



USING THE DM-24 AS A LIVE MIXER WITH VERSION 2.0

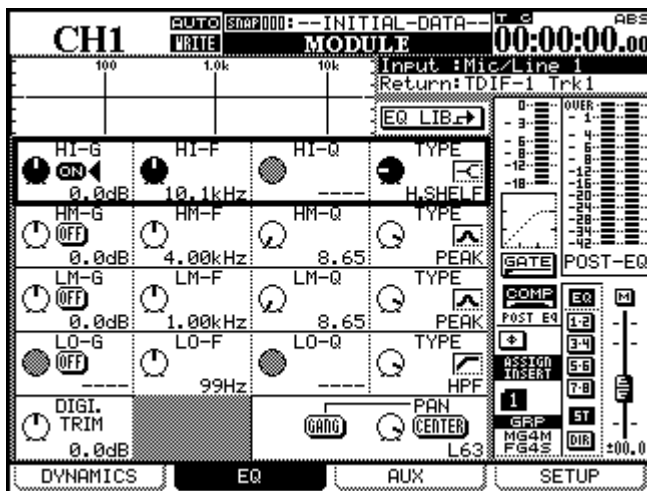
Although the DM-24 is a great recording mixer, it is also very much at home as a live mixer. The simple fact that the DM-24 offers 16 mic pres, 32 mono compressors, 3 stereo compressors, 16 gates, 32 four band parametric Eqs, two effect processors and snapshot recall is reason enough to consider the DM-24 for this purpose. The DM-24 has a MAP price of only \$2399. When you compare this price to what you would have to spend on an equivalent analog board and racks full of outboard gear the DM-24 is a bargain indeed. To better understand some of the concepts in this document, you should first read [The DM-24 Basics](#) and the [2.0 Release notes](#). [\(add links\)](#)

EASE OF USE

Unlike other digital consoles from the past, common functions are not buried in hard to find menus. Almost everything you need access to for a live mix is either on the surface of the mixer itself or one button press away. You can access the EQ, mute, solo and pan for every channel right from the control surface. You can also assign channels to busses and/or the stereo buss right from the control surface. All of this with out ever looking at the LCD display screen.

MODULE SCREEN

By pressing the MODULE key and selecting a channel you have access to every parameter for that channel on the LCD display screen. EQ, dynamics, aux sends, pan, phase, etc. This is actually much less confusing then staring at 32 rows of identical knobs and trying to isolate the channel that you are looking for. Even on an analog console you are only adjusting the settings on one channel at a time. So the limitation of only being able to view one channels parameters at a time is not a limitation at all. You even get to see the input level of the channel and the gain reduction of the compressor. You can also view and change the location of the compressor in the signal flow between pre or post EQ. These conveniences are what make the DM-24 great.



FADER LAYERS, MUTE AND SOLO

There are only three fader layers. Each with a lighted key so you always know what layer you're looking at. Fader layer one controls channels 1-16. Fader layer two controls channels 17-32. Fader layer three controls buss masters 1-8 and aux send masters 1-6. There are mutes keys for every channel, buss master and aux master. Pressing the SOLO key above the master fader causes the SOLO key to blink RED and turns the mute keys into SOLO keys. SOLO can be used as PFL, AFL or INPLACE. Each channel can be assigned "solo safe," meaning those channels will NOT be muted when another channel is soloed while using "INPLACE" mode.

The faders can also be used to adjust aux send levels per channel. This is much easier than using individual knobs. You'll find yourself very attached to this feature as soon as you begin to use it! This feature can be turned on or off globally in any aux send menu screen. When this feature is on and aux send menu is viewed, the faders will jump to represent the aux send levels for the channels on that fader layer. If you were on fader layer one viewing channels 1-16 and you press the aux 1 key, you will be viewing the aux 1 send levels for channels 1-16. The fader layer keys will blink letting you know that you are no longer viewing the audio faders. There are individual aux send keys to access aux 1-2, 3-4 and 5-6. Another soft key lets you toggle between 1 and 2, 3 and 4 and 5 and 6. Pressing the MODULE key will bring the faders back to the audio layer.

SEL

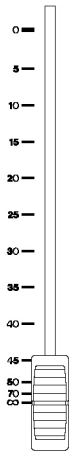
SEL

MUTE

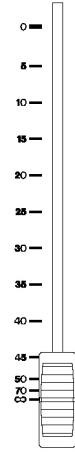
SOLO

LAYER STATUS

- CH 1-16
- CH 17-24
- MASTER



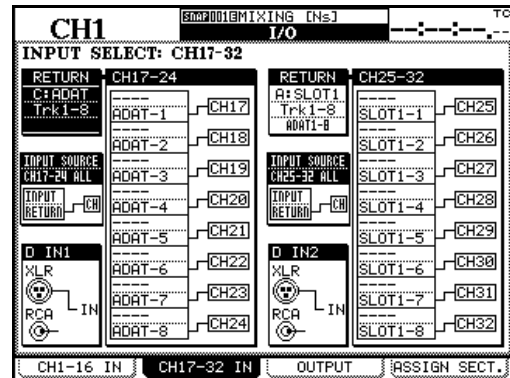
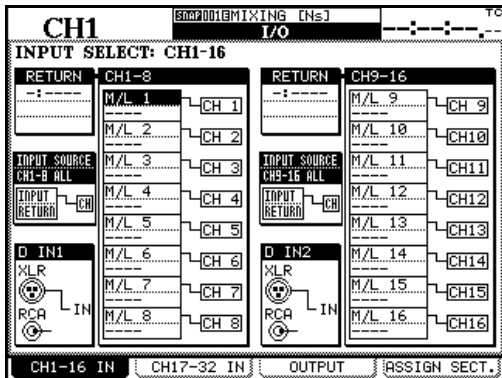
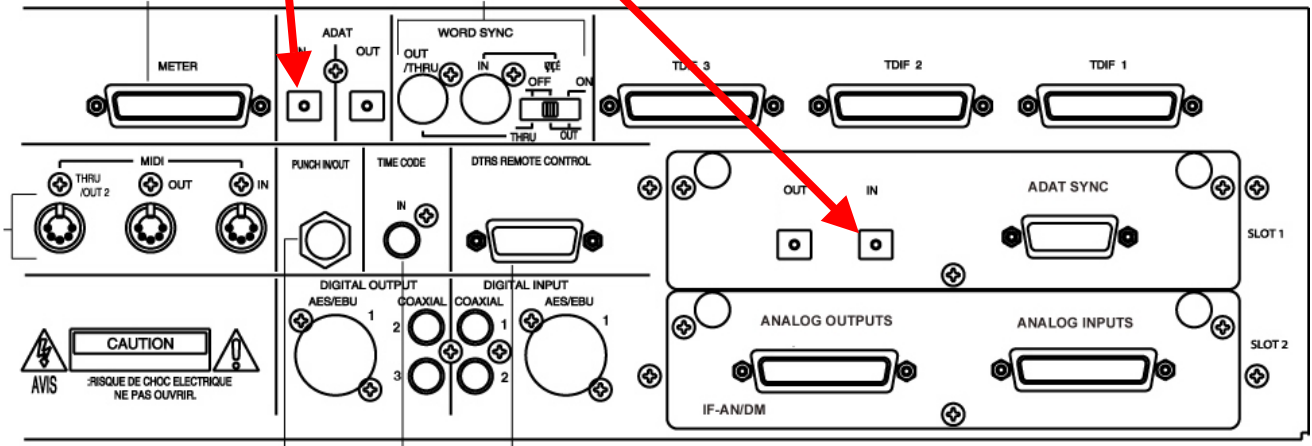
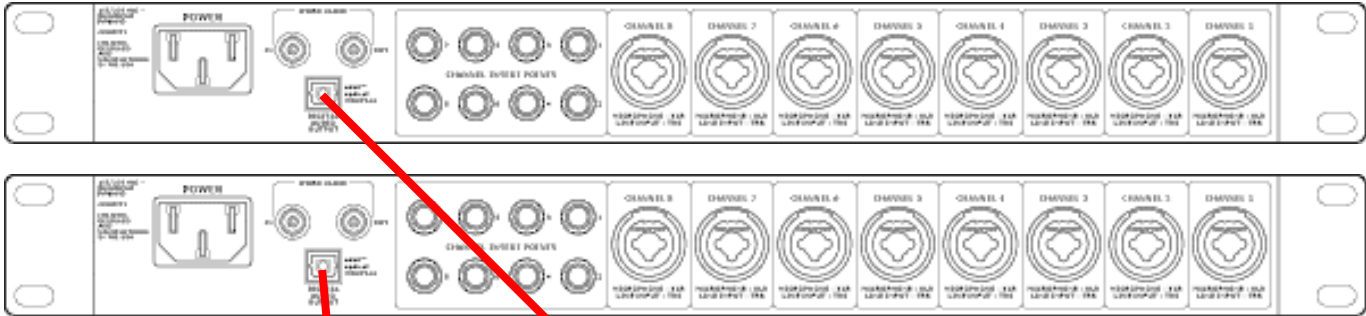
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STEREO

MICROPHONE INPUTS

The DM-24 has 16 mic preamps with phantom power in groups of four. This might be enough for small events. If more mic preamps are needed we recommend the Presonus DigimaxLT. This is an 8-channel preamp with a digital lightpipe output. Adding one of these will give you 24 mic preamps. If you need 32 mic preamps you will require two DigimaxLTs and one IF-AD/DM lightpipe option card. Mic/line inputs 1-16 would be assigned to channels 1-16 on the DM-24 while the Digimax connected to the internal lightpipe will be assigned to channels 17-24 and the Digimax connected to the lightpipe option card will be assigned to channels 25-32.



AUX SENDS

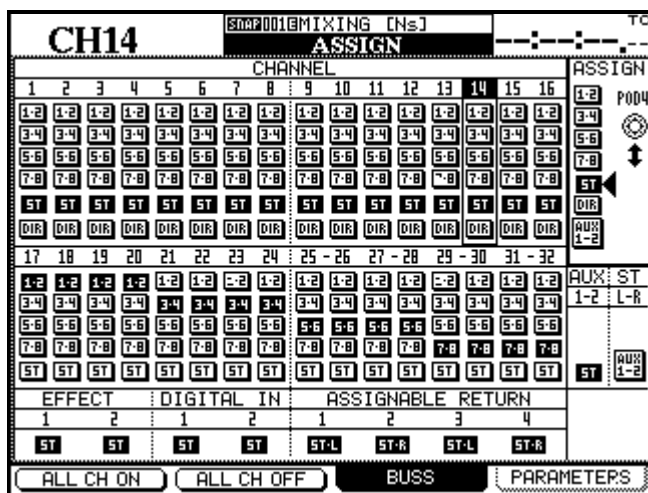
There are six aux sends on the DM-24. They can be individually set to pre or post fader. There is a preference that you can check if you wish for the channel mute to also mute the pre-fader aux sends. Post-fader aux sends will always be muted when a channel is muted. There are four physical outputs on balanced TRS jacks for the assignable sends. If four monitor mixes are all that is required, the other two aux sends can be used to feed the internal effect processors. The effect returns can be assigned directly to the stereo buss on the ASSIGN page so they do not take up channels. If you do not need to use effects, but require 6 monitor mixes you can get the IF-AN/DM option card which allows you to send all six aux sends to the stage. This frees up the assignable sends to be used as assignable "inserts" if you would like to use some of your favorite outboard compressors or gates on any individual channel or the stereo buss.

AUX 1-2 TRICKS

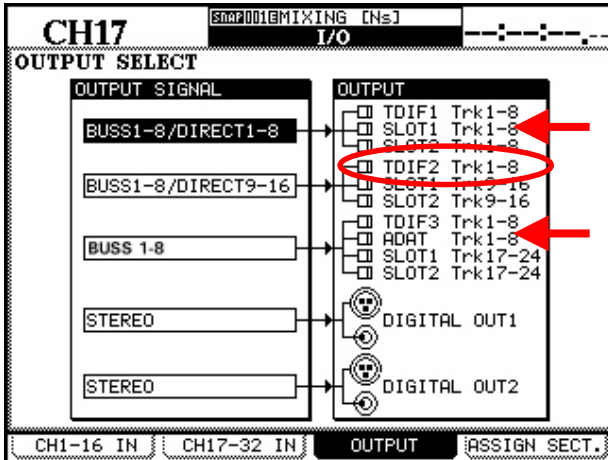
Aux 1-2 also have other special functions. They can be used as a separate input path to the stereo buss for the RETURNS (TDIF, ADAT or option card inputs) or the mic/line inputs instead of being a "send" path. When you link Aux 1-2 you have a level and pan control for these inputs. On the ASSIGN page you can assign AUX 1-2 to the stereo buss.

BUSSES 1-8

Busses 1-8 on the DM-24 are meant to be used for recording. As such the busses cannot be assigned to the stereo buss. But there are a few work-a rounds for this limitation. I will describe a few of the theories, then give specific examples. ****also see "Fader Groups."*** The busses are normally assigned to the mult-track outputs (TDIF, ADAT, option cards) for recording. We can send busses 1-8 to a TDIF, ADAT or option card output, then take a cable from the TDIF, ADAT or option card output and plug it right back in to TDIF, ADAT or option card input. From here there are a couple of ways to get this new INPUT signal to the stereo buss. We can assign these inputs to channels. This lets us use EQ and compression on the buss signal and then assign it to the stereo buss. As the effect returns can be assigned directly to the stereo buss, sending these buss signals to channels 25-32 makes good sense if you don't require the channels for other inputs. These buss signals could instead be assigned to the AUX 1-2 path as described above. This still gets the buss signal to the stereo buss, simply with out the addition of EQ and dynamics to the signal. The ASSIGN screen shot below shows channels 1-16 assigned to the stereo buss and channels 17-32 assigned to busses 1-8. The AUX 1-2 signal is also assigned to the stereo buss here as are the effect returns.

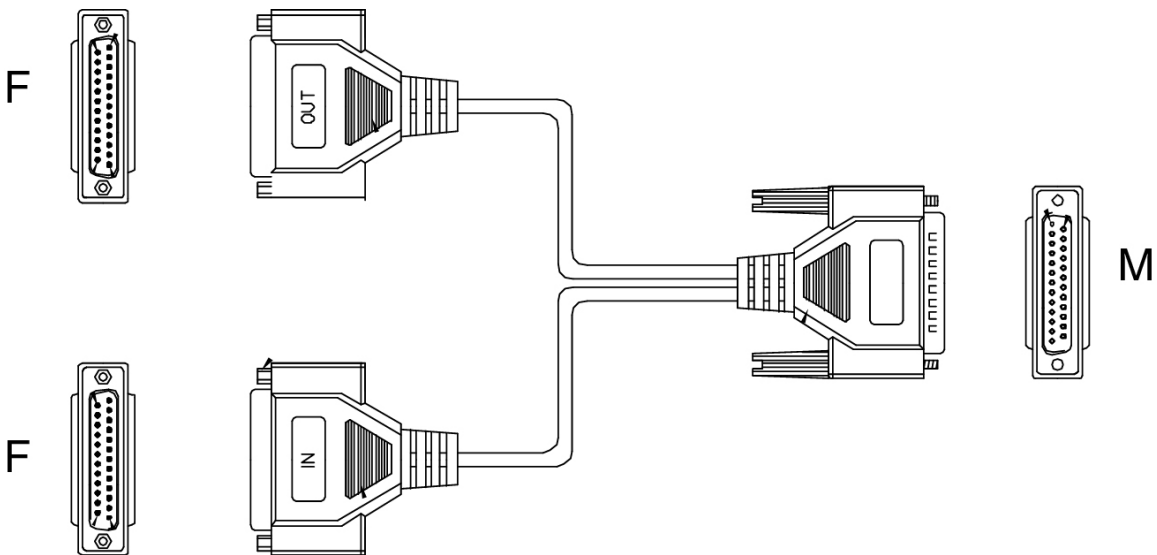


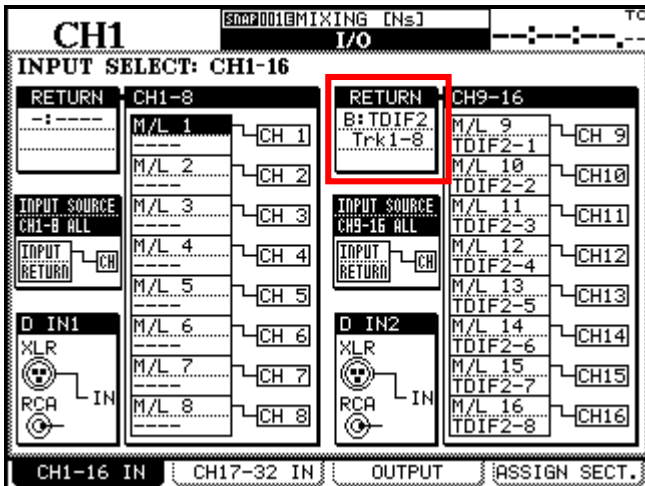
The I/O screen shot below shows buss 1-8 outputs feeding all of the TDIF, ADAT and OPTION SLOT outputs. Outputs are always active, but inputs have to be chosen. As we're already using ADAT 1-8 inputs for our 1st DigimaxLT on channels 17-24 and the SLOT 1-8 inputs for our 2nd DigimaxLT inputs on channels 25-32, we're going to use TDIF2 1-8 to send and return our buss 1-8 signal.



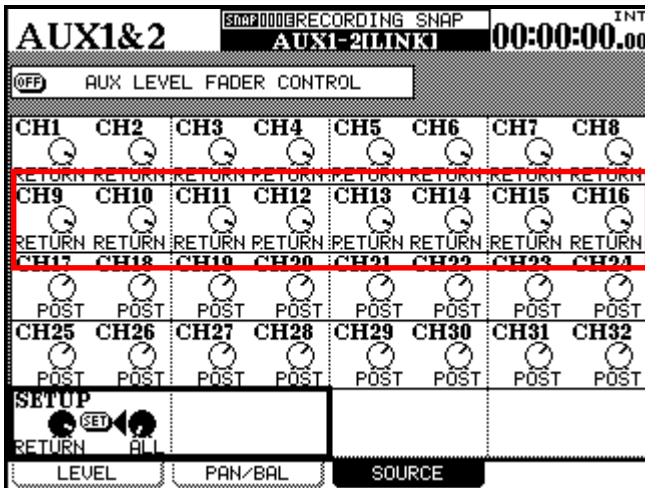
This requires two cables. One CU/PWSPLIT. This is a TDIF Splitter Y cable. The Y splits the INPUT and OUTPUT section of the TDIF cable. The standard end plugs in to the TDIF 2 jack on the DM-24. Now use a CU/PW88DS, which is a 2' TDIF cable, and plug one side of the cable in to the OUTPUT side of the Y cable and the other end of the TDIF cable into the INPUT side of the Y cable. Basically we just plugged the OUTPUT of TDIF 2 in to the INPUT of TDIF2. So the buss 1-8 signal is being routed to the TDIF2 1-8 RETURN, which is coming back on the Aux 1-2 path and then being assigned to the stereo buss. The RETURN source for CH 9-16 must be set to B:TDIF2 even though channels 9-16 are using the Mic/line inputs.

CU/PWSPLIT TDIF SPLITTER Y CABLE

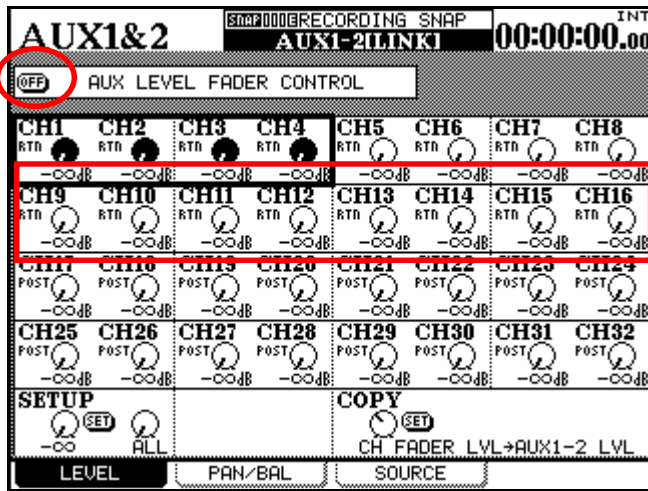




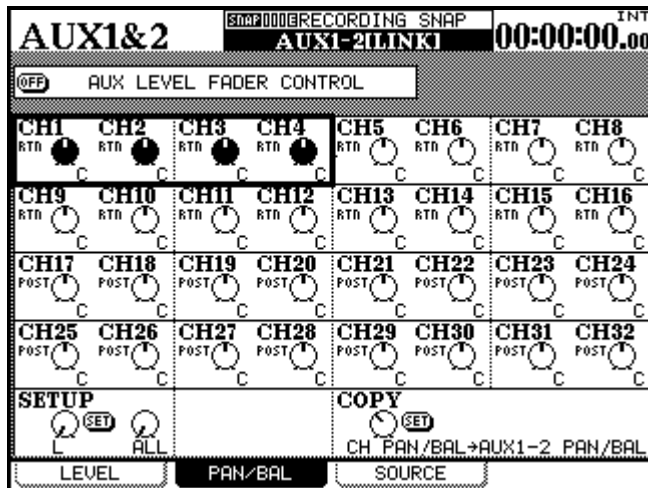
The AUX 1-2 screen shot below shows the “SOURCE” of the AUX path as “RETURNS” for channels 1-16. “Returns” refer to TDIF, ADAT or option card inputs. Our TDIF 2 signal carrying our buss 1-8 signal uses CH 9-16 on this page. Channels 1-8 here would refer to the first DigimaxLT signal. As this signal is already assigned to channels 1-8, we don’t want to route the same signal to the Aux 1-2 return path too. The source of these channels should instead be set to POST like CH 17-32.



This AUX 1-2 screen shot shows the level for the 16 possible “RETURNS.” You can use the POD knobs to adjust these levels or if you use the cursor keys to highlight the “Aux level fader control” and press ENTER and you can turn this parameter ON to use the faders instead.



This AUX 1-2 screen shot shows the PAN setting for these “RETURNS.”



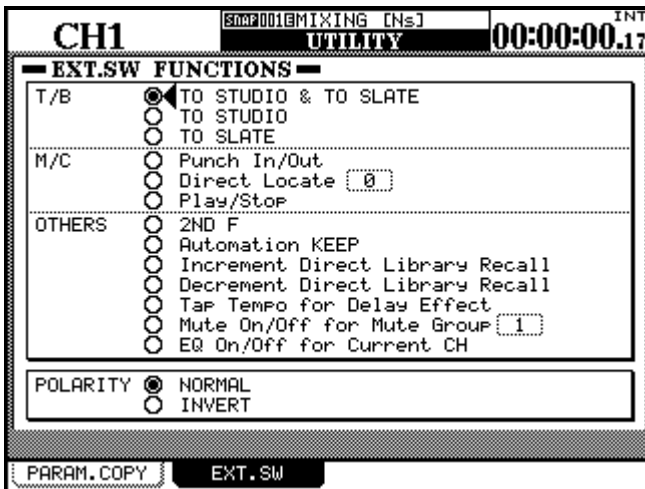
USING BUSSES AS POST FADER AUX SENDS

Let's say you don't require the use of any busses for your mix. You're using the assignable sends with aux 3-6 to send 4 monitor mixes to the stage and aux 1-2 to feed the internal effect processors. But you still have to add more effects to the mix. How can you send to your external effect devices? Use an IF-AN/DM analog option card. Assign busses 1-8 to the card. Now you can use a buss like a post fader aux send. This is like adding 4 post fader aux sends. The only real difference between an aux send and a buss send is that when you assign a signal to a buss, you can't control "how much" of the signal you are sending. It just goes out at unity gain. Where as with an aux send, the individual sends per channel are used as wet/dry ratio controls as the effect returns come back at unity gain. This means assigning multiple channels to a buss for this purpose is not very effective. However, usually you're only using a specific effect with a specific channel anyway in live use. The reason that this is like adding 4 post fader aux sends instead of 8 is because busses 1-8 get their signal "post pan control." So if the channel is panned to center, the same signal will be sent to buss 1 and buss 2. However, if you had two channels that both needed to send to effects and one channel was panned to the left and one to the right you could use buss 1 for the left channel send and buss 2 for the right channel send. Your stereo mix

dictates the use of the busses in this regard. For our example, the effect returns would be plugged into the analog option card, INPUT RETURN for channels 9-16 would be set to B:SLOT2 and then set the RETURN levels in the AUX 1-2 page for channels 9-16.

SNAPSHOTS and EXTERNAL FOOT SWITCH FUNCTIONS

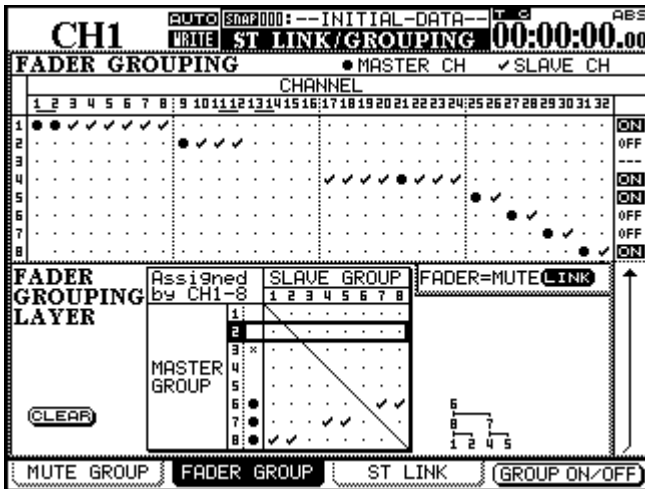
The DM-24 has a library section. In this library you can store 128 EQ presets, compressor presets, gate presets, and effect presets. These presets can be recalled to any channel at any time. The DM-24 can also store 128 snapshots. These snapshots include all of the settings of your mix. Faders, mutes, mute groups, fader groups, EQ settings, dynamics settings, effect settings, input and output routing, aux levels, etc. All of these snapshots can be named. With the touch of a button or by stepping on an external foot switch you can recall these snapshots in an incremental order. You might use multiple snapshots with one song. Perhaps in one point in a song you need an echo on the lead vocals, at another point the background vocals need to be distorted and in yet another point the entire drum mix needs a heavy flange. All of this can be done by setting up the proper snapshots in advance and then recalling them in the proper order at the proper time. If you "really" run a hi-tech show the DM-24 does have internal dynamic automation that can sync to MIDI Time Code from a sequencer or SMPTE time code from a multi-track. In this kind of scenario a click track is sent to the drummers headphones when the sequencer or multi-track starts to play so the band plays in time with the background tracks. The DM-24 plays back mix moves that were recorded while it was locked to the time code in rehearsal. It will also recall snapshots and such. All of these snapshots and automated mixes can be dumped to the sequencer as a MIDI file for backup and reloaded to the DM-24 at any time. The external foot switch can also be used for other functions.



FADER GROUPS AND MUTE GROUPS

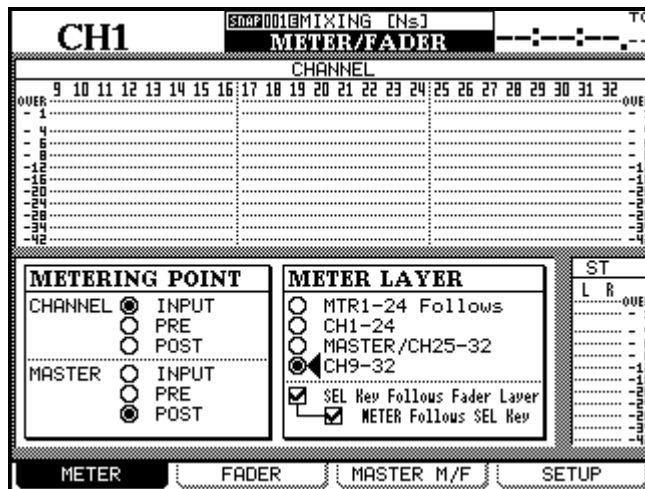
The DM-24 allows you to set up 8 fader groups. This allows you to adjust the volume of multiple channels with one master group fader. You can always adjust the individual channel volumes even if they are part of a group, but when you want to bring the whole group down in volume you must use the master group fader. If your drums are on channels 1-8 you can make channel 1 the master group fader and control the volume of the entire drum mix by adjusting the fader for channel 1. You can even have groups of fader groups if you want to control multiple groups with one fader. So even though the 8 busses are not assignable to the stereo buss, using fader groups gives you the same result.

Mute groups work the same way. This allows you to mute multiple channels by muting one channel. If your drums are on channels 1-8 you can make channel 1 the master group mute and mute the entire drum mix by muting channel 1. You can even have groups of mute groups if you want to control multiple groups with one mute key. The screen shot below shows the fader group page. The mute group page is similar.



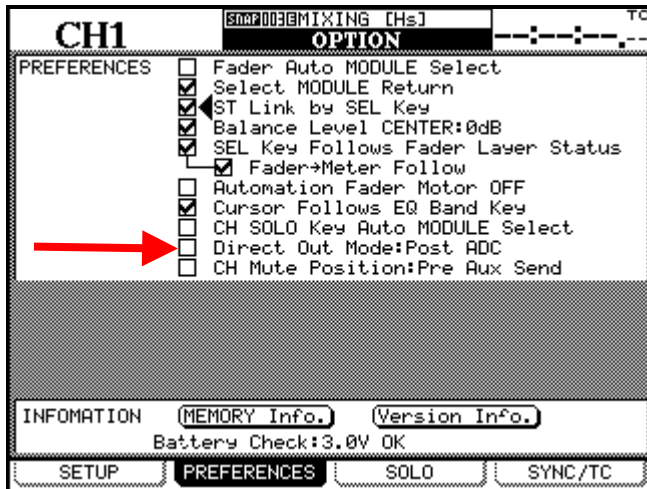
METERS

The optional MU-24 meter bridge is a wonderful addition to any DM-24. It allows you to see any metering you require as well as MTC or SMPTE at all times while your LCD display is showing you other information. However, the MU-24 is not required to see these meter levels. The METER/FADER menu will show you all of the meters on the LCD display.



LIVE RECORDING DIRECT OUT MODE

The 16 direct outputs for recording are usually “post fader.” There is a mode to make direct outputs come directly after the A/D converter. This means your recorder will receive its signal post mic pre, post insert and after it has been converted from analog to digital. Now any mix moves you make to change the front of house mix do NOT effect the signal going to tape unless you change the input trim controls.



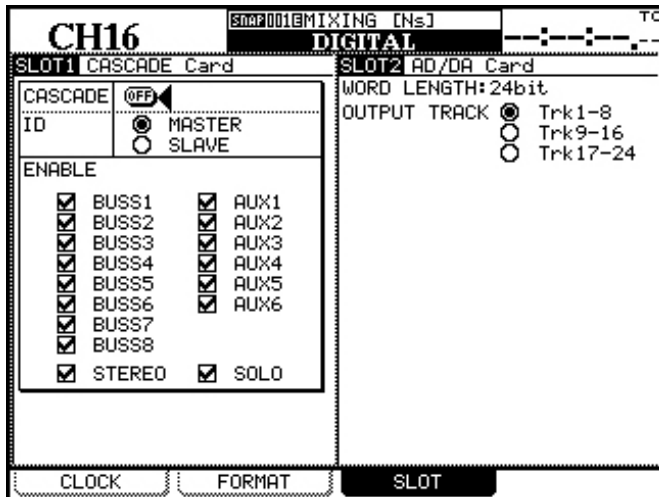
TWO DM-24s CASCADED

For those who don't want to deal with fader layers and external mic preamps or for those who just need more inputs you can cascade two DM-24s. This requires two IF-CS/DM cards that go in to SLOT 1 of each DM-24. A cascade cable connects the two mixers. When cascaded, the DM-24s can share the aux sends, busses 1-8, the solo buss and the stereo buss. Cascading turns two DM-24s into one big console. When you recall a snapshot on the master, the slave will also recall. You have full access to the effect processors in both mixers via the aux sends. This means you could use two different reverbs for example. Perhaps a small room reverb on the snare drum and a hall reverb on an electric guitar. Or you could use up to 4 different effects at once. A reverb, a delay, distortion and chorus for example. Or if you wish you don't have to cascade the aux sends. This would give you six aux sends per board.

Cascading two DM-24s provides:

- 64 channels
- 32 mic pres
- 4 effect processors
- 64 mono compressors and six stereo compressors
- 32 gates
- 64 four band, parametric Eqs
- 48 channels of TDIF I/O
- 16 channels of ADAT I/O
- 4 S/PDIF I/O
- 4 AES/EBU I/O
- 2 option slots for additional I/O
- 8 assignable inserts
- 32 direct outputs for live recording
- 32 faders

All of this for about \$5000



The MAP price of the DM-24 is only \$2399. The MAP price of the Mackie SR-32/4VLZ PRO with 4 DBX 266XL compressor/gates is the same price. This console has 28 mono channels and 2 stereo channels. The simple 3 band EQ has a cut and boost for 12Khz and 80Hz with a sweepable midrange from 100Hz to 8kHz. Aux 5-6 are fixed as post fader sends. There is a "master" phantom power switch for ALL channels. This is a popular system, but as you can see the DM-24 is much more powerful for the same price.

The Mackie 32-8 analog console has a MAP price of \$3599. The 4 band EQ has a true parametric Hi Mid, a sweepable Lo Mid with Hi and Lo shelving at 12kHz and 80Hz. There are 6 aux sends, but you must choose between aux 3&4 OR aux 5&6 per channel. There is a "master" phantom power switch for ALL channels. Again this is a popular choice for a live console and again it is no match for a DM-24 with two Presonus DigimaxLT mic pres.

The DM-24 is the best choice you can make for a 32-channel front of house live mixer.