



File Windows Synchronization Help

SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	SOURCE	OFFLINE
AD1	AD2	AD3	AD4	AD5	AD6	AD7	AD8	mLAN1	mLAN2	mLAN3	mLAN4	mLAN5	mLAN6	mLAN7	mLAN8	FX1-1	FX2-1		
BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS	BUS		
STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO	STEREO		
PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE	PHASE		
FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1	FX1		
FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2	FX2		
DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN	DYN		
EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ	EQ		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	ST1	ST2		
AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX	AUX		
Center	Center	Center	Center	Center	Center	Center	Center	Center	Center	Center	Center	Center	Center	Center	Center	L63	L63		
SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT	SELECT		
SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO	SOLO		
ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON		
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	mL1	mL2	mL3	mL4	mL5	mL6	mL7	mL8	ST11	ST12		
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6		
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40		
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60		
-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞		
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		
10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10		
15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40		
50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50		
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60		
70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70	70		
-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞	-∞		
																		L	R
																		STEREO	
																		LAYER	
																		9-16	
																		17-24 MASTER	
																		SELECT	
																		ON	
																		STEREO	

Phil Clendeninn
 Senior Product Specialist
 Technology Products
 ©Yamaha Corporation of America

Studio Manager for 01X

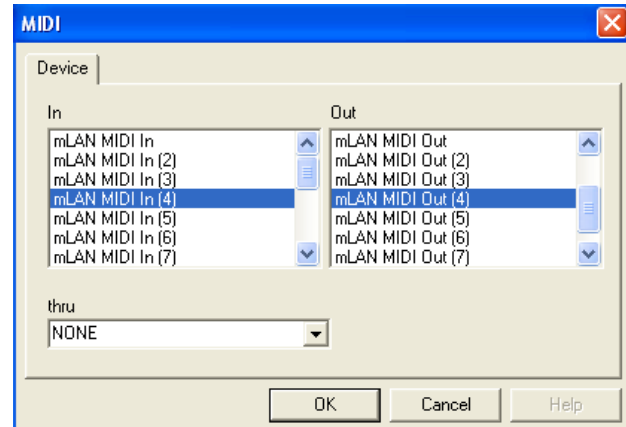
The best way to learn your 01X

It may seem ironic that the best way to learn a physical digital mixer like the Yamaha 01X is to use a graphic, software-based interface. But because you may be new to the world of digital mixers, the Studio Manager software is a great tool because it lets you visualize the digital mixer via a more familiar analog mixer layout. In addition to being a great learning tool, the Studio Manager software conveniently stores your Mix setups, your library files and your Scene memories. The connection between the software (Studio Manager) and the hardware (01X) is seamless. It is a **bi-directional** and **simultaneous** interface. In other words, any change you make in either one will be reflected immediately in the other. If at anytime you wish to re-synchronize them you have the option on the toolbar. You can send the **CONSOLE → PC** or the **PC → CONSOLE**. The two might become unsynchronized when you open a new session, or a previous session or make a change to one or the other prior to establishing communication. This is the 17th year of Yamaha digital mixers and once you have worked with any of the newer generation (those that use Studio Manager) you will be in heaven. They all work in a very similar fashion. In other words the Studio Manager software for the 01V96, the Studio Manager software for the 02R96/DM2000, etc., will all work in a very similar fashion – and you are joining the legion of top professionals who use this interface to control recording sessions and live music concerts around the world. Every parameter (save for the analog mic/gain trim control and monitor level) can be memorized for recall. In a recording scenario you can immediately see the value - you can recall the initial setup including all patching, effects, routing, EQ, etc. at the start of a session. During a session SCENE (snapshots) can be recorded and documented. Studio Manager is software that represents the Internal Section of the 01X Digital Mixer. The DAW (Digital Audio Workstation) software will have its own mixer which, as we will find out, the 01X can physically remote control. What we will attempt to do in this article is give you a guided tour of a channel module and then the master channels. And at each step find where on the physical mixer this parameter is found and what it means. The learning curve on mLAN and related gear will be eased greatly once you have a handle on the signal flow (as in all things audio related).



Getting Started

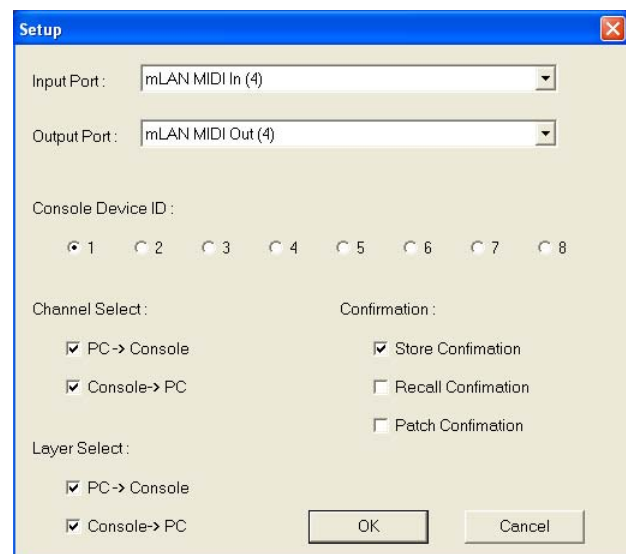
If you have the mLAN driver installed on your computer, and have a healthy firewire connection between your computer and your 01X you are ready to go. Open the STUDIO MANAGER software as a standalone. In the MIDI SETUP box (shown above) select Yamaha mLAN MIDI IN and OUT Port 4. This is the communication PORT for the Studio Manager software. (This is found by clicking FILE, then SELECT CONTROL PORTS, on the Mac): mLAN MIDI IN (4)/ mLAN MIDI OUT (4).



- Click OK

For this part of the tutorial this is the only mLAN MIDI PORT connection we will need. This connects the 01X to the computer.

Under the FILE pulldown find the SYSTEM SETUP... function. Here you are connecting the MIDI PORT selection to the Studio Manager software:



- Open a New Session

- Click on FILE and select New Session



Channel Module: SOURCE

Take a look at the first channel strip and let's simply take a look at what is on it. At the very top you see the word SOURCE. This is where signal is coming from - it reads AD1. Place your cursor arrow on the **AD1** and click. Doing this will show you the available options for incoming signal to this particular channel (AD1, AD2, AD3, AD4, AD5, AD6, AD7 AD8, Digital In L, or Digital In R). AD1 refers to the first analog jack on the back panel of the 01X (Analog-to-Digital). So what does this mean and when would you ever change this from AD1? It means you never have to unplug a cable to route an incoming signal to any particular CHANNEL. That is any of the physical jacks on the back panel can be routed to this channel strip. I'll mention here that a CHANNEL is not a TRACK (I will be very strict when using the language of mixing and recording). A Channel is a physical entity that can handle different types of signal. This is an INPUT Channel because we are talking about routing an AD input to this channel. A CHANNEL is a physical strip containing certain devices that prepare a signal for routing to a target destination. You can route the channel to an output, that output can be assigned to the stereo monitor bus, to an AUX Send, to another input channel, etc., etc.

But channel 1 does not mean necessarily track 1. Any input channel can be routed to any track – the system is *totally* flexible.

All we need to know is that channel 1 is taking signal from an input and preparing it for next device in the signal flow.

When would you change this SOURCE to something other than AD1?

When, indeed? The answer is whenever you need to. Your selection options include any of the other AD inputs and either the Left or Right channel of the SPDIF input. If you are sending in a stereo signal from an external source, for example, you might take the SPDIF out of an AW4416, Mini-Disc, DAT or other device and connect it to the SPDIF input of the 01X, you could send the left channel to channel 1 and the right channel to channel 2. As we will learn in a minute, Yamaha digital mixers allow you to set up pairs of channels in an odd/even grouping. It takes two channel strips to handle a stereo signal. However, in the Master section of the board, as we will learn later,

there are two Stereo modules...

Where is the SOURCE parameter found on the physical 01X?

Make sure you are at "home" - press INTERNAL (green LED) - this will be considered home when we are dealing with the 01X as a physical mixer. And remember Studio Manager deals with the INTERNAL 01X mixer.

- Press UTILITY
- Press knob #2: PATCH. This will reveal the INPUT PATCH screen 1/8 (screen 1 of 8)
- Turn knob #1 to view the same selections we viewed above in software, i.e, the other seven AD inputs, digital in Left and digital in Right. Any cable plugged into the back of the 01X can be routed to this channel module.

All Patch setting can be memorized in a Library. A Library is a place for preset and user-created settings.

Channel Module: BUS (RECORD BUS)

Take the bus across 57th Street if you want to get to Carnegie Hall. A Bus is a device for moving something or several things from one place to another, and so it is in audio routing. When you assign a signal to a BUS you are routing it to an output option. You can then connect that bus to some other device. I'm not trying to be vague - just trying to illustrate that *where* you connect it will be dependent on what you are doing at the time. One typical scenario is to route a signal on a bus to be combined with other signals. For example, lets say you have 5 microphones on a drum kit. You are using input channels 1-5 but you want to record the drums to a stereo pair of tracks. You could assign all 5 inputs to a stereo BUS and connect the bus to a stereo pair of record tracks. All five channels can get on the bus and can be moved to a destination across town (track 1&2), for example. In order to mix signals there are combining amplifiers at work – this makes the 01X a true mixer not just an I/O box.

There are several kinds of buses. The two kinds of buses we need to talk about first in the 01X are the STEREO BUS and the RECORD BUS. The stereo bus is typically for monitoring purposes (listening) and the record bus is for signal that you are actually going to print to tracks. Both of these buses are stereo buses (have a left and a right channel).

When you light the BUS icon on a Studio Manager module, you have connected the module to the bus. You can then direct (connect) that bus to several different destinations depending on what you need to accomplish at the time. Do not

misunderstand...you do not have to light the BUS option in order to record. As we will see most times you will probably route an input via a DIRECT OUT to a track of your Digital Audio Workstation. But it is up to you and will depend on what it is you need to accomplish.

Where is the output assignment of a channel on the physical 01x?

- Press the [SELECT] button on the channel you wish to assign
- Press the [PAN] multiple times to toggle between several parameters (REC BUS, STEREO BUS, PHASE, LEVEL and ON/OFF).
- Or – Press the [SELECTED CHANNEL] button. This view will show not only the PAN parameter, but will show the REC BUS assign, the STEREO BUS assignment, the Phase, the ON/OFF status and the LEVEL of the selected channel. The BUS in Studio Manager is referring to the RECORD BUS.

Where is the RECORD BUS assigned out (connected to a destination) in the physical 01x?

- Press UTILITY
- Press knob #2 PATCH
- Use the DISPLAY PAGE DOWN cursor to page through to Page 5 of 8 OUTPUT PATCH

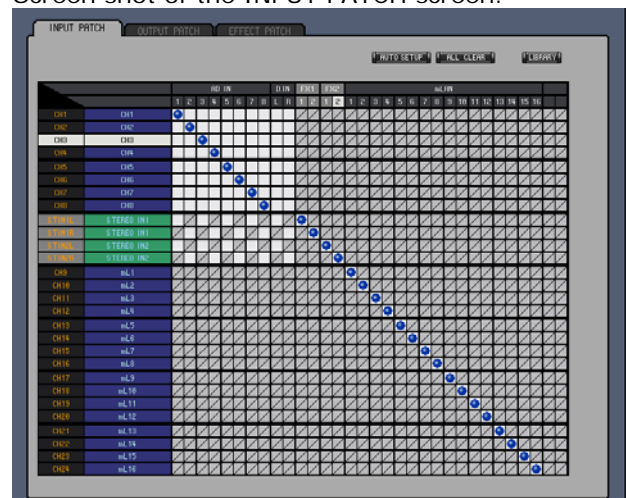
Here you can connect the record bus, the stereo bus, the aux1/2 bus, or the aux3/4 bus (more on the Aux buses in a moment) to output destinations. Any of these buses can be connected to any pair of mLAN channels. This makes it possible to use any of them as a destination when you need to combine signals. Here is an example of such a situation: You might have the opportunity to record a choir - 8 singers, each on their own microphone. It would not be prudent to record them each on their own track. So you might decide to record 2 passes with them but combine each pass to a stereo pair of tracks... resulting in 4 tracks with 16 singers – each stereo pair is 8 singers. How is this done? Well, the REC BUS can be assigned to any pair of mLAN modules, 1&2, 3&4, 5&6, 7&8, on through to 23&24. You should maximize the gain of each input during the record process so that you have proper signal to noise ratio. When combining multiple signals on a bus like this you can use the module's ATT (attenuator) to turn down the signal prior to going to the Phase-> the EQ-> the Dynamics-> and on to the DIRECT OUT (which can be connected to a pair of tracks of your DAW). The Attenuator is a very important component, as you can see from this example. Each input must be "gain-staged" – a term used to describe the optimization of the record level so that you have maximum level short of distortion. If you have all these inputs each maximized as to

their level, then how can it be possible to combine them to a single module or a pair of modules without overloading that module? The answer is, of course, the Attenuator – a way to attenuate (turn down) the signal so as not to distort.

You can move the Direct out PRE or POST the module Fader. A reason for making the signal POST the fader is so that you have an artistic control if it is necessary to adjust the level of the vocals during the record process. (This is all about flexibility). The PRE or POST FADER option for the DIRECT OUT is found in UTILITY> 2 PATCH> DISPLAY Page 7/8

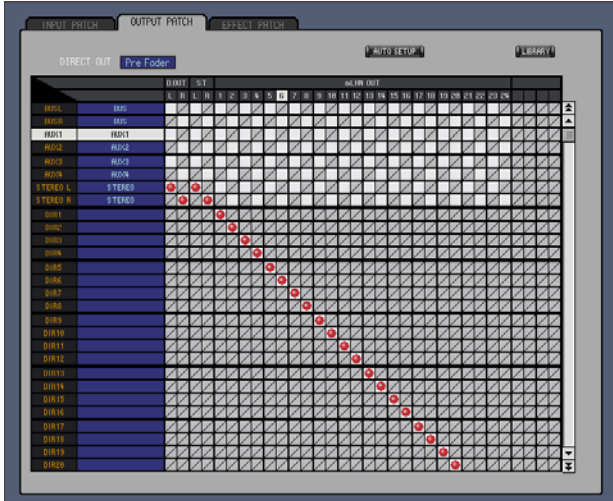
Also of note, when talking about assignment: In Studio Manager software you can see all your PATCH settings (Input, Output and Effects) on a convenient grid. Spend a little time making a change on the physical 01X and relating it to how the change is reflected in the software and vice versa. This will help you visualize the console and the options that you have. Once you understand where things take place you will have a good foundation on which to get creative. No one guide could cover all the possibilities when it comes to "audio engineering" – and nothing illustrates this point more than creative patching. It is not a bad idea to take a microphone and do some creative routing before you dive into a session. Do not make the mistake of trying out things for the first time in the heat of a recording session. Take a practice run on data that is purely for experimentation. (The automobiles that they let students drive are never expensive cars...why? Because nobody cries when it is just a practice run.)

Screen shot of the INPUT PATCH screen:



- Select the Windows pull-down and find PATCH EDITOR. INPUT PATCH (shown above). OUTPUT PATCH (shown below).

Screen shot of the OUTPUT PATCH screen



Channel Module: STEREO (STEREO BUS)

The stereo bus is automatically selected (lit) when you open a Studio Manager session because it is assumed you will want to monitor (listen to) the signal in a channel module. The Stereo Bus can also be routed to any pair of mLAN outputs (24); it can be routed to the stereo coaxial digital outputs; it can be routed to the stereo/Aux jacks on the back panel of the 01X. Typically, when something is routed to the stereo bus, it can be heard - this is importantly different from the RECORD bus where our intention will be to combine channels typically for recording the signal. The Stereo and the Record Buses can be connected to any pair of mLAN Outputs (there are 24); they can be connected to the stereo coaxial digital outputs; they can be routed to the physical Stereo Output/AuxOut jacks on the back panel. The Stereo Bus and the Record Bus are configurable and you do not have to take their names literally.

How do you assign a module to the Stereo Bus on the front panel of the 01X?

STEREO BUS does not have a dedicated button but is found under the [PAN] button.

- Press the [SELECT] button on the channel you wish to assign
- Press the [PAN] button multiple times to select ST-BUS.
- Or – Press the [SELECTED CHANNEL] button. This view will show not only the PAN parameter, but will show the REC BUS assign, the STEREO BUS assignment, the Phase, the ON/OFF status and the LEVEL of the selected channel.

Channel Module: Phase

In a scenario where you are miking with overheads, a phase reverse may be a necessary tool. It is a common rule of thumb in recording

that if you have two microphones aimed at the same object that you apply the 3:1 rule. The distance between the first microphone and the source is considered "1", then the distance between the first and the second microphone should be 3 times that distance. That is, if both microphones are 1 foot from the source, there should be 3 feet between them. If this is not possible you may get a degree of phase cancellation. A phase reverse can help in such situation where the 3:1 rule cannot be observed. There are many other tricks with Phase, please consult your local library on audio engineering tips and tricks.

How do you change the Phase on the front panel of the 01X?

Phase does not have its own dedicated button but is found under the [PAN] button.

- Press the [SELECT] button on the channel you wish to assign
- Press the [PAN] button multiple times to select Phase.
- Or – Press the [SELECTED CHANNEL] button. This view will show not only the PAN parameter, but will show the Phase, REC BUS assign, the STEREO BUS assignment, the ON/OFF status and the LEVEL of the selected channel. The BUS in Studio Manager is referring to the RECORD BUS.

Channel Module: FX1 and FX2

These two buttons are used to INSERT one of the two effect processors specifically on this channel. By that I mean, in a default session the two 32-bit effects processors in the 01X are setup as SYSTEM effects. Each channel has a send to them (AUX) and there is a stereo return from each processor. In fact, FX1 (EFFECT 1) is connected to AUX SEND 3 and FX2 (EFFECT 2) is connected to AUX SEND 4. FX1 (EFFECT1) defaults to returning to Stereo IN 1 (ST1) and FX2 (EFFECT 2) defaults to Stereo IN 2 (ST2). This routing can be changed but this is a convention that Yamaha has adopted on many of our digital mixers. AUX 1 and AUX 2 are, by default, available at the back panel of the 01X for whatever use you might have (for example, to a feed to a headphone amp, external recorder, a second system, whatever). The last two auxiliary sends are typically connected to the onboard processors. If you click on FX1, for example, what you have done is remove the first of the two effects from its duties as a System-wide effect and you have **inserted** it, inline, with the signal in this channel module. During a recording session if you want to apply an effect to the recorded signal you would use this FX switch to assign the module to the effect (it is the digital equivalent of taking patch cables and routing signal to and from a rack mount effect via the old analog patchbay).

When you click and highlight it (FX1) you will notice (if you are very observant) that in the next to last channel strip on your right (ST1) the word NONE now shows as the SOURCE for that channel module. That channel module is the "ST1" or STEREO IN 1 and it defaults to the return from the effect (FX1). Go to that next to the last module and click on the NONE under the word "SOURCE" and set it to FX1 (that's where it was before you assigned it to channel module 1). Now go back to channel module 1 and click FX2. Now see how the last of the channel strips has changed. An effect can be reached via an AUX SEND or as we have just seen, you can have the effects INSERTED on any particular channel.

One important thing to notice on the two Stereo Ins, ST1 and ST2, is that they are both **stereo**. However you see they only have one fader each... you are viewing the left side **or** the right side of this return. Press the [SELECT] button on the ST1 channel module and this will toggle to the opposite side. Typically, a paired set of channels like this share everything (except the pan position)... so only one fader is shown on the console view at a time. If you are viewing the left side, typically the PAN is set to hard left and the SOURCE at the top will say FX1-1, when you are viewing the right side the PAN is set to hard right and the SOURCE at the top will say FX1-2. This is indicating Left (1) and Right (2).

Shown below is a screen shot of the "ST IN1 L" or Stereo Input 1 Left channel. The Studio Manager lets you view the Left and Right channel of this stereo pair individually. This Stereo Input is assigned to the INTERNAL EFFECT #1 by default. You can select the right side by clicking on the Channel Select.



This is accomplished on the physical 01X by pressing the [SELECT] button repeatedly - which toggles between the two channel sides.

- "ST IN1L & ST IN1R" defaults to Internal Effect processor number 1 (fed by AUX SEND 3)
- "ST IN2L & ST IN2R" defaults to Internal Effect processor number 2 (fed by AUX SEND 4)

Okay, and pay attention here, this next bit is important when finding these parameters on the front panel of the 01X. You notice that global things concerning the SOURCE (PATCH) area are in UTILITY. However, inserting an effect on a channel happens on the channel. So certain setting will be made at the channel level and others at the UTILITY (global) level. This will become clear here in our next topic...

Where do I INSERT an Effect on my channel module in the physical 01X?

Press the EFFECT button on the right side of the front panel. This will take you to the area where you can select effect types and route the two 32-bit effect processors. Spend a little time getting used to the screens in this area. It will return to the screen you were last looking at so learning to navigate this area will be directly related to you knowing what screens appear in this area. We have been working with EFFECT 1 (FX1) Use the DISPLAY PAGE UP screen to return to the first screen in this area. Here you will see EFFECT 1 PATCH to AUX 3 (that is the default setting set at the factory). If you change this you are reassigning the Effect 1 processor to a particular input channel. As you turn this knob and make setting - notice the Studio Manager screen will instantly reflect where you have assigned it. The FX1 button will activate on the currently selected channel.

How do you Patch the INSERT Effect back to its typical function on AUX 3?

Obviously you cannot do this on an input channel. Patching it back to its default of AUX 3 will be a function found in UTILITY. If you think about it for a minute it makes sense - you are making the Effect globally available to any channel - so that type of parameter would be found in [UTILITY]. Press [UTILITY] > Press [PATCH] > PAGE DOWN to PAGE 3 of 8. Set the INPUT SOURCE of the ST1 to FX1.

"[FX1] -> ST1"

What this translates to is: Effect 1 is returning to Stereo In 1. Once you have used one of the two Effect processors as an insert on a particular channel, to reassign it back to its SYSTEM duties you would go to [UTILITY]. This is important because if you do not understand the routing scenario here, you may not find the option to

assign it and mistakenly think it should be with the channel assignment options. It isn't...it is in UTILITY. It is logical.

Channel Module: DYN

This button simply turns the DYNAMICS PROCESSOR on and off for the channel module. When you want to edit the Dynamics Processor, it is a simple matter to SELECT the channel and launch the [SELECTED CHANNEL] window. This is found in the software under the WINDOWS heading on the toolbar or you can use the quick keys indicated next the SELECTED CHANNEL. There will be more on setting up the Dynamics Processor in a separate Power User article. Typically an ON/OFF button like this is used to compare what you have **now** with what was originally the signal. This is called an A/B comparison. This way you can quickly hear if you have actually improved the sound or degraded it.

Where is the DYNAMICS PROCESSOR ON/OFF found on the physical 01X?

Each channel has a [SELECT] button and on the right front panel there is a dedicated [DYNAMICS] button. When this is pressed you can turn the knob associated with a channel to turn the processor ON and OFF.

How do you edit the DYNAMICS PROCESSOR from the front panel of the 01X?

After you have selected the channel module you wish to edit the Dynamics Processor, press the [SELECTED CHANNEL] button and the parameters of the Processor will be shown. Multiple presses of the [DYNAMICS] button will toggle between the two editing screens. One screen allows you to select the Dynamics algorithm and the other screen lets you edit the parameters.

Channel Module: EQ

The 4-band parametric EQ ON/OFF button simply allows you to toggle the EQ on and off when doing comparisons. When you want to edit the EQ, it is a simple matter to SELECT the channel and launch the SELECTED CHANNEL window as explained above. There will be more on setting up the EQ in a separate Power User article.

Where is the EQ ON/OFF found on the physical 01X?

Each channel has a SELECT button and on the right front panel there are 4 buttons, one for each of the four ranges LOW, LOW-MID, HI-MID and HIGH. We will use the EQ area to demonstrate and learn a small but very useful trick about the front panel of the 01X.

Press the LOW button, repeatedly. You will toggle around through four screens. Now depending on

what else you have selected you will see different things. And once you grok this next little gem you will be well on your way to "getting" the 01X.

Make sure that [SELECTED CHANNEL] is **not** lit. Press the [LOW] button four times, you will see a view where 8 channels have their info displayed. You will see the following four parameters (NAME):

Shown	Actual parameter
"EQ-ON"	EQ ON/OFF
"EQL-G"	EQ Low GAIN boost or cut
"EQL-F"	EQ Low Frequency setting
"EQL-Q"	EQ Low Bandwidth

- Press the button [NAME/VALUE] (to switch the view to VALUE).
- Press the LOW button four more times. You will see the following four parameters (VALUE):

Value	Explanation
ON	Status of the EQ
0.0	Amount of boost or cut
125	Frequency in Hertz
L-SHVL	Type or Q setting, smaller is wider

The significant thing to get is that one view is showing the NAME of the parameter and the other is showing you the VALUE (setting). If you have the NAME showing and you turn the associated knob - the parameter will change and be visual for a few seconds before switching back to the NAME. If this is disturbing or confusing you can turn that function OFF, **or** you can simply use the VALUE view.

Now once you have this item down. Let's go one more step. Press the [SELECTED CHANNEL] button. Now you get an overview of the channel we are dealing with. In the left of the screen you will see:

- "EQ-ON" - this can be toggled by turning knob 1
- "ATT" (attenuation) - this can boost or cut the overall signal by turning knob 2
- "Q" (bandwidth) - this will broaden or narrow the affected range knob 4
- "F" (frequency) - this will set the frequency affected in Hertz knob 5
- "G" (gain) - this is how you are boosting or cutting the specified frequency knob 6

In the upper right corner you will see the currently selected channel.

Again toggle the [NAME/VALUE] button to see how this allows you to see the parameter names and then their current values. Once you see how

these views differ and what is going on, you start to realize how to interface with the 01X screen.

One last tip with the EQ on our channel strip: You can with the mouse drag over the flat line on the screen of Studio Manager and do a quick EQ without having to go in and deal with parameters. This is useful when you are playing back a CD or other data and want to just put a "smiley curve" on it quickly. (Not an endorsement of smiley curve EQ).

Below the EQ Section but above the AUX SENDS is the Channel Module Number [1-24],[Bus], [Aux1-4], and [ST1-ST2].

Channel Module: AUX

The four horizontal blue lines represent the AUX SEND level. If you drag on this with your mouse you can change the send level. It will be orange (post) or green (pre) as you drag left-to-right to increase the send amount. Make sure you have not INSERTED an effect on the channel (FX1/FX2 are not lit on any channels. The FX assignment should be showing on the ST1/ST2 (Stereo In) modules on the right side of the Studio Manager). The AUX SEND would be used to send a portion of the channel's signal to an effect - by dragging from left to right on AUX3 you will be sending signal to EFFECT 1 (FX1). You can bypass this by clicking on the number 3 in this area. The orange (post) or green (pre) line will go hollow and you have bypassed the send level. This is useful for comparing and troubleshooting. If you have signal connected to input 1 of the 01X you will see signal appear in the meters of Studio Manager. Click on the MASTER button above the Stereo fader on the far right of the console. This will let you see the four AUX SENDS the two Stereo Returns and the Main stereo out. You should see your signal reflected in AUX 3 (send) and ST1 (return).

The prime directive: Never, ever, ever, send the ST1 (return) back out to AUX3. Bad things will happen - this would be the definition of a feedback loop. Yes you could send the return to AUX 4 That's okay. But never back to itself. Conversely never return the ST2 (return) back out to AUX 4. You could send it to AUX 3 but not to itself. Feedback is dangerous for a few reasons; it can potentially damage your gear, it can potentially damage your ears (imagine having headphones on at drummer volume and feedback occurs) it is a serious situation and understanding how to avoid it is your job.

Where do I find the AUX SEND level in the physical 01X?

Press the SEND button on the right front panel.

Several presses will toggle you through the various sends. Remember AUX 3 is FX1, and AUX 4 is FX2. AUX 1 and AUX 2 are sent directly to the AUX/STEREO output jacks on the back panel of the 01X.

AUX SENDS can be PRE or POST (that is simply before or after) the channel fader. The significance of this has to do with whether the send is going to be influenced by the channel fader. If the AUX SEND is PRE the fader - then the fader's position does not affect the signal being sent. If the AUX SEND is POST the fader - then the fader's position will have a big influence on the signal being sent.

Let's use an example, you want to set up AUX 1 to feed a separate headphone amplifier so that the singer can have a separate mix. Would you want the send to be pre or post the fader? PRE... this way your fader can be set to control a separate mix for yourself. This way you can adjust the level of AUX SEND 1 to the comfort of the singer without having to listen to the same balance of instrument to vocal.

When applying the PRE/POST concept to effects, a good example of the difference would be the following: You have a vocal track going through a channel module and you want the effect that the singer is walking away down a long hallway into the distance. Using reverb to create the illusion of spaciousness, you can make the send PRE the channel fader. Now when you fade the signal out with the channel fader, the dry signal will disappear but the vocal will continue to be sent to the reverb and returned to the ST1 (return) - leaving a ghostly image of the voice - it will sound as if they walked away down a long hallway. If the send had been post, both the dry and wet signal would have faded out together and it would be an entirely different impact.

In the Studio Manager software, click on WINDOWS and open the SELECTED CHANNEL view. On the right side of the screen you will see the AUX SEND knobs and a button below each one to make that send PRE or POST.

There will be a bit more on this in the Conclusions and Final Thoughts section of this article.

Channel Module: PAN and SELECT

The Pan Pot (panorama potentiometer) or PAN, for short, is the act of adding resistance to one side so signal flows easily to the other. In other words when you pan something left you are actually adding resistance to signal flow going to the right, and vice versa. When you have paired a set of channels this will allow you to position them

left or right.

The [SELECT] button is pretty self-explanatory. It is simply the channel you are currently working on.

In order to pair two channels you must pair them in ODD/EVEN pairs. For example, 1&2 is a good pair, while 2&3 would not be possible. The ODD number will always be first. To create a pair is easy. Open the SELECTED CHANNEL (press WINDOWS on the toolbar) and click on the broken HEART in the lower left corner ("unbreak the heart" - so to speak, [great tune]). The faders are typically set to 0.0 during tracking – to raise the faders to nominal simply press the knob associated with them.

How do I pan on the physical 01X?

Press the PAN button. And now you know about several ways to view this. Try them out. Work with the NAME/VALUE button, and the SELECT CHANNEL view on the front panel of the 01X.

How do I pair channels on the physical 01X?

Hold down the odd number channel's SEL button and touch the adjacent SEL button. Hold SEL button 1 and touch button 2. You are given options to copy any data you have already setup on one of the channels to the other or you can RESET them both. Resetting them both will reduce their volume to infinity (off) and pan them hard left and right respectively.

Channel Module: SOLO

The Solo function is programmable. You can have it so that one SOLO button truly isolates just the channel it is pressed on or you can have what is called MIX SOLO where you can have several channels soloed by simply clicking them one after the other. The type of SOLO mode that is selected is setup in the 01X in UTILITY.

- Press UTILITY
- Press knob 7 PREFER
- Press PAGE DOWN to select page 4 of 5
- Select MIX SOLO or LAST SOLO

SOLO is a dedicated button on the front panel of the 01x. When activated the channel ON button will flash. Press the ON button(s) of the channel you wish to isolate.

A related function are the MUTE GROUPS. We will discuss MUTE Groups and FADER Groups a little later.

Channel Module: ON

The ON button activates the channel and is used to SOLO a channel when the SOLO button is

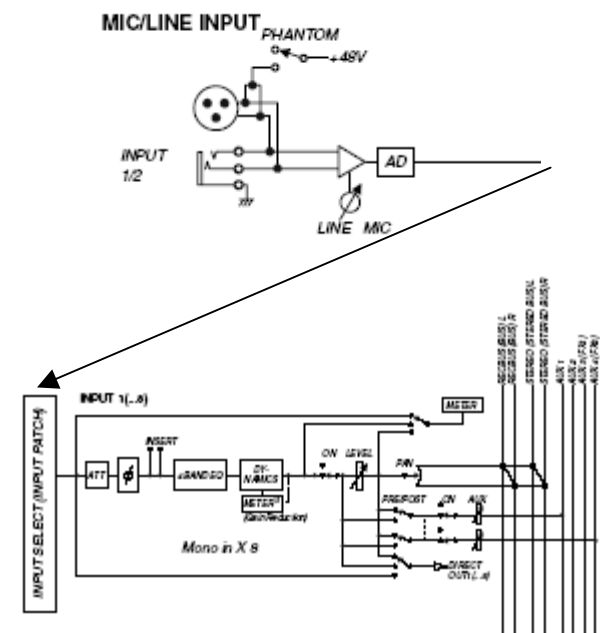
activated. And as mentioned any ON button pressed when a channel is placed in a MUTE GROUP can act as the master ON/OFF for the group.

Channel Module: FADER

Fader is a valve. Like a valve you would find on a pipe. It is not responsible for gain (that is the analog knob on the front panel of the 01x and is not represented in Studio Manager). The faders controls how much water is flowing in the pipe on a per channel basis. If the signal distorts it more times than not occurs at the analog input stage. Turning down the fader will not help rectify this - you will only hear the distortion less –you will not create a situation where the is less distortion - it is still there. A fader is an in-line attenuator for artistically controlling the signal flow. In a similar fashion to how MUTE GROUPS are created you can create Fader Groups where any fader in the group can control all the other members of the group.

You may initially think that signal flows from the top down the module...but this is not true. The typical mixing console is laid out so that things you use most often are closest to you and things you "set and forget" are farther away. The fader is truly the artistic level control during the mixdown process so it has found its way to the bottom (or closest) position. The input assignment is done at the start of the session is not changed during the recording. What follows is a chart of actual signal flow in an 01X channel module.

MODULE OVERVIEW:



Plug in a microphone into AD input 1. We will take a run through this channel functioning as an INPUT CHANNEL.

- First the signal goes through the Mic/Gain trim control (in the analog domain). Here the overall level of the signal is determined: **Mic** signal (weak)/ **Line** level signal (strong) – the gain/trim is all about boosting or reducing level. Notice that channels 1 and 2 have access to a +48V power source – this is a switchable function used by condenser microphones.
- Then on to the **AD** converter - from this point on you are in the digital domain (top diagram). You can decide what channel module the input will appear at the **INPUT SELECT PATCH** point. Set the channel module you want to use to SOURCE = AD1. Any analog input can be connected to any channel (for example, if you plug a guitar into the high impedance input at number 8, you can route that to the first module by setting SOURCE = AD8).
- Next is the channel **ATTENUATOR (ATT)** for turning down signal. The attenuator is typically set at 0.0. You would use the attenuator when a channel is receiving input from several other channels i.e., when bouncing channels making a composite mix - the attenuator keeps your signals from overloading the channel - because when signals are bounced together internally you do not go through the gain/trim¹.
- Next is the **PHASE REVERSE** option, followed by an **INSERT** point where you can PATCH the Effect processors (FX1/FX2) as an in-line effect;
- Next is the 4-band parametric **EQ**. The significance of a Parametric EQ means you can select the Frequency, you can select the “Q” or bandwidth (small number = wide) and you can boost or cut the Gain at that frequency.
- Next is the **DYNAMICS PROCESSOR**. This unit can be configured as a Compressor, a Limiter, an Expander, a Noise Gate, or a Ducker. You can recall setups from the LIBRARY and tweak them as necessary. This Leveling Amplifier is one of the most powerful weapons in the 01X arsenal of professional tools.
- Then an option to select to **METER** the signal – there is also a METER associated with the DYNAMICS PROCESSOR because you can boost and reduce gain in that device.
- Next is the Channel module **ON/OFF** switch.
- Next you have a point at which you can send data to a **DIRECT OUT**. This DIRECT OUT is typically where signal is sent to your DAW

¹ Such signal arrives at the INPUT SELECT PATCH point.

software to be recorded. The Direct Out is ultimately assigned (connected to) a track in your DAW. The Direct Outs are referred to by as mLAN 1 through mLAN 24 by your Digital Audio Workstation. Even though the first 8 modules are analog inputs and the next 16 are called mLAN1~mLAN16, when we are referring to Direct **Outs** sent to your DAW – they all travel via mLAN and are referred to as mLAN1 through mLAN24. If you look closely you will see options to route signal to the DIRECT OUT both **PRE** and **POST** the module’s **FADER** (the fader is shown as a rectangle with an arrow through it that says LEVEL. A PRE-fader send, the channel FADER and then the POST-fader Send follow this.

- And finally the signal arrives at the Panorama Potentiometer (**PAN POT**). After this point you connect it on to whatever your goal for this input is... in a live or monitoring situation you would route this to the stereo bus. In a situation where you are bus recording (bouncing) you would route this on to a bus that is connected to other channel modules and then on to your recorder and so on.

SELECTED CHANNEL View



On the toolbar of the Studio Manager program you can click on “Windows” and choose the “Selected Channel” view. This is everything on a single channel strip. We have briefly mentioned the Selected Channel button on the front panel of the 01X – this changes the view of the 01X screen so that the information pertains to just the current channel. There are times when you will prefer one view or the other. It is simply a matter of choice and convenience.

FADER GROUPS and MUTE GROUPS

There are four Fader Groups, (A-B-C-D), and four Mute Groups (E-F-G-H). When a module is assigned to a Group any member of the group can act as Master to control the others. Fader groups will all respond in proportion to each other’s position. The Groups are not selectable on the

main Studio Manager screen but are accessible when in the SELECTED CHANNEL view. On the 01X front panel you will find a dedicated [GROUP] button. If you place an "A" above a particular module, this would assign it to Fader group "A". All other modules designated for Group "A" would move when any one of them was moved. If you assign a module a letter "E", for example, it would join a Mute Group. All modules designated for Group "E" would be silenced when you press the ON/OFF button for any member of the group. These are extremely useful for adjusting multiple modules simultaneously.



Press the MASTER button on the STEREO channel strip on the far right of the Studio Manager console. This ensures that you can see all of the master functions. Notice the abbreviated BUS module, the AUX 1-4 modules the previously mentioned ST1 and ST2 Stereo Return modules, the Master Stereo channel.

The BUS module has the ability to insert FX1 and FX2 it has a DYNAMICS PROCESSOR, a SELECT and an ON/OFF button. The AUX buses have simply a SELECT button and an ON/OFF switch. The ST1 and ST2 modules have the ability to send to any of the AUX buses (but be warned again...do not send a returned signal back to a destination that is feeding it: FEEDBACK) - these stereo modules have access to their own EQ, to

the Stereo bus, Record bus, Phase reverse, SELECT, SOLO, and ON/OFF.

These can all be viewed in the physical 01X by pressing the MIXING LAYER [MASTER] button. Typically the levels of all buses are kept at 0.0dB - fully open (they are valves on the signal pipe). On close inspection you will notice that the BUS, AUX SENDS, and STEREO MASTER have 0dB at the top of the fader's travels, while channel modules, and the two stereo Returns have 0dB and then an area that goes up to +6dB at the top of the travel. This is to allow for boosting signals when these type channels are dealing with combining signals from other modules. The BUS, AUX and STEREO do not have this extra area because you do not go over +0db on a scientific output for any reason in the digital domain (because no one has found a musical use for total digital distortion). If you have properly gain staged your system by the time you get to busing, sending AUX outs and to the final stereo out you do not need any boosts.

The MIXING LAYER selects which channels are showing on the physical 01X front panel and on the software Studio Manager. You can view on the 01X in groups of eight faders: 1-8, 9-16, 17-24, the bus, aux and returns view uses 7 of the 8 faders. In the Studio Manager software you can view 1-8, mLAN 1-8 and the stereo returns in the [1-8] and the [9-16] view. When you press the [17-24] or [MASTER] view you get the second eight mLAN channels 17-24 and the BUS, AUX SEND, and STEREO Returns channels.

CONCLUSIONS and FINAL THOUGHTS

Making a correlation between the Studio Manager software and your 01X hardware is the first step toward mastering the mLAN concept. Learning about mLAN can be fun and easy if you start in the shallow water and wade out to the deep end of the pool. However, if you dive in the deep end first, because you are convinced you are a MIDI Jedi Knight, you may find a bit of frustration because this networking thing, while it builds on familiar concepts is the cutting edge of technology. It is like sitting behind a huge studio-recording console (in many ways). There is so much potential in terms of what it possible ...the routing ...the creative functions are truly unlimited. There is a learning curve and it starts with knowing the possibilities of your gear. Once you have become comfortable in routing signals through the 01X as a physical digital mixer, things like using it as a remote control surface and as an I/O for your computer will be a bit easier to get your head around.

Another very important concept in the whole DAW-mLAN Network scenario is the concept of

PRE and POST, which speaks to the whole signal flow scenario. Simply put this is BEFORE and AFTER. We talked about it in terms of the routing pre or post the channel fader in a send scenario. But on a larger scale you think about it in other ways as well. For example, the INPUT channel is PRE the recorder, and a TRACK Channel is POST the recorder. What is a TRACK Channel? Simply put a Channel module can be carrying inputs **to** the recorder or it can be playing back data **from** the recorder. Other than that the devices on each module are very similar...the only difference being: the INPUT channel goes through the AD converter, while the track channel starts its module run at the INPUT PATCH Point (tracks are not in the analog domain but start in the digital domain). Things done to a signal PRE the recorder will **be** recorded to the take, however, things done to the signal POST the recorder are simply monitored (heard in the speakers). This will be a very important part of your life now in the world of recording. Signals coming into your 01X (before they are recorded) will be considered the "scientific" signal – in that you are going to print that to the recording. Signals coming back from the recorder will be considered the subjective signal – in that you can alter it without penalty of the alteration being permanent – at least until you decide to create a final mixdown.

Let's give an example in the real world. Typically when working with computer-based systems you have been taught to apply processing and effects POST the recording. However, this has, up until now, been a limitation of the technology. Because many systems cannot process on the way in, the adage "Fix it in the mix" has been the norm. One of the advantages of having an audio interface that is hardware is that you can process on the way to the recorder. Often with reverb you want to wait until later, but sometimes with guitars or basses or keyboards you want to record the effect because it is "all about" the processing. You wind up *playing* the guitar effects – it is part of the musician's performance. In other words, the way that they play is affected by the sound you create on the way in to the recorder. This is a key advantage of the 01X and mLAN with its flexible routing. Zero Latency means – absolutely no delay and that is the norm here. You are listening to the signal prior to going to the recorder.

A good example of a recording scenario is where you want to record a lead vocal. You need to use a compressor to give optimum control over signal level and to get the correct **presence** on the vocal recording. Compressing the vocal after-the-fact is bogus...vocals benefit from recording *with* proper compression as you record. You can apply the compressor at the 01X on the way to the

recorder. It is also true that vocalist's request reverb in the headphones...ever wonder why? Because like when you sing in the shower, reverberation helps the ear/brain "hear" itself better – the notes hang in the air allowing you to make subtle changes to correct your pitch and enjoy the experience. Reverb is a necessary evil but you do not want to record with reverb in a multi-track scenario – why? Because you do not want to commit to a final amount until all the components can be balanced together. You normally want to wait until "final mixdown" to apply finishing touches like reverb. Therefore, you would apply the reverb on signal POST the direct out to the recorder. The signal that is POST the DIRECT out is the one you would feed to the musician's headphone mix. You would send the headphone mix POST the DIRECT OUT but PRE your fader. This will allow you to set a separate balance of instruments for the singer – while you monitor as you wish. This is the beauty and complexity of the recording setup. You have signal that is scientific, and you have signal that is subjective. Pre/Post – find your own way to think about it. But I have found through the years that knowing the signal flow and what you are looking at will serve you well and let you troubleshoot your own system. No one can tell you what to do exactly. It is all about signal flow – once you know what is possible, it is an artistic tool that you can use to your creative whim. Learn the basics and then "go for it!" See you online...

Locking in the setup:

Setup your 01X to your own particular preferences; including which DAW is the default REMOTE, all of your initial PATCH settings, Word Clock preference, etc.
Press [SHIFT] + [UTILITY] to create a "BACKUP"
Your mixer settings will be stored until you either rewrite the backup or do a Factory reset.

Run Studio Manager
Synchronize from 01X → PC
Then FILE> "Save Session as..."
Name the file

When next you boot: Run Studio Manager
Then FILE> OPEN SESSION
Choose the .X1X file
Then SYNCHRONIZATION/RE-SYNC
Press PC→ 01X Button

Phil "Bad Mister" Clendeninn
Senior Product Specialist
Technology Products
Yamaha Corporation of America