# User Manual

## Multi-Viewer Switch API

Adder Technology Limited

Part No. MAN-000023
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# Introduction

This guide explains how to use RS-232 to remotely control an Adder Multi-Viewer switch (AVS-1124, CCS-MV4224).

To control a switch using RS232, the user needs to connect a controlling device to the switch's RCU port. The controlling device can be a PC or any custom device with RS-232 capability.

Remote controlling means performing actions that users could otherwise do only using the front panel or hotkeys, including:
- Switching channels
- Audio hold
- Selecting a screen preset layout

# Installation

This procedure shows how to connect a switch to a remote-control device. A suitable RS232 cable will be required with an RJ12 connector to plug into the RCU port with the pinout shown below:
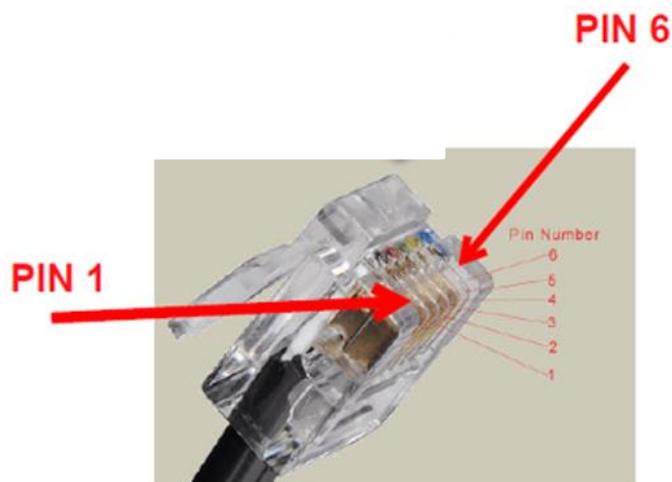


Pinout for the RDU port:
- Pin 1: 5V
- Pin 2: Not connected
- Pin 3: Not Connected
- Pin 4: GND
- Pin 5: RX
- Pin 6: TX

Few modern PCs have an RS232 port, so it may be necessary to use a USB or Ethernet adapter.

# Operation

Configuring example using the PuTTY open-source serial console utility. This procedure demonstrates how to switch channels via RS-232 using a remote control Windows PC.

## Pre-configuration

1. Install PuTTY on the remote computer.
2. Connect a serial cable from the PC's USB port to the switch's RCU port.
3. Run the PuTTY utility.
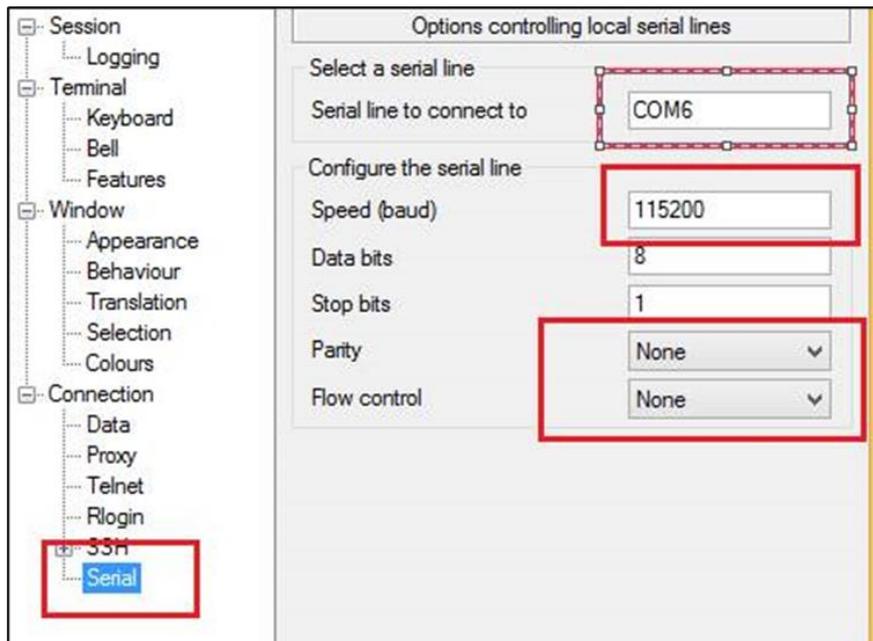4. Configure the Serial, Terminal and Session settings, as per figures 1 to 3
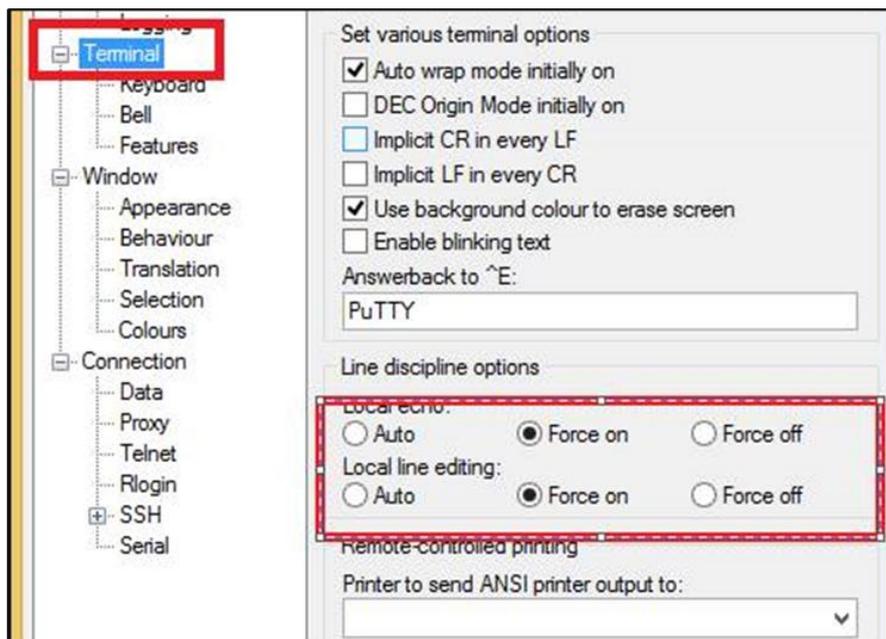
*Figure 1: PuTTY Serial Settings*

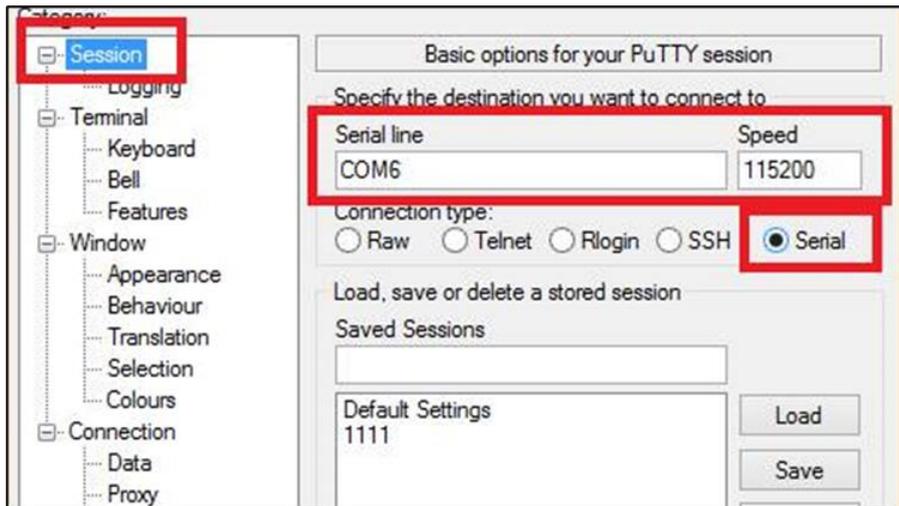

*Figure 2: PuTTY Terminal Settings*

*Figure 3: PuTTY Session Settings*

Note:  At this point, the device starts sending Keep-Alive events, every five seconds.

Keep-Alive events are transmitted by the switch periodically to communicate the current configuration. For example, to switch to Channel 4, the user types: #AFP_ALIVE F7

Then, every five seconds, the device sends the following keep-alive event: 00@alive fffffff7 as shown in Figure 4.
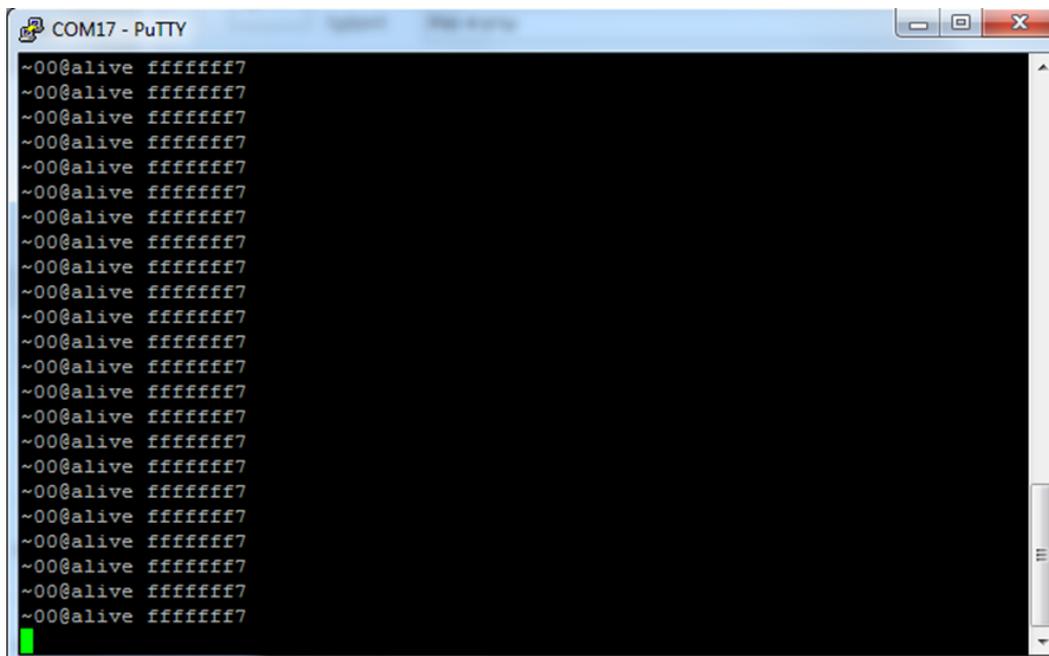


*Figure 4: Keep-Alive Events*

The interval time of keep-alive events can be changed, using the #ANATA command followed by a time period operand in units of 0.1 second. Thus:
- #ANATA 1 gives an interval of 0.1 seconds
- #ANATA 30 gives an interval of 3 seconds

## Command Structure

The command structure is comprised of the following 4 fields:

<pre-amble> <command> <operand1> <operand2>

Where:
- There is a space between each field
- The pre-amble is either #ANATL or #ANATR, where:
  - #ANATL equals the key sequence Left CTRL | Left CTRL
  - #ANATR equals the key sequence Right CTRL | Right CTRL
- Commands require 0, 1 or 2 operands
- Command success: Upon successful command execution, the device returns the output: command + OK
- Command failure: Upon failure, the device returns the output: command + Error Message
- To initiate a new serial connection, enter #ANATF 1

## Command List

The command is a translation of the keyboard hotkey listed in an Appendix of the Multi-Viewer User Manual (MAN-000007). Example translations are:

| Description | Hotkey | API Command |
|---|---|---|
| Load preset #3 | Left Ctrl \| Left Ctrl \| F3 | #ANATL F3 |
| Switch to channel #4 | Left Ctrl \| Left Ctrl \| 4 | #ANATL 4 |
| Maximize active channel to full screen | Left Ctrl \| Left Ctrl \| F | #ANATL F |

*Figure 5: Example commands*

The most common commands are likely to be loading a preset and positioning and resizing windows on the display. The general format of the command to move and resize a window is:

#ANATL F11 END <Channel> <Operation> <Location>

Where:
<Channel> is 1 to 4
<Operation> is:
1. Window top left X location (0 to 100%)
2. Window top left Y location (0 to 100%)
3. Window X extent as percentage of total X width
4. Window Y extent as percentage of total Y height
5. X offset (the location of the window compared to the full image size when bigger).
6. Y offset (the location of the window compared to the full image size when bigger).
7. X scaling as a percentage
8. Y scaling as a precentage
<Percent> is a 4 digit number in increments of 0.01%

Note that where dual monitors are used in Extend mode, the percentages relate to the total display size. For example, to set the window for channel 1 to occupy the 4$^{th}$ quadrant:

| Description | API Command |
|---|---|
| Set the window top left X position at half display | #ANATL F11 END 1 1 5000 |
| Set the window top left X position at half display | #ANATL F11 END 1 2 5000 |
| Set window X extent to half screen | #ANATL F11 END 1 3 5000 |
| Set window Y extent to half screen | #ANATL F11 END 1 4 5000 |

*Figure 6: Set Channel 1 to 4$^{th}$ quadrant (single monitor)*

Note that the commands change slightly when using dual side by side monitors:

| Description | API Command |
|---|---|
| Set the window top left X position at half display | #ANATL F11 END 1 1 2500 |
| Set the window top left X position at half display | #ANATL F11 END 1 2 5000 |
| Set window X extent to half screen | #ANATL F11 END 1 3 2500 |
| Set window Y extent to half screen | #ANATL F11 END 1 4 5000 |

*Figure 7: Set Channel 1 to 4th quadrant of left monitor*

There is one command that doesn't adhere to the aforementioned pattern, Audio Hold. To toggle the audio hold button, enter the command:

#AUDFREEZE 1