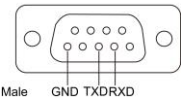
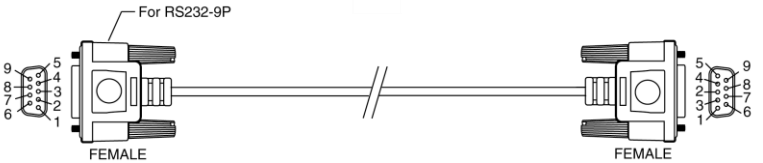
Dell 7760 RS232 Protocol Document

- RS232 Projector Pin Assignment (Facing Projector)



- RS232 Serial Communication Cable Pin Assignment (Facing Cable)



◆ Pin Assignments

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

Note 1: The RS232 (pin2-3 swap) 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 Operating Hour
Byte0, Byte1, Byte2, Byte3
Byte0: 0x00 (Success)
Byte1: 0x2f (the Command Code of Operating Hour)
Byte2: LSB (Hex)
Byte3: MSB (Hex)
Ex: 800 (3x256 + 2x16 = 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 On	0xefbe	0x10	0x0005	0xffc6	0x1111	0x0001	0x01		See Note 2
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 Search	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 On	0xefbe	0x10	0x0005	0xffc3	0x1111	0x0001	0x0d		
Freeze	0xefbe	0x10	0x0005	0xbfc2	0x1111	0x0001	0x0e		
Hide	0xefbe	0x10	0x0005	0x7e02	0x1111	0x0001	0x0f		
Video Mode	0xefbe	0x10	0x0005	0x3fca	0x1111	0x0001	0x10		Toggle
V. Keystone Up	0xefbe	0x10	0x0005	0x7fcb	0x1111	0x0001	0x13		Min. -30
V. Keystone Down	0xefbe	0x10	0x0005	0x3e09	0x1111	0x0001	0x14		Max. +30
Aspect Ratio (Original/4:3/16:9/16:10)	0xefbe	0x10	0x0005	0x7e08	0x1111	0x0001	0x17		Toggle
Power Off	0xefbe	0x10	0x0005	0x3e0c	0x1111	0x0001	0x18		
Source-VGA Analog-A	0xefbe	0x10	0x0005	0xffcc	0x1111	0x0001	0x19		
Key Pad Lock On	0xefbe	0x10	0x0005	0x3e1d	0x1111	0x0001	0x24		
Key Pad Lock Off	0xefbe	0x10	0x0005	0xffdd	0x1111	0x0001	0x25		
Current Source	0xefbe	0x10	0x0005	0xbfdc	0x1111	0x0001	0x26		0x00: No Source 0x01: VGA-A 0x03: HDMI 0x0c: HDMI2 0x0d: Wireless Display Dongle 0x0e: Network
V. Keystone Read	0xefbe	0x10	0x0005	0x3e18	0x1111	0x0001	0x28		
Auto Keystone Write	0xefbe	0x10	0x0006	0x1b28	0x1111	0x0002	0x29		0x00: No. Off 0x01: Yes. On
Power-Mode-ECO	0xefbe	0x10	0x0005	0xbfd9	0x1111	0x0001	0x2a		
Power-Mode-Normal	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		
Operating 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: No. Off 0x01: Yes. On
Aspect Ratio Read	0xefbe	0x10	0x0005	0xbfd3	0x1111	0x0001	0x32		Feedback: 0x00: Original(1:1) 0x01: 4:3 0x02: 16:9 0x03: 16:10
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	0xefbe	0x10	0x0005	0x3fd1	0x1111	0x0001	0x34	0x01~0x04	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	0xefbe	0x10	0x0006	0x1ae4	0x1111	0x0002	0x39	0x01~0x04	0x01: Low 0x02: Mid 0x03: High 0x04: Custom
Color Temperature Read	0xefbe	0x10	0x0005	0xbe15	0x1111	0x0001	0x3a		0x01: Low 0x02: Mid 0x03: High

									0x04: Custom
Enter	0xefbe	0x10	0x0005	0x3ff6	0x1111	0x0001	0x40		
Tint Read	0xefbe	0x10	0x0005	0xfe36	0x1111	0x0001	0x41	0x00~0x64	Range (0x00~0x64)
Video Mode Read	0xefbe	0x10	0x0005	0xbe37	0x1111	0x0001	0x42		0x00: Presentation Mode 0x01: Birght Mode 0x02: Movie Mode 0x03: sRGB Mode 0x04: Custom Mode
Color Space Write	0xefbe	0x10	0x0006	0x9b07	0x1111	0x0002	0x43	0x01~0x03	0x01: Auto 0x02: RGB 0x03: YUV
Color Space Read	0xefbe	0x10	0x0005	0x3e35	0x1111	0x0001	0x44		0x01: Auto 0x02: RGB 0x03: YUV
White Intensity Write	0xefbe	0x10	0x0006	0x1b05	0x1111	0x0002	0x45	0x00~0x0a	Range (0x00~0x0a)
White Intensity Read	0xefbe	0x10	0x0005	0xbff4	0x1111	0x0001	0x46		Range (0x00~0x0a)
H. Position Write	0xefbe	0x10	0x0006	0x1b00	0x1111	0x0002	0x49	0x00~0x64	Range(0x00~0x64) See Note 3
H. Position Read	0xefbe	0x10	0x0005	0xbff1	0x1111	0x0001	0x4a		Range(0x00~0x64) See Note 3
V. Position Write	0xefbe	0x10	0x0006	0x9ac1	0x1111	0x0002	0x4b	0x00~0x64	Range(0x00~0x64) See Note 3
V. Position Read	0xefbe	0x10	0x0005	0x3ff3	0x1111	0x0001	0x4c		Range(0x00~0x64) See Note 3
Current Language Write	0xefbe	0x10	0x0006	0x1ac3	0x1111	0x0002	0x4d	0x01~0x12	0x01: English 0x02: German 0x03: French 0x04: Italian 0x05: Spanish 0x07: Swedish 0x08: Dutch 0x09: Iberian Portuguese 0x0a: Japanese 0x0b: T_Chinese 0x0c: S_Chinese 0x0d: Korean 0x0e: Russian 0x0f: Arabic 0x10: Turkish 0x12: Indonesia
Current Language Read	0xefbe	0x10	0x0005	0xbe32	0x1111	0x0001	0x4e		0x01: English 0x02: German 0x03: French 0x04: Italian 0x05: Spanish 0x07: Swedish 0x08: Dutch 0x09: Iberian Portuguese 0x0a: Japanese 0x0b: T_Chinese 0x0c: S_Chinese 0x0d: Korean 0x0e: Russian 0x0f: Arabic 0x10: Turkish 0x12: Indonesia
Volume Read	0xefbe	0x10	0x0005	0x7ff2	0x1111	0x0001	0x4f		Range (0x00~0x14)
Source-HDMI	0xefbe	0x10	0x0005	0x3e3a	0x1111	0x0001	0x50		
Password	0xefbe	0x10	0x0009	0xaaf9	0x1111	0x0005	0x56	0x30~0x39 0x41~0x5a	4byte: Original Password
Change Password	0xefbe	0x10	0x000d	0x99fa	0x1111	0x0009	0x57	0x30~0x39 0x41~0x5a	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	0xefbe	0x10	0x0005	0x7e3e	0x1111	0x0001	0x5f		
Get Mute State	0xefbe	0x10	0x0005	0xffee	0x1111	0x0001	0x61		0x00: Mute Off 0x01: Mute On
Freeze Off	0xefbe	0x10	0x0005	0xbfef	0x1111	0x0001	0x62		

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)
Temp Alert	0xefbe	0x10	0x0005	0xbe29	0x1111	0x0001	0x6a		0x00: Normal 0x01: Abnormal
Exit Lockup	0xefbe	0x10	0x0005	0xffeb	0x1111	0x0001	0x6d		
Source-HDMI3	0xefbe	0x10	0x0005	0x7fe3	0x1111	0x0001	0x73		Wireless Display Dongle
Source-HDMI4	0xefbe	0x10	0x0005	0x3e21	0x1111	0x0001	0x74		Network Display
Power Saving	0xefbe	0x10	0x0006	0xfe66	0x1111	0x0002	0x81	0x00~0x78	0x00, 0x05, 0x0a, 0x0f, 0x14, 0x19, 0x1e, 0x23, 0x28, 0x2d, 0x32, 0x37, 0x3c, 0x41, 0x46, 0x4b, 0x50, 0x55, 0x5a, 0x5f, 0x64, 0x69, 0x6e, 0x73, 0x78
Power-Mode Read	0xefbe	0x10	0x0005	0x7fa7	0x1111	0x0001	0x83		0x00: Eco 0x01: Normal
Password Off	0xefbe	0x10	0x0005	0xffa5	0x1111	0x0002	0x85		
Password Delete	0xefbe	0x10	0x0005	0xbfa4	0x1111	0x0002	0x86		
Speaker	0xefbe	0x10	0x0005	0x7e64	0x1111	0x0002	0x87		0x00: Off 0x01: On
Speaker Status	0xefbe	0x10	0x0005	0x3e60	0x1111	0x0001	0x88		0x00: Off 0x01: On
Zoom Status	0xefbe	0x10	0x0005	0xffa0	0x1111	0x0001	0x89		Range (0x01~0x0a)
Get Power Saving status	0xefbe	0x10	0x0006	0xbfa1	0x1111	0x0002	0x8a		0x00, 0x05, 0x0a, 0x0f, 0x14, 0x19, 0x1e, 0x23, 0x28, 0x2d, 0x32, 0x37, 0x3c, 0x41, 0x46, 0x4b, 0x50, 0x55, 0x5a, 0x5f, 0x64, 0x69, 0x6e, 0x73, 0x78
System Status	0xefbe	0x10	0x0005	0x7e46	0x1111	0x0001	0xff		0x01: Standby 0x02: Warm Up 0x03: Power On 0x04: Cooling 0x05: Power Saving

Note 2: After power on the projector, wait for 5 seconds before sending next command.

Note 3: The range will depend on VGA input resolution.

Note 4: If sending multiple commands, check that a response has been received from the projector before sending next command.

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