Revision History

Release C

Applied firmware release

Release E

Reply format corrected for ES, ET, LT, RT, UP, DN commands

Release F

Reply format corrected for QE, SS commands

Release G

- Model query command added
- Othello function control command added

Release H

- Commands with argument added
- A command which saves current while balance, R, G and B contrast and brightness, into nonvolatile memory added.

Release J

- Source Select command added
- Source Query command reply modified
- Applied to U2 model

Release K

- Commands added : SOURCE, RGB, VIDEO button functionality

Release L

- #Qu command added

Release M

- #CE command added
- Supported 9600 bps control

Release N

- telnet protocol supported
- reply timeout documented

PC Control Specification Release N

PLUS Vision Corp.
2005/1/17
Ref. Firmware 05/01/17A (x.22.3.83) or later

Preface

This specification applies to following series projectors

- U5/U7/U8 series projectors which equipped RS-232C communication port.
- U4/U7/U8 series projectors which has wired/wireless LAN functionality.

Notice

- Projector's behavior may be changed on changing firmware without notice.
- This specification may be changed without notice.
- A projector which working with an earlier firmware can be driven by updating its firmware.
- Contact

  http://www.plus-vision.com

PC Control Specification Release N

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1. Mechanical

RS-232C connection

DIN Sub 9 pin (male)

Pin 2 Transmit Data (Projector to Host)
Pin 3 Receive Data (Host to Projector)
Pin 5 Signal Ground

telnet connection

Projector should be connected via wired or wireless LAN.

2. Electrical

RS-232C connection

TIA/EIA-232 compliant

3. Protocol

RS-232C connection

Baud Rate	115.2Kbps (Default) ,19.2Kbps or 9600bps
Data	8 Bit
Start	1 Bit
Stop	1 Bit

X protocol OFF

No hardware handshake

telnet connection

- RFC 854 compliant
- No log in authentication required
- Valid only documented commands in this specification

3.1. Packet

All byte data consists of human-readable ASCII character set except for CR and LF.

1) Command without Arguments

Prefix	Command/Return	Suffix

Prefix	# (23h)
Suffix	CR (0Dh) LF(0Ah)

Ex) command (Host to Projector) #RT[CR][LF]
Return (Projector to Host) #RT_[CR][LF]

1) Command with Arguments

Prefix	Command/Return	Suffix

Prefix	> (3Eh)
Suffix	CR (0Dh) LF(0Ah)

Ex) command (Host to Projector) #BB255[CR][LF]
Return (Projector to Host) #BB169_[CR][LF]

3.2. Transaction

- Case A represents almost all command transaction.
- Case C transaction will be used if periodical reporting option is enabled.
- RS-232C command will be responded within one second while telnet connection gets reply within two seconds. Timeout data may be returned.
- Host application is recommended to wait command response if exists. Issuing next commands without waiting response will cause system problems.

Case	Host	Direction	Projector
A	Command Packet	→-→ →	
			(Process)
		← ← ←	Return Packet (Normally within 0.5Sec it returns packet. Depends on executing command and source status)
B	Command Packet	→-→ →	
			(Process)
C		← ← ←	Return Packet

3.3. Command without Arguments

Command and return packets are listed without packet prefix and suffix.

Command	Name	Return	Description
P0	power off	P00	Fail
		P01	Pass
P1	Power on	P10	Fail
		P11	Pass
SR	RGB source select ● In case that the model has only one DVI or VGA input connector, from the connector. ● In case that the mode has both DVI and VGA input connector, from DVI connector.	SR0	Fail
		SR1	Pass
SA	RGB2 source select ● In case that the mode has both DVI and VGA input connector, from VGA connector.	SA0	Fail
		SA1	Pass
SN	Network source	SN0	Fail
		SN1	Pass
SI	Image Viewer source	SI0	Fail
		SI1	Pass
SV	VIDEO source select	SV0	Fail
		SV1	Pass
SS	SVIDEO source select	SS0	Fail
		SS1	Pass
SK	Change source	SK_	Pass
IR	Same as RGB button on remote	IR_	Pass
IV	Same as VIDEO button on remote	IV_	Pass

MT	AV Mute	MT0	Fail
		MT1	Mute out
		MT2	Mute in
OS	On Screen	OS0	Fail
		OS1	Onscreen disabled
		OS2	Onscreen enabled
FZ	Freeze	FZ0	Fail
		FZ1	Unfreezed
		FZ2	Freezed
AS	Change aspect	AS0	Fail
		AS1	Auto
		AS2	Direct
		AS3	Real
		AS4	Wide
		AS5	Zoom
LM	Lamp Mode	LM0	Fail
		LM1	Normal Mode
		LM2	Eco Mode
AT	Auto	AT0	Fail
		AT_	Pass
FV	Vertical Flip	FV0	Fail
		FV1	Not flipped
		FV2	flipped
FH	Horizontal Flip	FH0	Fail
		FH1	Not flipped
		FH2	flipped
GM	Gamma	GM0	Fail
		GM1	Normal
		GM2	Natural
		GM3	Real
LR	Lamp Timer Reset	LP0	Fail
		LR_	Pass

MN	Menu	MN0	Fail
		MN1	Menu hidden
		MN2	Menu visible
UP	Up	UP0	Fail
		UP_ or UP1	Pass
DN	Down	DN0	Fail
		DN_ or DN1	Pass
LT	Left	LT0	Fail
		LT_ or LT1	Pass
RT	Right	RT0	Fail
		RT_ or RT1	Pass
ET	Enter	ET0	Fail
		ET_ or ET1	Pass
ES	Cancel	ES0	Fail
		ES_ or ES1	Pass
VI	Volume Inc	Vhh	hh:Value in hexadecimal format. ex V2A Operation failed if hh is 80.
VD	Volume Dec	Vhh	
KI	Keystone Inc	Khh	
KD	Keystone Dec	Khh	
ZI	Zoom In	Zhh	
ZO	Zoom Out	Zhh	

TM	Presentation Timer	TM0	Fail
		TM1	10min
		TM2	20min
		TM3	30min
		TM4	40min
		TM5	50min
		TM6	60min
MQ	Quick Menu	MQ0	Fail
		MQ1	Menu hidden
		MQ2	Menu visible
QS	System Status Query	QS0	Not defined
		QS1	Booting
		QS2	Standby
		QS3	Starting
		QS4	Warming up
		QS5	Image can be displayed but still warming up
		QS6	Image can be displayed
		QS7	Failur
		QS8	Cooling down
		QS9	Fatal error
QE	Error Status Query	QE0	No Error
		QE1	System Error
		QE2	Lamp cover opened
		QE3	Too hot
		QE4	Fan error
		QE5	Lamp ignition error
		QE6	Lamp life expired
		QE7	Lamp should be changed.
		QE8	-
		QE9	Lamp ignition error
		QEa	Lamp error
		QEb	-
QV	Version Query	QVhh.hh.hh.hh	Version in hexadecimal format Ex) “QV01.07.02.0d”
QU	Used hours of the lamp	QUhhhh	Hhhh hours in hexadecimal format

QR	Source	QR0	VGA	
		QR1	DVI	
		QR2	HD	
		QR3	COMPONENT (Progressive)	
		QR4	COMPOSITE	
		QR5	SVIDEO	
		QR6	COMPONENT (Interlaced)	
		QR7	Image Viewer	
		QR8	VGA	In case that the mode has both DVI and VGA input connector, from VGA connector.
		QR9	HD	
		QRa	COMPONENT (Progressive)	
		QRb	COMPONENT (Interlaced)	
		QRc	Network	
		QRd	--	
QP	Source status	QP0	Invalid	
		QP1	Valid	
		QP2	Out of range	
QA	All Status	QAserp	s : same value in returned packed of QS command	
			e : same value in returned packed of QE command	
			r : same value in returned packed of QR command	
			p : same value in returned packed of QP command	

B0	Vertical Flip ON	B00	Fail
		B01	Pass
B1	Vertical Flip OFF	B10	Fail
		B01	Pass
B2	Horizontal Flip ON	B20	Fail
		B21	Pass
B3	Horizontal Flip OFF	B30	Fail
		B31	Pass
B4	Gamma Normal	B40	Fail
		B41	Pass
B5	Gamma Natural	B50	Fail
		B51	Pass
B6	Gamma Real	B60	Fail
		B61	Pass
B7	On Screen ON	B70	Fail
		B71	Pass
B8	On Screen OFF	B80	Fail
		B81	Pass
B9	Non Othello (B/W) mode	B90	Fail
		B91	Pass
BA	Othello(B/W) mode	BA0	Fail
		BA1	Pass
BB	Model Query	BB0	Fail
		BB model dmd option	* model "U5" U5 series * dmd "S" SVGA "X" XGA * option "-" No option "T" Othello available Between "BB", (model), (dmd) and (option), there will be one or more space (0x20) characters.

X0	Disable periodical status report output (default)	X0_	*Each sent packet is same as of QA command. *Packet will be reported each 10 seconds. *On source status change, it reports too. *periodical report transaction is type C.
X1	Enable periodical status report output	X1_	Pass *This version does not support this command via telnet connection.
CH	Set to 115.2Kbps	(Don't expect)	In case the projector's current baud rate is unknown, send these command using both 115.2Kbps and 19.2Kbps. * Even in telnet connection, this command changes RS-232C communication speed.
CL	Set to 19.2Kbps	(Don't expect)	
CE	Set to 9600bps	(Don't expect)	
XR	Save current White Balance. This command saves all set R, G and B contrast and brightness at one time.	XR_	Pass

3.4. Command with Arguments

Command and return packets are listed without packet prefix and suffix.

Command	Name	PC to Projector	Projector to PC (return)	Description
CR	Contrast (Red)	CRnnn	CRnnn0	Fail
			CRnnn_	Pass
CG	Contrast（Green）	CGnnn	CGnnn0	Fail
			CGnnn_	Pass
CB	Contrast（Blue）	CBnnn	CBnnn0	Fail
			CBnnn_	Pass
BR	Brightness（Red）	BRnnn	BRnnn0	Fail
			BRnnn_	Pass
BG	Brightness（Green）	BGnnn	BGnnn0	Fail
			BGnnn_	Pass
BB	Brightness（Blue）	BBnnn	BBnnn0	Fail
			BBnnn_	Pass

- 000(Low)<= nnn <= 255(High) (Decimal)
- Values other than above will be taken as a value query.
- Set value will not be saved in the nonvolatile memory before sending #XR command. #XR command saves all contrast and brightness values at one time as a White Balance setting.
- In reply string, nnn is same as sent data or retrieved value.
- On plugging-in AC, saved respective brightness values will be overwritten by a default value if below 47 or above79. Thus those values will last only while AC power supplied.
- On plugging-in AC, saved respective contrast values will be overwritten by a default value if below 95 or above159. Thus those values will last only while AC power supplied.

CT	Color Temprature	CTnnn ● 000(Low)< = nnn <= 3 (High) ● Values other than above will be taken as a value query. ● Unless Color/Quick Color Adj. is set to Custom, set Color Temperature will be overwritten by Standard or .Color setting of Quick Color Adj.	CTnnn0	Fail
			CTnnn_ ● nnn Is same as sent data or retrieved value	Pass
FT	Filter	CTnnn ● 000 <= nnn <=004 ● Values other than above will be taken as a value query.	FTnnn0	Fail
			FTnnn_ ● nnn Is same as sent data or retrieved value	Pass
KS	Keystone	KSnnn ● 050 <= nnn <= 149 (Decimal) ● Set 100 to disable keystone adjustment ● Values other than above will be taken as a value query.	KSnnn0	Fail
			KSnnn_ ● nnn Is same as sent data or retrieved value	Pass