



VauxProtocol Version 5.21

RS-232 Control

***For more information, visit our web site: www.vauxelectronics.com
or email us: tech@vauxelectronics.com***

***Vaux Electronics, Inc.
Mesa, Arizona, USA
PHONE: (480) 354-5556
FAX: (480) 354-5558***

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VauxProtocol Commands & Messages (RS-232)

Connection of a computer or control system to the VC-232 serial port allows you to fully control the system using a selection of *Commands*, and to obtain immediate feedback on system status by listening to *Messages*. This Command/Message language is called VauxProtocol.

VauxProtocol *Commands* begin with an asterisk (*), followed by two letters, then one or more comma-delimited decimal number parameters, and finally a carriage-return and/or line-feed char (CR/LF). The numbers are ascii-encoded-decimal number strings which may range from 0 to 255. The decimal numbers may be one, two, or three digits total, and may include leading zeroes, or not, as desired (ie: 001, 01, and 1, are all equivalent).

A comma must be used to delimit fields, and the command requires a CR, LF, or CR/LF as termination delimiter -- indicated by <cr>. Spaces may be removed, or inserted if desired (they are ignored).

Note: the following commands are all identical:

```
*CW,035,007 <cr>
or:   * C W, 035 , 007 <cr>   (extra spaces are ignored)
or:   *CW,35,7 <cr>         (leading zeros also optional)
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Similarly, VauxProtocol *Messages* begin with an exclamation (!), followed by one letter, and then one or more comma-delimited decimal number parameters, and a terminating CR/LF.

The CR/LF characters are the only non-printable ascii characters used in VauxProtocol (CR = 0D hex = 13 decimal; LF = 0A hex = 10 decimal)).

Coding Tip: You will likely only need to implement a handful of commands/messages in a typical application! The simplest application will simply send a subset of the commands, and ignore any received Status Messages.

Coding Tip: Status messages are sent in response to RS-232, remote-control, or keypad control – by parsing the messages independently of the command programming, and updating internal variables in your program, you will “close-the-loop” on the whole system. You may then send commands blindly, and allow you message-handler to update your variables/displays. If you wish to ensure that your command resulted in an action, you may monitor internal variables after sending your command (instead of waiting for the actual message), and implement timeout/retry/alert code as desired for your application. This is a more generalized technique than simply sending a command and then waiting to parse a general command-acknowledge message.

Control-Command & Status-Message Summary:

- For zones 1 to 255, Status-Messages are sent in response to Control-Commands.
- Many commands return the same status message – simplifying message parsing programming.
- For zone 0 (all zones), no messages returned (multiple switchers would be responding together).
- Note that volume/bass/treble/mute commands will only affect zones that are not off, even if the requested zone is 0.
- A muted zone will be unmuted if 1) certain route commands (*CW,10/11/12/13/15/17/19) are received, or 2) certain volume commands (*CW,24/25/35/36) are received.

<i>Control-Cmd Description</i>	<i>Command</i>	<i>Status-Message</i>
Route-Audio/Video ssa/ssv (Zone-0 OK)	*CW,10,zon,ssa,ssv <cr>	!S,10,zon,ssa,ssv <cr> then !S,50,zon,sta,vvl,vvr <cr>
Route-Audio ssa (Zone-0 OK)	*CW,11,zon,ssa <cr>	!S,11,zon,ssa <cr> then !S,50,zon,sta,vvl,vvr <cr>
Route-Video ssv (Zone-0 OK)	*CW,12,zon,ssv <cr>	!S,12,zon,ssv <cr>
Route-A/V-Src src (Zone-0 OK)	*CW,13,zon,src <cr>	!S,10,zon,ssa,ssv <cr> then !S,50,zon,sta,vvl,vvr <cr>
Route-Muted ssa (Zone-0 OK)	*CW,14,zon,ssa <cr>	!S,11,zon,ssa <cr> then !S,50,zon,sta,vvl,vvr <cr>
Route-At-Volume ssa (Zone-0 OK)	*CW,15,zon,ssa,vvl,vvr <cr>	!S,11,zon,ssa <cr> then !S,50,zon,sta,vvl,vvr <cr>
Route-At-Vol-Muted ssa (Zone-0 OK)	*CW,16,zon,ssa,vvl,vvr <cr>	!S,11,zon,ssa <cr> then !S,50,zon,sta,vvl,vvr <cr>
Route-Cluster ssa/ssv (Zone-0 OK)	*CW,17,clu,ssa,ssv <cr>	!S,10,zon,ssa,ssv <cr> then !S,50,zon,sta,vvl,vvr <cr>
Route-Cluster-Muted ssa/ssv (Z-0 OK)	*CW,18,clu,ssa,ssv <cr>	!S,10,zon,ssa,ssv <cr> then !S,50,zon,sta,vvl,vvr <cr>
Route-Cluster-Src src (Zone-0 OK)	*CW,19,clu,src <cr>	!S,10,zon,ssa,ssv <cr> then !S,50,zon,sta,vvl,vvr <cr>

Routing Notes:

Routing audio using standard route commands (*CW,10/11/13,zon...):

- 1) Routing a source when zone is currently off:
 - Routes and sets zone volume to:
 - a) Normal (factory setting) route volume uses programmed "Zone-Initial-Volume."
 - b) Optionally, may configure route volume to be "Previous" volume.
(this was level when zone was last turned off)
(the implementation actually updates Zone-Initial-Volume at every zone turn-off).
- 2) Routing a source when zone is currently on (skipped if source is the same):
 - Routes at current zone volume.
- 3) Routing a source when zone is currently muted:
 - Routes and unmutes to previous volume (level when zone was muted).

Routing audio using Route-Audio-Muted command (*CW,14,zon,ssa):

- 1) Routing a source when zone is currently off:
 - Routes and places zone in muted state, and sets unmute volume to:
 - a) Normal (factory setting) unmute level uses programmed "Zone-Initial-Volume."

b) Optionally, may configure unmute level to be "Previous" volume.
(this was level when zone was last turned off)
(the implementation actually updates Zone-Initial-Volume at every zone turn-off,
then this route-muted command loads unmute levels from initial).

2) Routing a source when zone is currently on (skipped if source is the same):

- Routes at current zone volume.

NOTE: DOES NOT MUTE IF ZONE IS ON

3) Routing a source when zone is currently muted:

- Routes and leaves zone in muted state.

- Unmute level will be previous volume (level when zone was muted).

Routing audio using Route-Audio-At-Volume command (*CW,15,zon,ssa,vvl,vvr):

1) Routing a source when zone is currently off:

- Routes and sets zone volume to specified volume level.

2) Routing a source when zone is currently on:

- Routes at specified volume level (if source is the same, just updates volume).

3) Routing a source when zone is currently muted:

- Routes and unmutes to specified volume level.

Routing audio using Route-Audio-At-Vol-Muted command (*CW,16,zon,ssa,vvl,vvr):

1) Routing a source when zone is currently off:

- Routes and places zone in muted state.

- Unmute level will be specified volume level.

2) Routing a source when zone is currently on:

- Routes at specified volume level (if source is the same, just updates volume).

NOTE: DOES NOT MUTE IF ZONE IS ON

3) Routing a source when zone is currently muted:

- Routes and leaves zone in muted state.

- Unmute level will be specified volume level.

<i>Control-Cmd Description</i>	<i>Command</i>	<i>Status-Message</i>
Absolute-L/R-Vols vvl/vvr (Zone-0 OK)	*CW,20,zon,vvl,vvr <cr>	!S,50,zon,sta,vvl,vvr <cr>
Absolute-Left-Volume vvl	*CW,21,zon,vvl <cr>	!S,21,zon,vvl <cr>
Absolute-Right-Volume vvr	*CW,22,zon,vvr <cr>	!S,22,zon,vvr <cr>
Absolute-Volume vol (Zone-0 OK)	*CW,23,zon,vol <cr>	!S,50,zon,sta,vvl,vvr <cr>
Volume-Up (2-dB/step) (Zone-0 OK)	*CW,24,zon <cr>	!S,50,zon,sta,vvl,vvr <cr>
Volume-Dn (2-dB/step) (Zone-0 OK)	*CW,25,zon <cr>	!S,50,zon,sta,vvl,vvr <cr>
Left-Volume-Up (2-dB/step)	*CW,26,zon <cr>	!S,21,zon,vvl <cr>
Left-Volume-Dn (2-dB/step)	*CW,27,zon <cr>	!S,21,zon,vvl <cr>
Right-Volume-Up (2-dB/step)	*CW,28,zon <cr>	!S,22,zon,vvr <cr>
Right-Volume-Dn (2-dB/step)	*CW,29,zon <cr>	!S,22,zon,vvr <cr>
Balance-to-Left (L-up/R-dn)	*CW,30,zon <cr>	!S,20,zon,vvl,vvr <cr>
Balance-to-Right (R-up/L-dn)	*CW,31,zon <cr>	!S,20,zon,vvl,vvr <cr>
Start-Ramping-Volume-Up	*CW,35,zon <cr>	!S,50,zon,sta,vvl,vvr <cr> (/step)
Start-Ramping-Volume-Down	*CW,36,zon <cr>	!S,50,zon,sta,vvl,vvr <cr>(/step)
Stop-Ramping-Volume	*CW,37,zon <cr>	(none)
NOTE: volume ramps at 2-dB/120-msec until stopped, or Min/Max-Vol reached!		
Absolute-Bass/Treble levels bas/trb	*CW,40,zon,bas,trb <cr>	!S,40,zon,bas,trb <cr>
Flat-Bass/Treble (0-dB) (Zone-0 OK)	*CW,41,zon <cr>	!S,40,zon,bas,trb <cr>
Bass-Up (3-dB/step)	*CW,42,zon <cr>	!S,40,zon,bas,trb <cr>
Bass-Down (3-dB/step)	*CW,43,zon <cr>	!S,40,zon,bas,trb <cr>
Treble-Up (3-dB/step)	*CW,44,zon <cr>	!S,40,zon,bas,trb <cr>
Treble-Down (3-dB/step)	*CW,45,zon <cr>	!S,40,zon,bas,trb <cr>
Audio-Mute-Toggle	*CW,50,zon <cr>	!S,50,zon,sta,vvl,vvr <cr>
Audio-Mute-On (Zone-0 OK)	*CW,51,zon <cr>	!S,50,zon,sta,vvl,vvr <cr>
Audio-Mute-Off (Zone-0 OK)	*CW,52,zon <cr>	!S,50,zon,sta,vvl,vvr <cr>
Send IR Command (Aris-only)	*CW,100,isd,ifc,0,0,0 <cr>	!S,100,isd,ifc,0,0,0,xst <cr>
Send X10 Command (Aris-only)	*CW,120,xhc,xuc,xfc,rpt,0 <cr>	!S,120,xhc,xuc,xfc,rpt,0,xst <cr>
Play a Macro (Aris-only)	*CW,150,mac,0,0,0,0 <cr>	!S,150,mac,0,0,0,0,xst <cr>

Configuration-Command and System-Control Command Summary:

Coding Tip: In many applications, the factory settings are just right. You may want to adjust zone parameters manually using an RC-8 or RC-16 remote control – see the notes below.

<i>Config-Write-Cmd Description</i>	<i>Command</i>	<i>Factory setting</i>
Write-Switcher-Class-and-Base-Zone	*PW,1,swc,0,0,bzn <cr>	swc = 90, bzn = 1
Write-Zone-Minimum-Volume-Level	*PW,10,zon,vll <cr>	0 (-80 dB)
Write-Zone-Maximum-Volume-Level	*PW,11,zon,vhh <cr>	35 (+6 dB)
Write-Zone-Initial-Left-Vol-Level	*PW,12,zon,vil <cr>	22 (-20 dB)
Write-Zone-Initial-Right-Vol-Level	*PW,13,zon,vir <cr>	22 (-20 dB)
Write-Zone-Mute-Volume-Level	*PW,14,zon,vmm <cr>	0 (-80 dB)
Write-Zone-Bass-Level	*PW,15,zon,bas <cr>	4 (0 dB)
Write-Zone-Treble-Level	*PW,16,zon,trb <cr>	4 (0 dB)
Write-Zone-Audio-Mode	*PW,17,zon,mod <cr>	1 (stereo)
Write-Zone-Taper-Up-Delay	*PW,18,zon,tud <cr>	20 (ms/2-dB-step)
Write-Zone-Taper-Down-Delay	*PW,19,zon,tdd <cr>	5 (ms/2-dB-step)
Write-Zone-Parameter-Config-Table	*PW,30,zon,vll,vhh,vil,vir,vmm,bas,trb,mod,tud,tdd <cr>	
Write-Zone-Config-Flag	*PW,20,zon,flg,fst <cr>	fst = 0 (off-state)
Write-Cluster-Table (8-zone-switcher)	*PW,21,clu,z01,z02...z08 <cr>	zxx = 0 (exclude zone)
(16-zone-switcher)	*PW,21,clu,z01,z02...z16 <cr>	zxx = 0 (exclude zone)
Write-Source-Trim-Level	*PW,22,ssa,stl <cr>	stl = 0 (0 dB)

<i>Config-Read-Cmd Description</i>	<i>Command</i>	<i>Config-Message</i>
Read-Switcher-Class-and-Base-Zone	*PR,1 <cr>	!C,1,swc,0,0,bzn <cr>
Read-Zone-Minimum-Volume-Level	*PR,10,zon <cr>	!C,10,zon,vll <cr>
Read-Zone-Maximum-Volume-Level	*PR,11,zon <cr>	!C,11,zon,vhh <cr>
Read-Zone-Initial-Left-Vol-Level	*PR,12,zon <cr>	!C,12,zon,vil <cr>
Read-Zone-Initial-Right-Vol-Level	*PR,13,zon <cr>	!C,13,zon,vir <cr>
Read-Zone-Mute-Volume-Level	*PR,14,zon <cr>	!C,14,zon,vmm <cr>
Read-Zone-Bass-Level	*PR,15,zon <cr>	!C,15,zon,bas <cr>
Read-Zone-Treble-Level	*PR,16,zon <cr>	!C,16,zon,trb <cr>
Read-Zone-Audio-Mode	*PR,17,zon <cr>	!C,17,zon,mod <cr>
Read-Zone-Taper-Up-Delay	*PR,18,zon <cr>	!C,18,zon,tud <cr>
Read-Zone-Taper-Down-Delay	*PR,19,zon <cr>	!C,19,zon,tdd <cr>
Read-Zone-Parameter-Config-Table	*PR,30,zon <cr> !C,30,zon,vll,vhh,vil,vir,vmm,bas,trb,mod,tud,tdd <cr>	
Read -Zone-Config-Flag	*PR,20,zon,flg <cr>	!C,20,zon,flg,fst <cr>
Read -Cluster-Table (8-zone-switcher)	*PR,21,clu <cr>	!C,21,clu,z01,z02...z08 <cr>
(16-zone-switcher)	*PR,21,clu <cr>	!C,21,clu,z01,z02...z16 <cr>
Read -Source-Trim-Level	*PR,22,ssa <cr>	!C,22,ssa,stl <cr>

<i>System-Control-Cmd Description</i>	<i>Command</i>	<i>Note</i>
Zone-Restore-Factory-Settings	*PW,31,zon <cr>	
Write-Zone-Volume-Settings (zone must be on and unmuted to set these)	*PW,40,zon,cvs <cr>	
cvs = 1	Set Zone-Initial-Volume-To-Current	
cvs = 2	Set Zone-Mute-Volume-To-Current	
cvs = 3	Set Zone-Min-Volume-To-Current	
cvs = 4	Set Zone-Max-Volume-To-Current	
Restore-Factory-Settings	*PW,254,0,0,1 <cr>	The front-panel light-bar will flash, followed by the Factory-Settings Restored message (IS,190,4,0)
Force-System-Reset	*PW,255,0,0,1 <cr>	After approximately two seconds, the front-panel light-bar will flash, followed by the System-Boot message (IS,0,bzn,ccf,ccm,swc,0,svh,svl)

Request-Command & Status-Message Summary:

Status-Message are sent in response to preceding Control-Commands, but system status may also be determined at any time (by polling) using these optional Request-Commands (zon=0 not allowed).

Coding Tip: You probably do not need to need to use these commands, in most applications!

<i>Request-Command Description</i>	<i>Command</i>	<i>Status-Message</i>
Get-System-Information	*CR,0,0 <cr>	IS,0,bzn,ccf,ccm,swc,0,svh,svl <cr>
Get-Zone-Status	*CR,1,zon <cr>	IS,1,zon,sta,stv,ssa,ssv,vvl,vvr,bas,trb <cr>
Get-Audio/Video-Sources ssa/ssv	*CR,10,zon <cr>	IS,10,zon,ssa,ssv <cr>
Get-Audio-Source ssa	*CR,11,zon <cr>	IS,11,zon,ssa <cr>
Get-Video-Source ssv	*CR,12,zon <cr>	IS,12,zon,ssv <cr>
Get-Left/Right-Volumes vvl/vvr	*CR,20,zon <cr>	IS,20,zon,vvl,vvr <cr>
Get-Left-Volume vvl	*CR,21,zon <cr>	IS,21,zon,vvl <cr>
Get-Right-Volume vvr	*CR,22,zon <cr>	IS,22,zon,vvr <cr>
Get-Bass/Treble bas/trb	*CR,40,zon <cr>	IS,40,zon,bas,trb <cr>
Get-Audio-Mute-State	*CR,50,zon <cr>	IS,50,zon,sta,vvl,vvr <cr>
Get-Acknowledge	*CR,199,0 <cr>	IS,199,1 <cr>

Remote-Control Equivalent Commands and Messages:

Pressing buttons on Vaux remote controls or keypads initiates actions equivalent to the following VauxProtocol Commands. Since these actions result in the same Messages being sent (as they would for the equivalent Command), the control system must only parse one set of Messages. This means that the control system is always up-to-date on zone-routes, volume-levels, and other system parameters, reegardless of whether they were initiated by a VauxProtocol command, or by a remote/keypad button press.

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<i>Remote-Control Button-Press</i>	<i>Equivalent Command</i>	<i>Status-Message</i>
Source-Select (tuner...) or Zone-Off	*CW,13,zon,src <cr>	!S,10,zon,ssa,ssv <cr> then !S,50,zon,sta,vvl,vvr <cr>
Cluster-Source-Select (tuner...) or Off NOTE: clu 1 to 8 = remote zone 91 to 98	*CW,19,clu,src <cr>	!S,10,zon,ssa,ssv <cr> then !S,50,zon,sta,vvl,vvr <cr>
Volume-Up/Down/Release NOTE: volume ramps at 2-dB/120-msec until button released, or Min/Max-Vol reached!	*CW,35/36/37,zon <cr>	!S,20,zon,vvl,vvr <cr> (per step)
Flat (bass/treble to 0-dB)	*CW,41,zon <cr>	!S,40,zon,bas,trb <cr>
Bass-Up/Down	*CW,42/43,zon <cr>	!S,40,zon,bas,trb <cr>
Treble-Up/Down	*CW,44/45,zon <cr>	!S,40,zon,bas,trb <cr>
Mute (toggle)	*CW,50,zon <cr>	!S,50,zon,sta,vvl,vvr <cr>
IR Command (Aris-only)	*CW,100,isd,ifc,0,rpt,0 <cr>	!S,100,isd,ifc,0,rpt,0,xst <cr>
X10 Command (Aris-only)	*CW,120,xhc,xuc,xfc,rpt,0 <cr>	!S,120,xhc,xuc,xfc,rpt,0,xst <cr>
Macro (Aris-only)	*CW,150,mac,0, <cr>	!S,150,mac,0,xst <cr>

Command/Message Parameter Notes (A/V Routing and Control):

zon is zone	0 to 255 (0=all) (or 1 to 255, depending on command) (no !S mssg returned for zon=0 cmds)
src is audio/video source	0 to 8 (0=off) (or 0 to 16, depending on controller)
ssa is audio source	0 to 8 (0=off) (or 0 to 16, depending on controller)
ssv is video source	0 to 8 (0=off) (or 0 to 16, depending on controller)
vol is volume (left and right)	0 to 35 (2-dB/increment, except for 0)
vv1 is left volume level	0 to 35 (2-dB/increment, except for 0)
vv2 is right volume level	0 to 35 (2-dB/increment, except for 0)
	35 +6 dB (max volume level)
	34 +4 dB
	33 +2 dB
	32 0 dB (passthrough volume level)
	31 -2 dB
	30 -4 dB
	...
	3 -58 dB
	2 -60 dB
	1 -62 dB
	0 -80 dB (min volume level)
bas is bass level	0 to 8 (3-dB/increment)
trb is treble level	0 to 8 (3-dB/increment)
	8 +12 dB (max bass/treble level)
	7 +9 dB
	6 +6 dB
	5 +3 dB
	4 0 dB (flat bass/treble level)
	3 -3 dB
	2 -6 dB
	1 -9 dB
	0 -12 dB (min bass/treble level)
sta is audio-state code	0=off, 1=on, 2=on/muted-audio
stv is video-state code	0=off, 1=on

NOTE: Independent Audio Left and Right Volume Commands:

Source is always the same for L&R channels, but these commands allow you to provide independent volume for two mono rooms, if the zone is programmed for mono operation.

If the zone is programmed for stereo operation, you may use these left and right commands to balance the zone, or you may use the balance commands.

The left and right volumes may be different -- the volume up/down commands operate on both channels, relative to the volume of each.

Command/Message Parameter Notes (Switcher Configuration):

NOTE: Only connect to one switcher when programming swc/bzn (ie: disconnect RS-232 daisy-chain). The swc parameter is set to 91 (Separate-A/V-Switchers) when both an LE-1600A and LE-1600V are used together, on the same Base-Zone. Both switchers are then configured for swc=91. In this mode, the audio switcher handles all messages for both switchers (routes, etc), while the video switcher acts as a silent slave.

swc is Switcher-Class	90 = Normal, 91 = Separate-A/V-Switchers
bzn is Base-Zone	1 to 248 for 8-zone switcher (1 to 240 for 16-zone ctrl) (typical bzn: 1, 9, 17...)
mod is Zone-Audio-Mode	0=mono, 1=stereo
tud is Taper-Up-Delay	1 to 30 (ms/2-dB-step)
tdd is Taper-Down-Delay	1 to 30 (ms/2-dB-step)
clu is cluster number	1 to 8
zxx is include/exclude parameter for zones 1 to 8 (or 1 to 16)	1 = include zone in cluster, 0 = exclude
fst is flag state (1 or 0)	
flg is flag:	
flg = 1	When fst = 1, use zone's "Previous-Volume" as Initial, else stored level
ssa is source (1 to 8, or 1 to 16)	
stl is source-trim level (attenuate a loud source)	
0	0 dB
1	-2 dB
2	-4 dB
3	-6 dB
4	-8 dB
5	-10 dB
6	-12 dB
7	-14 dB
8	-16 dB
9	-18 dB
10	-20 dB
vll is Minimum-Volume-Level	0 to 35 (2-dB/increment, except for 0)
vhh is Maximum-Volume-Level	0 to 35 (2-dB/increment, except for 0)
vmm is Mute-Volume-Level	0 to 35 (2-dB/increment, except for 0)
vil is Initial-Left-Volume-Level	0 to 35 (2-dB/increment, except for 0)
vir is Initial-Right-Volume-Level	0 to 35 (2-dB/increment, except for 0)

NOTE: Min-vol has priority over mute-vol and init-vol, and is the absolute min volume zone will reach. If min-vol incorrectly set above max-vol, then min-vol will be presumed to be zero.

NOTE: Max-vol has priority over all other settings, and is the absolute max volume zone will reach.

NOTE: Min-Vol and Max-Vol should be set before setting Initial-Volumes. If init-vol incorrectly set above max-vol, then init-vol will be presumed to be max-vol. If init-vol incorrectly set below min-vol, then init-vol will be presumed to be min-vol.

NOTE: Min-Vol and Max-Vol should be set before setting Mute-Volume.

Mute always acts upon both L&R channels, even though L&R volume levels may differ; balance is preserved when zone is unmuted.

Mute-vol is a ceiling, not an absolute level. If mute-vol set above min-vol, zone volume levels may go below mute-vol level. When muting, volumes above mute-vol will lower to mute-vol level, but volumes below mute-vol will not change. If mute-vol incorrectly set above max-vol, then mute-vol will be presumed to be max-vol. If mute-vol incorrectly set below min-vol, then mute-vol will be presumed to be min-vol.

Command/Message Parameter Notes (Aris-only IR, X-10, and Macros):

isd is IR-Source-Device-Bank (1 to 16)

ifc is IR-Function-code (1 to 36, except 20, 24, 25, 27, and 28 are removed for legacy reasons)

xst is Exit-Status for IR (1=performed, 20=empty, 21=invalid-dev/func, 22=bin-error, 23=data-error)

xhc is X-10-House-Code (1=A, 2-B...16=P)

xuc is X-10-Unit-Code (1 to 16)

xfc is X-10-Function-Code (0=off, 1=on, 2=dim, 3=bright)

rpt is number of repeats (must be 0 for on/off commands, must be 1 to 32 for dim/brt commands)

xst is Exit-Status for X10 (0=not-performed, 1=performed)

mac is Macro-Number

Command/Message Parameter Notes (System-Information Message):

The SysInfo message is sent at system boot, or in response to a *CR,0,0 Request-Command.

!S,0,bzn,ccf,ccm,swc,0,svh,svl <cr>

where:

bzn is Base-Zone for this switcher (eg: 1, 9, 17,...)

ccf/ccm is System-Family/Model

10/1 is Lattis LE800A

10/2 is Lattis LE800AV

10/3 is Lattis LE1600A

10/4 is Lattis LE1600V

20/1 is Aris AR510A

20/2 is Aris AR520A

20/3 is Aris AR508A

20/4 is Aris AR508AV

20/6 is Aris AR516A

swc is Switcher-Class (90=Normal, 91=Separate-A/V-Switchers)

svh/svl is Software-Version-High/Low (0 to 99 each)

(eg: 4/10 is version 04.10)

Note: In a system with daisy-chained multiple switchers, a message is returned from each switcher, in succession.

To keep multi-switcher responses from overlapping, the SysInfo message (which is about 34 ms max) is delayed 50 ms per 8 additional zones added to each switcher's base-zone:

Switcher Base-Zone	Delay	Message
1 (factory setting)	0 ms	!S,0,1,...
9	50 ms	!S,0,9,...
17	100 ms	!S,0,17,...
25	150 ms	!S,0,25,...
33	200 ms	!S,0,33,...
(etc)		

Command/Message Parameter Notes (Miscellaneous Messages):

Sensor-State-Change messages !S,180,sen,sst,0,0 <cr>

sen=1: VIN-1 input on VIO-1 jack !S,180,1,sst,0,0 <cr>

Diagnostic messages !S,190,dgc,0 <cr>

dgc=0: Watchdog-Reset occurred !S,190,0,0 <cr>

dgc=2: Brownout Detection/Recovery !S,190,2,0 <cr>

dgc=3: Base-Zone write cmd error !S,190,3,0 <cr>

dgc=4: Factory-Settings-Restored !S,190,4,0 <cr>

VC-232 Serial Port (EIA/RS-232)

The VC-232 Port is designed to connect directly to any computer or control system which has a standard RS-232 serial port. For the record, instead of RS-232 (RS stands for Recommended Standard), the proper term is actually EIA-232 or EIA/TIA-232 (for the standards bodies concerned). However, the EIA/TIA designation never really caught on, and virtually everyone retains the RS-232 terminology.

A cable (not supplied) is needed to connect the VC-232 Port to the control system or computer serial port. The VC-232 Port is a DB-9 F (female) connector – the connector pinout is defined below. Typically, only three wires are needed: TX, RX, and Ground. Depending on the setup of your control system serial port, you may need to connect other signals before the port becomes active. If your serial port expects handshake inputs (on CTS, DSR, and/or DCD), you may be able to either change your port configuration to ignore these signals, or you may provide the appropriate signals from the Vaux VC-232 connector. The Vaux end does not need special treatment – the VC-232 handshake input pins (RTS and DTR) are not used. Pin-9 on the VC-232 port is a Vaux-Private signal, used with the RS-232 daisy-chain cable for multi-switcher installations. Pin-9 should normally not be connected to anything, although a PC serial cable may temporarily be connected, since this signal is the normally-unused Ring-Indicator input to the PC, and will not affect either system.

Vaux systems communicate at 9600 baud (bits-per-second) using 8 bits of data, no parity, and one stop bit.

The serial port on the controlling computer must be configured according to its manufacturer’s instructions. Information transfer between the controlling computer and the Vaux system is in the VauxProtocol format – a Vaux-defined command language comprised of various commands and messages.

VC-232 Port (RS-232 Interface) (DB-9 F Connector):

Pin	Description	Signal Direction	Vaux Use
1	DCD (Data Carrier Detect)	Computer <→ Vaux	“Active” level output *
2	RXD (Receive Data)	Computer <→ Vaux	Data Out
3	TXD (Transmit Data)	Computer → Vaux	Data In
4	DTR (Data Terminal Ready)	Computer → Vaux	[not used]
5	Signal Ground	→	Signal Ground
6	DSR (Data Set Ready)	Computer <→ Vaux	“Active” level output *
7	RTS (Request To Send)	Computer → Vaux	[not used]
8	CTS (Clear To Send)	Computer <→ Vaux	“Active” level output *
9	IRU (private Vaux signal)	DO NOT CONNECT	(special) **

- Typical Connections: TXD, RXD, and Signal Ground.
- Minimal Connections: TXD, and Signal Ground (commands only)
- * One or more of CTS/DSR/DCD may need to be connected to your serial port, if expected.
- ** Pin 9 should not be connected to a computer serial port, as it is sometimes used for the Ring Indicator (RI) input – the Vaux IRU (unmod IR) signal should be left open for proper system operation.
- Pins listed as not used, are not connected (to anything) in the Vaux system.
- The DB-9 shield rim (the “D”) is connected to signal ground.