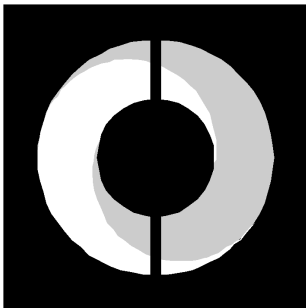


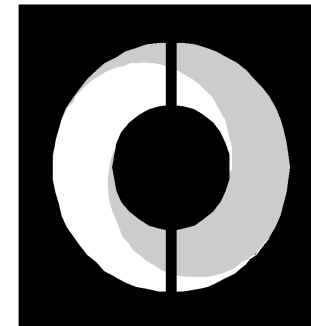
CVD 5206

CVD 5216

***Composite / S-Video
Switchers***



C O V I D



C O V I D

1723 West 4th Street / Tempe, AZ 85281
phone (480) 966-2221 / fax (480) 966-6728
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User's Manual

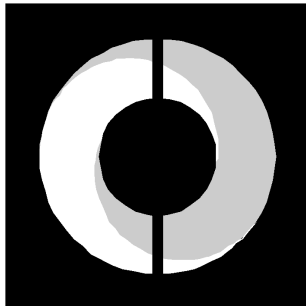
CVD 5206

**6 Input, 1 Output
S-Video Switcher**

CVD 5216

**6 Input, 1 Output
Composite Video Switcher**

**A Simple Solution for Switching Several
Video Sources to One Display**



C O V I D

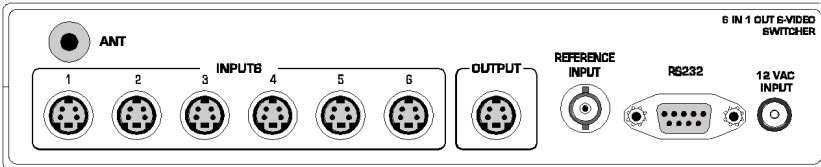
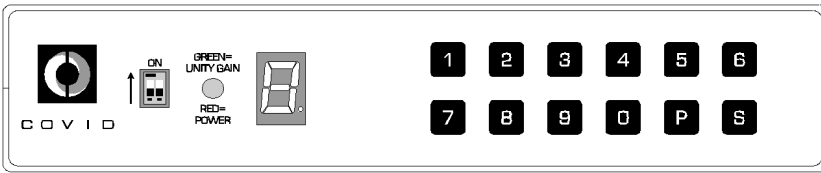
DISCLAIMER

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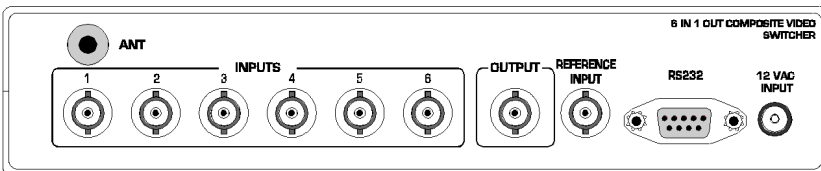
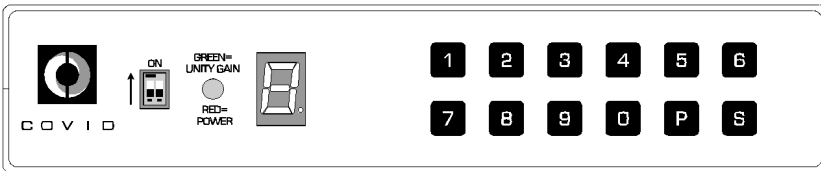
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CVD 5206



CVD 5216



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Introduction

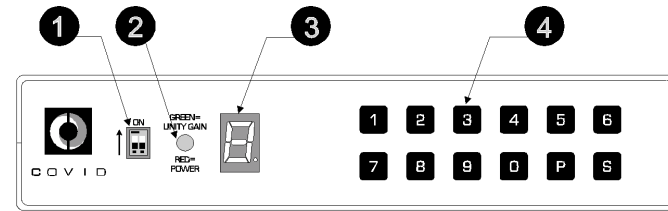
Thank you for purchasing a CVD 5206/5216 video switcher. Covid's CVD 5206/5216 provides a simple solution for switching several video source inputs to one display. It can be controlled via the Front Panel Keypad, RS232, or RF remote*. Some of the features of the CVD 5206/5216 video switchers include:

- 6 Inputs on BNC Female(5216) or 4-pin Mini-DIN female connectors(5206).
- 1 Output on BNC Female(5216)connector or 4-pin Mini-DIN female connector(5206).
- Front Panel Keypad
- Auto Scan
- Scan Sequencing
- 9 Programmable Scan Sequences
- Programmable Video Hold Times from 1 second to 4 minutes.
- Video Blanking
- Buffered Outputs
- 150 MHz Bandwidth
- 7 Segment Channel Readout Display
- RS232 Controllable
- RF Remote Control*
- Vertical Interval Switching+
- Electronic Gain Adjustment
- Black Level / Sync Tip Selectable

*Purchase Option

+Inputs must be synchronized.

Panel Descriptions

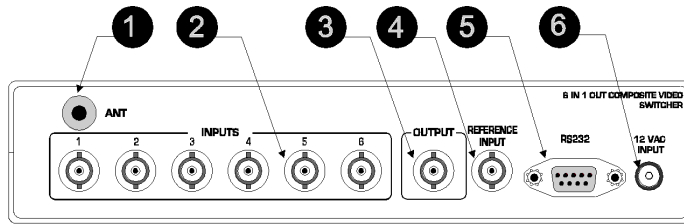


FRONT PANEL LAYOUT

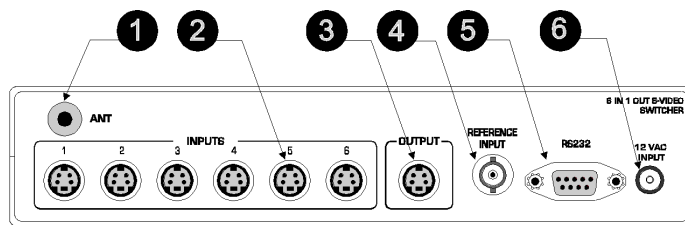
FRONT PANEL

1. **RF ID BITS:** The dip switches set the ID for the RF remote.
2. **POWER ON:** The LED turns red when power is applied to the unit and green if gain is set to Unity gain.
3. **SEVEN SEGMENT DISPLAY:** Displays the current input being viewed and aids in programming scan sequences.
4. **KEYPAD:** The 12 keys are used to switch inputs and program the unit.

Panel Descriptions



CVD 5216 REAR PANEL LAYOUT



CVD 5206 REAR PANEL LAYOUT

REAR PANEL

1. **ANTENNA IN:** Accepts the antenna for the RF remote option.
2. **INPUTS:** Six BNC Female (CVD 5216), or six 4 pin mini-DIN (CVD 5206) inputs available for video sources.
3. **OUTPUT:** One BNC Female (CVD 5216), or one 4 pin mini-DIN (CVD 5206) to connect to a display.
4. **REFERENCE INPUT:** Provided for synchronized switching during the reference input sync pulse.
5. **RS232 INPUT:** DB-9 connector provided for controlling the unit using RS232 commands.
6. **AC INPUT:** Accepts 12 VAC from the Wall Mount AC input.

General Specifications

CVD 5216 6 IN, 1 OUT COMPOSITE VIDEO SWITCHER

INPUT:

Signal:	Composite Video
Connectors:	(7) BNC Female
Video Impedance:	75 Ohms
Signal Level:	0.5 – 2.0 Vpp

OUTPUT:

Connectors:	(1) BNC Female
Video Impedance:	75 Ohms
Signal Level:	0.6 – 1.5 Vpp
Bandwidth:	130 MHz
Differential Gain:	<0.1%
Differential Phase:	<0.5 Degrees

CONTROL:

Front Panel Keypad	
RS232 Controllable	
RF Remote* (Optional)	
Connector:	9-pin D-Sub, Female

DISPLAYS:

Power On Indicator	
Seven-Segment Channel Readout	

PHYSICAL SPECIFICATIONS

DIMENSIONS:

1U High, 1/2 Rack Wide	
(in)	1.75 H x 8.50 W x 6.00 D
(cm)	4.45 H x 21.59 W x 15.24 D

ENCLOSURE: Aluminum, Black, Texture Finish

WEIGHT:

Net:	1.6 lbs. / 0.73 kg
------	--------------------

POWER:

Input:	110 or 120 VAC Wall Mount, 12 VAC, 1A, UL
Dissipated:	3 Watts

General Specifications

CVD 5206 6 IN, 1 OUT S-VIDEO SWITCHER

INPUT:

Signal:	S-Video
Connectors:	(6) 4-pin Mini-DIN Female
Video Impedance:	75 Ohms Y/C
Signal Level:	0.5 – 2.0 Vpp

OUTPUT:

Connectors:	(1) 4-pin Mini-DIN Female
Video Impedance:	75 Ohms Y/C
Signal Level:	Y: 0.5 – 1.5 Vpp C: 143 mVpp – 429mVpp
Bandwidth:	130 MHz
Differential Gain:	<0.1%
Differential Phase:	<0.5 Degrees

CONTROL:

Front Panel Keypad	
RS232 Controllable	
RF Remote* (Optional)	
Connector:	9-pin D-Sub, Female

DISPLAYS:

Power On Indicator	
Seven-Segment Channel Readout	

PHYSICAL SPECIFICATIONS

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Aluminum, Black, Texture Finish

WEIGHT:

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------	--------------------

POWER:

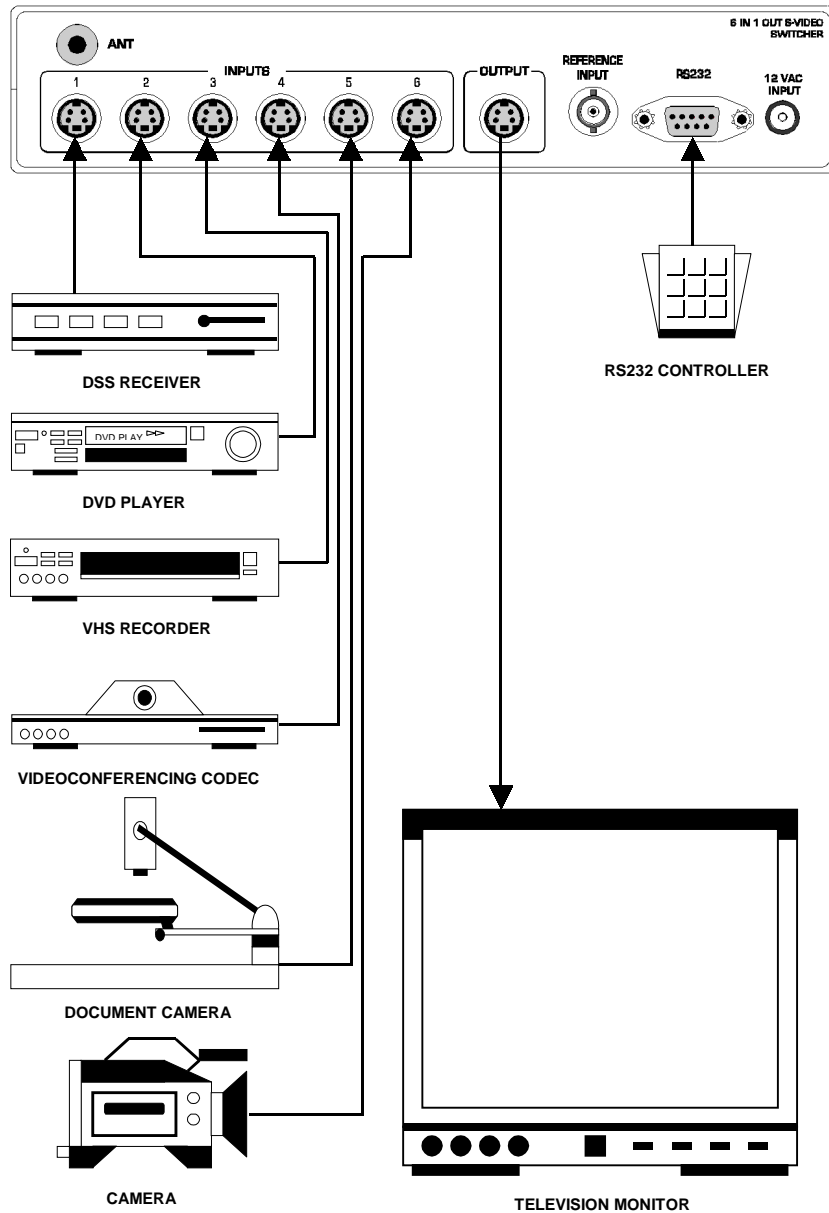
Input:	110 or 120 VAC Wall Mount, 12 VAC, 1A, UL
Dissipated:	3 Watts

Operational Setup

Turn off all equipment before connecting or removing cable connections.

1. Connect up to six video source signals to the desired inputs.
2. Connect the video output to a display.
3. If desired, connect a reference sync source signal to the reference input.
4. To control the unit using a computer, the CVD 5206 / CVD 5216 RS232 port must be connected to the PC's serial port using a straight through serial cable.
5. Power up the unit and check power on LED indicator.
6. The Seven Segment Display should read '1'.
7. The unit is now operational. Switch inputs as desired using the front panel keypad, RS232, or the RF remote.

Typical Configuration



RS232 Control Using a PC, Example

In this example, a terminal emulation program on a PC was used to control the CVD 52x6. The settings for the PC were as follows:

```
9600 BAUD RATE
NO PARITY BIT
1 START BIT
8 DATA BITS
1 STOP BIT
FLOW CONTROL Xon/Xoff
ECHO CHARACTERS LOCALLY OFF
```

Below is a sample of the communication from the PC to the CVD 52x6. An example of how to store a scan sequence is also shown below. The boldface typing is not present when controlling the unit in this manner. It is used here to illustrate what the command accomplishes.

```
>SW3$      ( connect video input 3 to output, $ = good command )
[SWITCH VIDEO 3]
>PG2$      ( start program scan sequence into location 2 )
[PROGRAM USER MODE 2]
[PROGRAM MODE ON]
>T003$     ( set time between switches to 3 seconds )
[STORE TIME]
>V1$       ( start at video input 1, step 1 of sequence )
[STORE VIDEO]
>V3$       ( next show video input 3, step 2 of sequence )
[STORE VIDEO]
>V5$       ( next show video input 5, step 3 of sequence )
[STORE VIDEO]
>PG2$     ( end program mode, saves into memory )
[PROGRAM USER MODE 2]
[PROGRAM MODE OFF/DONE]
>PS$      ( program status, shows scan sequences stored in memory )
[PROGRAM STATUS]
PRESET TIME SEQUENCE STEPS
0:      3      1 2 3 4 5 6 0 0 8
1:
2:      3      1 3 5          3
3:
4:
5:
6:
7:
8:
9:
>SC1$     ( start scan mode )
[SCAN MODE 1]
>SC1$     ( end scan mode )
[END SCAN MODE]
>
```

User Instructions

When the unit is first powered on, the seven-segment display shows the number '1'. This indicates that input 1 is switched to the output.

Keypad Control

Switching Video

To select an input, simply press the number representing the input to be displayed. Press the [0] button for a video blank.

Store Video Sequence

To store a scan sequence, press [P], the display should blink 'P'. Press a button between 1 – 9, this represents the program sequence being stored. Next, the unit needs to know the hold time between switching inputs represented in seconds. The time can be from 1 to 255 seconds (approximately 4 minutes). To enter a time of 5 seconds, for example, press [0], [0], [5]. Next the unit wants the sequence of the inputs to switch, for example, the odd inputs, press [1], [3], and [5]. To end program mode and store the sequence, press [P]. The display will return to the input selected before programming began. Nine different sequences can be stored. Eight input choices can be selected per sequence.

Scan Mode

To scan a stored sequence, press [S], then press a button between 0 – 9 representing the sequence desired. To end scan mode, press any button. Pressing a number between 0– 6 will end scan mode and switch to that particular input.

Pressing [S], [P], or [9] will end scan mode and the last input showing will remain selected.

Storing a Scan Sequence Into Memory, An Example

Say we want to store a scan sequence into memory scanning the even inputs only leaving each input connected for 30 seconds. First we need to select a preset to store the sequence. In this example, let's use preset 1.

Press [P], then press [1]. The display should blink 'P'.

Next we must enter the time in 3 digits, in this example, we chose 30 seconds. Therefore, we must enter 0 – 3 – 0. Press [0], the display will show '0', then return to a blinking 'P'. Now press [3], the display will show '3', then return to a blinking 'P'. Next press [0], the display will show '0' then return to a blinking 'P'. The time of 30 seconds has been saved.

Next, we need to enter the video sequence. In this example, we chose the even inputs. Press [2], then [4], then [6]. The display should behave as it did for entering the time. Finally, to end program mode and store the sequence, press [P]. The display will stop blinking 'P' and return to the input that is currently selected. By pressing [S] or [9] will also end program mode.

The sequence is now stored in preset position '1', and is ready to be placed in scan mode. When this position is chosen to be scanned, it will show input 2 for 30 seconds then switch to input 4, wait 30 seconds, and so on. After showing input 6 for 30 seconds, it will roll around back to input 2, and then continue on until scan mode is stopped.

String Message 'Software Version *.*'

- Applies after the version command. Displays the current software version of the internal firmware.

String Message 'Program Status'

- Applies after the status command.
- Displays a chart of the stored scan sequences.

PRESET	TIME	SEQUENCE	STEPS
0	3	1 2 3 4 5 6 0 0	8
1	30	2 4 6	3

The TIME is represented in seconds. SEQUENCE represents the input switch sequence. STEPS shows how many inputs have been selected for that particular sequence.

In this Program Status Display, PRESET 1 will show input 2 for 30 seconds, then switch the input 4. After another 30 seconds, it will switch to input 6. After another 30 seconds, it will recycle back to input 2 and continue through the sequence until SCAN Mode is stopped.

String Message 'Gain Setting *'

- Sent after a gain setting command.
- Signifies the gain level setting shown by the *.

String Message 'Black Level'

- Sent after the Black Level Select command.
- Notifies the user that the reference voltage is now at Black Level.

String Message 'Sync Tip'

- Sent after a Sync Tip Clamp Select Command.
- Notifies the user that the reference voltage is now sync tip clamped.

String Message 'Auto Sense *'

- Sent after the Auto Sense Command.
- Notifies the user that Auto Sense is ON or OFF.

String Message 'Store Time'

- Applies only when in program mode.
- Notifies that a legal video hold time has been entered into memory.

String Message 'Error! Number Must be Less than 6'

- Applies when in program mode.
- Applies if entering a time over 200 seconds.
- Maximum number of seconds allowed is 255 seconds, therefore any number entered after the 2, must be less than 6.

String Message 'Store Video'

- Applies when in program mode.
- Applies after a legal time has been entered.
- Notifies that the video selected has been stored into memory.

String Message 'Error! Not in Program Mode'

Applies when not in program mode and a time to be stored into memory is entered.

String Message 'Program Mode OFF/DONE'

- Applies after program mode has been completed.

String Message 'Scan Mode *'

- Applies after a preset scan sequence has been selected. The preset chosen is designated by the *.

String Message 'Preset Not Programmed'

- Applies when selecting to scan a preset that has not yet been stored.

String Message 'End SCAN Mode'

- Applies while in scan mode, then a switch to an input or ending scan mode has been requested.

Selecting A Scan Mode Preset

To put the unit into Scan Mode, press [S] then the preset you wish to scan. Since we just programmed Preset 1, let's scan preset 1. Press [S], the display will blink '-' then press [1]. The unit will then start the sequence programmed in the previous example. In this case, input 2 will start, show for 30 seconds, then switch to input 4 and continues. To end scan mode, press any key. If you press [S], [P], or [9], scan mode ends and stays with the input that was last showing. If you press a numbered key the unit will end scan mode and switch to the input selected.

Set Output Gain Level

Upon power up, the unit adjusts the video output voltage level to unity gain automatically. This can be changed in increments of .1 V by adjusting the gain. To change the output voltage level, press [9]. The letter 'L' appears on the seven-segment display. Press a button from [0] – [9], this adjusts the gain from 0.6 Vpp at 0, to 1.5Vpp at 9. The LED will turn green at unity gain, 1 Vpp.

Set Clamp Level

To set the reference voltage level to Black Level, press [P], then [0], a blinking 'H' will appear in the display. Press [0] again. To set the reference voltage level to Sync Tip, press [P], then [0], then press [1].

Auto Scan

To turn on the Auto Scan feature press [S], then press [S] again. The display should show a solid dash, if there are no video inputs present. The Auto Scan feature will scan the inputs looking for a video sync starting at input 1. Once a sync is found, the switcher will automatically show the input found. When the sync is removed, the unit will start scanning again, starting over at input 1. For example, if input 3 was found, input 3 will be switched to the output. If there is an input present on input 4 and an input becomes present on input 2, when input 3 is removed, the next video found will be input 2, not input 4. Input 1 takes highest priority and input 6 takes the lowest.

RF Remote

The RF remote makes it convenient to switch inputs at distances up to 75 feet. The buttons on the remote behave in the same manner as the Front Panel keypad buttons.

To use your remote, make sure the DIP switch ID bits on both the CVD 5206/5216 and the CVD 550R match. They are both defaulted to be '0' '0' from the factory.

A slide switch on the side of the remote is provided to greatly extend battery life when the remote is not in use. Set the slide switch to the ON position. Now, press a button. The display on the CVD 5206/5216 should change to match the button pressed.

The DIP switch ID bits are provided in case you have multiple units and need to control them separately or all at once using the RF remote. The RF remote must be opened to change the ID bits. The ID bits on the CVD 5206/5216 are externally accessible. When not using the remote, set the slide switch to the OFF position.

RF Remote Battery Replacement

To replace the battery, the case must be opened. Press on the tab of the battery holder to pop out the opposite end of the battery. Carefully remove. Carefully slide one end of the new battery under the tab. Gently press the battery into the socket. The battery is a 3V lithium coin type battery, CR2032 size.

RS232 Messages

The CVD 5206/5216 RS232 routine sends feedback messages to the user. Each character typed is echoed back to the terminal. Some of the messages provide helpful information when using the CVD 5206/5216. Messages are enclosed in square brackets. []

Character Message '?' -- Unknown Command

- Applies after an unrecognized character or bad command.
- Sent after an [Enter] key or a full command buffer.

Character Message '\$' -- Good Command

- Applies after a recognized command.
- Sent after an [Enter] key or a full command buffer.

After a good/bad command, the unit will return a prompt on a new line. After this message, the PC command must be reentered from the beginning.

String Message 'Switch Video *'

- Applies after a complete command has been recognized.
- Sent after an [Enter] key and a valid command.
- A switch has been made to the input designated by the *.

String Message 'Video Showing is *'

- Sent after a status command.
- Tells the user what input is current being shown.

String Message 'Program User Mode *'

- Sent after a program command.
- Entering program mode for storing a user preset designated by the *.

String Message 'Program Mode ON'

- Sent after a program command.
- Entering program mode for storing a user preset.

8. Software Version

This command displays the version of the internal software.

FORMAT:
PC COMMAND: VS(Enter)
HEX EQUIVALENT: [56][53][0D]

9. Gain Setting

This command sets the gain level of the output signal.

FORMAT:
PC COMMAND: GN(level)(Enter)
HEX EQUIVALENT: [47][4E](level)[0D]

Format for (level): ASCII characters 0-9, Hex Equivalents [30]-[39]

10. Black Level Clamp Select

This command sets the clamp select to black level.

FORMAT:
PC COMMAND: LVB(Enter)
HEX EQUIVALENT: [4C][56][42][0D]

11. Sync Tip Clamp Select

This command set the clamp select to the sync tip level.

FORMAT:
PC COMMAND: LVS(Enter)
HEX EQUIVALENT: [4C][56][53][0D]

12. Auto Scan

This command sets the unit to auto scan mode.

FORMAT:
PC COMMAND: AS(on/off)(Enter)
HEX EQUIVALENT: [41][53][on/off][0D]

Format for (on/off): ASCII characters 0-1, Hex Equivalents [30]-[31]
Where '1' is on and '0' is off.

RS232 Interface Program

RS232 Description

The RS232 port on the CVD 5206/5216 is a DB-9 pin female connector. The interface cable is a standard straight through DB-9 cable with a male end and a female end. Communication from a PC to the CVD 5206/5216 is possible provided the PC has terminal emulation software such as HyperTerminal for Windows 95/98/2000.

CVD 5206/5216 DB-9 Female Connector Pinout

PIN 2 **Transmit**, Output from CVD5206/5216
(Receive on terminal side)
PIN 3 **Receive**, Input from CVD5206/5216
(Transmit on terminal side)
PIN 5 **Ground**

ALL OTHER PINS NOT CONNECTED

Communication Parameters

ASYNCHRONOUS
SERIAL
9600 BAUD RATE
NO PARITY BIT
1 START BIT
8 DATA BITS
1 STOP BIT

RS232 Commands

1. Select Video Input

This command switches the selected input to the output.

FORMAT:
PC COMMAND: SW(input)(Enter)
HEX EQUIVALENT: [53][57][input][0D]

Format for (input): ASCII characters 0 – 6,
Hex Equivalents [30] – [36].

Choose '0' for video blanking. ASCII characters 1-6 represent the input.

2. Program Preset

This command starts program mode for storing a sequence.

FORMAT:
PC COMMAND: PG(preset)(Enter)
HEX EQUIVALENT: [50][47][preset][0D]

Format for (preset): ASCII characters 1-9, Hex Equivalents [31] – [39]

3. Time Set

This command sets the time interval between video switches for the selected preset. This command is only accepted when in program mode.

FORMAT:
PC COMMAND: T(digit1)(digit2)(digit3)(Enter)
HEX EQUIVALENT: [54][digit1][digit2][digit3][0D]

Format for (digit1): ASCII characters 0-2, Hex Equivalents [30]-[32]

Format for (digit2) and (digit3): ASCII characters 0-9, Hex Equivalents [30]-[39], if (digit1) is less than 2, otherwise, ASCII characters 0-5, Hex Equivalents [30]-[35]

4. Store Video Input

This command selects the input sequence to store in memory. This command is only accepted when in program mode and the time setting has been entered.

FORMAT:
PC COMMAND: V(input)(Enter)
HEX EQUIVALENT: [56][input][0D]

Format for (input): ASCII characters 0-6, Hex Equivalents [30]-[36].

Choose 0, for video blank.

5. Scan Mode

This command sets the unit to scan mode.

FORMAT:
PC COMMAND: SC(set)(Enter)
HEX EQUIVALENT: [53][43][set][0D]

Format for (set): ASCII characters 0-9, Hex Equivalents [30]-[39]

6. Status Update

This command reports what video input is currently selected.

FORMAT:
PC COMMAND: ST(Enter)
HEX EQUIVALENT: [53][54][0D]

7. Program Status

This command reports the status of the program settings, includes time, video sequence, and number of sequences.

FORMAT:
PC COMMAND: PS(Enter)
HEX EQUIVALENT: [50][53][0D]