

Crosspoint Video Switch
8 by 8 Configuration

Manual Version 2.11



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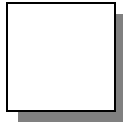
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Product Description

The VS8x8 Vertical Interval Video Crosspoint Switch is a digitally controlled matrix of 64 T-Switches that can connect any one of eight video inputs to any, or all, of eight video outputs. The switch matrix utilizes a monolithic, CMOS matrix IC for minimal crosstalk.

The VS8x8 can be manually controlled using the front panel controls or remotely controlled via a standard, asynchronous RS232 Serial Interface.

The eight video inputs are buffered and DC clamped. A DIP switch on the rear panel allows for 75 Ohm terminations on each input channel.

The eight outputs are driven by high speed, unity-gain stable video amplifiers that are capable of driving a 75 Ohm load with a bandwidth of 16MHz.

The system features a unique and simple programming operation which allows the user to specify various operation parameters, i.e., mode of operation, baud rate, unit ID code, etc. Programmed information is stored in internal EEPROM to prevent inadvertent loss of data caused by the loss of power.

Installation

Power Supply

The VS8x8 is shipped with a wall mount DC power supply rated at 12 volts, 500mA. Other suitable power supplies in the range of 9 to 15 volts may also be used. The unit has an internal bridge rectifier on the power supply input so that the user need not be concerned with the polarity of the power connector being used.

Video Connections

BNC connectors for composite video, Mini-DIN for Y/C video. The eight video inputs and eight video outputs are located on the rear panel of the device. An eight position DIP switch is also located on the rear panel to terminate the video inputs with 75 Ohm 1% resistors. Setting the switches in the down position will terminate the appropriate channel.

Serial Interface

The RS232 Interface connections use RJ11 type connectors located on the rear panel. The unit is supplied with a cable adapter for connecting the system to standard DB9 Serial Port. The two RJ11 connectors on the rear panel of the system are labeled HOST and LOOP. The cable adapter is configured for connection to a standard DTE Serial Interface common to most personal computers. Refer to the Appendix section for detailed information on the serial interface

connections. For systems employing a single VS8x8 unit, the serial cable is connected to the rear panel RJ11 connector labeled HOST. For systems using multiple VS8x8's, the systems are "daisy-chained" by connecting the LOOP (RS232 Out) connector of each unit to the HOST (RS232 In) connector of the next successive unit.

Operating Modes

Burst Electronics' default setting is Mode 1. Confirmation of the mode setting is accomplished by noting the number of flashes of the SET LED. Mode 1; the SET LED flashes once, then the LED stays on. Mode 2; the SET LED flashes twice, then the LED stays on. Mode 3; the SET LED flashes three times, then the LED turns off. Mode 4; the SET LED flashes four times, then the LED turns off. The unit can be easily programmed using the front panel switches by adjusting the following parameters:

1. Operating Mode
2. Serial Port Baud Rate
3. Unit Identification Code

Setting Operating Mode

Upon power up, the VS8x8 will flash the SET LED to indicate the currently programmed operating mode. The SET LED will flash either one, two, three, or four times to indicate the programmed operating mode. If the VS8x8 is not programmed, or an improper mode is selected, the SET LED will flash at a 5Hz rate continuously.

There are four operating modes:

Manual Mode (Mode 1)

Manual Triggered Mode (Mode 2)

Remote Control, single unit (Mode 3)

Remote Control, multiple units (Mode 4)

The operation mode is selected by setting Channel 1 thumbwheel switch. The unit supports two Manual Modes and two Remote Modes. In Manual Mode, the unit switches the video signals under control of the front panel thumbwheel switches. In Remote Mode, all video switching is controlled by commands sent to the unit using the RS232 interface.

The mode settings are as follows:

Mode 1: Manual Mode

In this mode, the front panel thumbwheel switches are continuously scanned for any changes. When a switch change is detected, the unit automatically switches the video during the next vertical interval.

Mode 2: Triggered Manual Mode

This mode is similar to Mode 1, in that the unit continuously checks the front panel switches for any change. When a change is detected, the unit

then waits for the operator to press the LOAD pushbutton before switching the video. The switch is done on the next vertical interval.

Mode 3: Single Unit Remote Mode

In this mode, all video switching is accomplished by sending commands via RS232 Serial Interface, the front panel thumbwheel switches are disabled in this mode. See the section on Command Description for a detailed description of the remote commands.

Mode 4: Multiple Unit Remote Mode

This mode is the same as Mode 3, but also supports multiple units (up to 99 units) on the same RS232 interface. Each unit must have a specific Unit Identification Code, and requires a Wake command to be sent from the host computer. See the section on Command Description for a detailed description of the remote commands.

Baud Rate

The Channel 2 thumbwheel switch is used to program the baud rate for the RS232 interface. The serial interface parameters are 8 data bits, 1 stop bit and no parity bit (8N1). The VS8x8 supports the following baud rates:

Switch Setting	Baud Rate
1	9600
2	4800
3	2400

4	1200
5	600
6	300
7	110

Unit Identification Code

The next two front panel thumbwheel switches, Channels 3 and 4, are used to program the Unit Identification Code. In multiple unit remote configurations (Mode 4), this value can be any number from 00 - 99, but care must be taken to insure that all units have a different code. In a single unit system (Mode 3), Channels 3 and 4 have no effect.

Example of Switch Setting

With the thumbwheel switches set to 4101000 the VS8x8 is configured for Mode 4 operation at 9600 Baud with an ID of 01.

Storing Mode Settings

Storing the configuration information into internal EEPROM is accomplished by first setting the front panel thumbwheel switches, (Channel 1-4) to the desired settings. The unit is then powered up while depressing the front panel LOAD pushbutton. Upon power up, the internal microprocessor detects the depression of the LOAD switch and then programs the internal EEPROM memory with the selected values. The unit will flash the front panel SET LED for a few seconds to indicate that it is programming the system EEPROM, and will then enter that

operating mode. The unit will now enter the appropriate operating mode whenever it is powered up. The unit can be reprogrammed any time and the internal EEPROM is rated for an excess of 10,000 write operations.

Operation

The following paragraphs detail the operating procedures for each of the four operating modes that can be programmed into the VS8x8 Video Crosspoint Switch.

Manual Mode (Mode 1)

When operating in this mode, the operator sets the front panel thumbwheel switches corresponding to the specific output channel. Setting the thumbwheel switch to the values of 1 through 8 will connect that video input to the specified output. Setting the thumbwheel switch to a value of 0 or 9 will turn off the output. When the unit detects a change on the front panel thumbwheel switches, it will wait for the vertical sync interval of the current setting before turning off the output, and will then wait for the sync interval of the new input channel before activating the new selection. In this mode, the front panel SET LED is always on, indicating that the video outputs are always set to correspond with the thumbwheel settings.

Triggered Manual Mode (Mode 2)

This mode is similar to the Scanned Manual Mode with one exception. When a change is

detected on the thumbwheel switches, the system will turn off the SET LED to indicate a disparity between the thumbwheel switches, and the actual video signal routing. The unit then waits for the operator to initiate the new selection by pressing the front panel LOAD button. This mode prevents erratic video outputs caused by scrolling the thumbwheel switches through the selections. Once the LOAD button is pressed, the unit then sets the new selection (waiting for the vertical sync intervals) and then reactivates the SET LED to indicate that the new selection has been activated.

Single Unit Remote Mode (Mode 3)

In this mode, the unit is controlled exclusively by the serial RS232 interface. Routing of the video signals is accomplished by using a host computer to transmit simple command to set the video outputs. The channel thumbwheel switches are disabled and have no effect on video switching.

To configure the VS8x8 for Mode 3, set the thumbwheel switches to: 31xxxxxx (x = any number available). This selects Mode 3 at 9600 baud.

Step by Step Procedure:

1. Set Channel 1 switch to 3.
2. Set Channel 2 switch to the desired baud rate.
3. Depress and hold the LOAD button while turning power on. The SET LED will blink 3 times then stays off.

The VS8x8 is now set for single unit remote at 9600 baud. See Command Description on how to communicate to the VS8x8.

Multiple Unit Remote Mode (Mode 4)

In this mode, two or more units are controlled exclusively by the serial RS232 interface. Routing of the video signals is accomplished by using a host computer to transmit simple commands to set the video outputs. The channel thumbwheel switches are disabled and have no effect on video switching.

To configure the VS8x8 for Mode 4, set the thumbwheel switches to : 4101xxxx (x = any number available). This selects mode 4 at 9600 baud and unit ID of 01.

Step by step procedure

1. Set Channel 1 switch to 4.
2. Set Channel 2 switch to the desired baud rate.
3. Set Channels 3 and 4 to the desired unit ID number (01 to 99).
4. Depress and hold the LOAD button while turning power on. The SET LED will blink 4 times then stay off.

The VS8x8 is now set for multiple unit remote control at your desired baud rate and ID number. See Command Description on how to communicate to the VS8x8.

Command Description

Each command (unless otherwise stated) must be terminated by a carriage return (0Dh) (<CR>). All characters that are transmitted to the unit are echoed back to the hosting computer (except for the initial Wake command in mode 4).

Sio (Set Input to Output)

This command routes an input channel specified by “i” to an output channel specified by “o”. The “i” and “o” characters are single digit values from 0 to 9 (0 and 9 being channel off). There are no spaces allowed. The command is case insensitive, but must be followed by a carriage return. The unit switches immediately after receiving the carriage return, using the same vertical sync detection scheme as previously described. Example: S35<CR> connects input channel 3 to output channel 5.

R (Read)

This command causes the VS8x8 to transmit the current settings of all 8 video outputs to the host computer. No carriage return required.

L (Lock)

When received, this command locks the current video settings to prevent inadvertent changes of the video settings. Once locked, the unit will then ignore any subsequent SET commands and will display an appropriate error message. The video setting can still be viewed using the “R” command. The unit will stay in the locked mode

until an ESC (1Bh) code is received.

M (Manual)

This command is used to place the unit in the Triggered Manual Mode (Mode 2) from the Remote Mode. Once initiated, the unit will remain in the Triggered Manual Mode. To return to the remote mode, transmit an ESC (1Bh) to the unit.

SA (Set All Channels)

All eight channels are set with this command.

Example: SA43215678<CR> will cause output Channel 1 to connect to input Channel 4, output Channel 3 to input Channel 2, etc.

If a "X" is placed in a output channel location, that channel will not change from its previous setting. Example: SA43XX5678<CR>, output Channels 3 and 4 will stay at their previous setting and the other six channels will switch.

ESC (Escape)

The ESC (Escape) command is used during Mode 3 and Mode 4. If the Lock command or the Manual Mode command has been sent, the ESC key on your computer's keyboard will recover the VS8x8 back to the standard functions of the Remote Modes.

WK (Wake) and SP (Sleep)

The Wake (WK) and Sleep (SP) commands allow for selection of which VS8x8 is responding to the

RS232 data in a multi unit (Mode 4) environment.

Example:

SP (sp)	Puts all units to sleep
WK,01 (wk,01)	Wakes up unit ID 1
SA12345678	Set All command for unit ID 1
SP (sp)	Puts all units to sleep
WK,02 (wk,02)	Wakes up unit ID 2
SA87654321	Set All command for unit ID 2
SP (sp)	Puts all units to sleep

When VS8x8's are in Mode 4, they always power up in the Sleep state. Before any unit will respond to RS232 commands, a Wake command must be sent. Setting two or more VS8x8's to the same ID will control each unit together, but the data returning to the computer will be jumbled.

Specifications:

Video Inputs

Standard NTSC/PAL (Color or Monochrome)
Level: 1V p-p nominal
Impedance: 75 Ohm, terminated
10k Ohm, unterminated

Video Outputs

Level: 1V p-p nominal
Impedance: 75 Ohm

Serial Interface:

Standard RS232 (3-wire)
Baud: 110,300,600,1200,2400,4800,9600
Data Format: 1 start bit, 8 data bits, no parity

Performance

Crosstalk: 60dB at 5Mhz
Gain: Unity
Differential Gain: <0.5%
Differential Phase: <1°
Bandwidth: 16MHz (-1dB)

Electrical

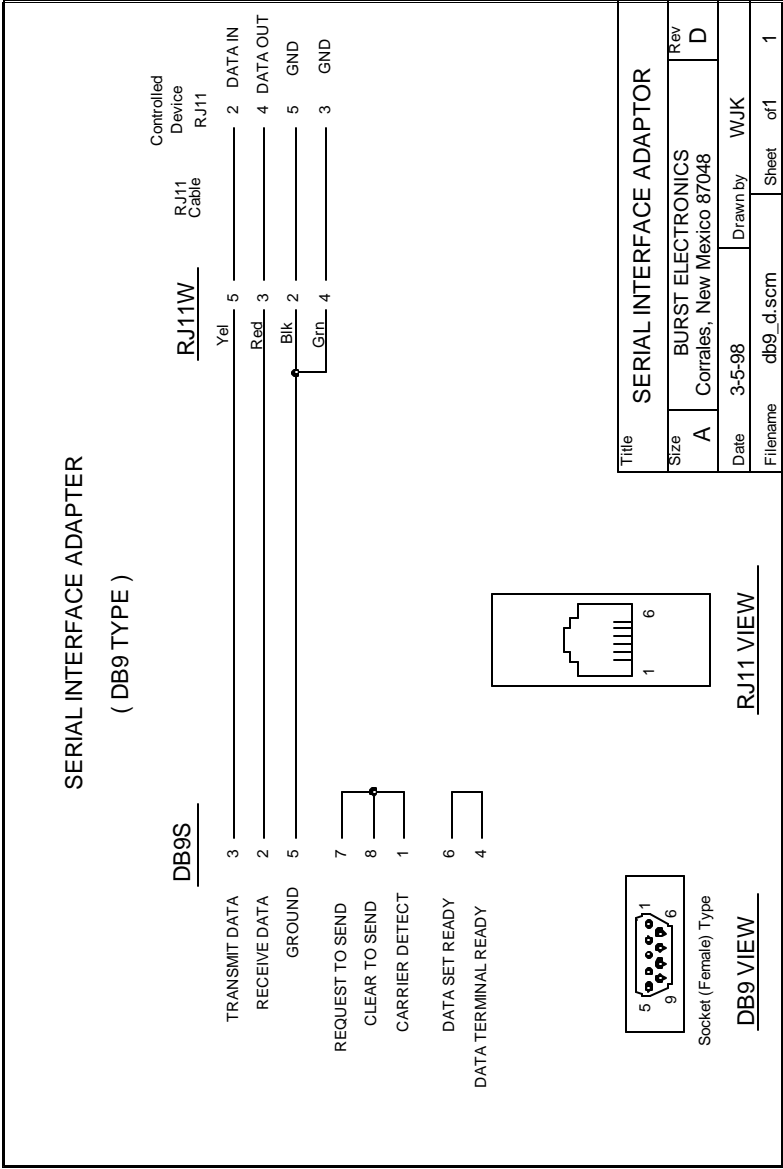
Power supply: 9-12 Vdc @ 275mA

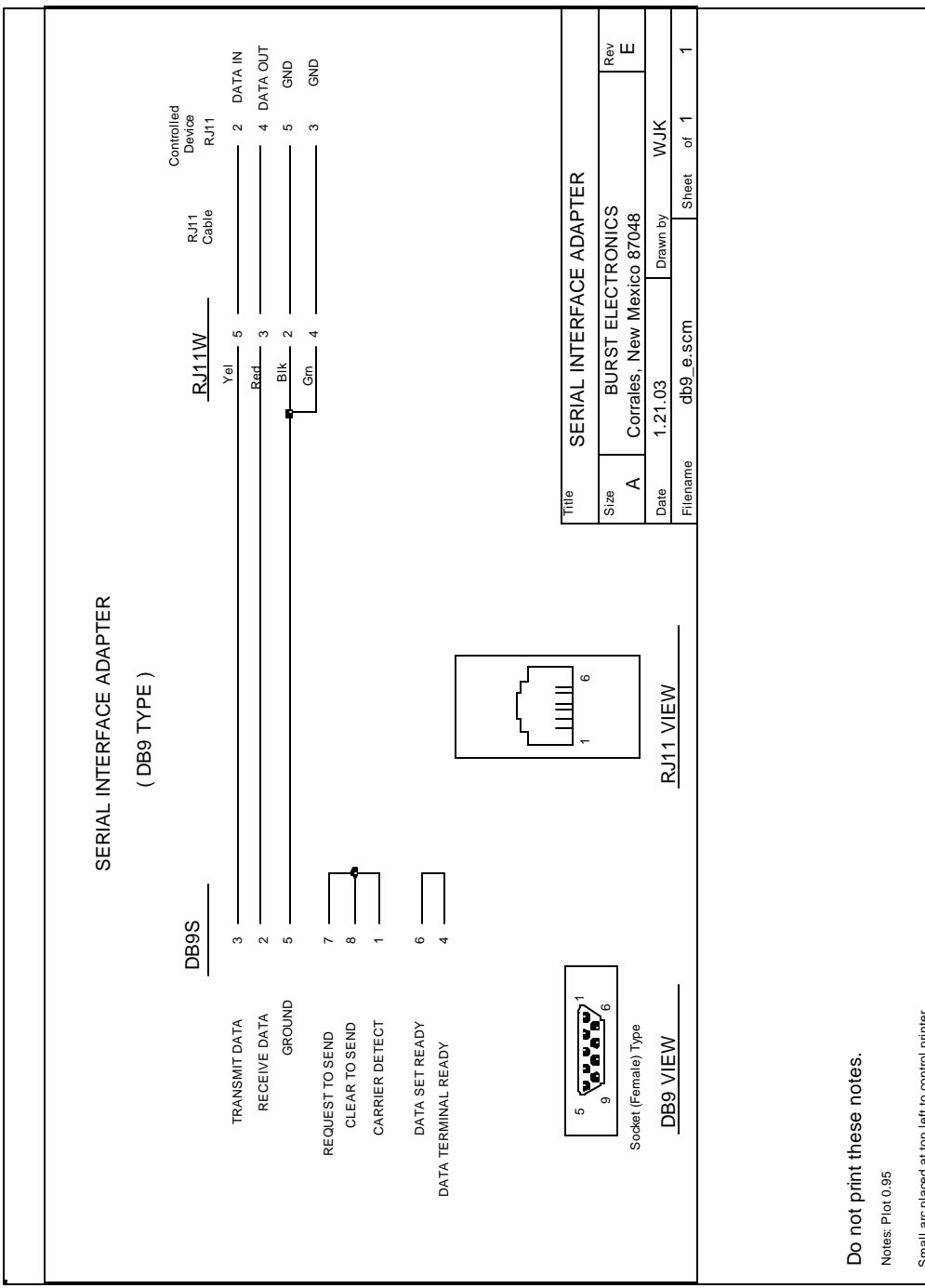
Dimensions

H: 1.75"
W: 16.5"
D: 6.0"

Rack Mount (optional)

RM-Ear





Notes

