The 01X Configuration Guide

TOTAL INTEGRATION
YAMAHA'S 01X, A BREAKTHROUGH IN TOTAL INTEGRATION
WITH YOUR COMPUTER MUSIC ENVIRONMENT

A Very Brief Introduction

"Welcome to the world of learning!"

Like many of you, I have spent countless hours reading and re-reading the 01x and the Cubase SX owner's manuals, scouring the Internet, and perusing the various forums to try and glean further information on these excellent components. Maybe you have even spent a considerable amount of money on this or that book or video (like I have) only to find out that, in the final analysis, they are really not worth the money you paid for them. Sure the 01x DVD Experience may have helped many (probably only the "Pros"); it did nothing for me other than to show me how "stupid" I am! Ever feel like that?

Well, I sincerely hope that this guide is not like that? I trust that it will be of benefit to you as it has been to me during the preparation of it. I am dedicated to the "step-by-step" (or procedural) approach to things, as I believe this will assist the user in comprehension. As a result, you should be able to understand how all this "stuff" works so that you will actually be able to do what you are being asked to do. And once you do, then devices like the 01x (and even Cubase SX) will be a whole lot more understandable (and, need I say, "useable").

As you go through this guide, ask yourself questions, like, "Why does this happen (or does not happen)?" As was just mentioned, this will aid in your comprehension of the 01x and of Cubase SX as well.

Also, it must be understood, that due to the versatility and flexibility of the 01x (and indeed of Cubase SX as well), there can be many different approaches to the understanding of it (and believe me, there are)! This guide, as presented here, is just one of many such approaches.

What this guide is...
What this guide **is**, is an introduction to the 01x, and more specifically, the Auto Connector, and how the Auto Connector relates to the 01x and its integration with Cubase SX. I will also cover the INTERNAL and REMOTE mode features of the 01x as well as the MONITOR A/B functions of the 01x.

...and what it is not...
This guide is **not** an **absolute** beginners guide to either the 01x or to Cubase SX. Therefore, you should know:
1. how to launch and exit from Cubase SX
2. how to load a blank project in Cubase SX
3. how to insert tracks within a project
4. how to properly configure the Device Setup within Cubase SX
5. how to access the VST Ins & Outs within Cubase SX
6. how to start the Auto Connector, and how to configure it, etc.
7. what a control surface is

Note: If you are not familiar with any of the above, you need to read the appropriate documentation to learn how to do this. This information will be found in the Cubase SX/SL Operation Manual and the Cubase SX Quick Start Guide, as well as in the Yamaha Owner's Manual and Installation Guide. Information about control surfaces can be discovered via the Internet through the use of any good search engine.

Thank you's
I would like to thank the following for their assistance in the preparation of this guide:
- Charmain Dennison and Phil Clendeninn of Yamaha

- The folks at 01xRay
- Steinberg (for the great software and the books)
- My wife and my son for proof-reading and being "guinea pigs"

A Practical Suggestion
As you go through this guide, try and **think** your way through the steps as presented in each of the procedures. It is very important that you **comprehend** each of the steps as you go through them so that you will be able to use the concepts you have learned in your own projects and setups.

Comparisons
Many times throughout this guide comparisons will be made as to the actual audio signal as it comes into the 01x on its way to Cubase SX and of the audio signal as it comes out of Cubase SX. It will be of help to make note of any audible changes in this audio signal between these two sources. This point should become clear as you progress through this guide.

A Word About "Routing"
Throughout this guide, you will very often come across the word "assign". You can easily substitute this word for the word "route". In this way you can sound (and talk) like a real "Pro"!

Remember: Assign = route

What is a bus and how is one used?
First, "What is a bus?" Like a passenger bus, a bus is a device for moving something or several things from one place to another. So it is in audio routing. Second, "How is one used?" When you assign a signal to a bus, you are assigning (or routing) that signal to an output option. You can then connect that output (i.e. bus) to some other device. This device can be either an internal or an external device depending on how the mixer is designed. It is important to understand that where you connect the bus will be dependent on what you are doing at any particular time.

To The Source...
In the 01x Owner's manual, page 14, it says: "A signal route that mixes the signals from multiple channels and send them to an output jack or internal effect input is called a 'bus.' Unlike channels, which handle only a single signal, a bus can combine multiple signals into one or two, and send them to a destination. (This comes from the common meaning of the word, a vehicle to carry many passengers simultaneously).

So...
…we will talk a lot about buses in this guide. Therefore I hope that the concept of buses and how they work will become a whole lot more understandable to you.

Observe:
- Channels: handle only a single signal
- Buses: can combine multiple signals into one or two and send them to a destination

Preliminary Information (List of things needed or used in this guide.)
1. Cubase SX 2 or 3 (**SX 3.02 is being used for this guide**)
2. An audio source of some kind (CD-Player or keyboard, etc.) input to channels 1 & 2 on the 01x

Note: I hope that you will use some form of pre-recorded material as your audio source. This is so that you can focus on the concepts being taught and not on your playing of it, etc.

3. mLAN drivers version 1.5.3 or later (**I am using 1.5.4!**)
4. On the 01x
   - All faders set to infinity (i.e. down of off)
   - Set to default configuration (i.e. factory settings)
   - Set to INTERNAL MODE
   - MONITOR A/B set to off
   - REMOTE mode set to CUBASE
   - Wordclock set to 44.1kHz

Note: The above 2 settings will need to saved (i.e. backed-up) in order for these settings to be available the next time you power-up the 01x. See page 86 in the Yamaha 01x Owner's Manual for more details.
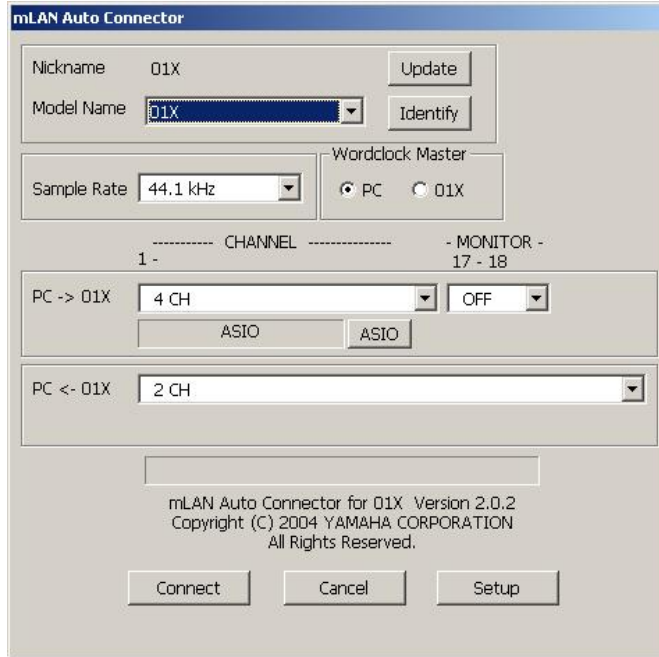
5. In Cubase SX

- Set to Asio mLAN
- Auto Monitor set to Tapemachine Style
6. That you have configured Device Setup as follows:
    - VST Inputs: Ports 1 to 6 set to Visible
    - VST Outputs: Ports 1 to 6 and 17&18 set to Visible

In the beginning...
Begin by setting the 01x Auto Connector to the following:
1. PC -> 01x: 4
2. PC <- 01x: 2
3. MONITOR 17-18 OFF

Note: These are the minimum values that can be set in the Auto Connector. I personally would like to have the ability to send only 2 channels from the PC -> 01x. Also, the symbol PC <- 01x should really read 01x -> PC (this would make it a lot clearer and easier to understand).

To The Source...
Settings on the 01X (page 20, The 01x Installation Guide)

From 01X to PC	.....	Determines the number of mLAN audio transmission channels from the 01X to the computer.
From PC to 01X	.....	Determines the number of mLAN audio transmission channels from the computer to the 01X.

Note: It might help you to **mentally** replace the word PC with your DAW software. In this situation PC = Cubase SX.

So:
1. Cubase SX -> 01x: 4
2. Cubase SX <- 01x: 2 (or 01x -> Cubase SX: 2

Setting input and output levels (on the 01x)
1. Start your audio source
2. Raise the CH1 & CH2 faders to 0db
3. Raise the Stereo Master fader to 10
4. Adjust the MONITOR/PHONES knob to your listening preference

Note: If you are using a stereo input source you can (and should) pan CH1 & CH2 "hard left & hard right" to hear the proper stereo image.

A Word About Patching...
For my purposes, I used the demo songs on my RD-700 input to channels 1&2 on the 01x (but you are welcome to use whatever input source you prefer). However, I suggest using channels 1&2 as your

inputs on the 01x as these are the ones used throughout this guide.

Also, as I had to use inputs 3&4 on the 01x (as inputs 1&2 are XLR connectors and my RD-700 uses ¼" connectors), I "patched" inputs 3&4 to 1&2 on the 01x. See Getting Started (page 61) and Input patch Reference (page 88) in the 01x Owner's Manual to see how this done.

Back to work...
At this point, you should be hearing the audio input and output from the INTERNAL mode of the 01x. In INTERNAL mode, you are using the 01x as if it were a stand-alone analog/digital mixer. This is **not** the same as using the 01x in REMOTE mode, as we shall see later on in this guide.

In INTERNAL mode, when you raise the CH1 & CH2 faders, you are adjusting the input signal of your audio source coming **into** the 01x mixer. Then, when you raise the Master (STEREO) fader, you are adjusting the output signal coming **from** the 01x (along with the MONITOR/PHONES knob) as it travels on its way to your monitor speakers.

Note: See page 17 in the 01x Owner's Manual for a fuller explanation of this process.

Now, while your audio source is playing, launch Cubase SX. Looking at the Transport Bar, what do you see? Depending on how Cubase SX is configured, you should see levels on the Audio Activity section of the Cubase SX Transport Bar (more specifically the Input Channels section).

Note: If you do not see activity here, ensure that you have your Device Setup configured properly in Cubase SX.

Press F4 to display the VST Connections dialog box. Click on the Inputs tab and remove any inputs listed here. Do the same for the Outputs tab. Then close the VST Connections dialog box. Now look again at the levels on the Audio Activity section of the Transport bar. What do you see? Nothing! So, what has just happened?

Note: If the level meters appear to be "stuck", press F2 twice to remove and reload the Transport Bar.

Observe: You have just disabled any audio coming **from** the 01x on its way to Cubase SX. Again, though you are **still** hearing audio (because of the INTERNAL mode of the 01x), the connection **between** the 01x and Cubase SX has been disconnected.

Remember: In the Auto Connector, the setting PC <- 01x was set to 2. These are the 2 output channels (more specifically, the two mLAN output channels) coming **from** the 01x **to** the PC. Also, you should notice that this setting has had NO effect on the audio going in and out of the INTERNAL mode setting of the 01X. This should be obvious in that there has been no change in the actual audio signal you are hearing while making these changes within Cubase SX.

IMPORTANT: Only Cubase SX has been affected here! Though this point may seem unimportant, **it is still nonetheless important**, so please make note of it.

Back to work...
Press F4 again to display the VST Connections dialog box. Click on the Inputs tab and create a new Stereo Input Bus. Call it Stereo mLAN In 1/2. Now, assign Device Ports mLAN 01 & mLAN 02 to this bus.

Note: These Device Ports should be assigned to this bus by default (if Device Setup has been configured properly). Also, these are the default names for the mLAN inputs. If you have renamed your input and output ports to meet your specific needs, then you need to take this into consideration.

Back to work...
Looking again at the Audio Activity section of the Transport bar you should now see levels appearing.

Note: There are no outputs assigned here at this time, just inputs so far. I mention this just for completeness.

Now, assign Device Ports mLAN 03 & mLAN 04 to this input bus. What has happened to the input levels? They have stopped again. Why? There are only 2 outputs coming **from** the 01x **to** the PC. These outputs are numbered 1&2. In order for Device Ports 3&4 to be used we would need to configure 2 more mLAN channels in the Auto Connector.

Before you proceed, stop your audio source.

A Word About Direct Out
To assist you in understanding the IN's & OUT's of the 01x, a word about "Direct Out" might be in order here. To begin with, there is a point within the configuration of the 01x where you can send audio signals to a Direct Out. What is a Direct Out exactly? First, it is an mLAN channel. Second, a Direct Out is where an audio signal is sent to your DAW software (in this case, Cubase SX) to be recorded or processed. The Direct Out is then assigned (or connected) to a track in your DAW. The Direct Outs are referred to as mLAN 1 through mLAN 24 within your DAW software. This point is very important, so please remember it.

Question: Are the Direct Outs processed or non-processed? That is, do they by-pass the internal architecture of the 01x or does the 01x process the signal on its way out of the 01x?
Answer: The Direct Outs provide an unprocessed signal on its way to the DAW.

Please note: Though you **could** adjust various parameters on the 01x (EQ, effects, etc) these adjustments would have no actual effect on the signal entering Cubase SX. Regardless of what you do with the 01x, the signal entering Cubase SX is a "dry, unprocessed" signal.
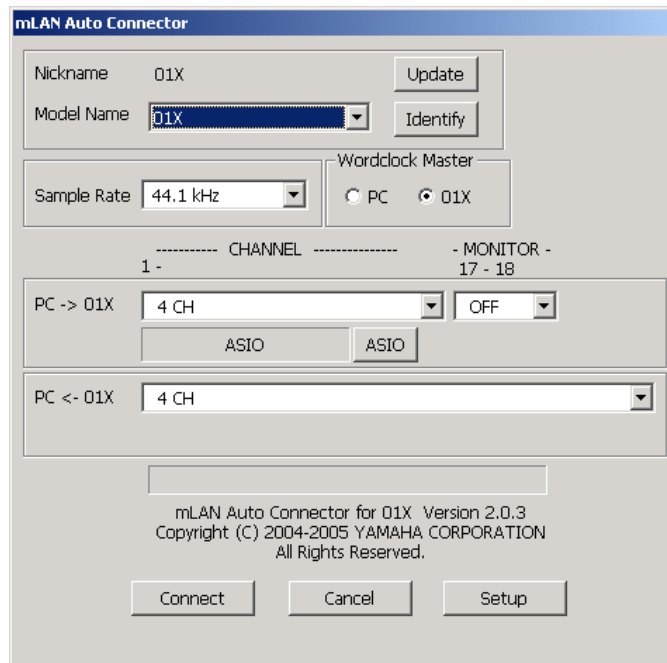
Is it 24, or is it 16?
So where do we get 24 mLAN channels from when you actually only see 16 mLAN channels? Well, on the 01x the first 8 channels are referred to as analog inputs (and are designated as CH1 to CH8). Next, we have 16 channels that are designated as mLAN1 to mLAN16. However, when you are referring to the Direct Outs that are sent to your DAW, these channels all travel via mLAN to the DAW and are referred to as mLAN1 through mLAN24 (our 8 analog channels PLUS the 16 mLAN channels). Your DAW therefore, sees ALL the outputs (as Direct Outs) as mLAN 1 through mLAN 24.
The same would be true for the inputs coming from the DAW to the 01x. In this situation though, we have **no** analogue outputs going to the 01x; they are all mLAN channels. Make sure you understand this aspect before continuing.

Remember: The Direct Outs that are sent (via mLAN) to your DAW are referred to as mLAN channels and are number mLAN1 through mLAN24

Setting input and output levels (on the 01x) - Continued...
To prove a point here, exit Cubase SX (do not save anything if it asks you). Launch the Auto Connector and configure it as follows:
1. PC -> 01x: 4
2. PC <- 01x: 4
3. MONITOR 17-18 OFF

Remember: Click the Connect button to enable these settings. Also, connect or re-route (i.e patch) your audio source to CH3 & CH4 on the 01x.

Back to work...
Re-launch Cubase SX and press F4 to display the VST Connections dialog box. Select the Inputs tab and assign Device Ports mLAN 03 & mLAN 04 to this bus. Start your audio source. Now what do you see? There are levels now on the Audio Activity section of the Cubase SX Transport Bar. Why? Because you just configured these outputs on the 01x (as PC <- 01x: 4)! Still not convinced? Set the Device Ports to any mLAN port other than ports 1 to 4. What happens? No levels! (This would be the same as using the Not Connected Device Port settings within Cubase SX.) Go back and reset the Device Ports back to mLAN 1 & mLAN 2. Press F4 to close the VST Connections dialog box. Exit from Cubase SX and stop your audio source.

Summary
What have you just discovered here? You have discovered that you can use the 01x as a stand-alone analog/digital mixer. (By this, it is meant that you can use the 01x as a mixer without having to connect it to a computer.) You have also discovered that in order to get input signals into the PC (from the 01x), you need to configure these channels in the Auto Connector.

And Remember: These channels are mLAN channels coming **from and returning to** the 01x (from your DAW software.)

Determining the number of channels
The number of channels you would configure in the Auto Connector would be dependent on how many outputs you would need to send to the PC from the 01x.

Note: Keep in mind that only an even number of channels can be sent to and from the 01x. For example, if you needed only 5 inputs, you would still be sending 6 channels from the 01x to the PC. This is because the Auto Connector only allows for an even number of channels to be sent (in multiples of 2) to and from the 01x. However, not to worry, you can still configure these channels to be either mono channels or stereo channels within Cubase SX.

A word about the Auto Connector
The Auto Connector setting here determines the number of channels going **to** (and **from**) the PC and the 01x. Very simply, you need to ensure that the numbers of input channels that you will be requiring (in Cubase SX) are equal to (or greater than) the number of channels going to the PC from the 01x.

So, for example, if you have a band with 4 performers, you would require 4 channels coming from the 01x to the PC. The number of output channels would also be dependent on how you would be configuring Cubase SX. Therefore, the number of channels sent **to** Cubase SX does not have to equal the number of channels sent **from** Cubase SX.

Output configuration
Before we continue, reset the Auto Connector to 2 channels from PC <- 01x and re-route or patch the audio source back to channels 1&2. Then re-launch Cubase SX.

Press F4 to display the VST Connections dialog box. Click on the Inputs tab and remove any inputs listed here. Do the same for the Outputs tab. Next, create a Stereo Input Bus and call it Stereo mLAN In 1/2. Assign mLAN 01 & mLAN 02 to this bus. Close the VST Connections dialog box. Starting your audio source, you should again see levels on the Transport Bar.

Now, create a new empty project and create a new stereo audio track.

Observe: Notice that the Monitor button (in Cubase SX) is enabled. If it is not, then enable it.
At this point you **should** be seeing activity in the Output Channel section of the Transport Bar. But you are **not**! Why?

Press F4 to display the VST Connections dialog box and select the Output tab.

Observe: No outputs! (You deleted these earlier.)

Create a Stereo Output Bus and call it Stereo mLAN Out 1/2. Assign mLAN 01 & mLAN 02 to this bus. Close the VST Connections dialog box. Now, assign the audio track you just created to this new output bus.

Observe: Notice that when you first created the project, that the Output bus assignment initially said "**No Bus**". Why? When the project was first created there was no output bus available. With no output bus available at the time the project was created, the track will default to "no bus". On the other hand however, if both input and output buses exist at the time the project was created, the project would

use those buses. Therefore, Cubase SX will "default" to using whatever input and output busses exist at the time the project was initially created. <u>This is an important point to remember, so make note of it.</u>

You should now see levels on the Audio Activity section of the Transport Bar (and more specifically the Output Channels section). Why? <u>Because you now have an output bus to send your audio signal to!</u> It is very important that you understand what is taking place up to this point!

Now, disable the Monitor button (in Cubase SX). What happens? If you are observant, you should have noticed that the output on the Output Channels section stopped. Even though you are not hearing any difference in the actual audio signal, <u>there is some kind of activity going on within Cubase SX.</u>

Toggle the Monitor button (ON & OFF) and verify the effect that it has on the Output Channel of the Audio Activity section of the Transport Bar. What is your observation?

Ask yourself this question: "Though I have created an output bus in Cubase SX, where is this bus going to?" Answer: It is going to mLAN out 1&2! However you are not actually **hearing** that output yet. To hear the actual output (going to the 01x via mLAN from Cubase SX) you need to do the following:

First, make sure the Monitor button is enabled. Next, press the Bank UP button on the 01x. (This should take you to the first bank of mLAN channels: mL1-mL8.)

Note: I would like to use the word "**reflect**" here as it just may make more sense. Up to now, the settings between the 01x and Cubase SX have **not** reflected each other (in that you have not heard any audible changes in the actual audio signal between these two devices.)

Raise the mL1 & mL2 faders to 0db. What happens? You should hear the output now (i.e. the output from Cubase SX being sent to the input of the 01x). **Or do you?** Turn the Monitor button OFF. If you are observant, you **will** hear a slight change in the audio output when the Monitor button is toggled ON and OFF. <u>Why is this?</u> Well, you are hearing both the original input signal (to the 01x) and the output signal (sent to the 01x from Cubase SX) <u>at same time</u> (depending on whether the Monitor button is ON or OFF). Not convinced? Then try the following:

With the Monitor button disabled, press the Bank DOWN button and lower the CH1 & CH2 faders. What happened? You have lost your audio signal and more specifically, the original audio input signal that is coming from your audio source **into** the 01x. Enabling the Monitor button allows you to hear the output (or input) again.

Note: This is the original audio signal that was sent via mLAN to Cubase SX and is now being returned via mLAN to the 01x again.

Analogue and Digital
It may help to look at this scenario from the analogue and digital perspectives. The original audio signal would be the "analogue signal" and the mLAN signal would be the digital signal. Analogue uses analogue-type cables, etc, whereas digital uses digital cables. Therefore, the RD-700 (or any "analogue source" connected to the regular inputs on the 01x, would be the analogue inputs (as the name suggests.) The connections between the 01x and the DAW are our digital signals. Think of "the analogue pathway" and "the digital pathway" between the 01x and the DAW. The only exception to this scenario would be if you used the SP/DIF connections on the 01x (as these are considered digital connections.)

So...

Monitor OFF - CH1&2 set to infinity: **No audio**	OR	Monitor OFF - CH1&2 set to 0db: **Audio**
Monitor ON - mL1&2 set to 0db: **Audio**		Monitor ON - mL1&2 set to infinity: **No audio**

Also, while you are toggling the Monitor button ON and OFF, notice the levels on the Audio Activity section of the Transport Bar (and more specifically the Output Channels section). These should toggle on and off as well (as you noticed earlier).

Before continuing, stop your audio source.

Observe: Think about all that is going here. With the Monitor button **disabled**, you do not hear any output as you have lowered the faders (on the 01x) that were controlling the input levels coming from your audio source **into** the 01x. With the Monitor button **enabled**, you hear the output from Cubase SX (via mLAN 1&2.)

If we were to map out the **audio path** at this point, you **should** have the following:
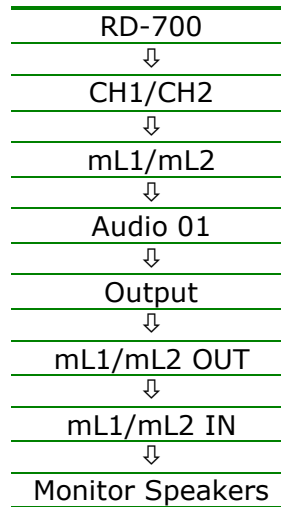
Audio Source	→	01x (via CH 1&2)
01x	→	Cubase (via mLAN In 1&2)
Cubase	→	01x (via mLAN Out 1&2)

Note: Another **possible** way of looking at this is that, in actuality, you are <u>monitoring the output signal as it leaves Cubase SX</u>. More on this later.

Remember:
1. The output of your audio source is connected to inputs 1&2 on the 01x. These are the analogue channels 1&2 on the 01x. So, channels 1&2 will control the input levels of these 2 channels (as we are using a stereo input device for our audio source).
2. These 2 input channels are routed to 2 mLAN output channels (namely, mL1 & mL2) on the 01x.
3. The 2 mLAN output channels are, in turn, connected to a stereo audio channel in Cubase SX (in this case, the Audio 01 channel).
4. This channel is then routed to the Cubase SX Output channel, which is bused out to 2 mLAN output ports (namely mL1 & mL2).
5. These 2 mLAN channels are sent to 2 mLAN input channels on the 01x (namely inputs mL1 and mL2).

So………

RD-700
⇩
CH1/CH2
⇩
mL1/mL2
⇩
Audio 01
⇩
Output
⇩
mL1/mL2 OUT
⇩
mL1/mL2 IN
⇩
Monitor Speakers

Remember: The purpose of the Monitor button is to enable you to Monitor the OUTPUT within Cubase SX. Again, more on this later.

Back to work...
Now let us try something else. Start your audio source and disable the Monitor button (if it is not already disabled). Press the Bank UP button on the 01x and Lower the mL1 & mL2 faders. Raise the mL3 & mL4 faders to 0db. Anything happen? Not yet! Why? Because you have no outputs assigned to those mLAN Device Ports (i.e. mLAN 03 & mLAN 04).

Press F4 to display the VST Connections dialog box and select the Outputs tab. Assign mLAN 03 & mLAN 04 to this bus. Close the VST Connections dialog box. Now, click on the Monitor button. What happens? You hear output again as well as seeing levels on the Output Channels section. Why? You have just assigned these buses to the mLAN outputs 3&4 <u>going to the 01x</u>.

Note: Think of the Monitor button in Cubase SX as an ON/OFF switch for the output as it leaves Cubase SX. Remember though, that to be able to actually **hear** this output, you need to raise the corresponding mLAN faders on the 01x <u>to hear it</u>.

Before continuing with the next section, stop you audio source.

Maybe, just a bit confusing here...
In Device Setup you configured the VST Inputs, with Ports 1 to 6 set to Visible and the VST Outputs, with Ports 1 to 6 and 17/18 set to Visible. It is very important that you see just how these **in's and out's** - <u>actually go in and out of the 01x and the DAW software application you are using</u>. At first, this might **appear** to be a bit confusing!

In Device Setup, when you initially configured the VST Inputs and VST Outputs, you should understand that these will be the input and output connections that you will see when you are assigning ports to the various input and output buses you create in Cubase SX. A question that might be asked now is, "Are these connections really inputs and outputs or are they the other way around?"

For example, in the VST Connections - Outputs dialogue box, when you create an output bus and assign this bus to the available device ports, these ports are actually inputs **to** the 01x. Think of it this way: "I am assigning the outputs in Cubase SX to the mLAN inputs of the 01x." Therefore, when setting up input buses in the VST Connections - Inputs dialogue box, you are, **in actuality** assigning inputs in Cubase SX to outputs of the 01x (or outputs of the 01x to inputs in Cubase SX! Boy, I sure hope that all of this makes sense?)
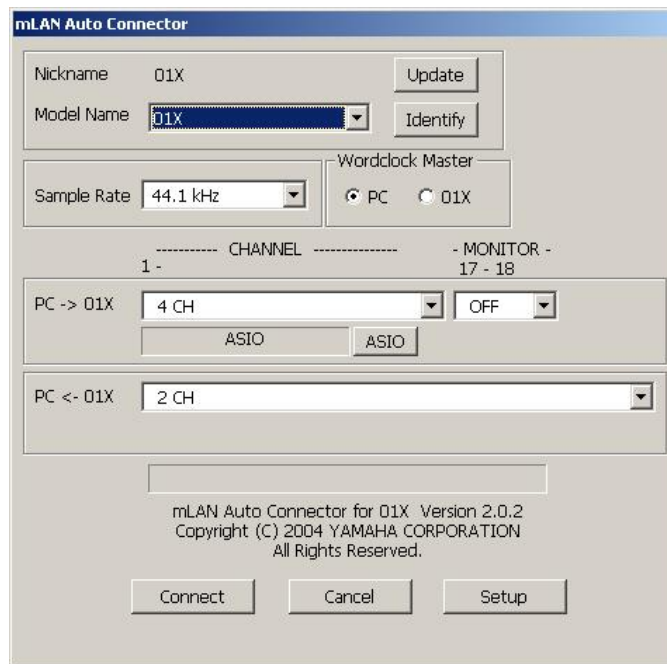
Note: It all depends on where it (i.e. the signal) comes from!

Think: SIGNAL FIRST!
- By this, it might be a good idea to THINK "Output THEN Input"! What do you think?

Observe: The settings on the 01x Auto Connector are set to the following:
1. PC -> 01x: 4
2. PC <- 01x: 2
3. MONITOR 17-18 OFF

This configuration is telling you that you have 4 outputs coming **from** Cubase SX **to** the 01x. In this situation, these would be mLAN IN 1,2,3 & 4 on the 01x. On the other hand, you have 2 inputs going **to** Cubase SX **from** the 01x and in this situation would be mLAN OUT 1&2.

Note: Spend as much time as you need to on this one as it should help you to "get a handle" on the in's & out's of this wonderful tool!

Remember: Think: SIGNAL FIRST!

Observation
Up to now, the faders on the 01x have had no effect on the input or output levels going into Cubase SX. There is a very good reason for this, which will be answered a little later on in this guide.

Back to Cubase SX…
…look at the Transport Bar again, and more specifically, the Level Control for the audio output channel. This level control adjusts the level of the audio output channel 1 in Cubase SX. This Level Control is the same as the Stereo mLAN Out 1/2 you created earlier in the VST Connections Outputs. Start your audio source and adjust this control with your mouse and notice the effect it has on the signal. What would you say? Like the Master (STEREO) fader on the 01x, it adjusts the output coming out of Cubase SX. Just make a note of this at this time. We will look more at this later.

Summary

So, what have you just discovered here? You have discovered that you can assign outputs from Cubase SX to the 01x allowing you to control the levels using the 01x faders (via mLAN 1&2). You have also found out how to assign different outputs (in Cubase SX) to the inputs on the 01x. Lastly, you have seen how to control the output from Cubase SX using the Output Level adjustment on the Transport Bar.

Back to work...

Press F4 to display the VST Connections dialog box and select the Outputs tab. Re-assign mLAN 01 & mLAN 02 to this bus.

Note: You should have lost your audio signal again here and **more specifically** the mLAN signal coming **from** Cubase SX.

Stop your audio source. Close the VST Connections dialog box and disable the Monitor button. Lower the mL3 & mL4 faders on the 01x. Press the Bank DOWN button on the 01x and raise the CH1 & CH2 faders to 0db. Save the project as Project 1.

Controlling the Levels in Cubase SX

All of the things that you have done so far have had no effect on the actual signal entering Cubase SX. A question might be asked: "How can I control the input levels going into Cubase SX from the 01x?" Maybe another (or better) way to say this is, "How can I configure Cubase SX so that the settings on the 01x **are reflected** in Cubase SX (or vice-versa)?"

To verify that the faders on the 01x have no effect on the input levels going into Cubase SX, perform the following: first, start your audio source. Now, raise and lower the CH1 & CH2 faders on the 01x while watching the Audio Activity Input Channel level meters. Did they move along with, or reflect the movement of the 01x faders? They do not. If the faders on the 01x **did** reflect the input going into Cubase SX, then you **would** see a change in the level meters. But you are not! Why? Really think about this one for a moment. So, before you continue, stop your audio source.

Earlier I noted that the 01x could be used as a stand-alone analog/digital mixer. Well, this is how it is functioning at present. This is referred to as the INTERNAL mode of the 01x. In order for the 01x to control the levels within Cubase SX, it must be configured to "control" it. This is called "Remote Control".

The Cubase SX Mixer

Before we get to the Remote Control functions of the 01x, I would like to spend a moment or two on the Cubase SX Mixer.

So, with Cubase SX launched and Project 1 open, press F3 to display the Mixer window. Adjust the Project Window, the Mixer and the Transport Bar so that all 3 items are nicely arranged (and visible). Save the project as Project 2.

Disable the Monitor button (if it is not already disabled) and start your audio source. Notice the levels on the Input channel in the Mixer (the one that says Stereo mLAN In 1/2). Using the mouse, raise and lower the Input Channel fader. What happens? You should see the level meters correspond to the fader setting within Cubase SX.

So, just what is happening here? The Input Channel fader is controlling the input level within Cubase SX. However, these changes are not being reflected on the 01x in that you are not hearing the actual changes in the audio signal. Stop your audio source.

Please note: Changes are still going on within Cubase SX however, whether you are hearing them or not.

Note: To really understand **why** you are not hearing these changes in the audio signal, you need to understand that it is because of the 01x's INTERNAL mode. This should become evident later. Also, it is worth noting that there is no **link** between the 01x and Cubase SX at this time! This link would be the mLAN link between the 01x and Cubase SX.

The Input Bus

In Cubase SX, the Input channel adjusts the input signal coming from the hardware source (our input source, in this case, the RD-700). Only Cubase SX has this Input channel (therefore, this feature is not available in Cubase SL).

To The Source…
For more information on the Input Bus as it pertains to Cubase SX, see pages 52 and 53, "Setting Input Levels" in the Cubase SX/SL Operation Manual.

Note: I personally prefer to "hide" the Input channel initially. To do this, see page 2-23 in the Cubase SX/SL Operation Manual.
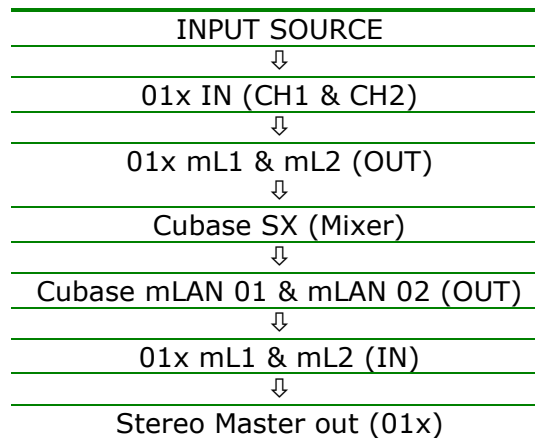
Back to work…
Now, start your audio source and enable the Monitor button. What happens? You see levels on the Audio 01 channel meters and the Output level meters. Again, using the mouse, raise and lower the Output Channel fader (the one that says Stereo mLAN Out 1/2). You should see the level meters reflect the fader settings within Cubase SX. As with the Input Channel, you are not actually "hearing" the changes yet. To hear these changes within Cubase SX, you will need to do the following:

On the 01x, lower the CH1 & CH2 faders. Press the Bank UP button and raise the mL1 & mL2 faders to 0db. You should hear output again. Now, raise and lower the Output channel fader (in Cubase SX). What happens? The output level also changes.

Notice also that when you enabled the Monitor button, that levels were showing on the Audio 01 channel in the Mixer. This is the audio channel that is controlling the Input signal going to the Cubase SX Mixer. Adjusting this fader also affects the Output level meters as well (and indeed it should)! Make sure you understand all that is going on here. Before continuing, stop your audio source.

If I were to "map out" the signal path between the 01x and Cubase SX, it might look something like this:

INPUT SOURCE
⇓
01x IN (CH1 & CH2)
⇓
01x mL1 & mL2 (OUT)
⇓
Cubase SX (Mixer)
⇓
Cubase mLAN 01 & mLAN 02 (OUT)
⇓
01x mL1 & mL2 (IN)
⇓
Stereo Master out (01x)

Does this all make sense? I hope so?

Now press the REMOTE button on the 01x. Looking to the left of the 01x display screen it should read:

<div align="center">

Pan
Audi01

</div>

Observe: When you pressed the REMOTE button on the 01x, did you notice the CH2 fader on the 01x move? You should have. Why? As a control surface, the 01x mixer settings should **reflect** the Cubase SX Mixer settings. As there is only one channel being used in the Cubase SX Mixer, there will be only one fader used on the 01x. Though the 01x required 2 channels to handle the stereo inputs, Cubase SX required only 1 channel. On the 01x, each channel is a MONO channel, while in Cubase SX, the channels can be configured as **either** mono or stereo channels (and, need I say, even more types than these)! In this case here, Cubase SX has configured a single channel strip, as a stereo channel - so only 1 channel strip is required.

Back to work…
Now, starting your audio source again, adjust the CH1 fader on the 01x. What happens? The fader now controls the fader within Cubase SX. Another way to say this is: "The **physical fader** on the 01x is controlling the **software fader** within Cubase SX." However you say it, the 01x is now remote controlling Cubase SX (with the 01x operating as a control surface). Adjusting the Master (STEREO) fader on the 01x now controls the Output fader within Cubase SX. Watch the level meters in Cubase SX to verify this. Also notice that the CH1 fader affects both the input and output signal, where the Master fader only affects the output signal. Make sure you understand this section before proceeding. Stop your audio source and save the project as Project 3.

Note: We have the mL1 and ML2 faders raised so that we can hear the output of our source (as it makes its way through Cubase SX on its way to the 01x). These mLAN channels are the input channels sent from Cubase SX to the 01x. This point is very important to note here, especially if you were to stop her and return to the guide later on. You must remember that you have no input levels configured here - just outputs. If you want to hear the input source, you will need to adjust the CH1 & CH2 faders accordingly (actually, the mL1 & mL2 faders.) <u>You need to make note of this.</u>

Recording Without Remote Control
Press the INTERNAL button on the 01x. For now, make sure that the Audio 01 channel and the Output channels (in Cubase SX) are all set at 0db in the Cubase SX Mixer (CTRL-Clicking each fader is a quick way of doing this). Start your audio source and click the Record button on the Transport Bar. You should see input being recorded in the event display in the Project window.

Now adjust the Audio 01 Channel fader (in Cubase SX). What happens? You should have heard the output change. However, the fader movement it has had no effect on the actual recorded signal. Why? Stop the recording and then stop your audio source.

Note: When I first came across this "phenomenon" I was surprised! Why did the fader movement (within Cubase SX) not affect the recorded signal? I thought that it should have. If I had to take an "uneducated" guess, I would say that the folks at Steinberg wanted the recorded signal to be left **unaltered** (probably for further processing. This also "fits" the cardinal rule of only recording "dry" then "processing" that signal later on.)

To The Source...
There is an information section in the Cubase SX/SL 3 Getting Started guide (pages 60 and 61) entitled "Audio terminology" that provides a possible answer why Steinberg prefers to leave the original recorded audio event left unaltered. I will not delve into this topic in this guide, so I will ask you to look this one up on your own.

To verify that the fader (while recording) has had no effect on the recorded signal, play back the track. Though you were moving the fader during recording, it did not affect, nor was it reflected, in the recorded signal at all.

Delete the event, start your audio source, and record the event again. This time use the Master output fader, adjusting the level with the fader. Did it affect the recorded signal? Not at all! (The same as it did with the Audio 01 channel Fader.)

One last time! Stop recording, delete the event and record it again, this time using the Input fader. What happens? Adjusting the Input Fader **does** affect the recorded signal going into Cubase SX (as seen in the recorded event)! Stop recording and stop your audio source. Playback the event to verify the changes the Input 01 channel fader had on the recorded event. Stop playback.

Notes:
1. You can only adjust the Input fader <u>if it is not hidden</u> (as I did recommend that it be hidden earlier on in this guide.)
2. This affect on the recorded signal is regardless of the VU-Meter Settings in Cubase SX. Notice though, that the meter Input setting affects the output but not the level meters (though, it does affect the Audio and Master levels). The Meter Post-Fader affects ALL level meters. Why? It has to do with Pre & Post fader settings, which I am not interested in here at this point.

Personal note: As I mentioned earlier, I prefer to "hide" the input channel within Cubase SX. Maybe the input channel may come in handy when using **only** the Cubase SX Mixer. But if using a control surface (like the 01x), this input setting is (and should be) handled by the control surface. This is a purely personal matter, and you should note it accordingly.

To The Source...
For a further explanation of the VU-Meter Settings (i.e. the Meter Input or Meter Post-Fader) see Page 111, Cubase 3 SX/SL Getting Started, points #2 and #3).

Recording With Remote Control
Let us now do some recording using the Remote Control features of the 01x. First, enable Remote Control mode on the 01x. Next, delete any recorded events you may have. Start your audio source and press the record button (this time, on the 01x). Adjust the CH1 and MASTER faders while you record the event.

Observe: Other than using the 01x faders and transport buttons to control Cubase SX, all should be as before.

Note: There is **no** remote control setting for the Input channel in Cubase SX. (Maybe another "good" reason to hide this channel!)

Stop recording, stop your audio source and playback the event. What is your observation? It should be identical to recording **without** remote control. As before, the movement of the faders on the 01x have had no effect on the actual recorded signal within Cubase SX. However, then 01x is now working as a true "control surface", controlling the fader movements (and much more) within Cubase SX.

However, because the 01x **is** controlling the fader movements within Cubase SX, adjusting the CH1 fader on the 01x **does** affect the output of the signal (as it would in Cubase SX). Playback the recorded track and raise and lower the CH1 fader and notice the effect it has on the Audio 01 and the Output level meters. However, looking at the recorded event in the Event Window, you will notice that there are no changes in the actual recorded event. Again, it is important that you understand what is happening here before continuing. Stop playback and save the project as Project 4.

Adding more channels
Thus far you have recorded events using only channels 1&2 on the 01x. What would you do if you needed to add another Stereo track and thus more channels? How would you go about doing this?

Note: You have done this before, so it should not be too difficult. Try to map this out in your own head before looking at the following procedure.

The Procedure
You need to exit Cubase SX and reconfigure the Auto Connector to enable 4 channels from the PC <- 01x. It might help you to see that in the default configuration of the 01x, there is a 1-to-1 relationship between the input channels on the 01x and the mLAN output channels going into Cubase SX. Therefore, by adding another 2 channels in the Auto Connector, you are, **in actuality**, adding channels 3&4 (or mLAN 3&4) going into Cubase SX. Test this for yourself by configuring the Auto Connector, then setting the input to mLAN 3&4, then recording on those buses. You will do this next.

What might be helpful here is a step-by-step procedure for adding more buses when they are required. So here it is:

1. Reconfigure the Auto Connector to be equal to or greater than the number of channels required.
2. Create an input and an output bus in Cubase SX to match the inputs and outputs.
3. Add an audio track to either monitor or record any events you need to monitor or record.
4. Set the audio track to the correct buses.

Back to work...
So, let us have a bit of fun with this setup. Launch Cubase SX and create a new blank project. Open the Mixer and adjust the windows as necessary. Press F4 to display the VST Connections dialog box. Click on the Inputs tab and remove any inputs listed here. Do the same for the Outputs tab. Select the Inputs tab and create 2 new stereo buses. Call them Stereo mLAN In 1/2 and Stereo mLAN In 3/4 respectively. Do the same for the Outputs tab (using "Out" instead of "In"). Assign mLAN 01 & mLAN 02 to the 1&2 input and output buses and mLAN 03 and mLAN 04 to the 3&4 input and output buses. Close the VST Connections dialog box. Press the INTERNAL button on the 01x and raise the mL1 to mL4 faders to 0db. Finally, press the REMOTE button again.

Here are the input and output port assignments:

Inputs	Ports
Stereo mLAN In 1/2	mLAN 01 & mLAN 02
Stereo mLAN In 3/4	mLAN 03 & mLAN 04

Outputs	Ports
Stereo mLAN Out 1/2	mLAN 01 & mLAN 02
Stereo mLAN Out 3/4	mLAN 03 & mLAN 04

Note: Make sure you route your audio source to the correct channels before recording.

Create 2 new audio tracks, the first track routed to input 1&2; the second track routed to input 3&4. Leave the outputs routed to Stereo mLAN 1&2 for now. Start your audio source and record an event

(approximately 30 seconds worth) on the first audio track. Stop recording. Lower the CH1 fader on the 01x.

Remember: You are in REMOTE mode here…so use the 01x to do this!

Next, record an event on the second audio track (again, approximately 30 seconds worth). Stop recording and stop your audio source.

Now, raise the CH1 fader on the 01x and playback the events. You are listening to the recorded events of audio tracks 1 and 2. Using the channel faders on the 01x, you can raise and lower the volume levels on each of the recorded tracks allowing you to listen to each of the tracks separately or together. (Much like you would in a "real" recording session!)

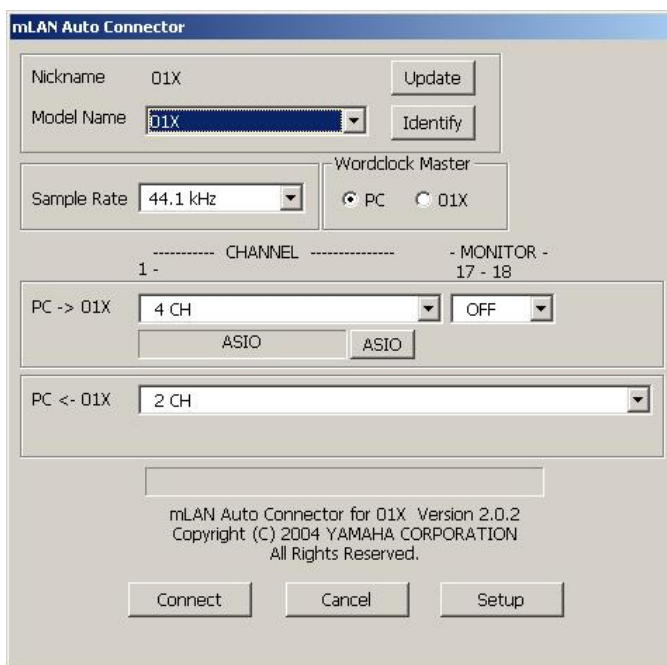Before continuing, stop playback.

Summary
We have covered a lot of ground here in this section and it is important that you absorb what you are learning here so that you are able to map out ahead of time what settings you will be require to perform a particular task using the 01x and Cubase SX.

In the next section, we are going to have a look at an interesting component of the 01x, the MONITOR A/B function. So before we begin, press the INTERNAL button on the 01x and save the project as Project 5. Exit Cubase SX and lower the channel faders mL1 to mL4 on the 01x. Finally, press the Bank DOWN button.
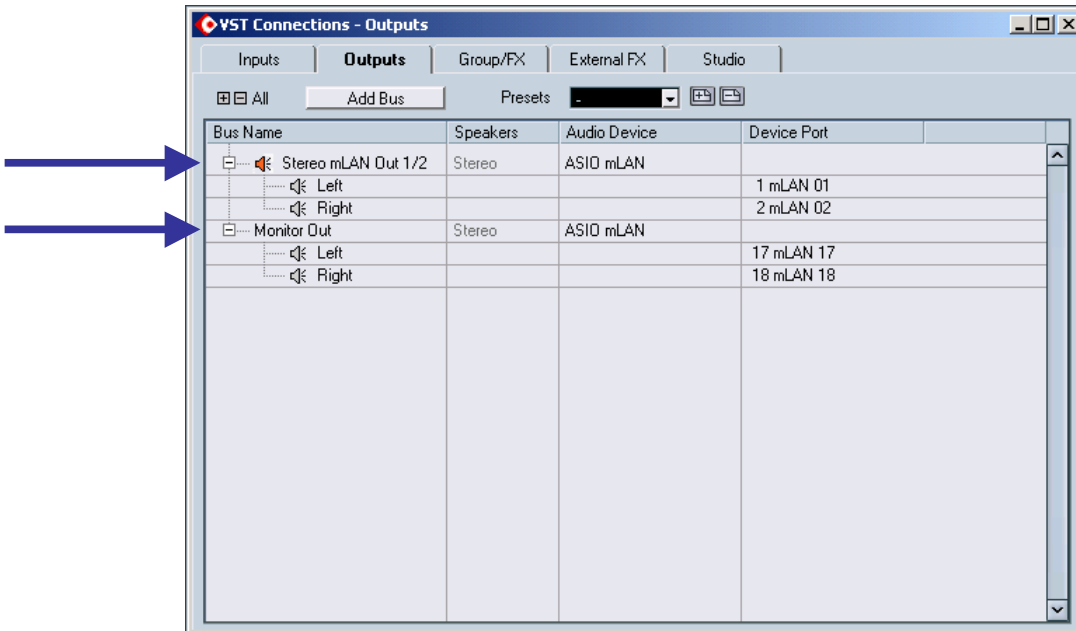
The MONITOR A/B function
Begin by setting the 01x Auto Connector to the following:
1. PC -> 01x: 4
2. PC <- 01x: 2
3. MONITOR 17-18 OFF

Back to work…
Launch Cubase SX. Press F4 to display the VST Connections dialog box. Click on the Inputs tab and remove any inputs listed here. Do the same for the Outputs tab. Select the Inputs tab and create a Stereo Input Bus called Stereo mLAN In 1/2. Assign mLAN 01 & mLAN 02 to this bus. Click on the Outputs tab and create 2 Stereo Output Buses: the first one called Stereo mLAN Out 1/2 and the second one called Monitor Out. Assign the first Stereo output bus to mLAN 1&2 and the second output bus to mLAN OUT 17+18. Close the VST Connections dialog box.

VST Connections - Outputs

| Inputs | **Outputs** | Group/FX | External FX | Studio |

⊞⊟ All   Add Bus   Presets ▾

Bus Name	Speakers	Audio Device	Device Port	
⊟ 🔊 Stereo mLAN Out 1/2	Stereo	ASIO mLAN		
🔊 Left			1 mLAN 01	
🔊 Right			2 mLAN 02	
⊟ Monitor Out	Stereo	ASIO mLAN		
🔊 Left			17 mLAN 17	
🔊 Right			18 mLAN 18	

Here is where the MONITOR A/B function comes into play. But first, a bit of ground work:
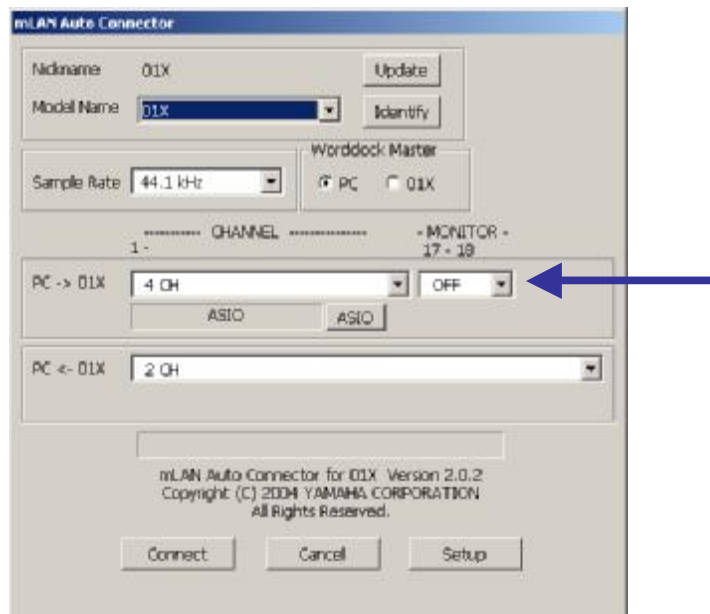
MONITOR A/B OFF:	You will hear the output from the 01x. In this way, you can use/control the output with the 01x faders (1/2 & Master outs) to control the outputs. Call this a "processed signal".
MONITOR A/B ON:	You hear the output directly from the DAW (through the 01x Monitor outs). Only the MONITOR/PHONES knob works here.

Note: This would be an unprocessed output (no processing is taking place within the 01x, other than controlling the output volume with the MONITOR/PHONES knob).

Back to work...
Create a new empty project and then create a new stereo audio track. The output should already be assigned to the Stereo mLAN Out 1/2 bus. Make sure that the MONITOR A/B button is off (i.e. it is not lit). Raise the CH1 & CH2 faders to 0db and start your audio source. Input and output is seen on the Audio Activity section of the Transport Bar. Now, lower the CH1 & CH2 faders.
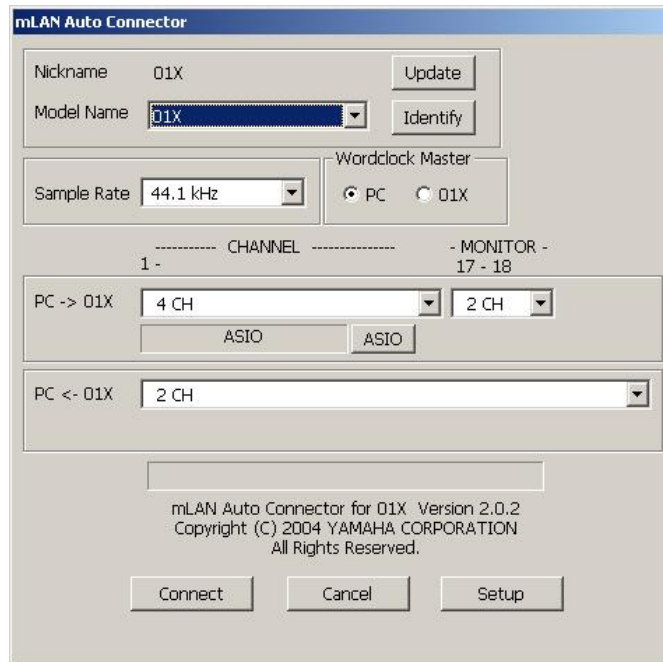
Now, assign the output to the Monitor Out bus. No change is heard. Now press the MONITOR A/B button (so it is lit.) Still no output is heard from the Monitor out bus. Also, there are no output levels showing on the Audio Activity section. Why? The Auto Connector setting is set to "Off" for Channels 17/18 (our MONITOR Out.) Thus, there is no monitoring of the 01x output.

mLAN Auto Connector

| Nickname | 01X | | Update |
| Model Name | 01X ▾ | | Identify |

Worddock Master
Sample Rate | 44.1 kHz ▾ | ◉ PC ○ 01X

··········· CHANNEL ···············   - MONITOR -
1 -   17 - 18

PC -> 01X | 4 CH ▾ | OFF ▾
   ASIO   ASIO

PC <- 01X | 2 CH ▾

mLAN Auto Connector for 01X Version 2.0.2
Copyright (C) 2004 YAMAHA CORPORATION
All Rights Reserved.

Connect   Cancel   Setup

Note: In the 01x <u>default configuration</u>, mLAN channels 17/18 are always output to MONITOR OUT regardless of how the Auto Connector is configured. However, on page 25 of the 01x Owner's Manual, it states that if the sample rate is set to 96kHz, then the MONITOR OUT is assigned to channels 9/10 respectively.

Back to work...
Stop your audio source and save the project as Project 6. Make sure that the MONITOR A/B button is off (i.e. it is not lit). Close Cubase SX and reset the Auto Connector for MONITOR 17-18 to 2 CH (i.e. ON).

Launch Cubase SX, open Project 6 and start your audio source. Enable the Cubase SX Monitor button. Now enable the 01x MONITOR A/B button. What has happened? With your audio source playing, you hear output from the Monitor outs! Also, when you now move the faders on the 01x, the faders on the 01x no longer function (in that no change in the audio is heard). <u>You are getting a straight-through (or direct-out) signal from the 01x.</u>

On the 01x, press the BANK UP button and raise the mL1 & mL2 faders to 0db. With this configuration, you can cycle between the Stereo Outs and Monitors outs via the MONITOR A/B button (as long as you switch between the different outs in Cubase SX and MONITOR A/B settings on the 01x).

Stop your audio source and close the current project. (Do not save the project if it asks you.)

For example:
MONITOR A/B OFF | Stereo mLAN Out ½ selected | mL1 & mL2 raised = Output
MONITOR A/B ON = No Output

MONITOR A/B ON | Monitor Out selected | mL1 & mL2 raised or lowered (does not matter) = Output
MONITOR A/B OFF = No Output

And now for some fun...
Here is something very interesting to try! Following this procedure will hopefully serve a two-fold purpose:

1. to clarify your understanding of the MONITOR A/B function and,
2. to show you the versatility of this function

Back to work...
First, disable the MONITOR A/B button. Create a new empty project and create 2 new audio tracks. Select the first audio track and make sure that it is assigned to Stereo mLAN In 1/2 and to Stereo mLAN Out 1/2. Select the second audio track and make sure that it is assigned to Stereo mLAN In 1/2 and to Monitor Out.

Note: To clearly understand how this function works, I recommend recording two completely different

events on each track. Make each event at least 1-2 minutes in duration. The reason for this will be apparent, as you shall soon see.

Now, start your 1st audio source and record the first event on Track 1. Stop the recording. Enable the MONITOR A/B button, select the second audio track, start your 2nd audio source and record the second event on it. Stop the recording and your audio source.

Now, you can use the MONITOR A/B button as a toggle between the 2 different recordings you just made. Playback the events and you should hear the event from track 1 with the MONITOR A/B OFF and you should hear the event from track 2 with the MONITOR A/B ON! Repeat the above process until you completely see and understand what is taking place here!

Stop playback and save the project as Project 7.

Remember:
With MONITOR A/B **OFF**, you are hearing the output from (or within) the 01x and can control the output with the 01x faders, etc. With MONITOR A/B **ON**, you are hearing the direct output from the DAW (through the 01x Monitor outs).

To The Source...
1. Signal flow between the 01x and the DAW on the computer (page 25, The 01x Owner's Manual)
You can monitor the output directly (monitor cascade) through the connected speaker system/headphones (according to the [MONITOR A/B] setting), if the stereo master output of the DAW is set to the last two available channels (the last two numbered channels specified with mLAN Auto Connector; refer to the separate Installation Guide).

2. MONITOR A/B (page 71, The 01x Owner's Manual)
Enable Monitor B. (Press the [MONITOR A/B] button so that the lamp is off.) This enables monitoring of the individual mLAN outputs from the DAW/computer. It also enables you to independently mix and process the individual DAW audio tracks from the 01X. Keep in mind that this monitor setting can be changed (page 96). The instructions here apply when the default setting is used.

A 50/50 Split!
The 01x forums (on 01Xray.com) recommend a setting of 63/63 for the MONITOR A/B function. At this point in my learning, I would prefer to leave it at the default setting. As with all learning, if I come across a practical and understandable reason for changing this default setting, I will make it available in this guide (as an updated version of it).

Closing Comments
What started out as just 2 pages has now grown to 17! I just had to make a decision at some point to complete this guide! As gleaning and learning progresses, I will provide either an Appendix to this guide or a complete revision of it.

I sincerely hope that this guide has been of benefit to you and that it has assisted you in "making some sense" out of these great tools.

Any comments or suggestions regarding this guide can be directed to me at:
dell@CustomerFirstComputing.com

Thank you, and happy recording & mixing!

Dell Krauchi
June 22, 2005