RS-232 Remote Control Command Reference

Codes Summary

Code (0x--)	Function	Code	Function
80	Volume Level / Mute	b1, b2	Comp H, V Position
81	Brightness (Black Level)	b3	Color Temp (CT) Select
82	Contrast (White Level)	b4, b5, b6	CT R, G, B Gain Values
83	Color Saturation	b7 ~ ba	VGA H, V Res, Freq Query
84	Color Hue	bb, bd	OSD Status, query
85	VGA Sample Phase	bf	Define Gamma Curve
86	VGA H Position	c1	RS-232 Command Ack Enable
87	VGA V Position	c3	VGA AutoSetup Invoke
8a	Image Sharpness	c4	RS-232 Commands Available
8b	VGA Sample Freq (H Size)	c5	AutoCal (AGC) VGA RGB input
8c	Scaling Mode (Aspect)	c6	Freeze Frame Toggle
90	Menu H Pos (OSD)	c8	Soft Power Invoke
91	Menu V Pos (OSD)	c9	Input Status, Main & PiP
92	Menu Transparency	ca	De-interlace Mode
93	Menu Timeout (sec)	cb	Bios, Hdwe Versions
95	Menu Language	ce	Emergency Load Values
98	Input select (Port, No.)	d9	VGA Wide Screen Mode
99	Auto Source Seek (valid sync)	e0, e1	Backlight Freq, Enable
9a	PiP/PbP/Tall	e2	Monochrome Mode
9b	SD Video System (ntsc/pal/...)	e3	PiP Swap
9d	Global Gamma Value	e5, e6, e7	B/L PWM vs. D/A, Freq, Invert
9f	Auto Power Off Enable	e8, e9, ea	CT R, G, B Offset Values
a0, 1/2	Hot Key 1/2 Functions	ed	PiP Window Transparency
a1	Run Time Counter	ee (1)	PiP Auto Off, Markers
a2	PiP Brightness (Black Level)	ee (2)	Color Matrixes Adjust
a3, a4, a5	PiP Contrast, H, V Postion	f0	On-screen Text
a6, a7, a8	PiP Size, Source, Zoom	f1	Display Mark
a9, aa	Zoom: H, V Position		
ad, b0	Comp Over/Under Scan Size		

1. Commands to emulate user push buttons:

Applies version _____ and later

Function	Command	Description	Remark
Menu button	0xf7	Menu button pressed	Button equivalent
Select-down button	0xfa	Select-down button pressed	Button equivalent
Select-up button	0xfb	Select-up button pressed	Button equivalent
Right/+ button	0xfc	Right/+ button pressed	Button equivalent
Left/- button	0xfd	Left/- button pressed	Button equivalent

2. Parameter setting - immediate value, relative value, value reset, and value query:

Function	Command	Description	Acknowledge (if enabled)
Volume control - left+right channel	0x80, “a” | “A”, nn | “+” | “-” | “r” | “R” | “?”	Set audio (L+R) volume = value/increment/decrement Reset Query	volume Range : “0””0”-“1””E” Default : “0””F”
Volume control - on/off (mute)	0x80, “m” | “M”, “0” | “1” | “r” | “R” | “?”	 Disable audio output. Enable audio output. Reset Query	“0” - audio off (muted). “1” - audio on.
Brightness control	0x81, nn | “+” | “-” | “r” | “R” | “?”	Saet brightness = value/increment/decrement Reset Query	Brightness. Range : “4””E”-“B””2” Default : “8””0”
Contrast control - all channels	0x82, “a” | “A”, nn | “+” | “-” | “r” | “R” | “?”	Set all contrast = value/increment/decrement Reset Query	Contrast Range : “1””C”-“E””4” Default : “8””0”
Saturation control	0x83, nn | “+” | “-” | “r” | “R” | “?”	Set saturation = value/increment/decrement Reset Query	Range : “0””1”-“F””F” Default : “8””0”
Hue control	0x84, nn | “+” | “-” | “r” | “R” | “?”	Set hue = value/increment/decrement Reset Query	NTSC tint (In NTSC mode only) Range : “5””3”-“9””F” Default : “7””9”
Phase (tuning) control	0x85, nn | “+” | “-” | “?”	Set dot clock phase = value/increment/decrement Query	Dot clock phase. (In PC mode only)
Image H position	0x86, nnnn | “+” | “-” | “?”	Set img_hpos = value/increment/decrement Query	Image horizontal position. (In PC mode only)
Image V position	0x87, nnnn | “+” | “-” | “?”	Set img_vpos = value/increment/decrement Query	Image vertical position. (In PC mode only)
Sharpness	0x8a, nn | “+” | “-” | “r” | “R” | “?”	Set sharpness = value/increment/decrement Reset Query	Sharpness. (Video Mode Source only) Range : “F””4”-“0””C” Default : “0””0”
Frequency	0x8b, nnnn | “+” | “-“ | “?”	Set frequency = Value/increment/decrement Query	Graphic mode H active size (in pixels)
Scaling Mode	0x8c, “0” | “1” | “2” | “3” | “9” | “A” | “B” | “C” | “D” | “r” | “R” |	Set graphic image scaling mode = value Reset Query	Image expansion on/off. “0” – 1:1 “1” – fill screen “2” – fill to aspect ratio “9” – 4:3

	"?"		"A" – 16:9 "B" – 16:10 "C" – 2.35:1 "D" – 2:1
OSD H position	0x90, nnn | "+" | "-" | "r" | "R" | "?"	Set osd_hpos = value/increment/decrement Reset Query	OSD horizontal position. Range : "0""0"-"F""F" Default : "8""0"
OSD V position	0x91, nnn | "+" | "-" | "r" | "R" | "?"	Set osd_vpos = value/increment/decrement Reset Query	OSD vertical position. Range : "0""0"-"F""F" Default : "8""0"
OSD Transparency	0x92, n | "+" | "-" | "r" | "R" | "?"	Set OSD transparency = value/increment/decrement Reset Query	OSD transparency. "0" – ON "1" - OFF
OSD menu timeout	0x93, nn | "+" | "-" | "r" | "R" | "?"	Select menu timeout = value/increment/decrement Reset Query	OSD menu timeout value. "0""0" – Continuous. value – Round up to nearest available step. if value > max available step, set it to the max available step. Range : "0""5"-"3""C" Default : "0""A"
Select OSD language	0x95, n | "r" | "R" | "?"	Select language = English, Chinese,… Reset Query	"0" – English. "2" - French "3" – Spanish "6" - German "8" – Chinese
Input main select	0x98, nn | "+" | "-" | "r" | "R" | "?"	Select input main = PC or VIDEO or next available Reset Query	Main selected. "0x41,0x31" ARGB "0x42,0x31" Composite "0x42,0x32" Composite2 "0x43,0x31" S-video "0x43,0x32" S-video2 "0x44,0x31" Component "0x44,0x32" Component2 "0x45,0x31" HDSDI "0x45,0x32" HDSDI2 "0x46,0x31" DVI "0x48,0x31" HDMI
Auto Source Seek	0x99, nn , "0" | "1" | "?" | "o"	Set Auto source enable = *1 Source Disable/ Enable Query Valid Source query	"nn" = "0x41,0x31"- ARGB "0x42,0x31"- Composite "0x42,0x32"- Composite 2 "0x43,0x31"- S-video "0x43,0x32"- S-video 2 "0x44,0x31"- Component "0x44,0x32"- Component 2 "0x45,0x31"- HDSDI "0x45,0x32"- HDSDI2 "0x46,0x31"- DVI "0x48,0x31" HDMI
Source Layout	0x9a, n | "r" | "R" | "?"	Select source layout = Single, PIP, PBP, PBPT Reset, Query	Query: "0"- Single "1"- Picture in Picture (PIP) "2"- Picture by Picture (PBP) "3"- Picture by Picture Tall (PBPT)
Video System	0x9b,	Set video system =	Query

(Composite, S-video and Component Only)	"0" | "1" | "2" | "3" | "r" | "R" | "S" | "s"| "?"	Auto/NTSC/PAL/SECAM Reset Video State Query Query	"0" – Auto. "1" – NTSC_M_358 "2" – PAL_N_443 "3" – SECAM "4" – NTSC_M_443 "5" - PAL_M_358 "7" – PAL_M_443 "9" – PAL_N_358 Video State Query "0" – No video. "1" – NTSC "2" – PAL "3" – SECAM "4" – NTSC 443 "5" – PAL M 358
GAMMA value select	0x9d, n | "r" | "R" "?"	Select GAMMA value = Value Reset Query	GAMMA value: "0" – 1.0, "1" – 1.6 "2" – 2.2, "3" – User Defined "4" – 1.7, "5" – 1.8, "6" – 1.9, "7" – 2.0, "8" – 2.1, "9" – 2.3, "A" – 2.4, "B" – 2.5, "C" – 2.6, "D" – 0.6, "E" – 0.7, "F" – 0.8, "G" – 0.9, "H" – 1.1, "I" – 1.2, "J" – 1.3, "K" – 1.4, "L" – 1.5
Auto power off	0x9f, "0" | "1" | "r" | "R" | "?"	Set power down option = On/Off Reset Query	"0" – Off. "1" – On.
Hotkey 1	0xa0, "1", n | "r" | "R" | "?"	Set Hotkey 1= Value Reset Query	"1" – volume. "2" – brightness. "3" – contrast. "4" – colour. "5" – input source. "7" – zoom "8" – freeze "9" – PIP "B" – No function "D" – PIP Swap "E" – Aspect Ratio "G" – Hue "H" – Backlight "I" – Auto Picture Setup
Hotkey 2	0xa0, "2", n | "r" | "R" | "?"	Set Hotkey 2 = value Reset Query	"1" – volume. "2" – brightness. "3" – contrast. "4" – colour. "5" – input source. "7" – zoom "8" – freeze "9" – PIP "B" – No function "D" – PIP Swap "E" – Aspect Ratio "G" – Hue "H" – Backlight

			“I” – Auto Picture Setup
Runtime counter	0xa1, nnnnn | “r” | “R” | “?”	runtime counter value = nnnnn (* 0.5 hour) Reset Query	Runtime = nnnnn.
PIP brightness control	0xa2, nn | “+” | “-” | “r” | “R” | “?”	Set PIP window brightness = value/increment/decrement Reset Query	PIP window brightness. Range : “4””E”-“B””2” Default : “8””0”
PIP contrast control	0xa3, nn | “+” | “-” | “r” | “R” | “?”	Set PIP window contrast = value/increment/decrement Reset Query	PIP window contrast. Range : “1””C”-“E””4” Default : “8””0”
PIP H position	0xa4, nnn | “+” | “-” | “r” | “R” | “?”	Set PIP_hpos = value/increment/decrement Reset Query	PIP window horizontal position. Range : “0””0””0”-“0””6””4” Default : “0””5””5”
PIP V position	0xa5, nnn | “+” | “-” | “r” | “R” | “?”	Set PIP_vpos = value/increment/decrement Reset Query	PIP window vertical position. Range : “0””0””0”-“0””6””4” Default : “0””1””4”
PIP window size select	0xa6, nn | “r” | “R” | “?”	Select PIP window size = PIP window size value Reset Query	Main selected. PIP off if “nn” = “0””0”. “0””0”~”1””2” “0””0” ~ “1””2” “1””9” : Size by Size “1””A” : Size by Size Tall
PIP source select	0xa7, n | “r” | “R” | “?”	Select input main = Video source value Reset Query	Main selected. 0x41, 0x31 : ARGB 0x42, 0x31 : Composite 0x43, 0x31 : S-video 0x44, 0x31 : Component 1 0x45, 0x31 : HDSDI 1 0x46, 0x31 : DVI 0x42, 0x32 : Composite 2 0x43, 0x32 : S-video 2 0x44, 0x32 : Component 2 0x45, 0x32 : HDSDI 2 “0x48,0x31” HDMI
Zoom level	0xa8, nnnn | “+” | “-” | “r” | “R” | “?”	Set Zoom level = value/increment/decrement Reset Query	Zoom level. Min : 0x30 0x30 0x30 0x30 (Default) Max : 0x30 0x30 0x41 0x33
Zoom H position	0xa9, nnnn | “+” | “-” | “r” | “R” | “?”	Set Zoom_hpos = value/increment/decrement Reset Query	Zoom window horizontal position. Default : 0x30 0x30 0x30 0x30 The min and max values will change depends on input resolution.
Zoom V position	0xaa, nnnn | “+” | “-” | “r” | “R” | “?”	Set Zoom_vpos = value/increment/decrement Reset Query	Zoom window vertical position. Default : 0x30 0x30 0x30 0x30 The min and max values will change depends on input resolution.
Horizontal Size	0xad,	Set horizontal size for Aspect Size =	Scalar horizontal stretch

	nnn | "+" | "-" | "r" | "R" | "?"	value/increment/decrement Reset Query	PAL(576i) / NTSC (480i) : Min : 0x30 0x30 0x30 (Default) Max : 0x30 0x46 0x30
Vertical Size	0xb0, nnn | "+" | "-" | "r" | "R" | "?"	Set Vertical Size for Aspect Size = value/increment/decrement Reset Query	Scalar vertical stretch. PAL(576i) / NTSC (480i) : Min : 0x30 0x30 0x30 (Default) Max : 0x30 0x46 0x30
Horizontal Pan	0xb1, nnn | "+" | "-" | "r" | "R" | "?"	Set horizontal pan position for Aspect Size = value/increment/decrement Reset Query	Scalar horizontal pan position PAL(576i) / NTSC (480i) : Assume max H-Size & max V-size : Min : 0x46 0x38 0x38 Max : 0x30 0x37 0x38 Default : 0x30 0x30 0x30 The min and max values will change depends on different value of H-Size, V-Size and input resolution.
Vertical Pan	0xb2, nnn | "+" | "-" | "r" | "R" | "?"	Set Vertical pan position for Aspect Size = value/increment/decrement Reset Query	Scalar vertical pan position PAL(576i) / NTSC (480i) : Assume max H-Size & max V-size : Min : 0x46 0x38 0x38 Max : 0x30 0x37 0x38 Default : 0x30 0x30 0x30 The min and max values will change depends on different value of H-Size, V-Size and input resolution.
Colour temperature select	0xb3, n | "r" | "R" | "?"	Select colour temperature = value Reset Query	Main selected. "0" – 9500K. "1" – 8000K. "2" – 6500K. "3" – 5000K "4" - User
Red level for selected colour temperature	0xb4, nn | "+" | "-" | "r" | "R" | "?"	Set the level of the red channel for the selected colour temp. = value/increment/decrement Reset Query	Red level for selected colour temperature. Range : "9""C"-"F""F" Default : "E""C"
Green level for selected colour temperature	0xb5, nn | "+" | "-" | "r" | "R" | "?"	Set the level of the green channel for the selected colour temp. = value/increment/decrement Reset Query	Green level for selected colour temperature. Range : "9""C"-"F""F" Default : "E""C"
Blue level for selected colour temperature	0xb6, nn | "+" | "-" | "r" | "R" | "?"	Set the level of the blue channel for the selected colour temp. = value/increment/decrement Reset Query	Blue level for selected colour temperature. Range : "9""C"-"F""F" Default : "E""C"
Graphic horizontal resolution enquiry	0xb7	Horizontal resolution (in pixels) in 3 digit hex number	"nnn" = horizontal resolution
Graphic vertical resolution enquiry	0xb8	Vertical resolution (in lines) in 3 digit hex number	"nnn" = vertical resolution
Graphic horizontal sync frequency enquiry	0xb9	Horizontal sync frequency (in units of 100Hz) in 3 digit hex number	"nnn" = horizontal frequency

Graphic vertical sync frequency enquiry	0xba	Vertical sync frequency (in units of Hz) in 3 digit hex number and 1 char	“nnnn” = vertical frequency nnn = 3 digit hex c= “i” or “p” interlace or Progressive 0xba added the interlace(i) or Progressive(p) feedback.
OSD status enquiry	0xbb	Status of OSD	“0” – OSD turned off “1” – OSD turned on
OSD turn off	0xbd	Turn off the OSD.	“1” – successful.
Set gamma data for user defined gamma curve	0xbf, mm, c, “?” 0xbf, “R” | “r” 0xbf, mm, c, nn	Query gamma data for color c index mm (c = 0 for color Red, c=1 for color Green, c=2 for color Blue) Set user gamma curve to linear Set gamma data for color c index mm. (If c= 3, then gamma data for red, green & blue will be set at the same time.)	“nn” = gamma data “1” “nn” = gamma data
Backlight control	0xe0, nn | “+” | “-” | “R” | “r” | “?”	Set Backlight = value/increment/decrement Reset Query	Backlight. Range: D/A : “0””0” ~ “1””6” 100Hz : “0””0” ~ “8””A” 120Hz : “0””0” ~ “7””3” 140Hz : “0””0” ~ “6””3” 160Hz : “0””0” ~ “5””6” 180Hz : “0””0” ~ “4””D” 200Hz : “0””0” ~ “4””5” 220Hz : “0””0” ~ “3””E” 240Hz : “0””0” ~ “3””9” 260Hz : “0””0” ~ “3””5” 280Hz : “0””0” ~ “3””1” 300Hz : “0””0” ~ “2””E” 320Hz : “0””0” ~ “2””B” 340Hz : “0””0” ~ “2””8” 360Hz : “0””0” ~ “2””6” 380Hz : “0””0” ~ “2””4” 400Hz : “0””0” ~ “2””2” 420Hz : “0””0” ~ “2””0” 440Hz : “0””0” ~ “1””F”
Backlight On/Off	0xe1, “0” | “1” | “R” | “r” ”?” “S” | “s”	Backlight Off / Backlight On /Status	“0” – Backlight Off “1” – Backlight On. “?” – Backlight On/Off Query “S”|”s” – Backlight Status Query
Color Monochrome mode selection (Output Channel Select)	0xe2 “0” | “1” | “2” | “3” | | “4” | “5” | “6” | “R” | “r”| ”?”	Off/ Blue Only/ Red Only/ Green Only/ Blue Mono/ Red Mono/ Green Mono/	“0” – Off “1” – Blue Only “2” – Red Only “3” – Green Only “4” – Blue Mono “5” – Red Mono “6” – Green Mono
PIP Swap	0xe3	Swap Main and PIP source	"0" - Fail. "1" - Successful.
Backlight D/A / PWM	0xe5 “0” | “1” | “R” | “r” ”?”	Set : PWM or D/A Reset Query	“0” – PWM “1” – D/A
Backlight PWM Frequency	0xe6, nnn | “+” | “-” | “R” | “r” |	Set Backlight PWM Frequency = value/increment/decrement Reset	+/- 20Hz Value 100Hz : “0”,”6”,”4”

	"?"	Query	120Hz : "0","7","8" 140Hz : "0","8","C" 160Hz : "0","A","0" 180Hz : "0","B","4"' 200Hz : "0","C","8" 220Hz : "0","D","C" 240Hz : "0","F","0" 260Hz : "1","0","4" 280Hz : "1","1","8" 300Hz : "1","2","C" 320Hz : "1","4","0" 340Hz : "1","5","4" 360Hz : "1","6","8" 380Hz : "1","7","C" 400Hz : "1","9","0" 420Hz : "1","A","4" 440Hz : "1","B","8"
Backlight Invert	0xe7 "0" | "1" | "R" | "r" "?"	Set On or Off Reset Query	"0" – Off "1" – On
Red Offset for selected colour temperature	0xe8, nn | "+" | "-" | "r" | "R" | "?"	Set the Offset of the red channel for the selected colour temp. = value/increment/decrement Reset Query	Red Offset for selected colour temperature.
Green Offset for selected colour temperature	0xe9, nn | "+" | "-" | "r" | "R" | "?"	Set the Offset of the green channel for the selected colour temp. = value/increment/decrement Reset Query	Green Offset for selected colour temperature.
Blue Offset for selected colour temperature	0xea, nn | "+" | "-" | "r" | "R" | "?"	Set the Offset of the blue channel for the selected colour temp. = value/increment/decrement Reset Query	Blue Offset for selected colour temperature.
PIP Window Transparency	0xed, nn | "+" | "-" | "R" | "r" | "?"	Select PIP Transparency Level PIP Transparency value Reset Query	PIP Transparency "0"F" = 6.25% "0"E" = 12.5% "0"D" = 18.75% "0"C" = 25% "0"B" = 31.25% "0"A" = 37.5% "0"9" = 43.75% "0"8" = 50% "0"7" = 56.25% "0"6" = 62.5% "0"5" = 68.75% "0"4" = 75% "0"3" = 81.25% "0"2" = 87.5% "0"1" = 93.75% "0"0" = 100%.
PIP Window Auto Off	"0xee", "0x41" "0" |"1" "?"	Auto Off / Auto On Query	"0"- Off "1"- On
ScreenMarker	"0xee", "0x42" ***SEE UPDATE IN TWO PAGES >>*** "0" |"1"	Screen Marker Off / Screen Marker On	"0"- Off "1"- On
CenterMarker	"0xee", "0x43" "0" |"1"	Center Marker Off / Center Marker On	"0"- Off "1"- On
AspectMarker	"0xee", "0x44" "0" |"1"	Preliminary 4:3 /16:9	"0"- 4:3 "1"- 16:9

Marker Background Transparency	“0xee”, “0x45” “0” |”1” |”2” |”3”	Preliminary 0% /25%/50%/95%	“0”- 0% “1”- 25% “2”- 50% “3”- 95%
Safe Area Marker	“0xee”, “0x46” “0x53”~”0x63”	Preliminary 64%~98% ***SEE UPDATE NEXT PAGE >>***	“36”, “33”- 98% “36”, “32”- 96% “36”, “31”- 94% “36”, “30”- 92% “35”, “46”- 90% “35”, “45”- 88% “35”, “44”- 86% “35”, “43”- 84% “35”, “42”- 83% “35”, “41”- 81% “35”, “39”- 79% “35”, “38”- 77% “35”, “37”- 76% “35”, “36”- 74% “35”, “35”- 72% “35”, “34”- 71% “35”, “33”- 69% “35”, “32”- 67% “35”, “31”- 66% “35”, “30”- 64%
Custom Sizing	0xef, “0”	“1”	“2” ”?”	Custom sizing selection : Overscan / Normal / Custom Query	“0” – Overscan “1” – Custom “2” – Normal

Function	Command	Description	Acknowledge (if enabled)
Send Display Mark	0xF1, ”S” | ”0x21” | ”0x40” ”0x60” | ”0x7E” Return “1”	“S” = “0x53 or 0x73” ASCII “0x21,0x40,0x60,0x7E” Return “ 0x31”	“S” – Send Command “Text” – Character “1” - successful.
e.g Send Display Mark RS232 Code: “0xF1 0x53 0x21” Return Code: “0xF1 0x53 0x21 0x31”			
Clear Display Mark	0xF1, ”C” Return “1”	“C” = “0x43 or 0x63” Return “ 0x31”	“C” – Clear command “1” - successful.
e.g Clear Display Mark RS232 Code: “0xF1 0x43” Return Code: “0xF1 0x43 0x31”			
Display Mark Horizontal Position	0xF1, |”H” |”ss”| Return “nn”	“H” = “0x48 or 0x68” --- “nn” = “0x30,0x30~0x46,0x46”	“H” – Horizontal Position command “ss” – Set Horizontal Position number “nn” – Return Position number
e.g Set Display Mark Horizontal Position RS232 Code: “0xF1 0x48 0x30 0x31” Return Code: “0xF1 0x48 0x30 0x31 0x30 0x31”			
Display Mark Vertical Position	0xF1, |”V” |”ss”| Return “nn”	“V” = “0x56 or 0x76” --- “nn” = “0x30,0x30~0x46,0x46”	“V” – Vertical Position command “ss” – Set Vertical Position number “nn” – Return Position number
e.g Set Display Mark Vertical Position RS232 Code: “0xF1 0x56 0x30 0x31” Return Code: “0xF1 0x56 0x30 0x31 0x30 0x31”			
Display Mark	0xF1,	“B” = “0x42 or 0x62”	“B” - Transparency command

17. Added RS-232 command for Safe Area Enable and Aspect Marker Enable

SafeAreaMarker Enable	“0xee”, “0x4B” “0” |”1”	Safe Area Marker Off / Safe Area Marker On	“0”- Off “1”- On
Aspect Marker Enable	“0xee”, “0x4C” “0” |”1”	Aspect Marker Off / Aspect Marker On	“0”- Off “1”- On

Background Transparency	|"B"|"N"| Return "n"	Set Transparency command ---------- "N" = "0x30~0x46" Transparency Value (Rang 00~0F)	"N" – Transparency Value "n"- Return Value 0x00 =opaque
Set Display Mark background Transparency value is 8 RS232 Code: "0xF1 0x42 0x38" Return Code: "0xF1 0x42 0x38 0x38"			

3. Other control

Function	Command	Description	Acknowledge (if enabled)
Select RS-232 acknowledge	0xc1, "0" | "1"	Disable/enable command acknowledge.	"0" – acknowledge disabled. "1" – acknowledge enabled.
Auto-setup	0xc3	Start auto-setup of current vmode.	"0" – fail. "1" – successful.
Command availability	0xc4, n	Check whether a command is available.	"0" – not available. "1" – available.
Auto-calibration	0xc5	Start auto-calibration of gain of the RGB amplifier.	"0" – fail. "1" – successful.
Freeze frame	0xc6, "0" | "1"	Unfreeze / freeze frame	"0" – unfreeze. "1" – freeze.
Soft Power On/Off	0xc8, "0" | "1" | "?"	Soft power off/on query	"0" – Turn off the LCD power and backlight. Turn off memory controller, Power down DVI Power down ADC, Power down Fclk PLL "1" – Turn on the unit
Query video input status	0xc9	Query the status of the primary & pip status	"nn,nn" = input status "nn,xx" digit = primary status: "0","0" : invalid "A","1" ARGB "B","1" Composite "B","2" Composite 2 "C","1" S-video "C","2" S-video 2 "D","1" Component "D","2" Component 2 "E","1" HDSDI "E","2" HDSDI 2 "F","1" DVI "H" "1" HDMI "xx,nn"= PIP input status: "0","0": invalid "A","1" ARGB "B","1" Composite "B","2" Composite 2 "C","1" S-video "C","2" S-video 2 "D","1" Component "D","2" Component 2 "E","1" HDSDI "E","2" HDSDI 2 "F","1" DVI "H" "1" HDMI
Video de-interlace method	0xca, "0" | "1" "r" | "R" "?"	De-interlace mode Reset Query	"3" "1"- enable AFM "3" "0"- disable AFM "4" "1"- enable TNR "4" "0"- disable TNR

			“5” ”1”- enable MADI “5” ”0”- disable MADI “7” ”1”- enable DCDi “7” ”0”- disable DCDi
Query BIOS version	0xcb, “0”	Read BIOS version	BIOS version “VV.YY.ZZ” VV = V0 or E0, V0 = Release version E0 = Engineering Sample YY= Version Number ZZ= Customer Number
Query PCBA number	0xcb, “1”	Read PCBA number	“nnnnn” = PCBA number SVX-1920= “41721”
Master Load Settings (Emergency Use Only)	0xce	Reset all parameters to Nominal Factory Values	“1” – successful.
Wide Screen Mode Selection	0xd9, “0” | “1”| “2” “r” | “R” “?”	Wide Screen Mode Reset Query	“0” – Normal Mode “1” – 1280x768 “2” – 1366x768

Save Current Settings to Calibrated Settings Memory Location: 0xd7. Success=0xd7 31.

ScreenMarker	“0xee”, “0x42” “0” |”1”	Screen Marker Off / Screen Marker On	“0”- Off “1”- On
CenterMarker	“0xee”, “0x43” “0” |”1”	Center Marker Off / Center Marker On	“0”- Off “1”- On
AspectMarker	“0xee”, “0x44” “0” |”1”	Preliminary 4:3 /16:9	“0”- 4:3 “1”- 16:9
Marker Background Transparency	“0xee”, “0x45” “0” |”1” |”2” |”3”	Preliminary 0% /25%/50%/95%	“0”- 0% “1”- 25% “2”- 50% “3”- 95%
Safe Area Marker	“0xee”, “0x46” “0x53”~”0x63”	Preliminary 64%~98%	“36”, “33”- 98% “36”, “32”- 96% “36”, “31”- 94% “36”, “30”- 92% “35”, “46”- 90% “35”, “45”- 88% “35”, “44”- 86% “35”, “43”- 84% “35”, “42”- 83% “35”, “41”- 81% “35”, “39”- 79% “35”, “38”- 77% “35”, “37”- 76% “35”, “36”- 74% “35”, “35”- 72% “35”, “34”- 71% “35”, “33”- 69% “35”, “32”- 67% “35”, “31”- 66% “35”, “30”- 64%

UMD/IMD display on screen (Apply for E0.39.70.02 or later firmware revision)

Scaling Mode	0x8c, "0" | "1" | "2" | "3" "="| "r" | "R" | "?"	Set graphic image scaling mode = Value Display OSD indicator Reset Query	Image expansion on/off. "0" – 1:1. "1" – fill screen. "2" – fill to aspect ratio "9" – 4:3 "A" – 16:9 "B" – 16:10 "C" – 2.35:1 "D" – 2:1 "E" – AFD# or WSS## "F" – UMD IMD Enable (Function at E0.39.70.02 or later revision) "3" – non-linear scaling "4" – expand letterbox video to fill screen "5" – expand letterbox video (with subtitles) to fill screen "6" – keep aspect ratio of 4:3 video on 16:9 screen "7" – expand 4:3 letterbox video to aspect ratio (on 16:9 screen) "8" – expand 4:3 letterbox video (with subtitles) to aspect ratio (on 16:9 screen) # - AFD is function on SDI mode only. ## - WSS is function on composite mode only.

Send UMD/IMD Text to buffer	0xF0, "U", "S", "TEXT", "0x0A" Return "1"	"U" = "0x55 or 0x75" "S" = "0x53" Send command ---------- "Text"= ASCII code, "0x20~0x7E" Character(Rang 0~34) ---------- - 0x0A = End of text	"U" Command "S"– Send "Text" – Character "0x0A" – End of text "1" - successful.
e.g Display "send Text" message on screen: RS232 Code:"0xF0 0x55 0x53 0x73 0x65 0x6E 0x64 0x20 0x54 0x65 0x78 0x74 0x0A" Return Code: "0xF0 0x55 0x53 0x73 0x65 0x6E 0x64 0x20 0x54 0x65 0x78 0x74 0x0A 0x31"			
Clear UMD/IMD Text	0xF0, "U" , " C" , "T" Return "n"	"U" = "0x55 or 0x75" "C" = "0x43" "T" = "0x54" Clear command ----------	"U" Command "C"– Clear "T" – Clear command "1" - successful.
e.g Clear Line RS232 Code: "0xF0 0x55 0x43 0x54 Return Code: "0xF0 0x55 0x43 0x54 0x31			

UMD/IMD Background Transparency	0xF0, “U” , ”B”,”N” Return “n”	“U” = “0x55 or 0x75” Set Background Transparency “B” = “0x42” Set Transparency command ---------- “N” = “0x30~0x46” Transparency Value (Rang 00~0F)	“U” Command “B” - Transparency command “N” – Transparency Value “n”- Return Value 0x00 =opaque
Set background Transparency value is 8 RS232 Code: “0xF0 0x55 0x42 0x38” Return Code: “0xF0 0x55 0x42 0x38 0x38”			
UMD/IMD Text Overlay Background On or Off	0xF0, “U” ”Q”, “N” Return “n”	“U” = “0x55 or 0x75” Set Background Enable or Disable “Q” = “0x51” ---------- “N” = “0x30~0x31”	“U” Command “Q” - command “1” Turn On UMDI/MD Background “0” Turn Off UMDI/MD Background “n”- Return Value
Set Overlay Background value is On RS232 Code: “0xF0 0x55 0x51 0x31” Return Code: “0xF0 0x55 0x51 0x31 0x31”			
Set Tally Background Color	0xF0, “U” , “G”, “r” | “R” “?” “n”	“U” = “0x55 or 0x75” Set Color Bar “G” = “ 0x47” - Background Reset Query “n” = “0x30~0x34” - Value	“U” - command “G” Tally Background Reset Query 0x30 - WHITE 0x31 – GREEN* 0x32 - RED 0x33 - YELLOW 0x34 - BLACK 0x35 – BLUE*
Set Tally Background Color is BLACK(0x34) RS232 Code:“0xF0 0x55 0x47 0x34 Return Code: “0xF0 0x55 0x47 0x34 0x34			
Set Left Tally Color	0xF0, “U”, “L”,| “r” | “R” “?” “n”	“U” = “0x55 or 0x75” Set Color Bar “L” = “ 0x4C” - Left Reset Query “n” = “0x30~0x34” - Value	“U” - command “R” Left Tally Reset Query 0x30 - WHITE 0x31 – GREEN* 0x32 - RED 0x33 - YELLOW 0x34 - BLACK 0x35 – BLUE*
Set Left Tally Color is BLUE(0x35) RS232 Code:“0xF0 0x55 0x4C 0x35 Return Code: “0xF0 0x55 0x4C 0x31 0x35			

Set Right Tally Color	0xF0, “U”, “R”,| “r” | “R” “?” “n”	“U” = “0x55 or 0x75” Set Color Bar “R” = “ 0x52” - Right Reset Query “n” = “0x30~0x34” - Value	“U” - command “R” Right Tally Reset Query 0x30 - WHITE 0x31 – GREEN* 0x32 - RED 0x33 - YELLOW 0x34 - BLACK 0x35 – BLUE*
Set Right Tally Color is RED(0x32) RS232 Code:“0xF0 0x55 0x52 0x32 Return Code: “0xF0 0x55 0x52 0x32 0x32			
Set Text Background Color	0xF0, “U”, “M”, “r” | “R” “?” “n”	“U” = “0x55 or 0x75” Set Color Bar “M” = “ 0x4D” – Center Reset Query “n” = “0x30~0x34” - Value	“U” - command “M” Text Background Color Reset Query 0x30 - WHITE 0x31 – GREEN* 0x32 - RED 0x33 - YELLOW 0x34 - BLACK 0x35 – BLUE*
Set Text Background Color is BLACK(0x34) RS232 Code:“0xF0 0x55 0x4D 0x34 Return Code: “0xF0 0x55 0x4D 0x34 0x34			
Set Text Color	0xF0, “U” , “T”, “r” | “R”, “?” “n”	“U” = “0x55 or 0x75” Set Color Bar “C” = “ 0x54” – Text Color Reset Query “n” = “0x30~0x34” - Value	“U” - command “C” Text Color Reset Query 0x30 - WHITE 0x31 – GREEN* 0x32 - RED 0x33 - YELLOW 0x34 - BLACK 0x35 – BLUE*
Set Text Color is YELLOW(0x33) RS232 Code:“0xF0 0x55 0x54 0x33 Return Code: “0xF0 0x55 0x54 0x33 0x33			

Remark :
* - Apply on E0.43.70.00 firmware code or later revision.

Using Boland RS-232 Remote Control

updated: 1/27/12/mb

Here is an brief overview and maybe your answers, but the manual and utility software are In this folder too. The section of the Remote Codes manual you probably want is page 5 of the pdf. If you have any questions, ask Mike, at (800) 918-9090 [+1 949 465-9911].

Input Select command summary: (lifted from BolandRemCodes9.pdf, page 7 of the pdf)
[Syntax: Command; immediate, relative, reset or query*. (Baud rate = 9600 bps, 8 bits, No parity, 1 Stop bit)]

Main selections (Prefix each of these with **0x98**)
(Syntax: Input Select, Input Port Type, Input Port No.)

0x41, 0x31 : ARGB (Analog RGB, Aka, VGA)
0x42, 0x31 : Composite
0x43, 0x31 : S-video
0x44, 0x31 : SD Component
0x45, 0x31 : HDSDI
0x46, 0x31 : DVI
0x47, 0x31 : HD Component
0x42, 0x32 : Composite 2
0x43, 0x32 : S-video 2
0x44, 0x32 : SD Component 2
0x45, 0x32 : HDSDI 2

example: in AccessPort, Select VGA: 98 41 31 [F10]

Select SDI 1: 98 45 31

*Syntax of 0x98 Command:

```
Input, Main, Select:    ;;("Main" as in selecting for a full screen,
                                as compared to selecting for a PiP)
  0x98,                 ;;Select Input Main, and...
  nn | "+" | "-" |      ;;nn = PC or VIDEO (see table above), or next
                                available, or backup to previous
  "r" | "R" |           ;;Reset
  "?"                   ;;Query status (active input selected)
```

In a typical system, you may be looking to issue Soft **Power On and Off** (0xc8 1, 0xc8 0 [c8 31, c8 30]) (0xe1 1 for vp-series) and/or Input Select commands (e.g., 98 41 31 for VGA [as inputselect/type port/port number]). **Soft Power** keeps the monitor processor awake looking for subsequent IR or RS-232 commands. Hard Power (front panel power switch) disables the monitor. (Of course, cover the monitor's IR port (when present) for an install in a public place, if you are not using it, to circumvent the visitors disturbing your displays).

In a looser environment, you can also control a monitor via the matrix switch, by denying it all inputs (Auto Power [DPMS] and AutoSource Select are both defaulted in the menu to On) to cause the monitor to go to sleep in the absence of signal, and to change inputs by presenting it with only one signal at a time (control via input Auto Search).

For over a year now I have been using the below referenced little item (Access Port, a public domain one-diskette wonder) to issue and read hex strings out a PC's Com Port to a Boland

monitor (and to display the monitor's status response) (or any other RS-232 device).

After you unzip it and execute AccessPort.exe, poke thfpe F2 key to enter the Comm setup menu (see How To.jpg, attached).

When I test a monitor, I type f7 into the bottom window and tap the F10 key (send) and see the menu pop up on the screen of the controlled monitor. When doing that, you can see that the monitor is talking status back in the top window. In this case, the response would be f7 f7, meaning receipt and then execution of the (f7, Menu) command.

Files Referenced:

S:\Adv&Prom\Manuals_Web&Email\SEseries-RS232RemCodes10c.pdf
S:\v_notInstalled\AccessPort\v133\How2UseAccessPort1v33.jpg
S:\v_notInstalled\AccessPort\v133\AccessPort133.zip
S:\Adv&Prom\Manuals_Web&Email\UsingAPc2a.pdf

The following commands for sending on-screen texts by RS-232 command:

Function	Command	Description	Acknowledge (if enabled)
Send Line	0xF0, |"S" |"LL"|"TEXT"| "0x0A" Return "1"	"S" = "0x53 or 0x73" Send command --- "LL" = "0x30,0x31~0x30,0x34" Line number (Rang 0~4 lines) --- "Text"= ASCII code, "0x20~0x7E" Character(Rang 0~34) --- 0x0A = End of line	"S" – Send Command "LL" – Line Number "Text" – Character "0x0A" – End of Line "1" - successful.
e.g Display "Send Text" message on screen: RS232 Code:"0xF0 0x53 0x30 0x31 0x53 0x65 0x6E 0x64 0x20 0x54 0x65 0x78 0x74 0x0A" Return Code: "0xF0 0x53 0x30 0x31 0x53 0x65 0x6E 0x64 0x20 0x54 0x65 0x78 0x74 0x0A 0x31"			
Clear Line	0xF0, |"C" |"LL"| Return "nn"	"C" = "0x43 or 0x63" Clear command --- "LL" = "0x30,0x31~0x30,0x34" Line number (Rang 0~4 lines)	"C" – Clear command "LL" – Line Number "nn" – Return Line number
e.g. Clear Line 1 RS232 Code: "0xF0 0x43 0x30 0x31" Return Code: "0xF0 0x43 0x30 0x31 0x30 0x31"			
Text Window Horizontal Position	0xF0, |"H" |"ss"| Return "nn"	"H" = "0x48 or 0x68" --- "nn" = "0x30,0x30~0x46,0x46"	"H" – Horizontal Position command "ss" – Set Horizontal Position number "nn" – Return Position number
e.g. Set Text Window Horizontal Position RS232 Code: "0xF0 0x48 0x30 0x31" Return Code: "0xF0 0x48 0x30 0x31 0x30 0x31"			
Text Window Vertical Position	0xF0, |"V" |"ss"| Return "nn"	"V" = "0x56 or 0x76" --- "nn" = "0x30,0x30~0x46,0x46"	"V" – Vertical Position command "ss" – Set Vertical Position number "nn" – Return Position number
e.g. Set Text Window Vertical Position RS232 Code: "0xF0 0x56 0x30 0x31" Return Code: "0xF0 0x56 0x30 0x31 0x30 0x31"			

Left offset*	0xF0, |"O" |"SSS"| Return "nnn"	"O" = "0x4F or 0x6F" Set Left Offset command --- "SSS" = "0x30,0x30,0x30~ 0x33,0x46,0x46" Offset Value (Rang 000~3ff)	"O" – Left Offset Command "SSS"- Offset Value (pixels) "nnn"- Return Value(pixels)
e.g. Set Left Offset = 100 pixels (0x64 (HEX)) RS232 Code: "0xF0 0x4F 0x30 0x36 0x34" Return Code: "0xF0 0x4F 0x30 0x36 0x34 0x30 0x36 0x34"			
Background Transparency*	0xF0, |"B"|"N"| Return "n"	"B" = "0x42 or 0x62" Set Transparency command ---	"B" - Transparency command "N" – Transparency Value "n"- Return Value

		"N" = "0x30~0x46" Transparency Value (Rang 00~0F)	0x00 =opaque
Set background Transparency value is 8 RS232 Code: "0xF0 0x42 0x38" Return Code: "0xF0 0x42 0x38 0x38"			
Text Window Horizontal Size	0xF0, |"X" |"SSS"| Return "nnn"	"X" = "0x58" Set Horizontal Size command ---------- "SSS" = "0x31,0x45,0x30~ 0x37,0x38,0x30" Horizontal Size Value (Range 000~3ff)	"X" –Horizontal Size "SSS"- Size Value (pixels) "nnn"- Return Value(pixels)
e.g Set Text Window Horizontal Size = 640 pixels (0x280 (HEX)) RS232 Code: "0xF0 0x58 0x32 0x38 0x30" Return Code: "0xF0 0x58 0x32 0x38 0x30 0x32 0x38 0x30"			

* Note :

Please set the "Background Transparency" and "Left offset" commands before the "Send Line" command.

The RS-232 command strings sent in one time can support up to 380 bytes via RS-232 port

The RS-232 command string sent in one time can support up to 50 bytes via Aux port.

n = 1-byte ascii-coded hex number, e.g., parameter value of 0x1 is represented by "1" (0x31).
mn or nn = 2-byte ascii-coded hex number, e.g., parameter value of 0x1e is represented by "1", "e" | "E" (0x31, 0x6e|0x4e).
Please refer to the ASCII to Hex convert table below.

Hex to ASCII conversion table

Hex	ASCII	Hex	ASCII	Hex	ASCII	Hex	ASCII
0x30	0	0x41	A	0x61	a	0x2B	+
0x31	1	0x42	B	0x62	b	0x2D	-
0x32	2	0x43	C	0x63	c	0x3F	?
0x33	3	0x44	D	0x64	d		
0x34	4	0x45	E	0x65	e		
0x35	5	0x46	F	0x66	f		
0x36	6	0x47	G	0x67	g		
0x37	7	0x48	H	0x68	h		
0x38	8	0x49	I	0x69	i		
0x39	9	0x4A	J	0x6A	j		
		0x4B	K	0x6B	k		
		0x4C	L	0x6C	l		
		0x4D	M	0x6D	m		
		0x4E	N	0x6E	n		
		0x4F	O	0x6F	o		
		0x50	P	0x70	p		
		0x51	Q	0x71	q		
		0x52	R	0x72	r		
		0x53	S	0x73	s		
		0x54	T	0x74	t		
		0x55	U	0x75	u		
		0x56	V	0x76	v		
		0x57	W	0x77	w		
		0x58	X	0x78	x		
		0x59	Y	0x79	y		
		0x5A	Z	0x7A	z		

RS-232 Gamut Matrix Adjustments:

Color Matrix Select	"0xee", "0x4E" "0" |"1" |"2" |"3"	Bypass / 601 / 709 / Custom	"0"- Bypass "1"- 601 "2"- 709 "3"- Custom
Color Matrix Green[0]	"0xee", "0x50" nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Green [0] = value/increment/decrement Reset Query	Color Matrix Green [0] Value Range "-0.5 ~ 1.5" e.g.: -0.5 x 4096 = -2048 = 0xF800 1.5 x 4096 = 6144 = 0x1800
Color Matrix Green[1]	"0xee", "0x51" nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Green [1] = value/increment/decrement Reset Query	Color Matrix Green [1] Value Range "-0.5 ~ 1.5"
Color Matrix Green[2]	"0xee", "0x52" nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Green [2] = value/increment/decrement Reset Query	Color Matrix Green [2] Value Range "-0.5 ~ 1.5"
Color Matrix Blue[0]	"0xee", "0x53 nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Blue [0] = value/increment/decrement Reset Query	Color Matrix Blue [0] Value Range "-0.5 ~ 1.5"
Color Matrix Blue [1]	"0xee", "0x54 nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Blue [1] = value/increment/decrement Reset Query	Color Matrix Blue [1] Value Range "-0.5 ~ 1.5"
Color Matrix Blue [2]	"0xee", "0x55 nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Blue [2] = value/increment/decrement Reset Query	Color Matrix Blue [2] Value Range "-0.5 ~ 1.5"
Color Matrix Red[0]	"0xee", "0x56 nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Red [0] = value/increment/decrement Reset Query	Color Matrix Red [0] Value Range "-0.5 ~ 1.5"
Color Matrix Red [1]	"0xee", "0x57 nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Red [1] = value/increment/decrement Reset Query	Color Matrix Red [1] Value Range "-0.5 ~ 1.5"
Color Matrix Red [2]	"0xee", "0x58 nnnn | "+" | "-" | "r" | "R" | "?"	Set Matrix Red [2] = value/increment/decrement Reset Query	Color Matrix Red [2] Value Range "-0.5 ~ 1.5"

Save Current Settings to Calibrated Settings Memory Location: 0xd7. Success=0xd7 31.

Notes:

Command syntax is: groupname ("0xee") and argument/value:

1) 0x4E (Select Color Matrix) : "0" - Bypass; "1" - REC 601; "2" - REC 709; "3" - Custom

2) 0x50 to 0x58 (to set the 3x3 Matrix parameters): The acceptable data range is from -0.5 to +1.5.
This acceptable range might get changed if we find it is too wide or too narrow.

3) The Matrix is arranged as Green the top row, Blue the 2nd row and Red the 3rd row.
For example, the bypass matrix will be:
G = G(0), G(1), G(2) = 1.0, 0.0, 0.0
B = B(0), B(1), B(2) = 0.0, 1.0, 0.0
R = R(0), R(1), R(2) = 0.0, 0.0, 1.0
If you want to add a bit of RED to Green, then you may change the Red row to say : 0.1, 0.0, 1.0

4) You need to pre-select which Matrix to write to by using the "0x4E" sub command. Once the target Matrix is selected, then all subsequent "0x50~0x58" sub command will write data to that Matrix.

5) This correction Matrix is not an offset matrix adding to the original color matrix;
this correction matrix will "multiply" the original 3x3 color matrix.

Option 51:

RS-232 Remote Control for boland
LCD Video Monitors

Pinouts, Monitor DB9F/3.5mm connectors*:

(Baud rate = 9600 bps, 8 bits, No parity, 1 Stop bit)

2/Ring - Tx Data
3/Tip - Rx Data
5/Sleeve - Signal Ground

*Type connector used varies by model.

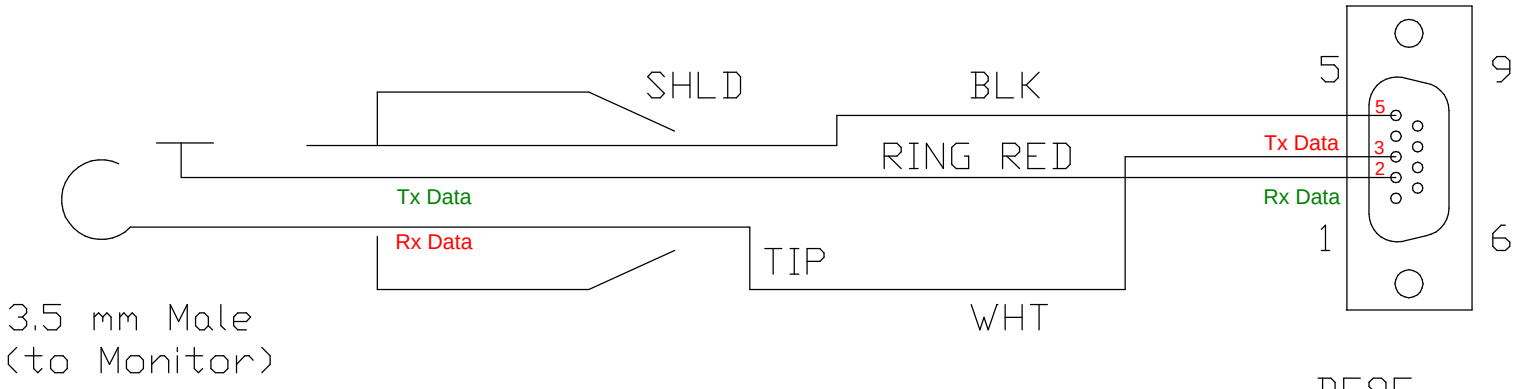
Tx/Rx Pin Identification:

Tx Data Pin, with cable unpluged is -12 v at idle, data bits are +12v)

Rx Data Pin, with cable unpluged is 0v.

With cable plugged onto monitor, both pins are at -12v (except during data)

Note: connecting the cable joins Controller Tx pin to Monitor Rx pin, and Monitor Tx pin is connected to Controller's Rx pin. When connected, the voltage normally drops from ±12v down to about ±8 or ±9v).



Data: 9600 8N1

BOLAND COMMUNICATIONS
(949) 465-9911

TITLE			
CABLE, RS232, Controller to Monitor			
USED ON	SIZE A	DOCUMENT NUMBER (rcbb3877xxdwg) 3740 3270	REV A
DATE: 2/11/10	BY: IO	DO NOT SCALE DRAWING	SHEET: 1