
Proxima DP8000 RS232 Commands

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1 PURPOSE

This document describes the Projector Management Protocol between the Projector and a Computer (Host). The Protocol is based on a ASCII commands. By using this protocol a Host will be able control the projector on a physical link.

2 SCOPE

The physical link is not defined in this document. Therefore the protocol can either be implemented on top of RS-232, USB, Ethernet or other forthcoming communication methods.

3 FUNCTION TYPE

The Function is grouped in four different function types:

Function type	Comments
Execute	An <i>execute</i> function executes an action on the projector, i.e. only one state .
State	A <i>State</i> function performs a set operation from a predefined list of states. Not all values in the range have to be legal.
Adjust	An <i>adjust</i> function is characterized by Maximum > Minimum. And all the integer values between Minimum and Maximum are legal.
Query	A query function is a read only function.

Table 1

3.1 Legal Arguments

Each Function type has a set of legal arguments:

Function type	Argument	Comments
State	<decimal number>	Sets the function to the required state.
Adjust	+	Increases the value of the function one step.
Adjust	-	Decreases the value of the function one step.
Adjust	<decimal number>	Sets the value of the function to the specific number.
All	?	Requests current, max and min value of the function.
Execute	E	Executes an action.
All	S?	Returns '0' if function is not supported Return '1' if function is supported
All	C	Returns Current Value
All	X	Return max value
All	M	Returns min value
All	D	Set the function to the default value

Table 2

4 COMMAND RETURN CODES

If a valid command is received the projector executes the command and as an acknowledgment it replies to the projector by returning a copy of the command with the current value appended.

If the projector receives an illegal command it replies by returning an error message.

5 COMMAND SYNTAX

Every command consists of a command that is ended with a delimiter. The command consists off a *function code*, a *separator*, and an argument.

A *function code* consists of 3-5 ASCII letters and begins with a letter [A-Z], [a-z]

|-----Command-----|

<Function code> <Separator> <Argument> <Delimiter >

At the end of this document, the “Table of Serial Commands” lists all valid function codes. Any other combination of characters received before a *delimiter* will result in an error response from the projector to the control unit (Host).

5.1 Delimiter

ASCII	HEX	DEC	Comment
^M	0D	13	The stop of a command is indicated by a carriage return = ↵
^L	0A	10	Line feeds after CR is ignored.

Table 3

5.2 Separator

ASCII	HEX	DEC	Comment
;	3B	59	Used as a separator between the function code and the argument

Table 4

5.3 Command Example

|-----Command-----|
<Function code> <Separator> <Argument> <Delimiter >
BRG ; 55 ↵

Always initiate programming by sending a carriage return
--

6 ERROR SYNTAX

If an command isn't available the projector response with an error message:

|----- Error message -----|

<Error Mark> <(Command)> <ErrorCode> <Separator> <<ErrorString>>

ASCII	HEX	DEC	Comment
!	21	33	Error is always started with an Error Mark

Table 5

The following error codes are defined:

1000;<Unknown command>
1001;<Unknown parameter>
1002;<Parameter out of range>
1003;<Command not supported by this projector>
1004;<Command only available in Power on>
1005;< Projector not ready to be turned on>
1006;<Command only available with valid input source>
1007;<Command only available with external module>
1008;<Command failed>
2000;<Command only available in RGB>
2001;<Command only available in VIDEO>
2002;<Command only available in NTSC>

6.1 Error Example

ASK>BRX;50;

<Error Mark> <(Command)> <ErrorCode> <Separator> <<ErrorString>>
! (BRX;50) 1000 ; <Unknown command>

7 TRANSACTION EXAMPLES

Character string is in ASCII code and ↵ is carriage return:

Adjust function:

```
ASK>BRG;?  
Min = 0  
Default = 128  
Max = 255  
Current = 12  
ASK>BRG;10↵  
BRG=10  
ASK>  
ASK>BRG;200↵  
!(BRG;200)8001;<Parameter out of range>  
ASK>
```

State function:

```
ASK>REAR;1↵  
REAR=1  
ASK>
```

Execute function:

```
ASK>FRES;E↵  
ASK>
```

Find out if a function is supported:

```
ASK>FRES;S?↵  
1  
ASK>
```

8 TABLE OF FUNCTIONS

Src.dep = Source dependent use ? or C,X,M parameter to get current Max and Min values before setting this functions.

Function	F. code	F.type	Arguments	Minimum	Maximum
Power	PWR	State	0 – Off 1 – On	-	-
Reset	RES	Execute	E	-	-
Tune	TUNE	Adjust	-/+, <dec>	Scr.dep	Scr.dep
Frequency	FRQ	Adjust	-/+, <dec>	Scr.dep	Scr.dep
Horizontal position	HOR	Adjust	+ (Up) - (Down) <dec>	Scr.dep	Scr.dep
Vertical position	VER	Adjust	+ (Right) - (Left) <dec>	Scr.dep	Scr.dep
ColorTemp	COLT	Adjust	-/+, <dec>	0	100
Rear	REAR	State	0 – Front projection 1 – Rear projection	-	-
Ceiling	CEIL	State	0 – Table use 1 – Ceiling mount	-	-
Factory reset	FRES	Execute	E	-	-

Table 6

Function	F. code	F.type	Arguments	Minimum	Maximum
Contrast	CON	Adjust	-/+, <dec>	0	100
Brightness	BRG	Adjust	-/+, <dec>	0	100
Tint	TINT	Adjust	-/+, <dec>	0	100
Color	COL	Adjust	-/+, <dec>	0	100
Sharpness	SHRP	Adjust	-/+, <dec>	0	100
Keystone	KSTN	Adjust	-/+, <dec>	0	100
16:9	16_9	State	0 – 4:3 aspect 1 – 16:9 aspect	-	-

Table 7

Function	F. code	F.type	Arguments	Minimum	Maximum
Volume	VOL	Adjust	-/+, <dec>	0	100
Mute	MUTE	State	0 – Off 1 – On	-	-
Treble	TRE	Adjust	-/+, <dec>	0	100
Bass	BASS	Adjust	-/+, <dec>	0	100
Loudness	LOUD	State	0 – Off 1 – On	-	-
Mute Internal	MUIN	State	0 – Off 1 – On	-	-

Table 8

Function	F. code	F.type	Arguments	Minimum	Maximum
On screen display	OSD	State	0 – Off 1 – On	-	-
Source	SRC	State	0 – VGA1 1 – S-VIDEO1 2 – CVBS1 3 – VGA2 4 – S-VIDEO2 5 – CVBS2 6 – DVI1 7 – DVI2 8 – BNC1 9 – BNC2	-	-
Osd language	LANG	State	0 – English (default) 1 – French 2 – German 3 – Spanish 4 – Norwegian 5 – Italian 6 – Japanese 8 – Chinese Simpl. 9 – Chinese Trad. 10 – Portugese	-	-
Mask ¹	MSK	Adjust	-/+, <dec>	0	100
Black ²	BLK	State	0 – Off 1 – On	-	-
Magnify	ZOOM	Adjust	-/+, <dec>	0	100
Pan horizontal ³	PANH	Adjust	-/+, <dec>	Scr.dep	Scr.dep
Pan vertical	PANV	Adjust	-/+, <dec>	Scr.dep	Scr.dep
Freeze	FRZ	State	0 – Off 1 – On	-	-
Baudrate	BAU	State	1200 9600 19200	-	-
DPMS	DPMS	State	0 – Off 1 – On	-	-
Source Search	SRCH	State	0 – Off 1 – On	-	-
IR Reciever	IRRE	State	0 – Off Not saved! 1 – On	-	-
Keyboard	KBRD	State	0 – Off Not saved! 1 – On	-	-

Table 9

¹ Sliding a mask from the bottom of the screen. Bottom is line 0

² Blacks the picture

³ Is used to define a new Zoom point

Function	F. code	F.type	Arguments	Minimum	Maximum
Information	INF	State	0 – Response is source information . 1 - Response is Service information. 2 – Response is product ID. 3 – Response is software version. 4 – Response is hardware revision 5 – Response is Lamp Time 6 – Response is Remaining Lamp Time 7 – Response is Protocol Version 8 – Response is product name 9- Response is network version	-	-
Current State	CSTA	query	? Response is the projectors current state Word in hex (0000-FFFF) 0 - STANDBY 1 - LAMP_STRIKE 2 - LAMP_ON_WARMING_UP 3 - SEARCHING 4 - SOURCE_DETECTED 5 - PICTURE_SETUP 6 - LAMP_OFF_COOLING		
Status Word	STAT	query	? Response is the current Status Word in hex(0000-FFFF) Bit D0: Power Bit D1: Valid Source Bit D2: Signal Source Change Bit D3: Module Change Bit D4: State Change Bit D5-D7: Reserved Bit D8: Fan Stop Bit D9: High Temperature Bit D10:Lamp Time Expired Bit D11-D15 Reserved		

Table 10

9 SETUP RECOMMENDATION

It is recommended to disable DPMS and Source search with,

DPMS;0↵

SRCH;0↵

,for best control of the projector.

Also disable keyboard and remote after Power On with:

IRRE;0↵

KBRD;0↵

These two command isn't saved so it's recommended to always set them after the *PWR;1* command.

9.1 Setting Up

To enable serial RS-232 control do the following:

- Power up the projector
- Connect the serial (COM) port from the Computer (Host) to the RS-232 port on the projector by using the optional twisted serial cable mentioned below under CABLES. Power up the computer.
- On the PC side a software that can perform a “terminal emulation” is needed. This is a standard component in most operating systems, and it is also available as stand alone software. Norton PCAnywhere and Norton Commander are two programs that can do this. As it is a standard component in the Windows Operating System, we recommend that HyperTerminal is being used. This can normally be found in the accessories menu. Set the Computer serial port settings as shown below: Default is 9600 baud - 8 bit - No parity - No flow control - 1 stop bit
- Press ENTER (sending a carriage return) and the projector should respond by sending a prompt (ASK>). The projector is now ready to receive commands.

9.2 Cables

Optional twisted RS-232 cable part# 301.159.

9.3 Communication Protocol

<u>Parameter</u>	<u>Default setting</u>	<u>Valid values for direct setting</u>
Baudrate	9600	9600, 19200 bps
Data bit	8	none
Parity bit	None	none
Stop bit	1	none
Flow Control	None	none