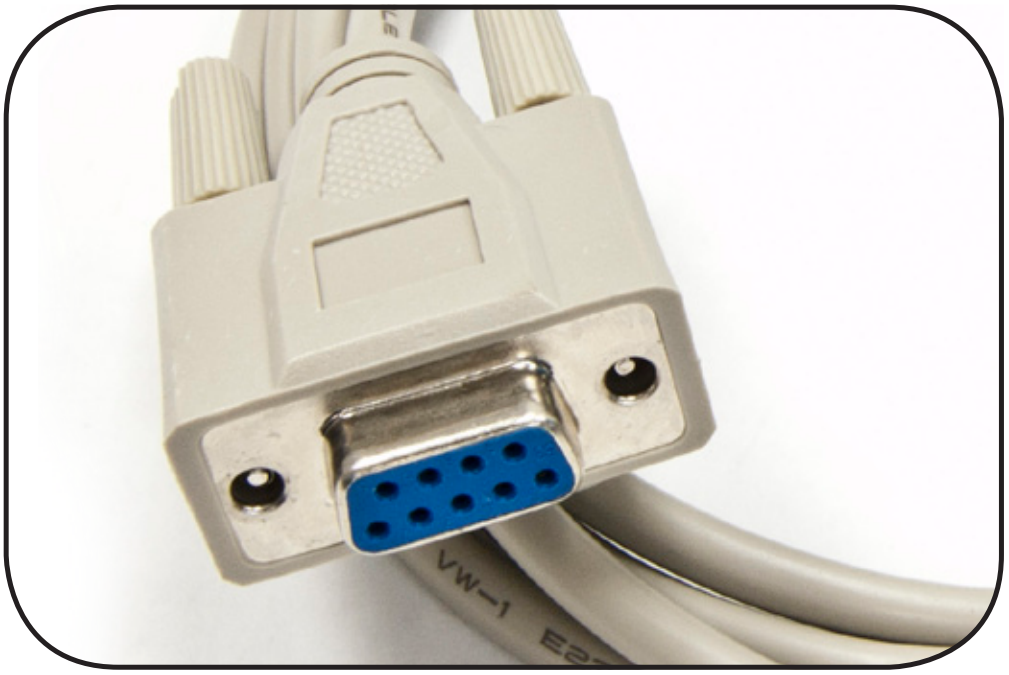
Smart-AVI
SMART AUDIO VIDEO INNOVATION

Installation Manual

RS-232 SPECIFICATION



How to properly create an RS-232 connection between a PC and most SmartAVI RS-232 compliant devices

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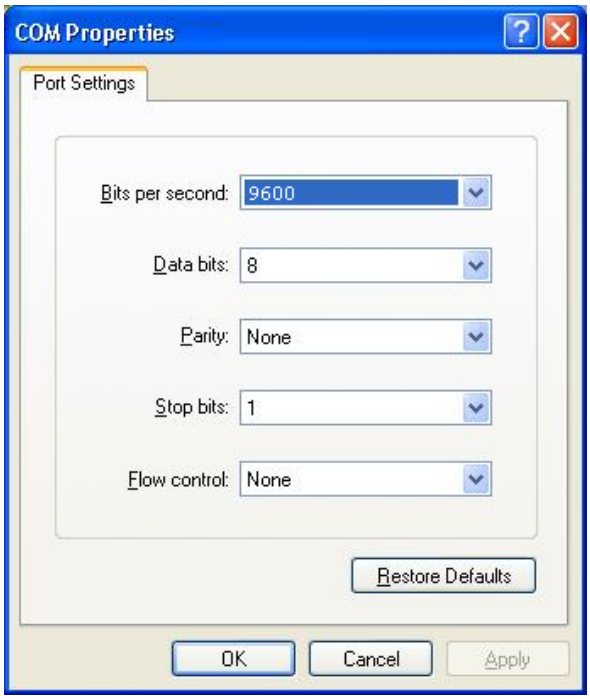
Establish a connection to your RS-232 compliant device:

1. Connect a straight through male to female RS-232 cable (shown on right) to the RS-232 connector on the PC.
2. Connect the other end of the cable to the RS-232 compliant device.
3. Power on the device.

Male to Female Straight Cable (not provided)



Hyperterminal Settings

Setting up the Terminal application:

1. Open Hyperterminal on the PC. (or use the terminal client of your choice)
2. Use the default settings to create a connection to the device (see settings on left). Settings MUST match those shown on the lower right.
3. Be sure that Flow Control is ***None***.
4. The output of the device will be the same as the PC.

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After you have established a connection to your device use the following commands:

1) To set a video crosspoint:
//Fxx**M**yy**I**zz<**CHK**><**CR**>
e.g. to set video input 3 to output 12 on a router with frame address "0" send the command: //F00M12I03<0x42><CR>

2) To set RS-232 crosspoint:
//Fxx**R**yy**I**zz<**CHK**><**CR**>

3) To disconnect RS-232 crosspoint:
//Fxx**D**yy**I**zz<**CHK**><**CR**>

4) To set new frame address:
//Fxx**F**nn<**CHK**><**CR**>

IMPORTANT

CALCULATING THE <CHK>

<CHK> stands for CHECKSUM: the <CHK> value is calculated by performing an XOR of the full command string. For example: //F00M12I03 will XOR to the hexadecimal value 0x42, therefore the value of <CHK> is 0x42.

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RS-232 Commands continued:

5) To query crosspoints from PC:
//Fxx**U**<**CHK**><**CR**>

- If all outputs are connected to input 1 then a 4x4 Matrix will respond with <**0x80**><**0x80**><**0x80**><**0x80**><**CR**>
- The router will send back one byte for each output and the string ends with a <CR>. The first byte sent is Output #1. In the example above, since there are 5 bytes total, we know that there are 4 outputs.
- To calculate the input number, the router sends the input number with the 7th bit set.
  - 0x80 = "1000 0000" → input 0
  - 0x81 = "1000 0001" → input 1
  - …
  - 0x8F "1000 1111" → input 15

Comms Port Settings:

Baud Rate	**9600**
Start Bits	**1**
Data Bits	**8**
Parity	**None**
Stop Bits	**1**

Notes:

- When successful, commands #1-4 will acknowledge by sending the checksum with nibbles swapped & <CR><LF>
  - e.g. checksum of 0x24 acknowledges with <0x42><CR><LF>

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The following are example commands for the first 8 inputs and 8 outputs. The hexadecimal values of the commands are also listed.

Operation	*Command*	*Hexidecimal Value*
input_1_output_1	/ / F 0 0 M 0 1 I 0 1 <CHK> <CR>	2F 2F 46 30 30 4D 30 31 49 30 31 42 0D
input_2_output_1	/ / F 0 0 M 0 1 I 0 2 <CHK> <CR>	2F 2F 46 30 30 4D 30 31 49 30 32 41 0D
input_3_output_1	/ / F 0 0 M 0 1 I 0 3 <CHK> <CR>	2F 2F 46 30 30 4D 30 31 49 30 33 40 0D
input_4_output_1	/ / F 0 0 M 0 1 I 0 4 <CHK> <CR>	2F 2F 46 30 30 4D 30 31 49 30 34 47 0D
input_5_output_1	/ / F 0 0 M 0 1 I 0 5 <CHK> <CR>	2F 2F 46 30 30 4D 30 31 49 30 35 46 0D
input_6_output_1	/ / F 0 0 M 0 1 I 0 6 <CHK> <CR>	2F 2F 46 30 30 4D 30 31 49 30 36 45 0D
input_7_output_1	/ / F 0 0 M 0 1 I 0 7 <CHK> <CR>	2F 2F 46 30 30 4D 30 31 49 30 37 44 0D
input_8_output_1	/ / F 0 0 M 0 1 I 0 8 <CHK> <CR>	2F 2F 46 30 30 4D 30 31 49 30 38 4B 0D
input_1_output_2	/ / F 0 0 M 0 2 I 0 1 <CHK> <CR>	2F 2F 46 30 30 4D 30 32 49 30 31 41 0D
input_2_output_2	/ / F 0 0 M 0 2 I 0 2 <CHK> <CR>	2F 2F 46 30 30 4D 30 32 49 30 32 42 0D
input_3_output_2	/ / F 0 0 M 0 2 I 0 3 <CHK> <CR>	2F 2F 46 30 30 4D 30 32 49 30 33 43 0D
input_4_output_2	/ / F 0 0 M 0 2 I 0 4 <CHK> <CR>	2F 2F 46 30 30 4D 30 32 49 30 34 44 0D
input_5_output_2	/ / F 0 0 M 0 2 I 0 5 <CHK> <CR>	2F 2F 46 30 30 4D 30 32 49 30 35 45 0D
input_6_output_2	/ / F 0 0 M 0 2 I 0 6 <CHK> <CR>	2F 2F 46 30 30 4D 30 32 49 30 36 46 0D
input_7_output_2	/ / F 0 0 M 0 2 I 0 7 <CHK> <CR>	2F 2F 46 30 30 4D 30 32 49 30 37 47 0D
input_8_output_2	/ / F 0 0 M 0 2 I 0 8 <CHK> <CR>	2F 2F 46 30 30 4D 30 32 49 30 38 48 0D
input_1_output_3	/ / F 0 0 M 0 3 I 0 1 <CHK> <CR>	2F 2F 46 30 30 4D 30 33 49 30 31 40 0D
input_2_output_3	/ / F 0 0 M 0 3 I 0 2 <CHK> <CR>	2F 2F 46 30 30 4D 30 33 49 30 32 43 0D
input_3_output_3	/ / F 0 0 M 0 3 I 0 3 <CHK> <CR>	2F 2F 46 30 30 4D 30 33 49 30 33 42 0D
input_4_output_3	/ / F 0 0 M 0 3 I 0 4 <CHK> <CR>	2F 2F 46 30 30 4D 30 33 49 30 34 45 0D
input_5_output_3	/ / F 0 0 M 0 3 I 0 5 <CHK> <CR>	2F 2F 46 30 30 4D 30 33 49 30 35 44 0D
input_6_output_3	/ / F 0 0 M 0 3 I 0 6 <CHK> <CR>	2F 2F 46 30 30 4D 30 33 49 30 36 47 0D
input_7_output_3	/ / F 0 0 M 0 3 I 0 7 <CHK> <CR>	2F 2F 46 30 30 4D 30 33 49 30 37 46 0D
input_8_output_3	/ / F 0 0 M 0 3 I 0 8 <CHK> <CR>	2F 2F 46 30 30 4D 30 33 49 30 38 49 0D
input_1_output_4	/ / F 0 0 M 0 4 I 0 1 <CHK> <CR>	2F 2F 46 30 30 4D 30 34 49 30 31 47 0D
input_2_output_4	/ / F 0 0 M 0 4 I 0 2 <CHK> <CR>	2F 2F 46 30 30 4D 30 34 49 30 32 44 0D
input_3_output_4	/ / F 0 0 M 0 4 I 0 3 <CHK> <CR>	2F 2F 46 30 30 4D 30 34 49 30 33 45 0D
input_4_output_4	/ / F 0 0 M 0 4 I 0 4 <CHK> <CR>	2F 2F 46 30 30 4D 30 34 49 30 34 42 0D
input_5_output_4	/ / F 0 0 M 0 4 I 0 5 <CHK> <CR>	2F 2F 46 30 30 4D 30 34 49 30 35 43 0D
input_6_output_4	/ / F 0 0 M 0 4 I 0 6 <CHK> <CR>	2F 2F 46 30 30 4D 30 34 49 30 36 40 0D
input_7_output_4	/ / F 0 0 M 0 4 I 0 7 <CHK> <CR>	2F 2F 46 30 30 4D 30 34 49 30 37 41 0D
input_8_output_4	/ / F 0 0 M 0 4 I 0 8 <CHK> <CR>	2F 2F 46 30 30 4D 30 34 49 30 38 4E 0D
input_1_output_5	/ / F 0 0 M 0 5 I 0 1 <CHK> <CR>	2F 2F 46 30 30 4D 30 35 49 30 31 46 0D
input_2_output_5	/ / F 0 0 M 0 5 I 0 2 <CHK> <CR>	2F 2F 46 30 30 4D 30 35 49 30 32 45 0D
input_3_output_5	/ / F 0 0 M 0 5 I 0 3 <CHK> <CR>	2F 2F 46 30 30 4D 30 35 49 30 33 44 0D
input_4_output_5	/ / F 0 0 M 0 5 I 0 4 <CHK> <CR>	2F 2F 46 30 30 4D 30 35 49 30 34 43 0D
input_5_output_5	/ / F 0 0 M 0 5 I 0 5 <CHK> <CR>	2F 2F 46 30 30 4D 30 35 49 30 35 42 0D
input_6_output_5	/ / F 0 0 M 0 5 I 0 6 <CHK> <CR>	2F 2F 46 30 30 4D 30 35 49 30 36 41 0D
input_7_output_5	/ / F 0 0 M 0 5 I 0 7 <CHK> <CR>	2F 2F 46 30 30 4D 30 35 49 30 37 40 0D
input_8_output_5	/ / F 0 0 M 0 5 I 0 8 <CHK> <CR>	2F 2F 46 30 30 4D 30 35 49 30 38 4F 0D

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input_1_output_6	/ / F 0 0 M 0 6 I 0 1 <CHK> <CR>	2F 2F 46 30 30 4D 30 36 49 30 31 45 0D
input_2_output_6	/ / F 0 0 M 0 6 I 0 2 <CHK> <CR>	2F 2F 46 30 30 4D 30 36 49 30 32 46 0D
input_3_output_6	/ / F 0 0 M 0 6 I 0 3 <CHK> <CR>	2F 2F 46 30 30 4D 30 36 49 30 33 47 0D
input_4_output_6	/ / F 0 0 M 0 6 I 0 4 <CHK> <CR>	2F 2F 46 30 30 4D 30 36 49 30 34 40 0D
input_5_output_6	/ / F 0 0 M 0 6 I 0 5 <CHK> <CR>	2F 2F 46 30 30 4D 30 36 49 30 35 41 0D
input_6_output_6	/ / F 0 0 M 0 6 I 0 6 <CHK> <CR>	2F 2F 46 30 30 4D 30 36 49 30 36 42 0D
input_7_output_6	/ / F 0 0 M 0 6 I 0 7 <CHK> <CR>	2F 2F 46 30 30 4D 30 36 49 30 37 43 0D
input_8_output_6	/ / F 0 0 M 0 6 I 0 8 <CHK> <CR>	2F 2F 46 30 30 4D 30 36 49 30 38 4F 0D
input_1_output_7	/ / F 0 0 M 0 7 I 0 1 <CHK> <CR>	2F 2F 46 30 30 4D 30 37 49 30 31 44 0D
input_2_output_7	/ / F 0 0 M 0 7 I 0 2 <CHK> <CR>	2F 2F 46 30 30 4D 30 37 49 30 32 47 0D
input_3_output_7	/ / F 0 0 M 0 7 I 0 3 <CHK> <CR>	2F 2F 46 30 30 4D 30 37 49 30 33 46 0D
input_4_output_7	/ / F 0 0 M 0 7 I 0 4 <CHK> <CR>	2F 2F 46 30 30 4D 30 37 49 30 34 41 0D
input_5_output_7	/ / F 0 0 M 0 7 I 0 5 <CHK> <CR>	2F 2F 46 30 30 4D 30 37 49 30 35 40 0D
input_6_output_7	/ / F 0 0 M 0 7 I 0 6 <CHK> <CR>	2F 2F 46 30 30 4D 30 37 49 30 36 43 0D
input_7_output_7	/ / F 0 0 M 0 7 I 0 7 <CHK> <CR>	2F 2F 46 30 30 4D 30 37 49 30 37 42 0D
input_8_output_7	/ / F 0 0 M 0 7 I 0 8 <CHK> <CR>	2F 2F 46 30 30 4D 30 37 49 30 38 40 0D
input_1_output_8	/ / F 0 0 M 0 8 I 0 1 <CHK> <CR>	2F 2F 46 30 30 4D 30 38 49 30 31 4B 0D
input_2_output_8	/ / F 0 0 M 0 8 I 0 2 <CHK> <CR>	2F 2F 46 30 30 4D 30 38 49 30 32 48 0D
input_3_output_8	/ / F 0 0 M 0 8 I 0 3 <CHK> <CR>	2F 2F 46 30 30 4D 30 38 49 30 33 49 0D
input_4_output_8	/ / F 0 0 M 0 8 I 0 4 <CHK> <CR>	2F 2F 46 30 30 4D 30 38 49 30 34 4E 0D
input_5_output_8	/ / F 0 0 M 0 8 I 0 5 <CHK> <CR>	2F 2F 46 30 30 4D 30 38 49 30 35 4F 0D
input_6_output_8	/ / F 0 0 M 0 8 I 0 6 <CHK> <CR>	2F 2F 46 30 30 4D 30 38 49 30 36 4C 0D
input_7_output_8	/ / F 0 0 M 0 8 I 0 7 <CHK> <CR>	2F 2F 46 30 30 4D 30 38 49 30 37 4D 0D
input_8_output_8	/ / F 0 0 M 0 8 I 0 8 <CHK> <CR>	2F 2F 46 30 30 4D 30 38 49 30 38 42 0D
Query Current Matrix	/ / F 0 0 U <CHK> <CR>	2F 2F 46 30 30 55 13 0D

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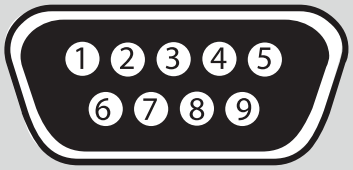
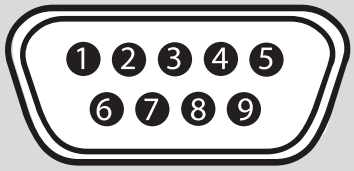
RS-232 SPECIFICATIONS

CONNECTOR	PIN	NAME	DESCRIPTION
DB9 MALE - RECEIVE 	2	RxD	Receive Data on DB9 Male
	3	TxD	Transmit Data on DB9 Male
	5	SGND	Ground
DB9 FEMALE - TRANSMIT 	2	TxD	Transmit Data on DB9 Female
	3	RxD	Receive Data on DB9 Female
	5	SGND	Ground

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