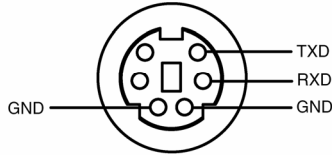


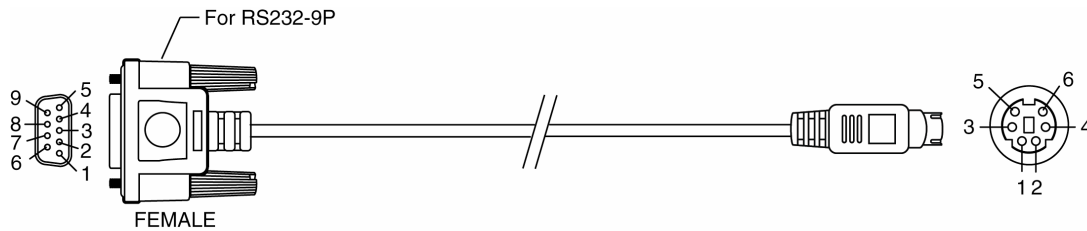


Dell™ 1409X RS232 Protocol Document

- RS232 Projector Pin Assignment (Facing Projector)




- RS232 Serial Communication Cable Pin Assignment (Facing Cable)



◆ Pin Assignments

RS232	PIN DESCRIPTION	MINI DIN-6
1		
2	TXD	5
3	RXD	3
4		
5	GROUND	1, 2
6		
7	Not Used	6
8	Not Used	4
9		

 **Note 1:** The RS232 cable is not provided by Dell.

- RS232 Protocol
Communication Settings

Connection Settings	Value
Baud Rate	19200 bps
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Flow control	None

Command Types

To display the OSD menu and adjust the settings.

Control Command Syntax (From PC to Projector)

[H][AC][SoP][CRC][ID][SoM][COMMAND]

[H][AC][SoP][CRC][ID][SoM][COMMAND][Value]

Example: Power On Command (Send Low Byte Firstly)

Enter the following code:

0xbe, 0xef, 0x10, 0x05, 0x00, 0xc6, 0xff, 0x11, 0x11, 0x01, 0x00, 0x01

Header [H] ==> Fixed, "be (Low Byte), ef (High Byte)"

Address Code [AC] ==> Fixed, "10"

Size of Payload [SoP] ==> Byte size from MsgID to Command Code, "05 (Low Byte), 00 (High Byte)" or Byte size from MsgID to Value, "06 (Low Byte), 00 (High Byte)".

CRC16 [CRC] ==> CRC value, "c6 (Low Byte), ff (High Byte)"

MsgID [ID] ==> Fixed, "11 11"

MsgSize [SoM] ==> Byte size of Command Code, "01 (Low Byte), 00 (High Byte)" or Byte size of Command Code and Value, "02 (Low Byte), 00 (High Byte)"

Command Code [COMMAND] ==> "Power On" Command, "01"

Projector Response Message Table

Byte0 value:

0x00: Success

0x01: Invalid Command (on the control command list but no valid)

0x02: Error Command (includes CRC error and unknown commands)

Projector Response System Status

Byte0, Byte1, Byte2

Byte0: 0x00 (Success)

Byte1: 0xff (the Command Code of System Status)

Byte2: Return status

Ex: When the projector is in standby mode, the return status will be 0x01.

Projector Response Lamp Hour

Byte0, Byte1, Byte2, Byte3

Byte0: 0x00 (Success)

Byte1: 0x2f (the Command Code of Lamp Hour)

Byte2: LSB (Hex)

Byte3: MSB (Hex)

Ex: 800 ($3 \times 256 + 2 \times 16 = 800$) hours --> 0x00, 0x2f, 0x20, 0x03

Firmware Version Response

Byte0, Byte1, Byte2, Byte3...Byte7

Byte0: 0x00 (Success)

Byte1: 0x30 (the Command Code of Firmware Version)

Byte2...Byte7

Firmware version: 6 Bytes ASCII Code: "M0RXXX"

XXX: 000-999

Ex: Version M0R001 → "M0R001" → 0x4d, 0x30, 0x52, 0x30, 0x30, 0x31 (Success, the Command Code of FW Version, 6 Bytes ASCII Code: "M0RXXX")

Control Commands List

Command Description	Header (WORD)	Address Code (BYTE)	Size Of The Payload (WORD)	CRC16 For The Entire Packet (WORD)	MsG ID (WORD)	MsG Size (WORD)	Command Code (BYTE)	Value (BYTE)	Comment
Power	0xefbe	0x10	0x0005	0xffc6	0x1111	0x0001	0x01		
Menu	0xefbe	0x10	0x0005	0xbfc7	0x1111	0x0001	0x02		
Up	0xefbe	0x10	0x0005	0x7e07	0x1111	0x0001	0x03		
Down	0xefbe	0x10	0x0005	0x3fc5	0x1111	0x0001	0x04		
Left	0xefbe	0x10	0x0005	0xfe05	0x1111	0x0001	0x05		
Right	0xefbe	0x10	0x0005	0xbe04	0x1111	0x0001	0x06		
R-sync	0xefbe	0x10	0x0005	0x7fc4	0x1111	0x0001	0x07		
Source	0xefbe	0x10	0x0005	0x3fc0	0x1111	0x0001	0x08		
Volume +	0xefbe	0x10	0x0005	0xfe00	0x1111	0x0001	0x09		
Volume -	0xefbe	0x10	0x0005	0xbe01	0x1111	0x0001	0x0a		
Zoom In	0xefbe	0x10	0x0005	0x7fc1	0x1111	0x0001	0x0b		
Zoom Out	0xefbe	0x10	0x0005	0x3e03	0x1111	0x0001	0x0c		
Mute	0xefbe	0x10	0x0005	0xffc3	0x1111	0x0001	0x0d		
Hide	0xefbe	0x10	0x0005	0x7e02	0x1111	0x0001	0x0f		
Video Mode	0xefbe	0x10	0x0005	0x3fca	0x1111	0x0001	0x10		
V. Keystone Up	0xefbe	0x10	0x0005	0x7fcb	0x1111	0x0001	0x13		
V. Keystone Down	0xefbe	0x10	0x0005	0x3e09	0x1111	0x0001	0x14		
Aspect Ratio (Original/4:3/Wide)	0xefbe	0x10	0x0005	0x7e08	0x1111	0x0001	0x17		Toggle
Power Off	0xefbe	0x10	0x0005	0x3e0c	0x1111	0x0001	0x18		
Source-VGA Analog 1	0xefbe	0x10	0x0005	0xffce	0x1111	0x0001	0x19		
Source-S-Video	0xefbe	0x10	0x0005	0xbe1f	0x1111	0x0001	0x22		
Source-Composite	0xefbe	0x10	0x0005	0x7fdf	0x1111	0x0001	0x23		
Key Pad Lock On	0xefbe	0x10	0x0005	0x3e1d	0x1111	0x0001	0x24		
Key Pad Lock Off	0xefbe	0x10	0x0005	0xffdd	0x1111	0x0001	0x25		
Current Source ¹	0xefbe	0x10	0x0005	0xbfdc	0x1111	0x0001	0x26		0x00: None 0x01: VGA-A 0x02: VGA-B 0x03: DVI-D 0x04: S-Video 0x05: CVBS
V. Keystone Read	0xefbe	0x10	0x0005	0x3e18	0x1111	0x0001	0x28		Range (0xdd~0x28)
Auto Keystone Write ²	0xefbe	0x10	0x0006	0x1b28	0x1111	0x0002	0x29	0x00~0x01	0x00: Yes. On 0x01: No. Off
ECO Mode On	0xefbe	0x10	0x0005	0xbfd9	0x1111	0x0001	0x2a		
ECO Mode Off	0xefbe	0x10	0x0005	0x7e19	0x1111	0x0001	0x2b		
Auto Source On	0xefbe	0x10	0x0005	0x3fdb	0x1111	0x0001	0x2c		
Auto Source Off	0xefbe	0x10	0x0005	0xfe1b	0x1111	0x0001	0x2d		
Factory Reset	0xefbe	0x10	0x0005	0xbe1a	0x1111	0x0001	0x2e		
Lamp Hour	0xefbe	0x10	0x0005	0x7fda	0x1111	0x0001	0x2f		
Firmware Version	0xefbe	0x10	0x0005	0x3e12	0x1111	0x0001	0x30		
Auto Keystone Read	0xefbe	0x10	0x0005	0xffd2	0x1111	0x0001	0x31		0x00: Yes. On 0x01: No. Off
Aspect Ratio Read	0xefbe	0x10	0x0005	0xbfd3	0x1111	0x0001	0x32		0x00: Origin (1:1) 0x01: 4:3 0x02: Wide (16:9)
Projector Mode Write	0xefbe	0x10	0x0006	0x9ae3	0x1111	0x0002	0x33	0x01~0x04	0x01: Front 0x02: Front, Ceiling 0x03: Rear 0x04: Rear, Ceiling
Projector Mode Read ³	0xefbe	0x10	0x0005	0x3fd1	0x1111	0x0001	0x34		0x01: Front 0x02: Front, Ceiling 0x03: Rear 0x04: Rear, Ceiling
Brightness Write	0xefbe	0x10	0x0006	0x1ae1	0x1111	0x0002	0x35	0x00~0x64	Range (0x00~0x64)
Brightness Read	0xefbe	0x10	0x0005	0xbe10	0x1111	0x0001	0x36		Range (0x00~0x64)
Contrast Write	0xefbe	0x10	0x0006	0x9b20	0x1111	0x0002	0x37	0x00~0x64	Range (0x00~0x64)
Contrast Read	0xefbe	0x10	0x0005	0x3fd4	0x1111	0x0001	0x38		Range (0x00~0x64)
Color Temperature Write ⁴	0xefbe	0x10	0x0006	0x1ae4	0x1111	0x0002	0x39	0x01~0x03	0x01: Low 0x02: Mid 0x03: High
Color Temperature Read ⁵	0xefbe	0x10	0x0005	0xbe15	0x1111	0x0001	0x3a		0x01: Low 0x02: Mid 0x03: High
Saturation Write	0xefbe	0x10	0x0006	0x9b25	0x1111	0x0002	0x3b	0x00~0x64	Range (0x00~0x64)
Saturation Read	0xefbe	0x10	0x0005	0x3e17	0x1111	0x0001	0x3c		Range (0x00~0x64)
Sharpness Write	0xefbe	0x10	0x0006	0x1b27	0x1111	0x0002	0x3d	0x00~0x1f	Range (0x00~0x1f)
Sharpness Read	0xefbe	0x10	0x0005	0xbfd6	0x1111	0x0001	0x3e		Range (0x00~0x1f)
Tint Write	0xefbe	0x10	0x0006	0x9ae6	0x1111	0x0002	0x3f	0x00~0x64	Range (0x00~0x64)
Enter	0xefbe	0x10	0x0005	0x3ff6	0x1111	0x0001	0x40		
Tint Read	0xefbe	0x10	0x0005	0xfe36	0x1111	0x0001	0x41		Range (0x00~0x64)
Video Mode Read	0xefbe	0x10	0x0005	0xbe37	0x1111	0x0001	0x42		0x00: PC 0x01: Movie 0x02: sRGB 0x03: Game 0x04: Custom
Color Space Write	0xefbe	0x10	0x0006	0x9b07	0x1111	0x0002	0x43	0x01~0x03	0x01: RGB 0x02: YcbCr 0x03: YpbPr
Color Space Read	0xefbe	0x10	0x0005	0x3e35	0x1111	0x0001	0x44		0x01: RGB 0x02: YcbCr 0x03: YPbPr

White Intensity Write ⁶	0xefbe	0x10	0x0006	0x1b05	0x1111	0x0001	0x45	0x00~0x0a	Range (0x00~0x0a)
White Intensity Read ⁷	0xefbe	0x10	0x0005	0xbff4	0x1111	0x0002	0x46		Range (0x00~0x0a)
Degamma Write ⁸	0xefbe	0x10	0x0006	0x9ac4	0x1111	0x0001	0x47	0x01~0x04	Range (0x01~0x04)
Degamma Read ⁹	0xefbe	0x10	0x0005	0x3e30	0x1111	0x0002	0x48		Range (0x01~0x04)
H. Position Write ¹⁰	0xefbe	0x10	0x0006	0x1b00	0x1111	0x0001	0x49	0x00~0x64	Range (0x00~0x64)
H. Position Read ¹¹	0xefbe	0x10	0x0005	0xbff1	0x1111	0x0002	0x4a		Range (0x00~0x64)
V. Position Write ¹²	0xefbe	0x10	0x0006	0x9ac1	0x1111	0x0001	0x4b	0xfb~0x05	See Note 2
V. Position Read ¹³	0xefbe	0x10	0x0005	0x3ff3	0x1111	0x0002	0x4c		Range (0xfb~0x05)
Current Language Write ¹⁴	0xefbe	0x10	0x0006	0x1ac3	0x1111	0x0001	0x4d	0x01~0x0f	0x01: English 0x02: German 0x03: French 0x04: Italian 0x05: Spanish 0x06: Polish 0x07: Swedish 0x08: Dutch 0x09: Iberian Portuguese 0x0a: Japanese 0x0b: T_Chinese 0x0c: S_Chinese 0x0d: Korean 0x0e: Russian 0x0f: Arabic
Current Language Read ¹⁵	0xefbe	0x10	0x0005	0xbe32	0x1111	0x0002	0x4e		0x01: English 0x02: German 0x03: French 0x04: Italian 0x05: Spanish 0x06: Polish 0x07: Swedish 0x08: Dutch 0x09: Iberian Portuguese 0x0a: Japanese 0x0b: T_Chinese 0x0c: S_Chinese 0x0d: Korean 0x0e: Russian 0x0f: Arabic
Volume Read	0xefbe	0x10	0x0005	0x7ff2	0x1111	0x0001	0x4f		Range (0x00~0x14)
Source-DVI ¹⁶	0xefbe	0x10	0x0005	0x3e3a	0x1111	0x0001	0x50		
Password ¹⁷	0xefbe	0x10	0x0009	0xaaaf	0x1111	0x0005	0x56		4byte: Original Password
Change Password ¹⁸	0xefbe	0x10	0x000d	0x99fa	0x1111	0x0009	0x57		4byte: Original Password 4byte: New Password
H. Frequency	0xefbe	0x10	0x0005	0xfe3c	0x1111	0x0001	0x59		(KHz)
V. Frequency	0xefbe	0x10	0x0005	0xbe3d	0x1111	0x0001	0x5a		(Hz)
H. Sync Polarity	0xefbe	0x10	0x0005	0x7ffd	0x1111	0x0001	0x5b		0x01: Negative 0x02: Postivite
V. Sync Polarity	0xefbe	0x10	0x0005	0x3e3f	0x1111	0x0001	0x5c		0x01: Negative 0x02: Postivite
Key Pad Lock State	0xefbe	0x10	0x0005	0xffff	0x1111	0x0001	0x5d		0x01: Key Pad Lock On 0x02: Key Pad Lock Off
Mute Off ¹⁹	0xefbe	0x10	0x0005	0x983c	0x1111	0x0001	0x5f		
Get Mute State	0xefbe	0x10	0x0005	0xffee	0x1111	0x0001	0x61		0x00: Ummute 0x01: Mute
Unhide	0xefbe	0x10	0x0005	0x3fed	0x1111	0x0001	0x64		
Get Hide State	0xefbe	0x10	0x0005	0xfe2d	0x1111	0x0001	0x65		0x00: Unhide 0x01: Hide
OSD Transparency Write	0xefbe	0x10	0x0006	0x5adc	0x1111	0x0002	0x66	0x00~0x0f	Range (0x00~0x0f)
OSD Transparency Read	0xefbe	0x10	0x0005	0x7fec	0x1111	0x0001	0x67		Range (0x00~0x0f)
Volume Write	0xefbe	0x10	0x0006	0xdb18	0x1111	0x0002	0x68	0x00~0x14	Range (0x00~0x14)
Source-VGA Analog 2	0xefbe	0x10	0x0005	0xfe28	0x1111	0x0001	0x69		
Temp Alert ²⁰	0xefbe	0x10	0x0005	0xbe29	0x1111	0x0001	0x6a		0x00: Normal 0x01: Abnormal
System Status	0xefbe	0x10	0x0005	0x7e46	0x1111	0x0001	0xff		0x01: Standby 0x02: Warm Up 0x03: Power On 0x04: Cooling 0x05: Power Saving



Note 2: V. Position Write: The range will depends on VGA input resolution.

Note 3: Response and control codes (remarked with superscript 1~20) added to projector in firmware version MOR002 and above.

Information in this document is subject to change without notice.

© 2008 Dell Inc. All rights reserved.

Reproduction in any manner whatsoever without the written permission of Dell Inc. is strictly forbidden.

Trademarks used in this text: *Dell* and the *DELL* logo are trademarks of Dell Inc.

Other trademarks and trade names may be used in this document to refer to either the entities claiming the marks and names or their products. Dell Inc. disclaims any proprietary interest in trademarks and trade names other than its own.

August 2008 Rev. A01