to XLR is preferred to minimize the chance for noise and/or interference.

27. MIDI OUTPUT - This requires a TYPE-A MIDI 3.5mm to DIN connector (available on WMDevices.com).

- See MIDI implementation guide for more info!

MIXER SETTINGS



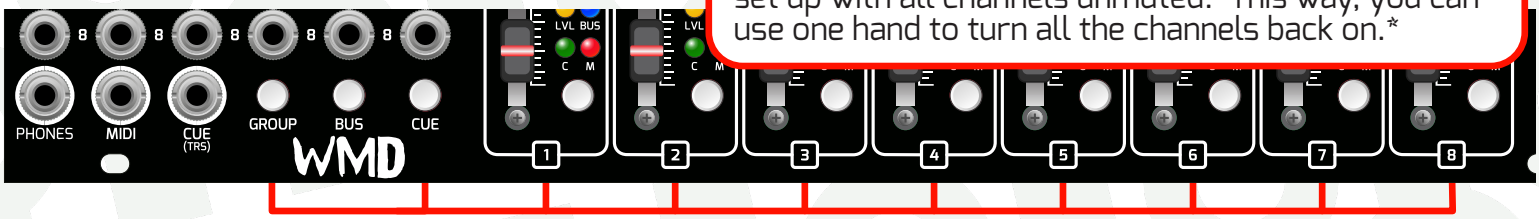
HOLD ALL THREE | BUS MODE | MUTE ON BOOT | GROUP MODE | MIDI SPEED | TBD | SEND ALL CCS | MIDI SETUP | INIT/RESET

- **(1) BUS MODE:** Hold GROUP+BUS+CUE and press 1 to cycle through the bus settings.
    - **BLUE**: Parallel processing setting. (Default)
        - Holding BUS and pressing a channel button will light the bus LED blue and the signal will be sent to the bus as well as the master outputs.
    - **PURPLE:** Submix processing setting.
        - Holding BUS and pressing a channel button will light the bus LED purple and the signal will be taken out of the master outputs and only be sent to the Bus Outputs. You will need to return to an channel, the FX return, or the MIX inputs to hear the signal on the bus.
    - **RED:** Tri-State Mode.
        - Holding BUS and pressing a channel button will cycle through three different bus settings - Blue, Purple, then off.
- **(2) MUTE ON BOOT:** Hold GROUP+BUS+CUE and press 2 to enable or disable mute configuration on power up. When disabled, all channels will be unmuted upon power up. When enabled, the last saved mute configuration will be loaded on power up.
    - Channel 1 flashes to show mute on boot is disabled (Default).
    - Channel 2 flashes to show mute on boot is enabled.
- **(3) GROUP MODE:** Hold GROUP+BUS+CUE and press 3 to change the group recall mode. Channel 1 flashes for Combo Mode, Channel 2 Flashes for Group Recall Mode.
    1. **COMBO MODE** - Hold GROUP and select multiple MUTE, BUS, and or CUE selections. Action on release.
    2. **GROUP RECALL MODE** - (Default) Hold GROUP and push a channel button to recall MUTE/CUE/BUS state. Action on release of the channel button (more below).
        - Recalling a group will override the current BUS MODE setting but doesn't change the setting.
- **(4) MIDI TRANSMIT RATE:** Shows 3 green flashes on CH1-CH5. CH1 is fastest, CH5 is slowest.
- **(5) CUE/MUTE DEFAULT:** Sets the default button press to MUTE (Default) or CUE
- **(6) SEND ALL Ccs:** Sends current state of all MIDI CCs at once, including any connected Channels modules. CCs must be enabled.
- **(7) MIDI SETUP:** Enters the menu for setting up the transmitting MIDI channel (see MIDI SETUP below).
- **(8) INIT/RESET:** Initialize mixer to factory settings (marked Default in this manual).
    - First Press - Does nothing, but flashes a warning.
    - Second Press - Resets everything to factory (Default) settings.
    - Third Press - Initializes all saved groups and clears eeprom memory.

MIXER SETTINGS CONTINUED

GROUP RECALL MODE EXPLAINED:

We find it helpful to have at least one mute group set up with all channels unmuted. This way, you can use one hand to turn all the channels back on.



HOLD GROUP+CUE

First, set up the mute, bus, and cue configuration that you would like to save.

Next, hold GROUP+CUE and press a a channel button (1-8) to save that configuration to that slot.

Finally, use the GROUP Button + channel button (1-8) to recall a group's settings. Action is on release of channel button.

MIDI GUIDE

WHY IS THERE MIDI ON THIS!?

Performance Mixer MKII includes a MIDI output so you can use it as a MIDI controller for your DAW, digital recorder, or other gear that accepts MIDI input. The intention of the MIDI output is to capture an overlay of the mixer control layer in realtime so that it may be combined with the raw audio in your DAW to recreate a performance so that you can move to post production more quickly.

We recommend using PRE-FADER outputs for recording via DB25 or Direct Outs.

Recording pre-fader outputs will capture the individual tracks of your performance without fader, mutes, or panning moves. This means that fader, mutes or panning moves will not be captured in the audio and CV of any of these parameters will also be ignored. You will essentially have a raw recording of each channel at the input (post gain, post insert).

With the addition of the MIDI output, you can now record the individual outputs pre-fader and use MIDI CC's mapped to parameters in the daw to capture your fader and knob movements as midi automation during a performance. This allows for much easier editing after the fact while keeping all of the original, undestructed recordings in tact.

MIDI will output MIDI CCs for LVL fader (including mute actions), PAN / AUX1 / AUX2.

The best way to map the controls to your DAW to use MIDI learn.

For example, make 8 tracks. Map the faders 1-8 to the faders on the channels in your DAW. Map the panning knob to the panning knobs in the DAW and same for both of the sends. Now, your mixer in the DAW will mirror the Performance Mixer's controls.

MIDI SETUP: To enter MIDI setup, hold GROUP+BUS+CUE and press channel 7.

- **MIDI CHANNEL -** To set the MIDI transmit channel, press any channel button to select channel 1-8, press it again for 9-16 (default channel is 1).
    - Shows BLUE on BUS LED for MIDI channels 1-8, and RED on BUS LED for MIDI channels 9-16.
- **CC ENABLE:** While in MIDI setup, the three left buttons correspond to the CV jacks above them.
    - Hold one of these buttons and press a channel button to enable/disable the corresponding CC on the corresponding channel. (default is all channels enabled)
- **GROUP = AUX 1 / 2 CC**
    - LED shows BLUE for only AUX 1 Enable,
    - RED for AUX 2 Enable,
    - Purple for AUX 1&2 Enable,
    - Off for Aux 1&2 Disabled
- **BUS = LVL CC**
    - LED shows Blue for LVL Enabled
    - Off for LVL Disabled
- **CUE = PAN CC**
    - LED shows Blue for PAN Enabled,
    - Off for Pan Disabled

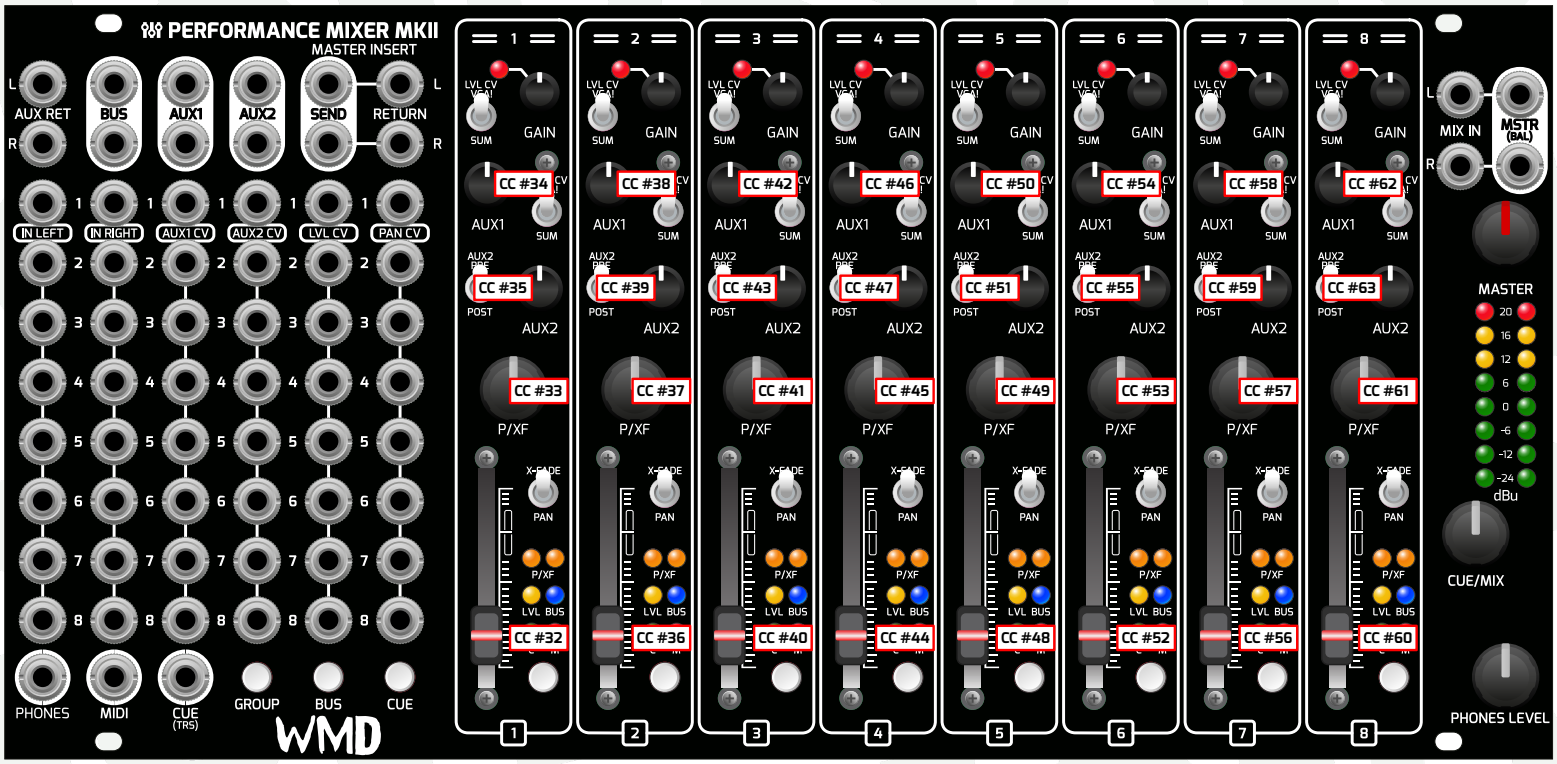
EXIT MIDI SETUP: Hold all 3 control buttons and press any channel button.

MIDI GUIDE CONTINUED

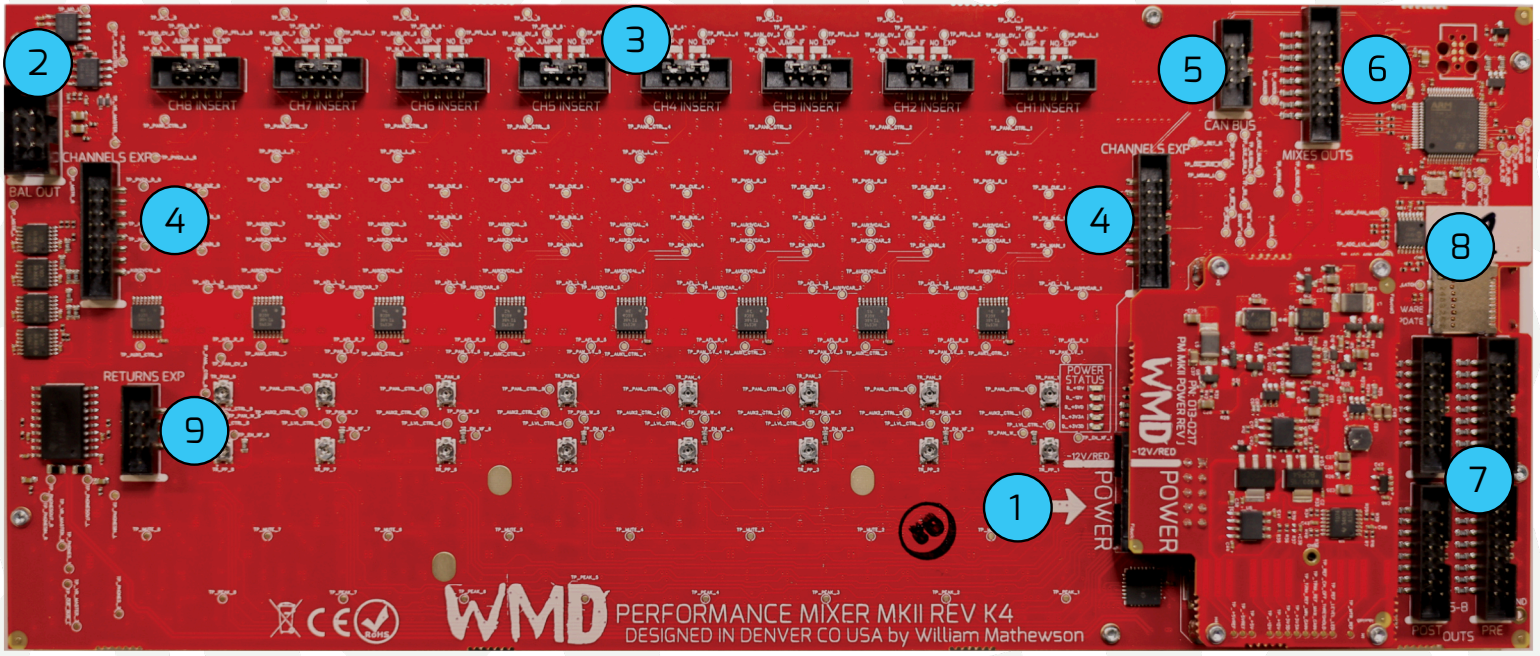
MIDI IMPLEMENTATION

CC Order - First MIDI CC# is 32 and arranged by channel strips.

MIDI CHANNEL	1	2	3	4	5	6	7	8
LEVEL	CC #32 (HEX 20)	CC #36 (HEX 24)	CC #40 (HEX 28)	CC #44 (HEX 2C)	CC #48 (HEX 30)	CC #53 (HEX 34)	CC #56 (HEX 38	CC #60 (HEX 3C)
PAN	CC #33 (HEX 21)	CC #37 (HEX 25)	CC #41 (HEX 29)	CC #45 (HEX 2D)	CC #49 (HEX 31)	CC #53 (HEX 35)	CC #57 (HEX 39)	CC #61 (HEX 3D)
AUX 1	CC #34 (HEX 22)	CC #38 (HEX 26)	CC #42 (HEX 2A)	CC #46 (HEX 2E)	CC #50 (HEX 32)	CC #54 (HEX 36)	CC #58 (HEX 3A)	CC #62 (HEX 3E)
AUX 2	CC #35 (HEX 23)	CC #39 (HEX 27)	CC #43 (HEX 2B)	CC #47 (HEX 2F)	CC #51 (HEX 33)	CC #55 (HEX 37)	CC #59 (HEX 3B)	CC #63 (HEX 3F)



REAR CONNECTIONS



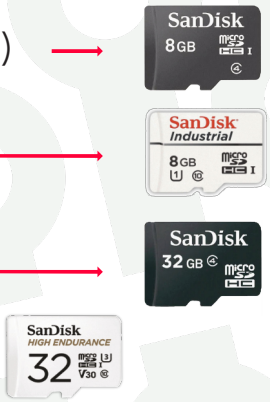
1. **POWER HEADER -** 2x5 pin horizontal eurorack power header.
    1. **<u>WARNING</u>** – DO NOT LIFT OR HANDLE MIXER BY POEWR BOARD.
    2. Shrouded and reverse polarity protected.
2. **BALANCED OUT -** 6 pin balanced output header for connection to Intellijel case outputs.
3. **CHANNEL INSERT HEADERS -** 8x8 pin, 2mm pitch headers for connection to WMD insert modules (future).
4. **CHANNELS EXP -** 2x 2x8 pin 2mm headers for connecting PM CHANNELS MKII to the PM MKII. Use one, the other, or both headers to add up to 4x expanders! PM MKIIs can not be chained together.
5. **CAN BUS -** Currently unused for customer facing needs. Do not connect anything to this.
6. **DB25 MIXES -** 2x8 2mm header for stereo mixes of the MASTER, AUX 1, AUX 2, and BUS send signals.
7. **DB25 OUTPUTS -** 4x 2x8 pin 2mm headers for connection to PM DB25 MKII or Direct Outputs expander
    - PRE FADER - Direct outputs that are post gain, post channel insert. Movements and CV for LVL, PAN/XF are not present on these headers.
    - POST FADER - Direct outputs that are located after the fader so all movement and CV for LVL and PAN/XF is heard in these outputs.
8. **MEMORY CARD SLOT -** Memory cards are used for loading new firmware only.
    - Memory card must be removed during normal use of the module.
    - **IF THE MEMORY CARD IS LEFT IN THE UNIT, THE FIRMWARE WILL UPDATE EVERY TIME YOU POWER ON. DO NOT DO THIS.**
9. **RETURNS EXP -** 2x4 pin 2mm headers for connection to the PM RETURNS expander module.

FIRMWARE UPDATE INFORMATION

- The PM MKII and Channels MKII have memory card slots for updating the firmware. Both modules use the same firmware file, and can be updated with the same memory card (one at a time of course).

Memory Card Information:

- Memory card MUST be SanDisk SDHC type. 8-32GB. No other brands or types are supported.
- Cards are available on wmdevices.com if you do not own a SanDisk SDHC card.
- Tested memory cards for firmware updating:
  - SanDisk SDSDQAB-008G (WMD Metron card)
  - SanDisk SDSDQAF3-008G-I
  - SanDisk SDSDQ-032G-C4
  - SanDisk SDSQQNR-032G-GN6IA



Procedure:

1. Set up the card
   1. Format the card for FAT32.
   2. Download firmware from https://wmdevices.com/products/performance-mixer-mkii. Firmware updates will be near the top of the page.
   3. Copy the downloaded firmware file “PM_MKII.bin” onto the memory card in the root directory.
2. Module Preparation for leaving connected and in rack.
   1. Power off the PM MKII / Channels MKII.
   2. Remove all four screws and lift the left side of the module. You do not need to unpatch unless you can’t lift the module out of the rack because of cable interference.
   3. Insert the memory card where the slot is on the left side of the module, rear of the board.
   4. Power the unit on.
      1. LEDs should be briefly RED while it reads the card. If they stay RED, then there’s a problem with the card or the firmware file.
      2. GREEN LEDs indicate everything is OK and the flash is being prepared.
      3. BLUE LEDs should flash for about 10-20 seconds, indicating writing of the firmware.
      4. Then it should go all GREEN, and the module will boot. Firmware is updated.
      5. Unit may initialize settings and/or GROUP RECALL settings. Only happens when module updates to a new save revision internally.

3. LAST STEP — REMOVE THE MEMORY CARD FROM THE MODULE

1. Reinstall the screws.

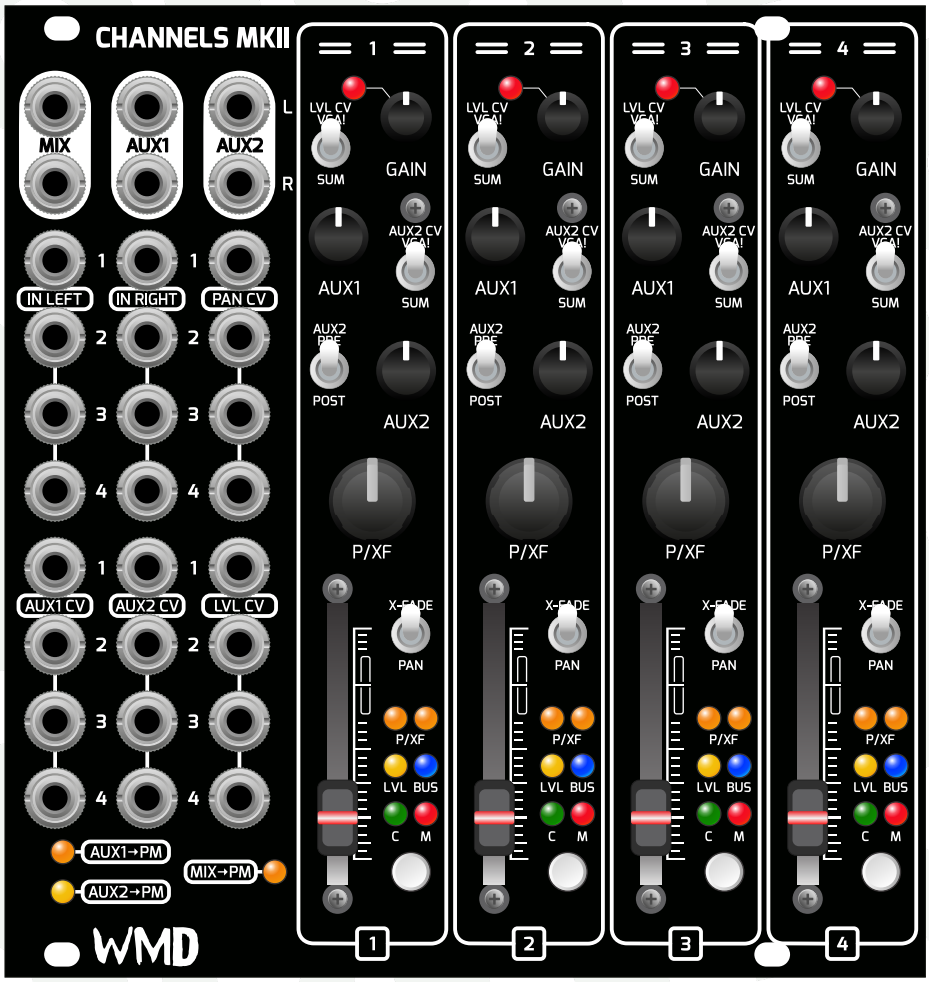
PM CHANNELS MKII

PM CHANNELS MKII

Up to 4x Channels MKII can be connected to a single Performance Mixer MKII.

Each Channels MKII must be independently connected to power.

Connections for unit to unit are via 2.0mm ribbon cables. 180mm standard length. Longer cables are available on wmdevices.com. See connection guide below.



STANDALONE OPERATION

The Channels MKII module can be used standalone as a 4 channel mixer with a few less features than the standard PM MKII. In standalone operation, the channel buttons operate only as mutes.

AUX OUTPUTS

These outputs always mix the AUX1 and AUX2 bus on this Channels MKII unit. No connected units will mix to these outputs. See output settings for more.

MIX OUTPUT

These outputs always mix the faders on the Channels MKII. They will not mix inputs from other units. See output settings for more.

JACKS AND CONTROLS

Each Channels MKII channel strip is a copy of the strips on the PM MKII. See above PM MKII info for detail.

PM CHANNELS MKII CONTINUED

OUTPUT SETTINGS

When connected to the PM MKII, the MIX, AUX1, and AUX 2 outputs on the Channels MKII can function independently of the Performance Mixer MKII, allowing you to use it as a standalone sub-mixer, an extension of the PM MKII, or a combination of both.

These settings can be saved and loaded with Group Recall.

To configure these settings hold GROUP, BUS, and CUE on the PM MKII and then press a channel button on the Channels expander.

The LEDS on the bottom left of the Channels MKII indicate the status of the MIX, AUX 1, and AUX 2 routings from the Channels MKII to the PM MKII. LED will be lit if the signal is routed to the correlating output on the PM MKII.

- **(1) MIX→PM:** Toggles MIX from the MIX output on the PM MKII,
- **(2) AUX1→PM:** Toggles AUX 1 on/off the AUX 1 output on the PM MKII.
- **(3) AUX2→PM:** Toggles AUX 2 on/off to the AUX 2 output on the PM MKII.
- **(4) ROUTING→PM GROUP RECALL:**
    - **Enabled:** (Default) When a group recall is initiated on PM MKII, the Mix, AUX1, AUX2 → PM settings will be saved and recalled with that group. The three LEDs will flash 6 times when changing to Enabled.
    - **Disabled**: MIX, AUX1, AUX2 → PM routoing will always be manual and will only change by directly changing the settings.
    - Note: each Channels MKII has their own setting for this. If multiple units are connected, they are independent from each other.

CHANNELS MKII FIRMWARE AND MIDI SETUP

FIRMWARE - must be same revision on both PM MKII and CHANNELS MKII. It must be updated via memory card.

If firmware is not the same, and the units are connected, Channels MKII will slowly double blink channel 1 Mute LED, and its interface will be halted.

CHANNELS MIDI ASSIGNMENT - Each Channels MKII needs to be assigned its unit number.

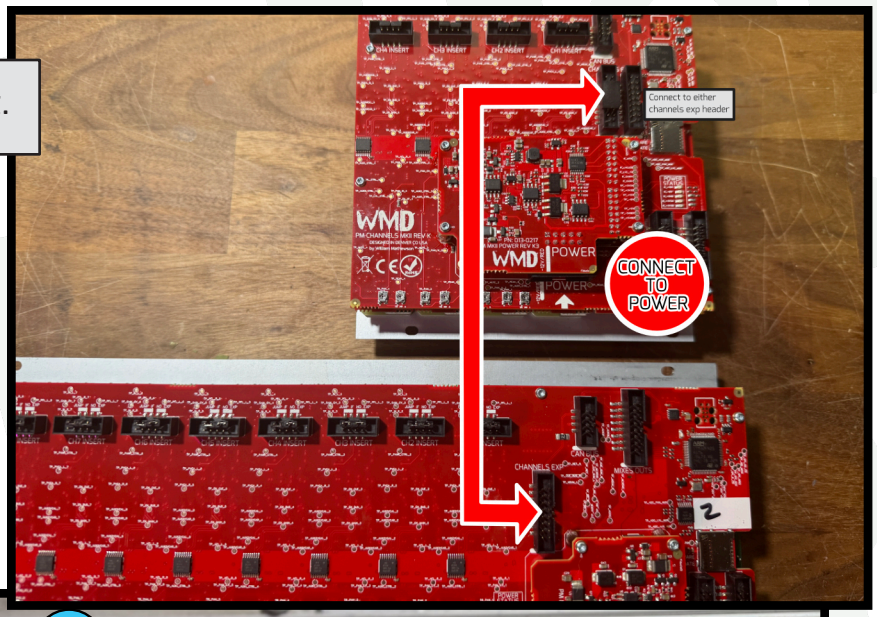
To do this, enter MIDI SETUP mode (GROUP+BUS+CUE & CH7 on PM MKII), and press a channel button on CHANNELS MKI to assign it to unit 1-4. This will offset the MIDI CCs so each channels has a unique set of CCs assigned to it. (Default is 1)

CHANNELS MKII CONNECTION GUIDE

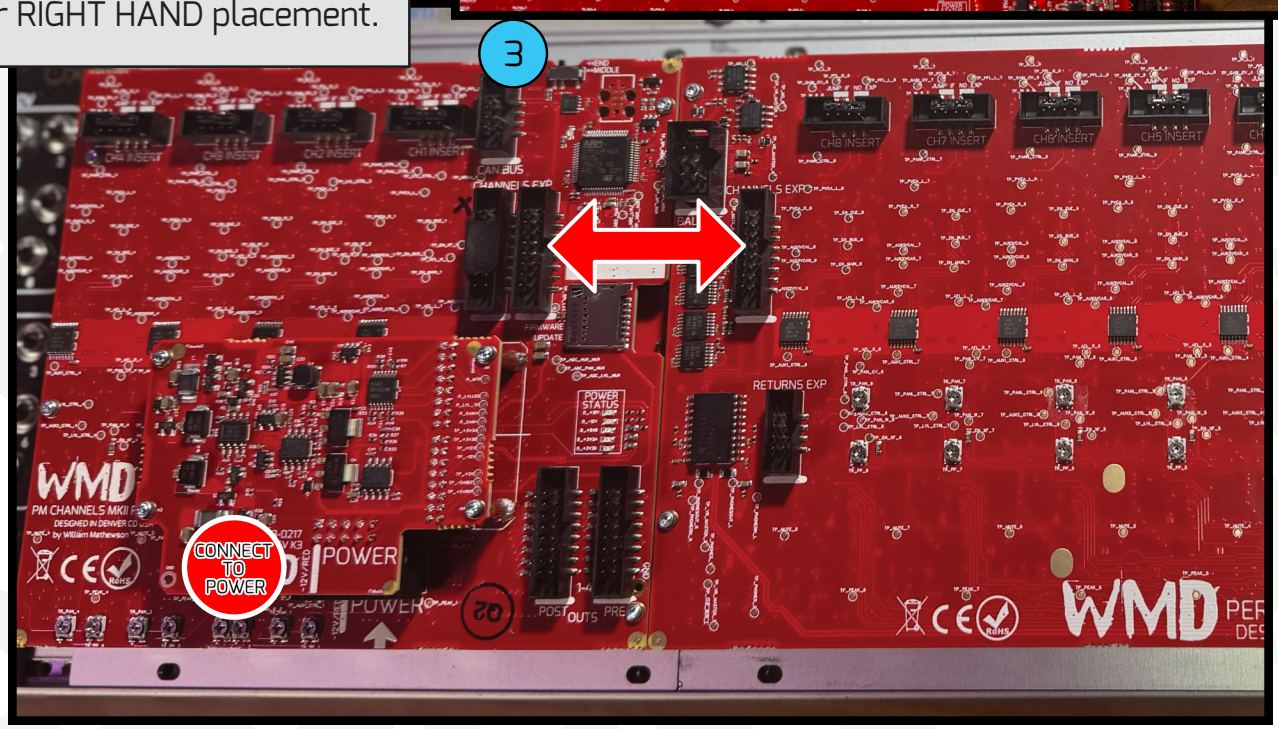
CONNECTING CHANNELS MKII

1. Connect Channels MKII to power with included standard pitch 10 pin ribbon cable.
2. Connect Channels MKII to the PM MKII using with the included 16 pin 2mm ribbon cable. Use whichever header fits your case configuration best.
    1. If connecting multiple Channels MKII to one PM MKII, you may “daisy chain” them together with the multiple header connections on the Channels MKII, or use the two headers on PM MKII.
    2. Standard cable length is 180mm. 400mm and 800mm cables are available from wmdevices.com if you need to place your Channels MKII further away from the PM MKII.
3. MIDDLE / END Switch: If you’re putting a Channels MKII module in the middle of the chain, make sure this switch is set to MIDDLE. If a Channels is at the end of the chain, make sure this is set to END.
    1. If a PM MKII is in the middle of 2x Channels MKII modules, both channels should be set to END.
4. Secure the modules to your eurorack case’s rails with the included screws.

Connection forLEFT HAND placement.



Connection for RIGHT HAND placement.



PM MKII RETURNS

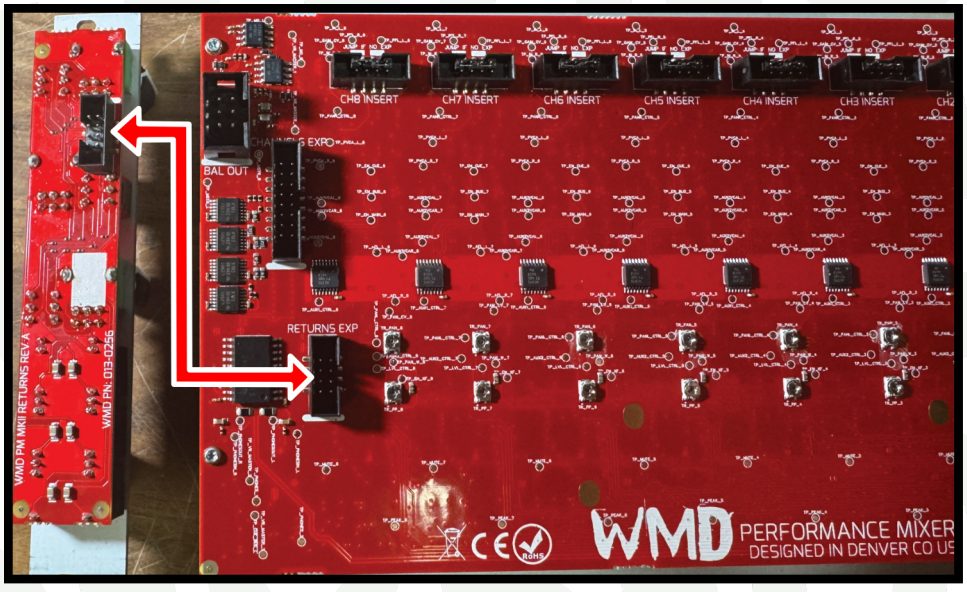
PM MKII RETURNS

Adds 3x stereo returns to your Performance Mixer MKII or Channels MKII.

1. STEREO INPUTS - 3X stereo inputs. Left is normalled to right for mono signals.
2. RETURN LEVELS - These outputs function in standalone mode as well as when connected to the main mixer.
3. ROUTING SWITCH - This switch changes where the signals are routed to.
    1. AUX RETURN - This setting routes the signal to the aux return bus, which pre-master insert. Any signals sent to this bus are effected by the master input.
    2. MIX IN - This setting routes the signal into the MIX BUS, which is post master insert. Any signals sent here will bypass the master insert and not be effected.

CONNECTING PM MKII RETURNS

1. Connect PM MKII RETURNS module to the headers on the rear of the PM MKII or CHANNELS MKII.
    1. Use the included 300mm 2mm 2x4 ribbon cable.
    2. Returns does not require power.
2. Secure the modules to your eurorack case's rails.



DB25 MKII

DB25 MKII

Individual balanced outputs for each channel on the PM MKII and CHANNELS MKII.

To capture all 16 outputs simultaneously, you will need to connect 2x DB d5 cables into a 16 channel audio interface or recorder.

Though the connection looks like something that would carry digital signals, these outputs are 100% analogue and use the TASCAM DB25 standard.

For more info past what is included in this manual, see our Multitrack Recording Guide.

PRE-FADER CONNECTION - These output the signal post gain, pre-pan, pre-fader. These signals are best for multitrack recording as pan and fader moves will not be included in the audio information.

POST-FADER CONNECTION - These output the signal post the fader, keeping all pan and fader moves in tact. Use these outputs if you want to include pan and fader moves, or any CV connected to panning or level.

MIXES CONNECTION - Also available are the MSTR, BUS, AUX1, AUX2 stereo mixes on this header. You may want to record these via DB25.

Any of the above connections can be mix and matched on a DB25 MKII. Please document what's connected where for your own sanity.

CONNECTING DB25 MKII

1. Connect DB25 MKII module to power using the included standard pitch 10 pin ribbon cable.

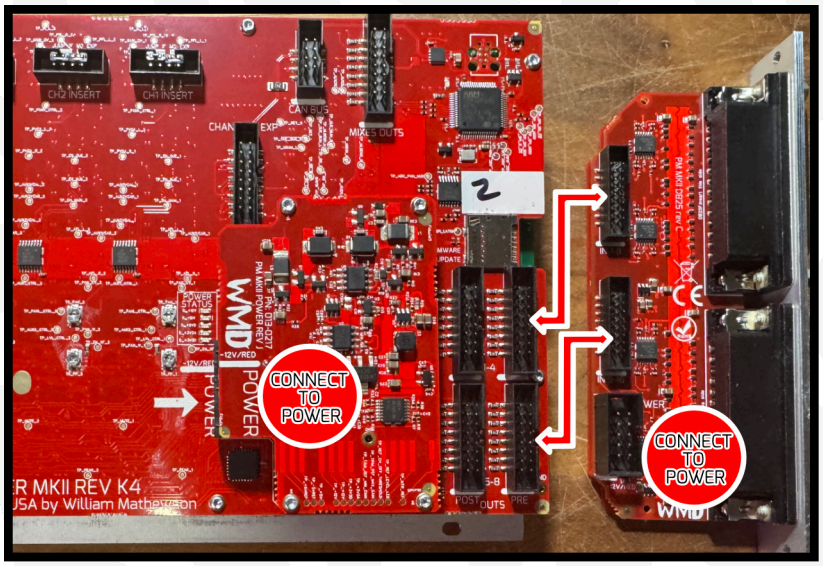
2. Connect PM MKII OUTS module to the headers on the rear of the PM MKII or CHANNELS MKII using the included 2mm pitch 16 pin cables. Standard cables are 400mm. 800mm cables are available on wmdevices.com if the DB25 MKII needs to be further away.

   - There are two sets of headers (pre and post fader) for direct outs on both the PM MKII and Channels MKII. Choose the connection that best suites your use case.

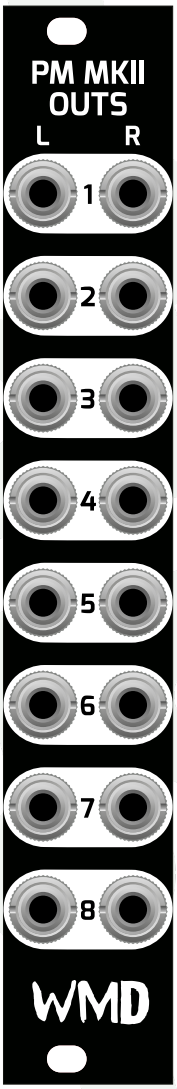
   - 2x ribbon cables needed for connecting to the PM MKII.

   - 1x ribbon cable needed for connecting to a single Channels MKII.

3. Secure the modules to your eurorack case's rails with the included screws.



PM MKII DIRECT OUTS



PM MKII DIRECT OUTS

Provides 8 pairs of unbalanced outputs for the Performance Mixer MKII.

PRE-FADER CONNECTION- These output the signal post gain, pre-pan, pre-fader. These signals are best for multitrack recording as pan and fader moves will not be recorded in the audio information

POST-FADER CONNECTION- These output the signal post the fader, keeping all pan and fader moves in tact. These are best for using the mixer as a bank of VCAs.

These outputs are unbalanced and not attenuated, Best for use with other eurorack modules. If using to record or interface with your computer, a eurorack audio interface is recommended.

CONNECTING PM MKII DIRECT OUTS

1. No power is required for Direct Outs.

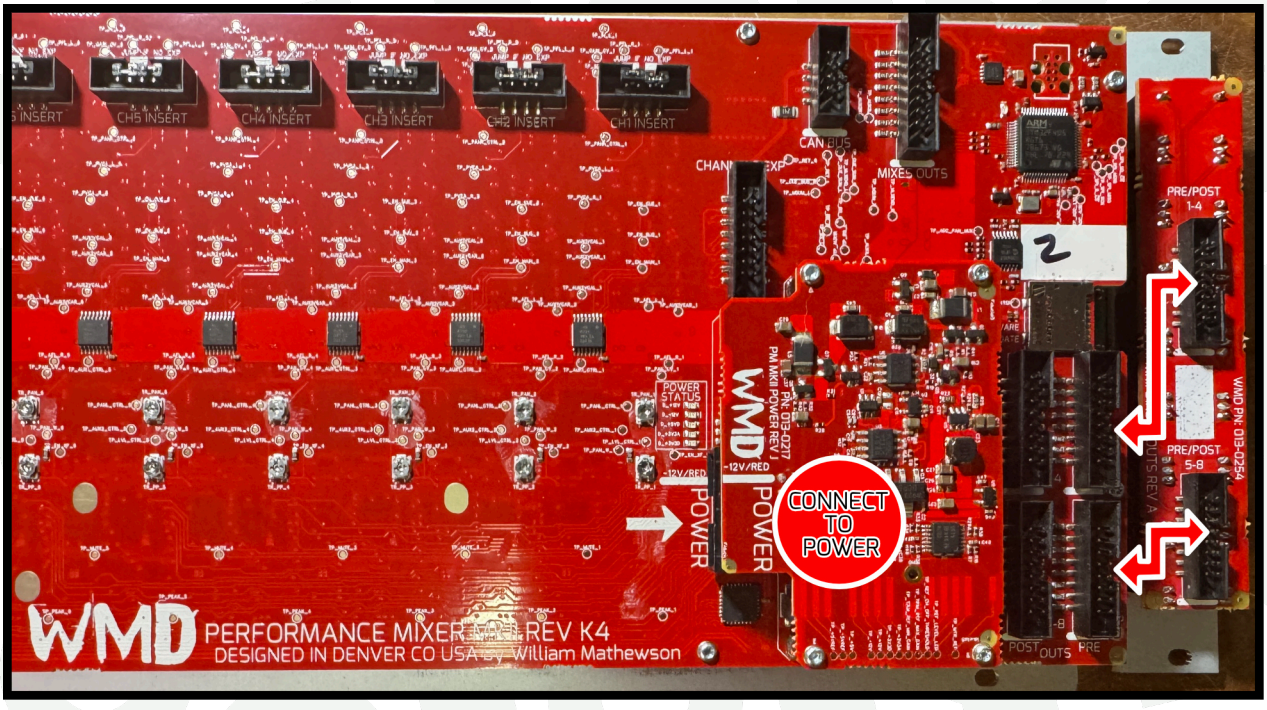
2. Connect PM MKII DIRECT OUTS module to the headers on the rear of the PM MK2 or CHANNELS MKII using the included 2mm pitch 16 pin cables. 400mm cables are standard. 800mm are available at wmdevices.com

   - There are two sets of headers (pre and post fader) for direct outs on both the PM MKII and Channels Expander. Choose the connection that best suites your use case.

   - 2x ribbon cables needed for connecting to the PM MKII,

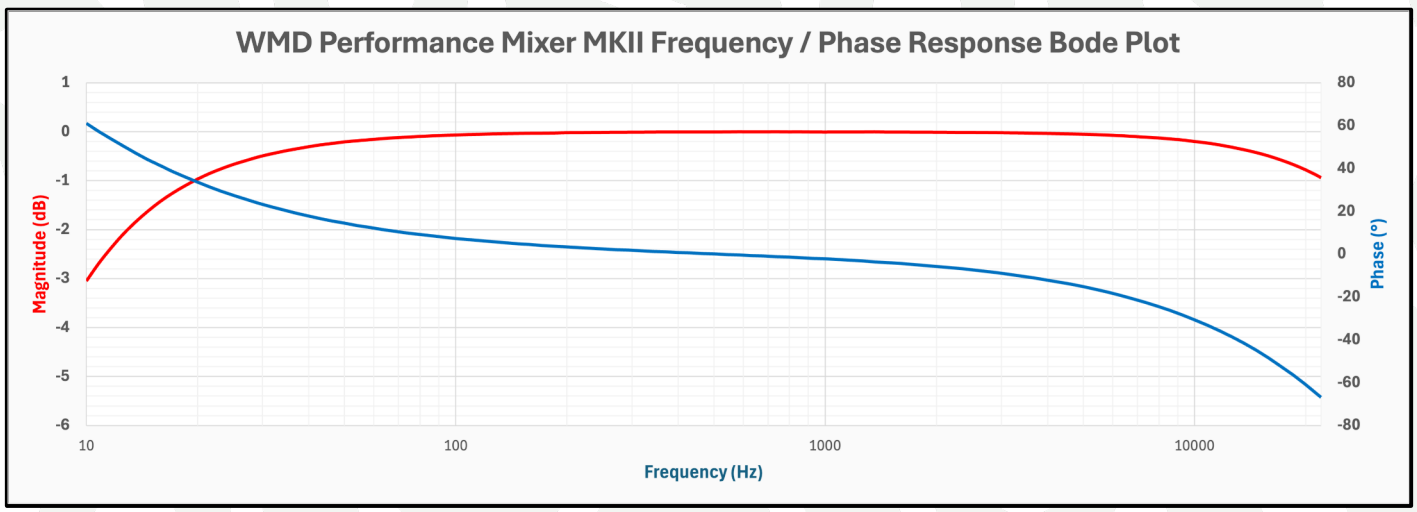
   - 1x ribbon cable needed for connecting to a single channels expander.

3. Secure the modules to your eurorack case's rails.



PM MKII SPECIFICATIONS

- **WIDTH:** 52HP
- **DEPTH:** 36mm behind panel including cables
- **BOARD HEIGHT BETWEEN RAILS:** 111.5mm
- **POWER CONSUMPTION:** +620mA, -560mA. Uses up to +-750mA if channels or busses are distorted.
- **CHANNEL INPUTS:** 20kΩ impedance
- **CHANNEL INPUT HPF:** -3dB @ 10Hz
- **CHANNEL INPUT GAIN:** -12dB to +20dB
- **FADER/AUX GAIN:** -100dB to +5dB
- **PAN CURVE:** -100dB / 0dB at hard pan, -3dB / -3dB at center
- **PHASE:** All inputs and outputs and headers are phase correct
- **FREQUENCY RESPONSE:** +-0.5dB 20Hz - 20kHz
- **LEFT RIGHT COHERENCE:** Better than +-0.5dB
- **LEVEL/AUX CV:** 0 to 5 V, 100kΩ impedance
- **PAN CV:** -5 to +5 V, 200kΩ impedance
- **MASTER OUTPUT:** Balanced 3.5mm TRS @ 600Ω nominal. DRV135 drivers
- **MASTER LEVEL:** Full level=modular level - Attenuate to your optimal level with MSTR knob.
- **ALL OTHER OUTPUTS:** 1kΩ modular level



PM CHANNELS MKII SPECIFICATIONS

CHANNELS MKII SPECS

- **WIDTH:** 24HP
- **DEPTH:** 36mm behind panel including cables
- **BOARD HEIGHT BETWEEN RAILS:** 111.5mm
- **POWER CONSUMPTION:** +320mA, -280mA. Uses up to +-350mA if channels/mix/auxes are distorted.
- **CHANNEL INPUTS:** 20kΩ impedance
- **CHANNEL INPUT HPF:** -3dB @ 10Hz
- **CHANNEL INPUT GAIN:** -12dB to +20dB
- **FADER/AUX GAIN:** -100dB to +5dB
- **PAN CURVE:** -100dB / 0dB at Hard Pan, -3dB / -3dB at center
- **PHASE:** All inputs and outputs and headers are phase correct
- **FREQUENCY RESPONSE:** +-0.5dB 20Hz - 20kHz
- **LEFT RIGHT COHERENCE:** Better than +-0.5dB
- **LEVEL/AUX CV:** 0 to 5 V, 100kΩ impedance
- **PAN CV:** -5 to +5 V, 200kΩ impedance
- **OUTPUTS:** 1kΩ modular level

PM MKII EXPANDER SPECIFICATIONS CONTINUED

PM RETURNS SPECS

- **WIDTH:** 4HP
- **DEPTH:** 24mm behind the panel including cables.
- **Connectivity:** 1x 8p 2.0mm ribbon cable
- **Power:** +-0mA (no power connection)
- **Input Impedance:** 10kΩ

PM DB25 SPECS

- **POWER:** +12V = 150mA; -12V = 150mA
- **SIZE:** 4HP
- **DEPTH:** 48mm
- **OUTPUT IMPEDANCE:** 600Ω balanced
- **OUTPUT DRIVERS:** 16x TI DRV135
- **THD+N:** <0.1%
- **NOMINAL OUTPUT LEVEL:** +4dBu
- **PM MKI ADAPTER BOARD:** (allowing connection to original Performance Mixer) consumes +-25mA

PM MKII DIRECT OUTS SPECS

- **WIDTH:** 4HP
- **DEPTH**: 24mm behind panel including cables
- **CONNECTIVITY:** 2x 16pin 2 mm ribbon cables
- **POWER:** +-0mA (no cower connection)
- **OUTPUT IMPEDANCE:** 1kΩ