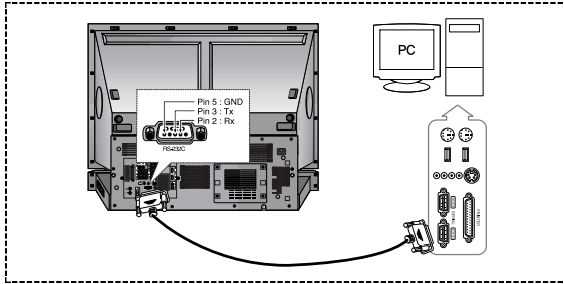


PROCEDURES FOR CONTROLLING A DLP DTU USING AN RS-232C CONNECTION

Connect the DLP DTU using the serial port.



- ✎ Do not disconnect or connect the RS-232C cable while the Computer or the DLP TV is operating. It may cause serious damage to the Computer or the DLP TV.
- ✎ If the PC is not properly configured, the RS-232C connection may not work properly. For further details, refer to the Computer's product documentation.

Serial Port Settings

Specification	RS-232C
Bit Rate	19200 bps
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Flow Control	None

Serial Communication Protocol

Command Packet Structure [7bytes]

0x08	0x22	Cmd1	Cmd2	Cmd3	Value	CS
------	------	------	------	------	-------	----

- ◆ A command packet consists of 7 bytes in total.
- ◆ The two bytes **0x08** and **0x22** signify that the packet is for serial communication.
- ◆ The following 4 bytes represent a pre-defined command that can be defined by the user.
- ◆ The last byte is the checksum which checks the validity of the current packet.

Header [2 Byte]: Pre-defined values fixed to 0x08 and 0x22.

Cmd1 [1 Byte]: The first value of the code defined in the command list (Hexadecimal)

Cmd2 [1 Byte]: The second value of the code defined in the command list (Hexadecimal)

Cmd3 [1 Byte]: The third value of the code defined in the command list (Hexadecimal)

Value [1 Byte]: Input parameter for the command (Default: 0) (Hexadecimal)

CS [1 Byte]: Checksum (the 2's complement of the sum of all the values except for the CS value.)

Response Packet Structure [3 Bytes]

◆ Success

◆ Fail

0x03	0x0C	0xF1
------	------	------

0x03	0x0C	0xFF
------	------	------

When the received packet from an external device has a valid value, a Success packet is sent. Otherwise, a Fail packet is sent.

A Fail packet is sent if:

- ◆ The received packet length is not equal to 7 bytes.
- ◆ The 2 byte packet header value is not equal to 0x08, 0x22.
- ◆ The check sum is incorrect.

Failure detection by an external device

An external device classifies the packet as Fail if it does not receive a Success packet within 100ms.

Communication Sequence

- ◆ **PC**
Creates a command packet and sends it through RS232C.
- ◆ **DLP DTU**
Receives a packet and parses the packet.
Determines whether it is a success or fail, and transmits the Ack packet to the PC.
Controls the DLP DTU with the parsed command.
- ◆ **PC**
Waits for the Ack packet.
Prepares the next command, if a Success packet arrives immediately.

PROCEDURES FOR CONTROLLING A DLP DTV USING AN RS-232C CONNECTION

Example

In this example, let's analyze the message of the communication protocol.

To change the Contract of the screen mode to 90, you have to define a packet as follows.

First, find the Contract command from the Command List.

Find 0x0B for PICTURE.

Find 0x00 for MODE.

Find 0x01 for CONTRAST.

Finally, insert the desired value 90 into the 4-byte data.

Insert the header values 0x08 and 0x22, calculate and insert the check sum and send the packet to the DLP DTV.

e.g.) PICTURE / MODE / CONTRAST (90) CS= ~(08+22+0B+00+01+5A)+1

0x08	0x22	0x0B	0x00	0x01	0x5A	0x70
------	------	------	------	------	------	------

If the DLP DTV receives, analyzes and parses the packet successfully, it transmits a Success packet to the PC.

0x03	0x0C	0xF1
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CONTROL ITEM				Cmd1	Cmd2	Cmd3	Value		
GENERAL	Power			0x00	0x00	0x00	0x00		
	Volume			0x01	0x00	0x00	(0-100)		
	Mute			0x02	0x00	0x00	0x00		
INPUT	Source List	TV		0x0A	0x00	0x00	0x00		
		AV1					0x01		
		AV2					0x02		
		S-Video1					0x03		
		S-Video2					0x04		
		Component1					0x05		
		Component2					0x06		
		PC					0x07		
		HDMI1					0x08		
		HDMI2					0x09		
PICTURE	Mode	Dynamic		0x00	0x00	0x00	0x00		
			Standard					0x01	
			Movie					0x02	
			Custom					0x03	
		Contrast						0x01	
			Brightness					0x02	
			Sharpness					0x03	
			Color					0x04	
		Tint (G/R)						0x05	
			Color Tone				Cool2		0x06
							Cool1		0x07
							Normal		0x08
	Warm1			0x09					
	Reset			0x0A					
		16:9		0x0B					
		4:3		0x0C					
		Zoom1		0x0D					
	Size	Zoom2		0x0E					
		Panorama		0x0F					
		Digital NR	Off		0x10				
	DNle Demo	On		0x11					
		Off		0x12					
	My Color Control	Easy Control	Red		0x0B	0x04	0x04	0x00	
			Green					0x01	
Blue				0x02					
Yellow				0x03					
Pink				0x04					
Standard				0x05					
Detail Control		Custom		0x06					
		Red		0x07					
		Green		0x08					
		Blue		0x09					
		Yellow		0x0A					
		Pink		0x0B					
Film Mode	Off		0x0C						
	On		0x0D						
PIP	Off		0x0E						
	On		0x0F						

CONTROL ITEM				Cmd1	Cmd2	Cmd3	Value		
SOUND	PIP	Source	TV	0x06	0x06	0x06	0x00		
			AV1				0x01		
			AV2				0x02		
			S-Video1				0x03		
			S-Video2				0x04		
		Component1	0x05						
		Component2	0x06						
		Swap	0x07						
		Size	Small					0x08	
			Large					0x09	
	Double			0x0A					
	Position	Double Wide		0x0B					
		Lower Right		0x0C					
		Upper Right		0x0D					
		Upper Left		0x0E					
		Lower Left		0x0F					
	Air/CATV	Air		0x10					
	Cable		0x11						
	Mode	Standard		0x00	0x00	0x00	0x00	0x00	
			Music					0x01	
			Movie					0x02	
			Speech					0x03	
			Custom					0x04	
			L/R						0x05
		Equalizer	100Hz						0x06
			300Hz						0x07
			1kHz						0x08
			3kHz						0x09
			10kHz						0x0A
			SRS TSXT					Off	
3D Mono		0x0C							
Stereo		0x0D							
Multi-Track Options	Preferred Language	English	0x0C	0x03	0x03	0x03	0x00		
		Spanish					0x01		
	Multi-Track Sound	French					0x02		
		Mono						0x03	
Auto Volume	Stereo	SAP	0x04						
		Off		0x05					
Internal Mute	On		0x06						
	Off		0x07						
Digital Output	Dolby Digital		0x08						
Sound Select	PCM		0x09						
	Main		0x0A						
SubWoofer	Sub		0x0B						
	SubWoofer	Off	0x0C						
	Volume	On	0x0D						
	Frequency		0x0E						
Melody	Off		0x0F						
	On		0x10						