



S-402A

40x2 Mono/20x1 Stereo Audio Routing/Summing Switcher

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Introduction

The S-402A is a forty input, two output audio routing system. Various modes of operation permit the unit to function as a 20x1 stereo audio switcher, a 40x2 mono routing switcher, or as a summing switcher, in either stereo or mono.

Input selections are made using the front panel pushbuttons, or via remote control. The S-402A may be slaved via the remote control connector to the S-201V 20x1 video switcher for 20x1 stereo audio follow video applications.

All audio inputs and outputs are balanced. The gain of the left and right audio outputs are adjustable using the front panel controls.

The unit occupies a single rack space.

S-402A Installation

All connections are made on the rear panel.

If remote operation is required, the unit must first be configured internally for either RS-232 or RS-422 communications. The factory default is RS-422.

Schematic diagrams of the S-402A system are included at the end of this section.

Remote Control Configuration

The S-402A must be configured internally for remote operation. A total of 5 jumpers must be set.

For RS-422 communication (the factory setting), install the 5 jumpers located behind U62 in the 422 position. For RS-232 communication, install the 5 jumpers in the 232 position.

Audio Installation

All audio inputs and outputs are balanced. Connect the audio signals to be switched to the A and B inputs (1-20) on the S-402A, using a small slotted screwdriver.

Connect the S-402A A channel and B channel audio outputs to the signal destinations. In a stereo setup, A and B may be considered Left and Right.

Note the signal polarity (+ and -) of the balanced signals on all connections. These are clearly indicated on the rear panel. If connecting unbalanced inputs, connect the signal to the '+' input, and connect the shield to the Ground (G) input. It is not necessary to connect the unused '-' input to Ground when using unbalanced inputs.

S-402A Installation (cont'd.)

Remote Control Connector Wiring

The 9-pin D-connector for the remote control is wired differently for RS-422 and RS-232. Make the necessary connections according to Table 1. The pinout for the remote connector is shown in Figure 1.

Pin #	RS-422	RS-232
1.00	+12V	+12V
2.00	TX-	TX
3.00	RX+	RX
4.00	GND	GND
5.00	N.C.	N.C.
6.00	GND	GND
7.00	TX+	N.C.
8.00	RX-	N.C.
9.00	+12V	+12V

Table 1. S-402A Remote Control Connector Pin Assignments

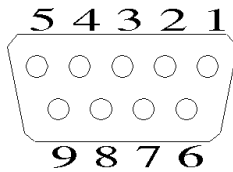


Figure 1.
S-402A Chassis Rear Panel, Remote Control DB-9F Connector Pinout

S-402A Operation

Once the audio and optional remote connections have been made, the unit is ready for operation. Connect the unit to a source of AC power, and turn on the rear panel power switch.

The S-402A has several modes of operation: it may perform as a 20x1 stereo switcher, a 40x2 mono switcher, or as a summing switcher, in either stereo or mono.

Note that SUM mode has its own crosspoint memory, and functions differently than the other modes. Please read this section carefully to understand the various modes of operation.

Output Modes - Non-Summing (SUM is OFF)

With the SUM feature disabled (the LED on the SUM switch is off), the S-402A may be operated as a 20x1 stereo switcher (both A and B channels switch simultaneously), or as a 40x2 mono router (A and B channels switch independently).

To select 20x1 stereo mode, press the Stereo (ST) Output Mode switch. The LED will light, indicating stereo mode. In this mode, selecting any of the 20 Input Select switches (1-20) will cause the corresponding A and B inputs to switch to the A and B outputs. For example, selecting input 14 will route input A14 to output A, and input B14 to output B. Both channels will switch simultaneously.

For 40x2 mono mode, select the output to be controlled, A or B, using the appropriate Output Mode switch. In this mode, any of the 40 inputs may be assigned to the selected output, forming a true 40x2 mono router. For example, if Output Mode switch A is selected, any of the inputs A1-A20 or B1-B20 may be selected, using the 22 Input Select switches (1-20, A, B). Similarly, any of the 40 inputs may be assigned to output B by pressing Output Mode switch B.

When switching from 40x2 mono mode (A or B) to Stereo (ST) mode, if the A and B channel input selections are not a stereo pair, the Output Mode switch LEDs for the Stereo (ST) switch and the A switch will both be on, indicating that Stereo mode is active, but the current selections are not a stereo pair. Repeatedly pressing the Stereo (ST) switch will alternately display the current A channel and B channel input selections using the various switch LEDs. Selecting an input (1-20) will select that stereo pair, and only the Stereo (ST) switch LED will remain on.

Output Modes - Summing (SUM is ON)

Pressing the SUM switch causes the S-402A to function as a summing switcher, allowing any number of inputs to be simultaneously selected and summed together.

IMPORTANT: Selecting SUM mode immediately changes the input selection. The S-402A has two internal memories, one for SUM mode, and one for standard routing mode. When the SUM switch is pressed for the first time after power up, no inputs will be selected.

S-402A Operation (cont'd.)

Output Modes - Summing (SUM is ON) (cont'd.)

Summing may be either in stereo or mono.

Pressing the Stereo (ST) switch while in SUM mode allows any number of stereo sources (1-20) to be summed together. Pressing an Input Select switch will alternately enable and disable each input. Note that levels will combine, and the overall level may increase rapidly if many sources are summed.

Pressing either the A or B Output Mode switches while in SUM mode allows mono summing. NOTE: only inputs A1-A20 may be summed to output A, and only inputs B1-B20 may be summed to output B. This differs from the non-summing 40x2 mono mode, where any of the 40 inputs may be routed to each output

Input selections may also be made remotely using the optional remote panel, or from another device using the correct remote protocol.

Using the S-402A with the S-201V

The S-402A may be slaved to the S-201V 20x1 video switcher for audio follow video applications. The two units are connected using the remote control connectors. Any selections made on the S-201V will also occur simultaneously on the S-402A.

When slaved to the S-201V, the S-402A will automatically be forced into 20x1 stereo mode, with summing off. If the breakaway switch is pressed on the S-201V, the S-402A will then have the ability to function in any of the available modes (20x1 stereo, 40x2 mono, or summing in stereo or mono). Once the breakaway is removed, the S-402A will return to 20x1 stereo mode

S-402A Adjustment

Audio Output Level

Audio output level adjustments are made using the front panel controls. Both channels are preset at the factory for unity gain.

The level of each of the two outputs (A and B) may be adjusted over a +/-6 dB range using the A and B front panel Output Level controls.

Audio Common Mode

The common mode adjust trimmers are located on the main board, inside the device. These are factory set for maximum common mode rejection, and should not require adjustment.

S-402A Specifications

Power Requirements 115 VAC, 60 Hz or 230 VAC, 50 Hz

Audio Inputs

Number of Inputs 40 mono, 20 stereo
Input Impedance 30 kohms balanced
Input Signal Level +8 dBu nominal, +24 dBu maximum
Input Connectors Screw clamp terminal blocks
Common Mode Rejection -60 dB typical @ 60 Hz

Audio Outputs

Number of Outputs 1 per channel, 2 channels total
Output Impedance 60 ohms balanced
Output Level +8 dBu nominal, +24 dBu maximum
Output Gain Range +/- 6 dB
Output Connectors Screw clamp terminal blocks
DC Offset Less than 20 mV
Frequency Response +0/-0.2 dB, 20 Hz to 20 kHz
THD + Noise Less than 0.08%, 20 Hz to 20 kHz, nominal
Hum and Noise -82 dBm, 20 Hz to 30 kHz
Crosstalk -80 dB typical @ 20 kHz

Physical Dimensions (Inches)

S-402A 19 W x 1.75 H x 11 D, EIA rack mounting

Warranty

Videoquip Research Limited (VRL) warrants the S-402A for a period of 2 (two) years from the date of shipment from the factory, to be free of defects in workmanship and material under normal use and service. This warranty is void if failure is due to abnormal use or modification, or if serial numbers have been tampered with. VRL's liability is limited to the repair or replacement of this unit, or to a sales credit, and the warranty action taken is at the discretion of VRL. Any warranty claims must be received in writing by VRL before the expiration of the two year period. Warranty coverage does not include shipping costs. This warranty is in lieu of all other warranties, expressed or implied, and all other obligations or liabilities of Videoquip Research Limited.

S-402A Remote Control V 1.10

Version 1.10 allows up to 3 remote control panels to be connected to the S-402 main unit. Each of the remotes is connected in parallel. Note that the remote control panels are connected to the main unit using a 1-to-1 wiring harness. This allows a ribbon cable harness to be used for shorter cable runs, where noise is not a concern.

Each remote must be assigned an address (1-3). To assign the remote address, turn on the power on the remote panel while holding down the front panel SUM switch. The first 3 front panel switches (1-3) are then used to assign a panel number. Press the switch corresponding to the desired panel number. The corresponding LED will light, indicating that the panel number has been assigned. Turn off the power. The panel number is stored in non-volatile memory. The remote is now ready for use.