

Technical Specification of the AV2 RS232 Port

- 9600bps
- 8 data bits, one stop bit, no parity
- Binary transmission, no flow control
- Pin to pin serial cable required. NULL CABLES WILL NOT WORK.

Command Format

All commands consist of at least four parts:

HEADER__DEVICE ID__SPACE __COMMAND __EOL CHARACTER

- The header must always consist of an * ASCII character (decimal 42) followed by a delay of 25mS followed by another * ASCII character.
- The device identifier consists of up to 6 characters.
- The space is <sp> ASCII (decimal 32).
- The command consists of a single character plus additional optional data bytes.
- The EOL character is decimal 255.

The reply is of a similar format. The reply header is a single # ASCII character (decimal 35) followed by the device identifier then the reply code. The reply also has decimal 255 as an EOL character.

e.g. for selecting source input 1 on AV2 the following command would be sent:

* (25mS) *AV2 47d 255d

and the reply would be: #AV2 47d 255d

If several commands are to be sent in succession it is important to ensure that a delay of 100ms is inserted between each command.

It should also be noted that if subsequent commands are sent within a 200ms window of each other then the 25ms header delay is not required.

A Verbose mode is included to allow the user to enable/disable RS232 information being sent when parameters are changed from the front panel or input signal changes occur. By default this is set to on.

Single Byte Commands

The following commands only require one data byte. Each command is echoed after it is successfully received. In addition to this if a system parameter is changed as a result of the command the System Status packet is also sent, See Output Data section for details. The output data for some commands differs from this structure. Commands with special outputs are indicated and are explained in the Output Data section

Command	Data
On	33(21H)
Standby	34(22H)
Mute on	36(24H)
Mute off	37(25H)
Display on	38(26H)
Display off	39(27H)
Midnight on	40(28H)
Midnight off	41(29H)
Bass mix on	42(2AH)
Bass mix off	43(2BH)
Cine EQ on	44(2CH)
Cine EQ off	45(2DH)
Reset all defaults (EXT reset to RC5)	46(2EH)
Input 1 (AN1)	47(2FH)
Input 2 (AN2)	48(30H)
Input 3 (AN3)	49(31H)
Input 4 (AN4)	50(32H)
Input 5 (AN5)	51(33H)
Input 6 (AN6)	52(34H)
Input 7 (OP1)	53(35H)
Input 8 (OP2)	54(36H)
Input 9 (CO1)	55(37H)
Input 10 (CO2)	56(38H)
Mode 1	57(39H)
Mode 2	58(3AH)
Mode 3	59(3BH)
Mode 4	60(3CH)
Mode 5	61(3DH)
Mode 6	62(3EH)
Mode 7 (Not used)	63(3FH)

Command	Data
Mode 8 (Not used)	64(40H)
Mode 9 (Not used)	65(41H)
Mode 10	66(42H)
Reset input defaults (EXT not reset to RC5)	80(50H)
Reset speaker defaults	102(62H)
Verbose mode on (Default ON)	103(67H)
Verbose mode off	104(68H)
Status query	105(69H)
Input menu query	106(6AH)
Speaker menu query	107(6BH)
Software version query	108(6CH)
Firmware version query	109(6DH)
Enter input menu	110(6EH)
Exit input menu	111(6FH)
Enter speaker menu	112(70H)
Exit speaker menu	113(71H)
Set units to feet	114(72H)
Set units to metres	115(73H)
Enter OSD menu	141(8D)
Exit OSD menu	142(8E)
Extra Status Query	144(90)

Multi Byte Commands

The following commands need two/three bytes: <command> <data>[<data>]

Some commands will only work from within the setup menus. To enter and exit the menus use single byte commands 6Eh to 71h. Commands requiring a menu are indicated below.

Command	Byte	Data	Description
Volume	1	35(23H)	Sets main volume
	2	0...99	
VIP1 Label	1	67(43H)	Sets VIP1 input label 0 = AN1, 1 = DVD, 2 = LASER D, 3 = TV, 4 = SAT, 5 = CABLE, 6 = HDR, 7 = VCR, 8 = GAME, 9 = PC, 10 = PREAMP, 11 = CD, 12 = CDR, 13 = TUNER, 14 = DAB, 15 = MD, 16 = DAT, 17 = TAPE, 18 = AUX, 19 = DVDA, 20 = SACD, 21 = 8CH, 22 = 6CH, 23 = --- (input off)
	2	0...23	
VIP2Label	1	68(44H)	Sets VIP2 input label 0 = AN1, 1 = DVD, 2 = LASER D, 3 = TV, 4 = SAT, 5 = CABLE, 6 = HDR, 7 = VCR, 8 = GAME, 9 = PC, 10 = PREAMP, 11 = CD, 12 = CDR, 13 = TUNER, 14 = DAB, 15 = MD, 16 = DAT, 17 = TAPE, 18 = AUX, 19 = DVDA, 20 = SACD, 23 = --- (input off)
	2	0...21	
AN3 Label	1	69(45H)	Sets AN3 input label. See VIP2 description for label codes
	2	0...21	
AN4 Label	1	70(46H)	Sets AN4 input label. See VIP2 description for label codes
	2	0...21	
AN5 Label	1	71(47H)	Sets AN5 input label. See VIP2 description for label codes
	2	0...21	
AN6 Label	1	72(48H)	Sets AN6 input label. See VIP2 description for label codes
	2	0...21	
OP1 Label	1	73(49H)	Sets OP1 input label. See VIP2 description for label codes
	2	0...21	
OP2 Label	1	74(4AH)	Sets OP2 input label. See VIP2 description for label codes
	2	0...21	
CO1 Label	1	75(4BH)	Sets CO1 input label. See VIP2 description for label codes
	2	0...21	
CO2 Label	1	76(4CH)	Sets CO2 input label. See VIP2 description for label codes
	2	0...21	
Panorama	1	77(4DH)	Switches Dolby Panorama setting on/off. 0 = off, 1 = on.
	2	0/1	
W	1	78(4EH)	Sets Dolby Panorama Width parameter. 0...7
	2	0...7	
D	1	79(4FH)	Sets Dolby Panorama Depth parameter. 0...6
	2	0...6	



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AV2 - RS232

Command	Byte	Data	Description
NEO6C	1	116 (74H)	Sets NEO6 Centre gain.
	2	0...5	0...5
Label_1_Input	1	117 (75H)	Assigns user label 1 to an input. 0 = none, 1-10 = AN1-CO2
	2	0...10	
Label_1_1	1	118 (76H)	Assigns an ASCII character to label 1 position 1 0 = ' ', 1-26 = 'A'-'Z', 27-36 = '0'-'9', 37 = '.1', 38 = '-' 39 = '/', 40 = ' '. As Label_1_1 for position 2.
	2	0...40	
Label_1_2	1	119 (77H)	
	2	0...40	
Label_1_3	1	120 (78H)	As Label_1_1 for position 3.
	2	0...40	
Label_1_4	1	121 (79H)	As Label_1_1 for position 4.
	2	0...40	
Label_1_5	1	122 (7AH)	As Label_1_1 for position 5.
	2	0...40	
Label_1_6	1	123 (7BH)	As Label_1_1 for position 6.
	2	0...40	
Label_1_7	1	124 (7CH)	As Label_1_1 for position 7.
	2	0...40	
Label_2_Input	1	125 (7DH)	Assigns user label 2 to an input. 0 = none, 1-10 = AN1-CO2
	2	0...10	
Label_2_1	1	126 (7EH)	Assigns an ASCII character to label 1 position 1 0 = ' ', 1-26 = 'A'-'Z', 27-36 = '0'-'9', 37 = '.1', 38 = '-' 39 = '/', 40 = ' '. As Label_1_1 for position 2.
	2	0...40	
Label_2_2	1	127 (7FH)	
	2	0...40	
Label_2_3	1	128 (80H)	As Label_1_1 for position 3.
	2	0...40	
Label_2_4	1	129 (81H)	As Label_1_1 for position 4.
	2	0...40	
Label_2_5	1	130 (82H)	As Label_1_1 for position 5.
	2	0...40	
Label_2_6	1	131 (83H)	As Label_1_1 for position 6.
	2	0...40	
Label_2_7	1	131 (84H)	As Label_1_1 for position 7.
	2	0...40	

Command	Byte	Data	Description
Label_3_Input	1	132(85H)	Assigns user label 3 to an input.
	2	0...10	0 = none, 1-10 = AN1-CO2
Label_3_1	1	133(86H)	Assigns an ASCII character to label 1 position 1
	2	0...40	0 = ‘ ‘, 1-26 = ‘A’-‘Z’, 27-36 = ‘0’-‘9’, 37 = ‘.1’, 38 = ‘-‘, 39 = ‘/’, 40 = ‘]’.
Label_3_2	1	134(87H)	As Label_1_1 for position 2.
	2	0...40	
Label_3_3	1	135(88H)	As Label_1_1 for position 3.
	2	0...40	
Label_3_4	1	136(89H)	As Label_1_1 for position 4.
	2	0...40	
Label_3_5	1	137(8AH)	As Label_1_1 for position 5.
	2	0...40	
Label_3_6	1	138(8BH)	As Label_1_1 for position 6.
	2	0...40	
Label_3_7	1	139(8CH)	As Label_1_1 for position 7.
	2	0...40	
LIP_SYNC	1	145(91H)	Set lip synch delay.
	2	0...15	0 = 0mS, 15 = 150mS.
Speaker size – left / right Speaker menu only	1	81(51H)	1 = small, 2 = large
	2	1/2	Note: Main speakers can never be turned off, and can only be set to small if a Sub is set to Yes.
Speaker size – centre Speaker menu only	1	82(52H)	0 = off, 1 = small, 2 = large
	2	0...2	
Speaker size – surround Speaker menu only	1	83(53H)	0 = off, 1 = small, 2 = large
	2	0...2	
Speaker size – extra rear Speaker menu only	1	84(54H)	0 = off, 1 = 1 small, 2 = 1 large, 3 = 2 small, 4 = 2 large.
	2	0...4	Note: Can only select if surround speakers set to small or large.
Subwoofer Speaker menu only	1	85(55H)	0 = off, 1 = on
	2	0/1	Note: Can only set to off if Main set to large.
SBF Speaker menu only	1	146(92H)	Subwoofer cut off frequency 40-140HZ
	2	0...10	0 = 40Hz...10=140Hz Note: Can only be set if Sub set to yes and 1 or more speaker set to small.

Command	Byte	Data	Description
Speaker distance – left Speaker menu only	1	86(56H)	Speaker distance - Left Note: 0...40 ft or 0...120 m (120 = 12.0m)
	2	0...40/ 0...120	
Speaker distance – centre Speaker menu only	1	87(57H)	Speaker distance - Centre Note: 0...40 ft or 0...120 m (120 = 12.0m)
	2	0...40/ 0...120	
Speaker distance – right Speaker menu only	1	88(58H)	Speaker distance - Right Note: 0...40 ft or 0...120 m (120 = 12.0m)
	2	0...40/ 0...120	
Speaker distance – right surround Speaker menu only	1	89(59H)	Speaker distance – Right Surround Note: 0...40 ft or 0...120 m (120 = 12.0m)
	2	0...40/ 0...120	
Speaker distance – right rear Speaker menu only	1	90(5AH)	Speaker distance – Right Rear Note: 0...40 ft or 0...120 m (120 = 12.0m)
	2	0...40/ 0...120	
Speaker distance – left rear Speaker menu only	1	91(5BH)	Speaker distance – Left Rear Note: 0...40 ft or 0...120 m (120 = 12.0m)
	2	0...40/ 0...120	
Speaker distance – left surround Speaker menu only	1	92(5CH)	Speaker distance – Left Surround Note: 0...40 ft or 0...120 m (120 = 12.0m)
	2	0...40/ 0...120	
Speaker distance – sub Speaker menu only	1	93(5DH)	Speaker distance - Sub Note: 0...40 ft or 0...120 m (120 = 12.0m)
	2	0...40/ 0...120	

Command	Byte	Data	Description
Noise Signal	1	143 (8FH)	Switch noise test signal on.
	2	0...8	0 = off, 1 = L, 2 = C, 3 = R, 4 = RS, 5 = RR, 6 = LR, 7 = LS, 8 = S.
Speaker level – left	1	94 (5EH)	Speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	2	0...60	
Speaker level – centre	1	95 (5FH)	Speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	2	0...60	
Speaker level – right	1	96 (60H)	Speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	2	0...60	
Speaker level – right surround	1	97 (61H)	Speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	2	0...60	
Speaker level – right rear	1	98 (62H)	Speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	2	0...60	
Speaker level – left rear	1	99 (63H)	Speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	2	0...60	
Speaker level – left surround	1	100 (64H)	Speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	2	0...60	
Speaker level – sub	1	101 (65H)	Speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	2	0...60	
This function erases PIC software.	1	147 (93H)	This command sets the AV2 ready to load new PIC software. Note: The contents of the PIC are erased by this function.
	2	14	
	3	11	

Output Data

Command	Byte	bit(s)	Data	Description
System Status	1	-	105 (69H)	These five bytes (105 + four data bytes) are sent by the AV2 every time a system parameter is changed
	2	8	0/1	0 = Standby, 1 = On
		7	0/1	0 = Input menu off, 1= Input menu on
		6	0/1	0 = Speaker menu off, 1= Speaker menu on
		5	0/1	0 = Display off, 1 = Display on
		4	0/1	0 = Dolby Digital off, 1 = Dolby Digital on
		3	0/1	0 = Dolby PLII off, 1 = Dolby PLII on
		2	0/1	0 = DTS off, 1 = DTS on
		1	0/1	0 = Stereo off, 1 = Stereo on
	3	8	0/1	0 = Midnight mode off, 1 = Midnight mode on
		7	0/1	0 = Bass mix off, 1 = Bass mix on
		6	0/1	0 = Cine EQ off, 1 = Cine EQ on
		5	0/1	0 = Verbose off, 1 = Verbose on
		4...1	0001... 1111	Current input : 0001 = VIP1, 0010 = VIP2, 0011 = AN3, 0100 = AN4, 0101 = AN5, 0110 = AN6, 0111 = OP1, 1000 = OP2, 1001 = CO1, 1010 = CO2, 1011 = Multi, 1100 = Future, 1101 = Future, 1110 = Future, 1111 = Future
	4	8	0/1	0 = Mute off, 1 = Mute on
		7...1	0...99	Volume 0 to 99
	5	-	0...255	Current decode mode : 0 = Direct, 1 = Mono, 2 = Stereo, 3 = PLII Music, 4 = PLII Movie, 5 = Neo:6 Cinema, 6 = Neo:6 Music, 7 = Neo:6, 8 = DTS, 9 = DTS ES-Matrix, 10 = DTS ES-Discrete, 11 = Dolby Digital, 12 = Dolby Digital EX 13 = No signal, 14 = Multi, 15 = '---', 16 = 1/1, 17 = 1/0, 18 = 2/0, 19 = 3/0, 20 = 2/1, 21 = 3/1, 22 = 2/2, 23 = 3/2, 24-47 = Future, 48 = 1/1.1, 49 = 1/0.1, 50 = 2/0.1, 51 = 3/0.1, 52 = 2/1.1, 53 = 3/1.1, 54 = 2/2.1, 55 = 3/2.1, 25-255 = Future

Command	Byte	Data	Description
Input menu status	1	106 (6AH)	
	2	0...23	VIP1 input label 0 = AN1, 1 = DVD, 2 = LASER D, 3 = TV, 4 = SAT, 5 = CABLE, 6 = HDR, 7 = VCR, 8 = GAME, 9 = PC, 10 = PREAMP, 11 = CD, 12 = CDR, 13 = TUNER, 14 = DAB, 15 = MD, 16 = DAT, 17 = TAPE, 18 = AUX, 19 = DVDA, 20 = SACD, 21 = 8CH, 22 = 6CH, 23 = --- (input off)
	3	0...21	VIP2 input label 0 = AN1, 1 = DVD, 2 = LASER D, 3 = TV, 4 = SAT, 5 = CABLE, 6 = HDR, 7 = VCR, 8 = GAME, 9 = PC, 10 = PREAMP, 11 = CD, 12 = CDR, 13 = TUNER, 14 = DAB, 15 = MD, 16 = DAT, 17 = TAPE, 18 = AUX, 19 = DVDA, 20 = SACD, 21 = --- (input off)
	4	0...21	AN3 input label. See VIP2 description for label codes
	5	0...21	AN4 input label. See VIP2 description for label codes
	6	0...21	AN5 input label. See VIP2 description for label codes
	7	0...21	AN6 input label. See VIP2 description for label codes
	8	0...21	CO1 input label. See VIP2 description for label codes
	9	0...21	CO2 input label. See VIP2 description for label codes
	10	0...21	OP1 input label. See VIP2 description for label codes
	11	0...21	OP2 input label. See VIP2 description for label codes
	12	0/1	PLII Panorama, 0 = off, 1 = on
	13	0...7	PLII Centre width 0 to 7
	14	0...6	PLII Dimension 0 to 6



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Command	Byte	Data	Description
Speaker menu status	1	107 (6BH)	
	2	1 / 2	Left / right speaker size, 1 = small, 2 = large
	3	0...2	Centre speaker size, 0 = off, 1 = small, 2 = large
	4	0...2	Surround speaker size, 0 = off, 1 = small, 2 = large
	5	0...4	Extra rear speaker size, 0 = off, 1 = 1 small, 2 = 2 small, 3 = 2 small, 4 = 2 large
	6	0 / 1	Subwoofer, 0 = off, 1 = on
	7	0 / 1	Distance units, 0 = feet, 1 = metres
	8	0...30	Left speaker distance
	9	0...30	Centre speaker distance
	10	0...30	Right speaker distance
	11	0...30	Right surround speaker distance
	12	0...30	Right rear speaker distance
	13	0...30	Left rear speaker distance
	14	0...30	Left surround speaker distance
	15	0...30	Subwoofer distance
	16	0...60	Left speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	17	0...60	Centre speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	18	0...60	Right speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	19	0...60	Right surround speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	20	0...60	Right rear speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	21	0...60	Left rear speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	22	0...60	Left surround speaker level trim where 00 = -30, 30 = 0 and 60 = +30
	23	0...60	Subwoofer speaker level trim where 00 = -30, 30 = 0 and 60 = +30

Command	Byte	Data	Description
Software version query	1	108 (6CH)	
	2	0...255	Software version byte 1
	3	0...255	Software version byte 2
Firmware version query	1	109 (6DH)	
	2	0...255	Firmware version byte 1
	3	0...255	Firmware version byte 2
	4	0...255	Firmware version byte 3
Extra Status query	1	144 (90H)	
	2	0...10	Label_1_Input
	3	0...40	Label_1_1
	4	0...40	Label_1_2
	5	0...40	Label_1_3
	6	0...40	Label_1_4
	7	0...40	Label_1_5
	8	0...40	Label_1_6
	9	0...40	Label_1_7
	10	0...10	Label_1_Input
	11	0...40	Label_1_1
	12	0...40	Label_1_2
	13	0...40	Label_1_3
	14	0...40	Label_1_4
	15	0...40	Label_1_5
	16	0...40	Label_1_6
	17	0...40	Label_1_7
	18	0...10	Label_1_Input
	19	0...40	Label_1_1
	20	0...40	Label_1_2
	21	0...40	Label_1_3
	22	0...40	Label_1_4
	23	0...40	Label_1_5
	24	0...40	Label_1_6
	25	0...40	Label_1_7
	26	0...5	NEO:6 Centre
	28	0...15	Lip Sync
		0...10	Sub F

Command	Byte	Data	Description
DVD5 on	1	93(147)	Switch DVD5 on.
DVD5 off	1	94(148)	Switch DVD5 off.