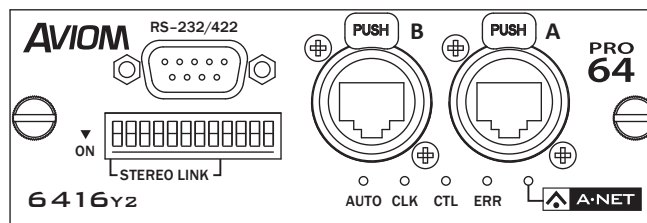


6416Y2 A-Net® Interface Card Quick Start

The 6416Y2 A-Net Interface Card is designed to be used with compatible Yamaha® digital products that support the MY expansion card format. This document shows suggested card setups that can be used as starting points when creating an audio network with Pro64® products. Refer to the documentation that shipped with the 6416Y2 card for additional configuration and system setup information.

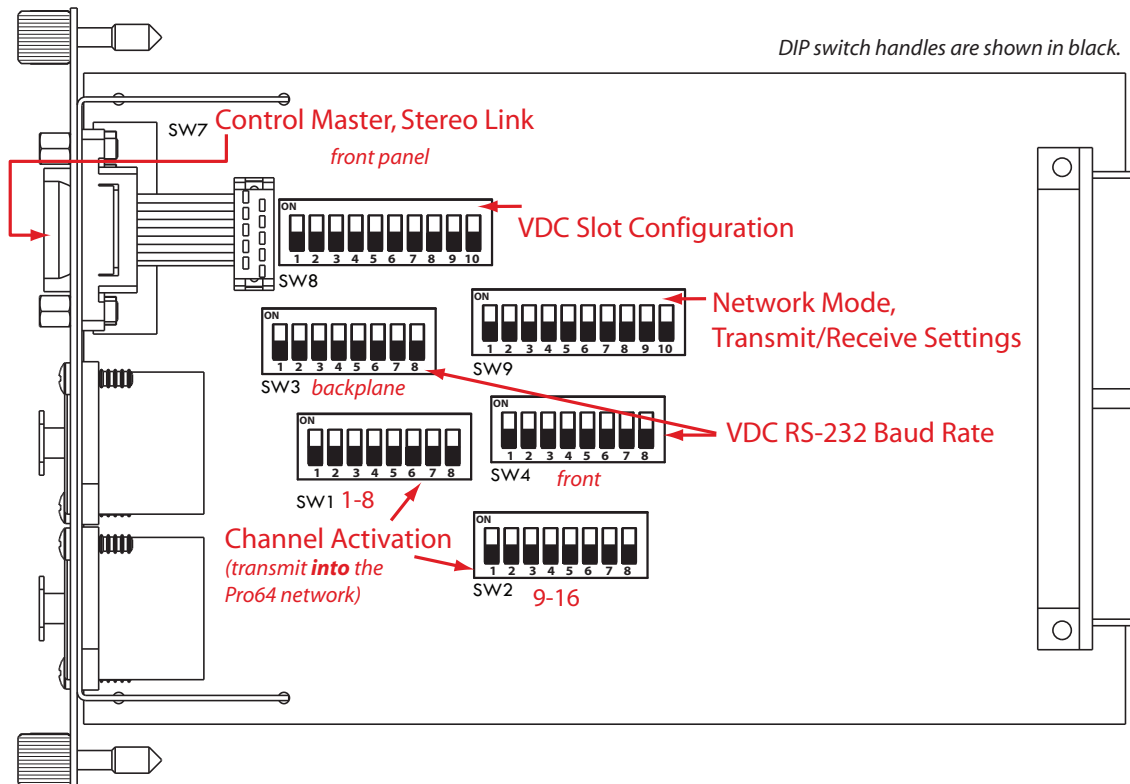
Card Configuration

The 6416Y2 card is configured with DIP switches; one block of switches is on the front panel with the remaining numbered DIP switch blocks located on the card's circuit board. The DIP switch blocks are labeled SW1-9.



Front view showing stereo link DIP switches, RS-232/422 jack, and Pro64 network connectivity

The diagram below details the functions of the card's various circuit board and front panel DIP switch blocks.



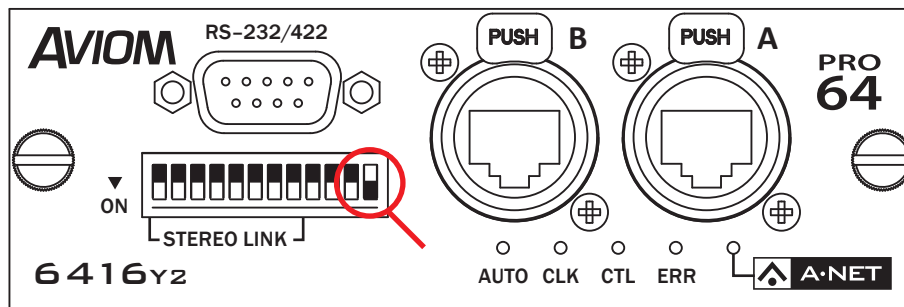
6416Y2 card showing the function of the various DIP switches

First Step: The Control Master

The first step in setting up a Pro64 network is to decide which Pro64 device will be the Control Master. A Pro64 network always has one Control Master and one Clock Master. The Control Master is in charge of network-wide settings, channel/Slot management, Virtual Data Cable allocation, error messaging, etc. The Clock Master controls the network sample rate and can allow the use of external clock sources if 6416dio Digital I/O Modules are part of the network. Any I/O device can be the Control Master, but only one Pro64 device may be in control of the network at a time.

6416Y2 as Control Master

On the front panel of the 6416Y2 card, DIP switch #12 is used to set the card as the network's Control Master. Move it to the down position if you want to make the 6416Y2 the Control Master. When the 6416Y2 card is the Control Master, it is also the network Clock Master, deriving the clock from the Yamaha host device.



This card is set to be the Control Master. The front panel DIP switches can also be used to set stereo link status. (DIP switch handles are shown in black.)

Pro64 I/O Modules as Control Master

To use another type of Pro64 module as the Control Master, such as a 6416i or 6416dio, set the appropriate DIP switch on its rear panel to make it the Control Master. Make sure to set the 6416Y2 card to non-control operation (DIP switch #12 up) if it was previously used as the Control Master.

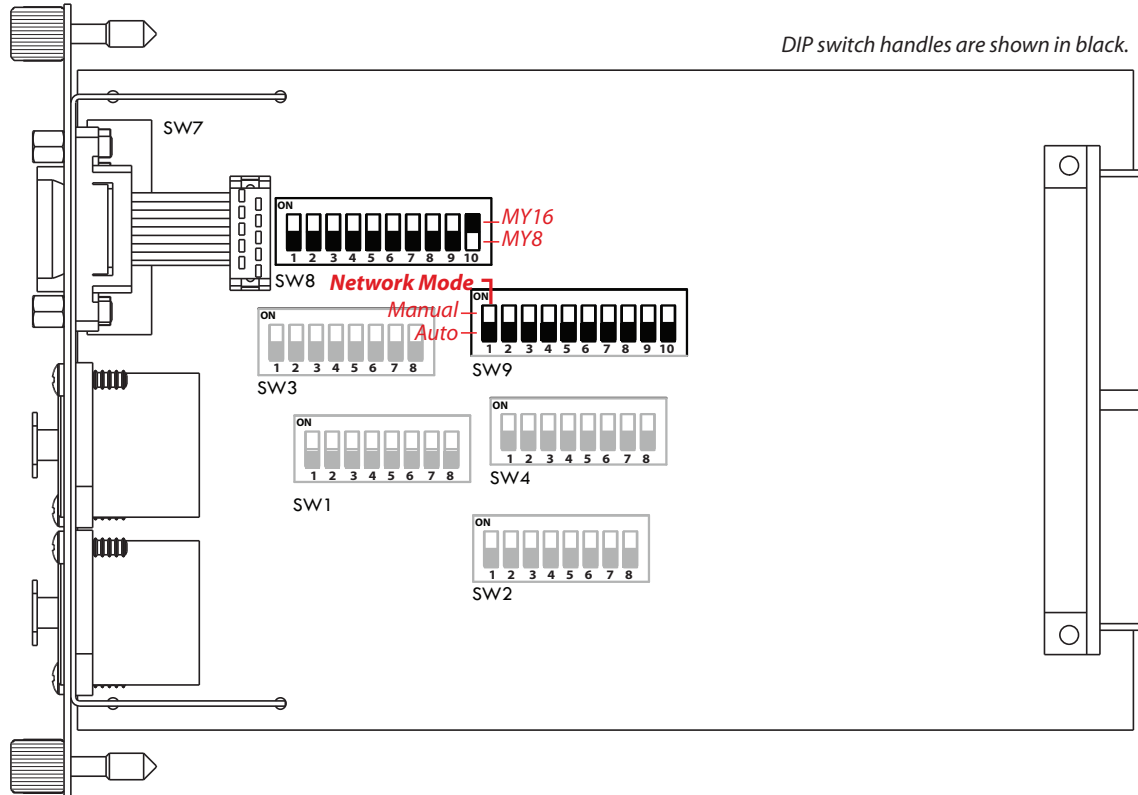
When an external Pro64 I/O module is used as the Control Master, the Yamaha digital console must be set to slave to the incoming clock. This is done on the DIO or Word Clock page depending on the console being used.

Failing to set the Yamaha console to slave to the incoming network clock will cause clicks, pops, and/or audio dropouts.

Second Step: Set The Network Mode

Every Pro64 network has three operational modes. Auto Mode, the easiest to use, allows 64 total channels at 48kHz. Cat-5e cables can be connected to any available A-Net port. Manual Mode provides 64x64 channels, perfect for high channel count applications such as digital snakes. Managed Mode requires a computer for control, used for firmware updates, etc.

The network mode is set on switch block SW9. DIP switch #1 in that block selects Auto Mode in the down position or Manual Mode in the up position.



The first DIP switch in block SW9 sets the network to Auto Mode when in the down position.

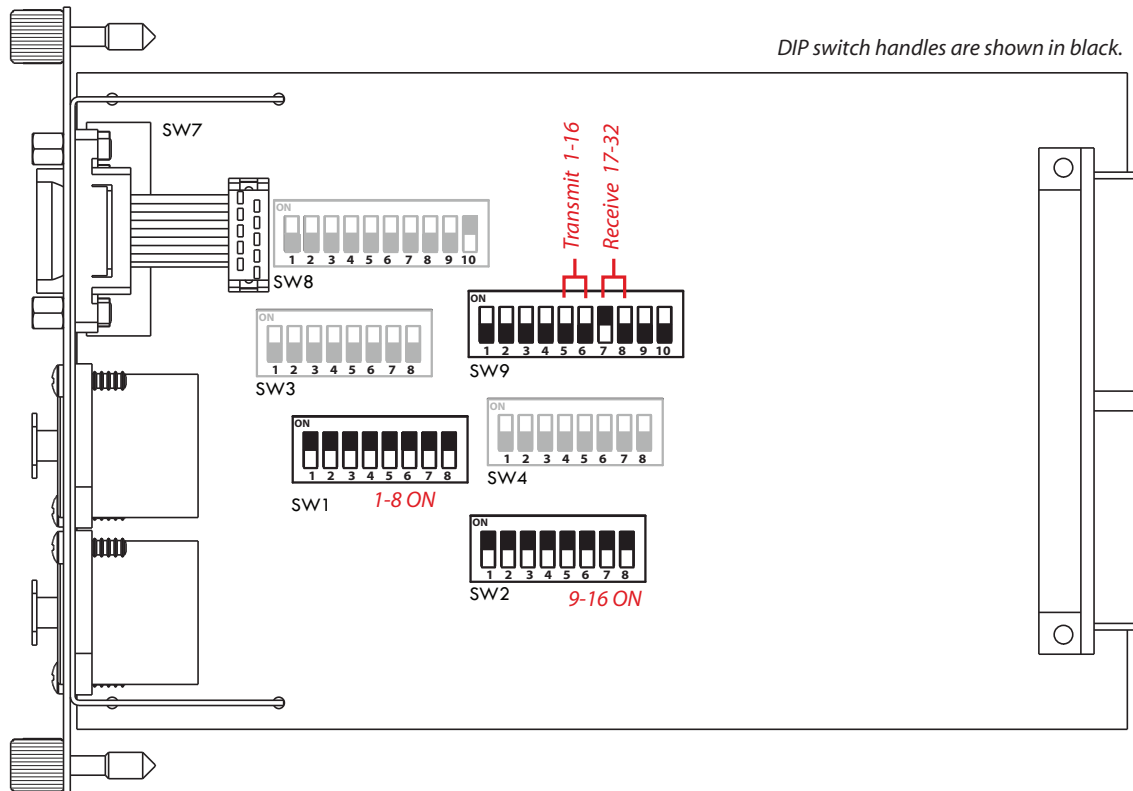
Auto Mode provides 64 total channels/Slots at 44.1 or 48kHz, and 32 total channels/Slots at 88.2 or 96kHz. Manual Mode provides 64x64 total channels/Slots at 44.1 or 48kHz, and 32x32 total channels/Slots at 88.2 or 96kHz. Although the Pro64 network can operate at sample rates higher than 96kHz, the Yamaha devices cannot. The Pro64 176.4 and 192kHz sample rates are not available when using a 6416Y2 card.

MY8 and MY16 Modes

Switch block SW8 contains the setting for Yamaha's MY8 and MY16 Modes. MY16 Mode provides 16-channel operation at 44.1/48kHz sample rates, while the MY8 Mode provides 8-channel operation when using higher sample rates (88.2/96kHz). Set DIP switch #10 in block SW8 to the up position (as seen in the diagram above) for 16-channel operation at 44.1/48kHz.

Third Step: Choose I/O Settings

Use switch block SW9 to set the range of Slots (in blocks of 16 channels) that a 6416Y2 card will use when transmitting/receiving audio. DIP switches #5 and #6 are used to select the network *transmit* Slot range (1-16, 17-32, 33-48, or 49-64). DIP switches #7 and #8 are used for the *receive* Slot range, also in groups of 16 channels. Remember that the 6416Y2 card functions as both an input and an output module. Use different transmit/receive Slot ranges to avoid channel/Slot allocation conflicts.



Block SW9 is used to choose A-Net Slot transmit and receive settings. Here the 6416Y2 card transmits the slot range Slot 1-16 into the network and receives Slots 17-32. DIP switch blocks SW1 and SW2 are used to activate individual channels sent from the Yamaha device, making them available in the Pro64 network.

Activate Channels/Slots

Once the base Slot range has been selected, use switch blocks SW1 and SW2 to activate the individual Slots, which send audio from the Yamaha console into the network. No audio will flow from the Yamaha device into the Pro64 network unless the Slots are activated with these switches. Move a DIP switch to the up position to activate it. Individual channel activation allows the most flexibility; activate only the channels/Slots you need on the 6416Y2 card, leaving network Slot bandwidth available for other Pro64 devices in your network. A Pro64 network is capable of having a virtually unlimited number of devices in it. While the number of devices is unlimited, the bandwidth of the network itself is not.

In most cases, you'll want the 6416Y2 card to run in Yamaha's MY16 Mode, which provides 16 channels in and out of the MY expansion slot at 48kHz. (This is set on switch block SW8 using DIP switch #10.)

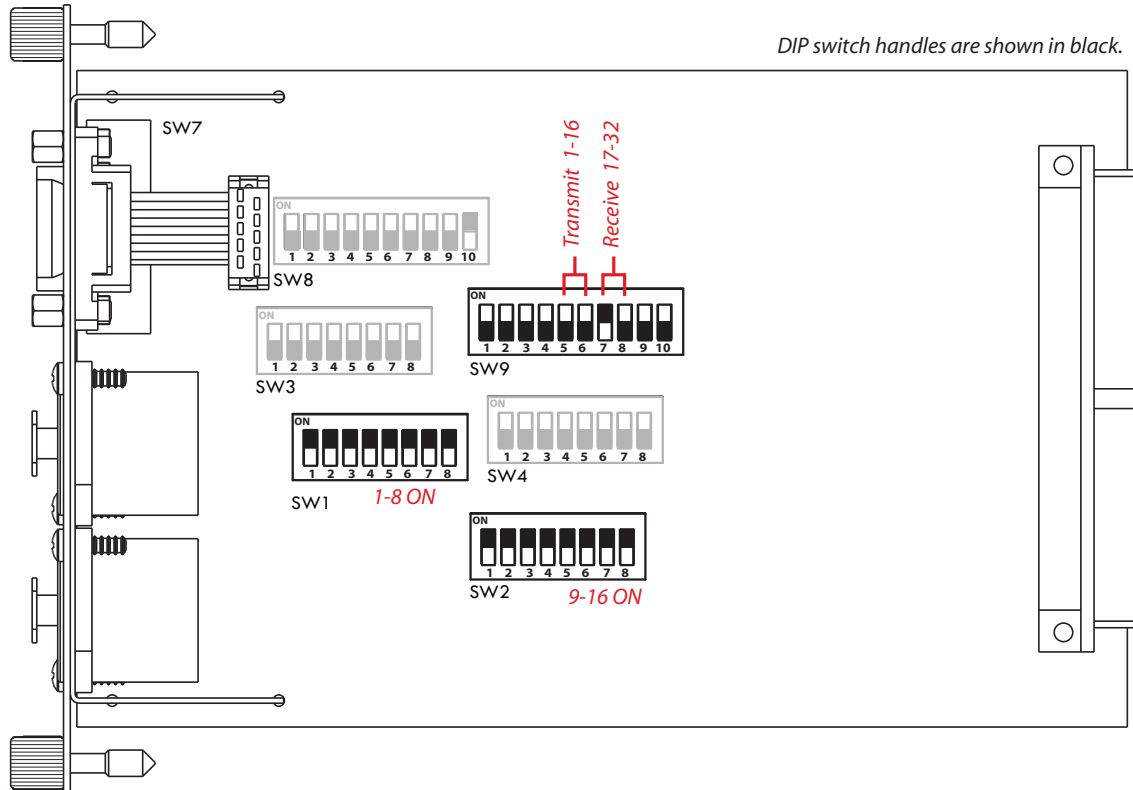
Digital splits and copies of data within the network are not subject to the 64 Slot (at 44.1/48kHz) limitation; an unlimited number of copies of the same data can be used in both analog and digital formats.

Sample Card Settings

The following examples show 6416Y2 card settings for various applications that can be used as starting points.

Transmit Slots 1-16, Receive Slots 17-32

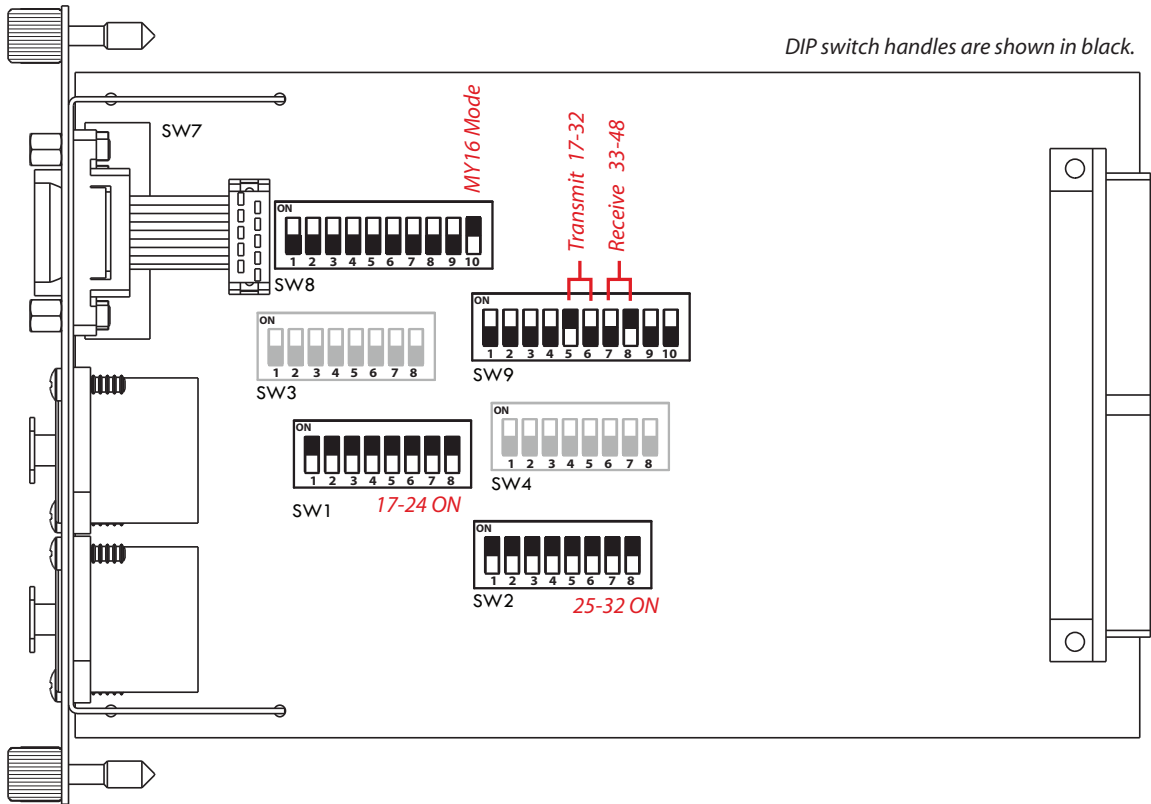
This example shows a 6416Y2 card set to transmit Slots 1-16 into the network and receive Slots 17-32 from the network.



The 6416Y2 card transmits Slot 1-16 and receives Slots 17-32

If you need less than 16 channels from the Yamaha device to be transmitted into the Pro64 network Slots, simply change the appropriate DIP switches in blocks SW1 and/or SW2. For example, to transmit only 8 total channels from the Yamaha console to Slots 1-8 of the Pro64 network, move all DIP switches in block SW2 to the down position. Those Slots are then available to be used by other Pro64 input devices within the network. Again, digital splits and copies of data within the network are not subject to the 64 Slot limitation; an unlimited number of copies of the same data can be used in both analog and digital formats.

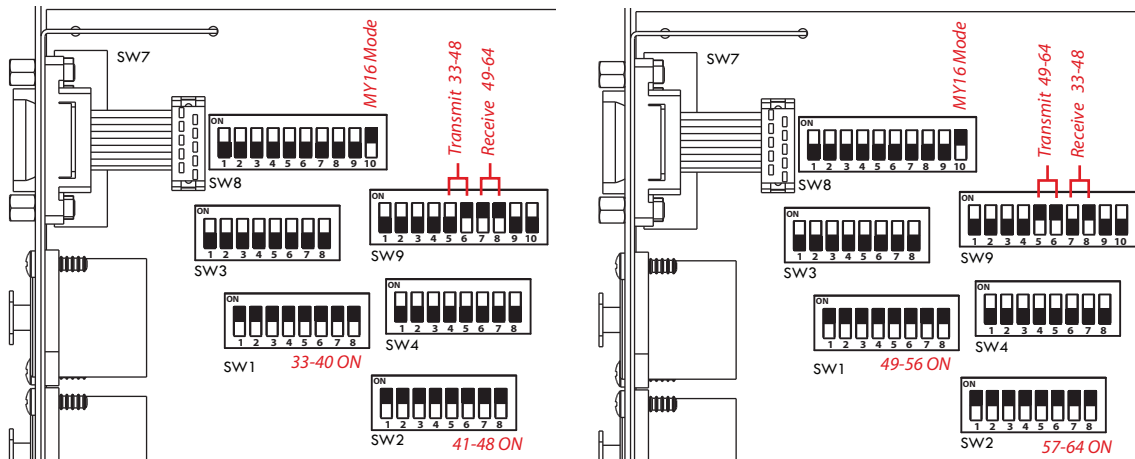
This setup has Slots 17-32 active on the network, while the card receives Slots 33-48 from the network.



The 6416Y2 transmits Slots 17-32 into the Pro64 network.

Note that SW1 and SW2 have all channels activated; edit the setting as needed to send fewer channels from the Yamaha device into the network. For example, to activate only Slots 17-20 in the network, change DIP switches 5-8 on SW1 and all 8 DIP switches on SW2 to the down position.

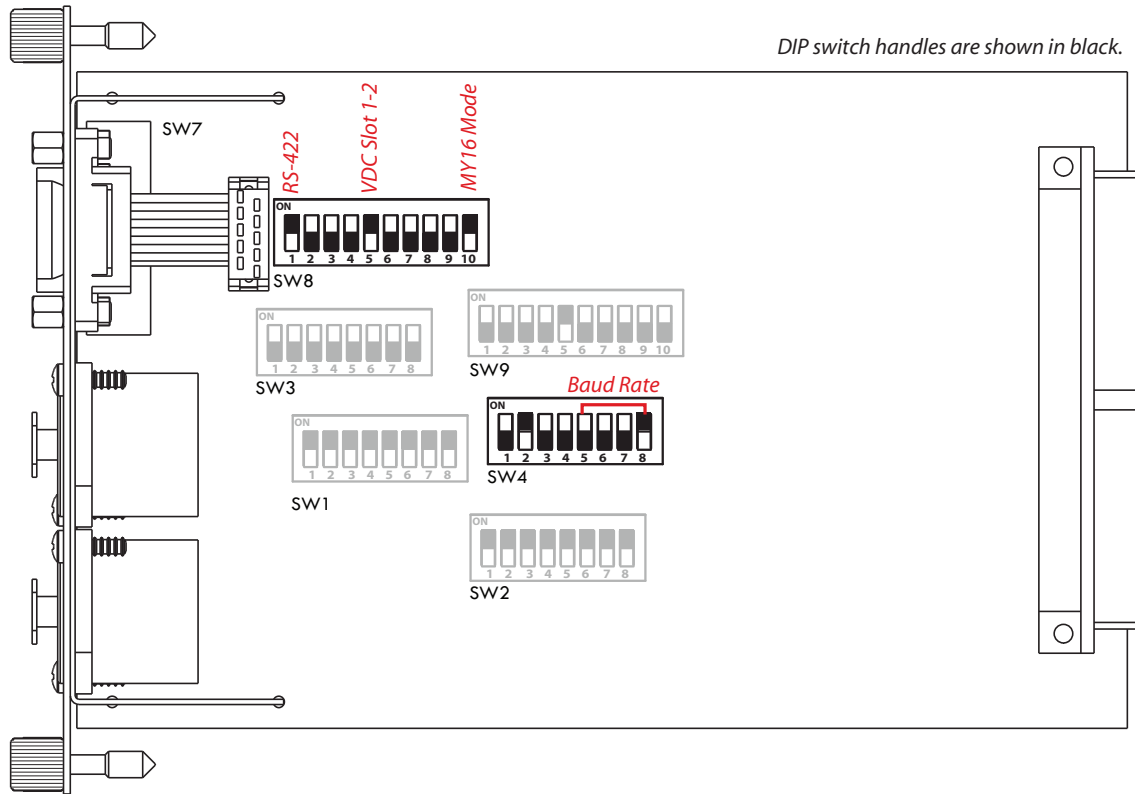
The remaining transmit/receive settings are shown below.



6416Y2 cards set to transmit on Slots 33-48 (left) and 49-64 (right)

Using Virtual Data Cables

Pro64's unique Virtual Data Cables™ (VDC) allows user control data to be transmitted throughout the network. The following setup shows how to configure the 6416Y2 card to transmit RS-422 control data to Yamaha AD8HR remote controllable preamps using Virtual Data Cables 1-2. The baud rate is set to 38,400, the default rate for the Yamaha AD8HR preamps.



VDC 1-2 are set to transmit RS-422 control data at the 38,400 baud rate.

Switch blocks SW3 and SW4 are both used for baud rate settings. SW3 controls the backplane VDC port (supported only on the LS9 consoles as of this writing) while SW4 controls the front panel VDC port. Only SW4 is shown as configured.