

VCM-88C Control Protocols

The VCM-88C can be set to receive one of four different control protocols, as determined by back-panel Protocol DIP switch settings:

- 1) **Standard** - for use with Crestron, or current AMX systems.
- 2) **Protea Software** - for use with Ashly Protea System Software, also used by many custom driver developers.
- 3) **RD-8C, RW-8C** - for use with Ashly RD-8C & RW-8C remotes.
- 4) **Legacy** - for use with original AMX "VCX-80" driver.

Note: Channel/Device Id. is determined by back-panel Device ID DIP switch settings, please refer to the VCM-88C users manual.

Standard (Ashly RD/RW-8, AMX, Crestron)

Baud Rate: 9600 BPS

1 Start Bit + 8 Data Bits + 1 Stop Bit

No Parity Bits, No Flow Control

Byte 1, Channel Id.: \$80-\$FF = channels 1-128 respectively; 8 channels x 16 Device Ids

Byte 2, Channel Level: \$00-\$7F = -75dB to +20.25dB, in .75dB steps; (\$64 =0dB)

Protea System Software Protocol

- 1) Serial port settings are as follows: 9600 BPS, 1 start bit + 8 data bits + 1 stop bit, no parity, no flow control.
- 2) Units are identified by their Device Id, which is configurable via back panel DIP switches.
- 3) The unit's protocol must be set to Protea Software via back panel DIP switches.
- 4) Data requests invoke a data response message from the selected device.
- 5) All non-applicable messages/bytes are passed through the unit.

Message Types:

00 = Data Request – ask device for current channel level parameters.

01 = Data Response – device replies with its channel levels, channel on/off status, remote disable switch status/mode, & firmware rev.

02 = Data Download – send new channel levels & remote disable switch mode to the device.

Data Request:

<u>Byte#</u>		<u>Value</u>	<u>Description</u>
1	Start Byte:	\$F0	Sys-Ex status byte (\$ denotes hexadecimal numbers)
2		00	Sys-Ex id escapement
3		01	Ashly MIDI manufacturer id most significant byte
4		\$2A	Ashly MIDI manufacturer id least significant byte
5		\$05	VCM-88E model number
6		\$0n	n = Device id (\$0-F)
7	MSG Type:	00	Data request message
8	End Byte:	\$F7	Sys-Ex end of transmission byte

Data Response:

<u>Byte#</u>		<u>Value</u>	<u>Description</u>
1	Start Byte:	\$F0	Sys-Ex status byte (\$ denotes hexadecimal numbers)
2		00	Sys-Ex id escapement
3		01	Ashly MIDI manufacturer id most significant byte
4		\$2A	Ashly MIDI manufacturer id least significant byte
5		\$05	VCM-88E model number
6		\$0n	n = Device id (\$0-F)
7	MSG Type:	01	Data response message

8	\$xx	Channel 1 level byte
9	\$xx	Channel 2 level byte
10	\$xx	Channel 3 level byte
11	\$xx	Channel 4 level byte
12	\$xx	Channel 5 level byte
13	\$xx	Channel 6 level byte
14	\$xx	Channel 7 level byte
15	\$xx	Channel 8 level byte
16	\$xx	Master level byte
17	\$yy	<u>07654321</u> : channel on/off status: 0 = Off, 1 = On
18	\$zz	<u>fffSRM8</u> : <i>fff</i> = firmware revision, <i>S</i> = Remote Disable switch status (0 = out, 1 = in) <i>R</i> = Remote Disable mode (0 = force unity, 1 = normal), <i>M8</i> = Master & Ch.8 on/off Status
19	<i>End Byte:</i>	\$F7 Sys-Ex end of transmission byte

New Data/Channel Levels Download:

<u>Byte#</u>	<u>Value</u>	<u>Description</u>
1	<i>Start Byte:</i> \$F0	Sys-Ex status byte (<i>\$</i> denotes hexadecimal numbers)
2	00	Sys-Ex id escapement
3	01	Ashly MIDI manufacturer id most significant byte
4	\$2A	Ashly MIDI manufacturer id least significant byte
5	\$05	VCM-88E model number
6	\$0n	<i>n</i> = Device id (\$0-F)
7	<i>MSG Type:</i> 02	New channel levels message
8	\$xx	New channel 1 level byte
9	\$xx	New channel 2 level byte
10	\$xx	New channel 3 level byte
11	\$xx	New channel 4 level byte
12	\$xx	New channel 5 level byte
13	\$xx	New channel 6 level byte
14	\$xx	New channel 7 level byte
15	\$xx	New channel 8 level byte
16	\$xx	New master level byte
17	\$yy	<u>07654321</u> : channel on/off status: 0 = Off, 1 = On
18	\$zz	<u>0000*RM8</u> : <i>R</i> = new Remote Disable mode (0 = force unity, 1 = normal), <i>M8</i> = Master & Ch.8 on/off Status, (<i>*Bit3</i> = switch status added to msg. echo)
19	<i>End Byte:</i>	\$F7 Sys-Ex end of transmission byte

Channel/Master Level Byte Details:

<u>xx</u>	<u>dB level</u>	<u>xx</u>	<u>dB level</u>	<u>xx</u>	<u>dB level</u>
00	-75	27	-45.75	4E	-16.5
01	-74.25	28	-45	4F	-15.75
02	-73.5	29	-44.25	50	-15
03	-72.75	2A	-43.5	51	-14.25
04	-72	2B	-42.75	52	-13.5
05	-71.25	2C	-42	53	-12.75
06	-70.5	2D	-41.25	54	-12
07	-69.75	2E	-40.5	55	-11.25
08	-69	2F	-39.75	56	-10.5
09	-68.25	30	-39	57	-9.75
0A	-67.5	31	-38.25	58	-9
0B	-66.75	32	-37.5	59	-8.25
0C	-66	33	-36.75	5A	-7.5
0D	-65.25	34	-36	5B	-6.75
0E	-64.5	35	-35.25	5C	-6
0F	-63.75	36	-34.5	5D	-5.25
10	-63	37	-33.75	5E	-4.5
11	-62.25	38	-33	5F	-3.75
12	-61.5	39	-32.25	60	-3

13	-60.75	3A	-31.5	61	-2.25
14	-60	3B	-30.75	62	-1.5
15	-59.25	3C	-30	63	-0.75
16	-58.5	3D	-29.25	64	0
17	-57.75	3E	-28.5	65	0.75
18	-57	3F	-27.75	66	1.5
19	-56.25	40	-27	67	2.25
1A	-55.5	41	-26.25	68	3
1B	-54.75	42	-25.5	69	3.75
1C	-54	43	-24.75	6A	4.5
1D	-53.25	44	-24	6B	5.25
1E	-52.5	45	-23.25	6C	6
1F	-51.75	46	-22.5	6D	6.75
20	-51	47	-21.75	6E	7.5
21	-50.25	48	-21	6F	8.25
22	-49.5	49	-20.25	70	9
23	-48.75	4A	-19.5	71	9.75
24	-48	4B	-18.75	72-7F	10.5
25	-47.25	4C	-18		
26	-46.5	4D	-17.25		

RD-8C, RW-8C

Baud Rate: 9600 BPS

1 Start Bit + 8 Data Bits + 1 Stop Bit

No Parity Bits, No Flow Control

<u>Byte#</u>		<u>Hex Value to TX</u>	<u>Description</u>
1	<i>Start Byte:</i>	F0	Sys-Ex status byte (<i>\$</i> denotes hexadecimal numbers)
2		00	Sys-Ex id escapement
3		01	Ashly MIDI manufacturer id most significant byte
4		2A	Ashly MIDI manufacturer id least significant byte
5		0F	RD8-C model number
6		00	Device id (always 0 for RD-8C or RW-8C)
7	<i>MSG Type:</i>	00	Fader Settings message
8		<i>xx</i>	Channel 1 Fader level: 0-\$7F; where 0 = -75dB/off, \$64 = 0dB, \$7F = +20.25dB
9		<i>xx</i>	Channel 2 Fader level: 0-\$7F; where 0 = -75dB/off, \$64 = 0dB, \$7F = +20.25dB
10		<i>xx</i>	Channel 3 Fader level: 0-\$7F; where 0 = -75dB/off, \$64 = 0dB, \$7F = +20.25dB
11		<i>xx</i>	Channel 4 Fader level: 0-\$7F; where 0 = -75dB/off, \$64 = 0dB, \$7F = +20.25dB
12		<i>xx</i>	Channel 5 Fader level: 0-\$7F; where 0 = -75dB/off, \$64 = 0dB, \$7F = +20.25dB
13		<i>xx</i>	Channel 6 Fader level: 0-\$7F; where 0 = -75dB/off, \$64 = 0dB, \$7F = +20.25dB
14		<i>xx</i>	Channel 7 Fader level: 0-\$7F; where 0 = -75dB/off, \$64 = 0dB, \$7F = +20.25dB
15		<i>xx</i>	Channel 8 Fader level: 0-\$7F; where 0 = -75dB/off, \$64 = 0dB, \$7F = +20.25dB
16	<i>Stop Byte:</i>	F7	Sys-Ex end of transmission byte

Legacy (original VCX-80 protocol)

Baud Rate: 4800 BPS

1 Start Bit + 9 Data Bits + 1 Stop Bit

No Parity Bits, No Flow Control

Byte # 1 – Channel Id.: 256-384 (base10) = channels 1-128 respectively; 8 channels x 16 Device Ids

Byte # 2 – Channel Level: 0-255 (base10) = -75dB to +20.625dB, in 0.375dB steps; (200 = 0dB)
