Command Catalog

Reference manual

For PGWX-61B

R5905745/03
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BARCO

Visibly yours

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1. INTRODUCTION

1.1 About this document

What is the purpose of this document?

This document is applicable for the Barco device mentioned on the front page of this document and can thus not be used on any other equipment.

It explains how the communication with the device is accomplished. In order to be able to communicate with this Barco device, the Barco Projection Protocol, which is explained in detail in the following chapter, must be strictly followed.

Audience & prerequisites

This document is intended for software programmers and system integrators who want to be able to control a Barco device from their own application. This document expects a basic knowledge of binary math, networking technology and programming.

2. THE BARCO PROJECTION PROTOCOL

Overview

- The Barco Projection Protocol explained
- Ethernet communication
- RS232/RS422/USB-B communication
- The command representation in this manual

2.1 The Barco Projection Protocol explained

Usage

The Barco Projection Protocol is used for the serial communication with a Barco device. This can be done by the following ways:

- Ethernet
- RS232
- RS422
- USB-B

Structure

Each command is built up from a start byte, device address, request/response, checksum and stop byte (image 2-1).

Image 2-1
Command structure

- **Start byte**: used to let the receiver know that a command will follow.
- **Device address**: when multiple devices (maximum 256) are connected on the same physical connection, the device address is used to specify the device (only for RS232 connections). In case of an Ethernet connection, this should be set to 0.
- **Request/Response**: the actual command bytes.
- **Checksum**: used to detect if any errors occurred during transmission or reception of the command.
- **Stop byte**: used to let the receiver know that the end of a command has been reached.

How is the checksum calculated?

The checksum calculation is based on modular arithmetic:

`Checksum` **=** **(**`Device address` **+** `Request/Response`**) modulo** `0x100 (or 256)`

Bytes conversion

Some bytes cannot be used in a command. If they do appear in the **request/response** or **checksum**, they must be converted. The table below gives an overview.

Byte	After conversion
0x80	0x80 0x00
0xFE	0x80 0x7E
0xFF	0x80 0x7F

When a byte sequence from the after conversion column is received, that sequence must be converted to the corresponding byte.

Characters and character strings

Each character is sent as a byte, using the ANSI encoding method.

Character strings can be formatted in two ways:

- **C-style format**
  An array of one or more characters which is terminated by a NULL character (`0x00`). The position of the NULL character determines the length of the string.
  Example: 'f' 'o' 'o' ' ' 'b' 'a' 'r' 0x00
- **Pascal-style format**
  An array of one or more characters which is started (the first byte) with the length of the string. Therefore, Pascal-style strings are limited to 255 characters.
  Example: 0x07 'f' 'o' 'o' ' ' 'b' 'a' 'r'

ANSI

American National Standards Institute

Data words

A data word is a value which consists of multiple bytes. Data words are formatted in **big endian**.

How to calculate the value of a data word?

Example of a 4-byte value: `0x01 0x20 0x50 0x30`

= (`0x01` * 256^3) + (`0x20` * 256^2) + (`0x50` * 256^1) + (`0x30` * 256^0)

= (1 * 16777216) + (32 * 65536) + (80 * 256) + (48 * 1)

= 16777216 + 2097152 + 20480 + 48

= 18894896

msb

The **m**ost **s**ignificant **b**yte, is the byte with the greatest weight (value).

lsb

The **l**ess **s**ignificant **b**yte, is the byte with the smallest weight (value).

Big endian

When the first byte of a data word is the **msb** and the last byte is the **lsb**, the data word is in **big endian**.

Negative values

The **two's complement** (**2-complement**) system is used for the representation of negative values.

Acknowledgement (ACK and NACK)

If a command is received, the receiver will check the validity and correctness of the command before processing it. If the command is understood, the receiver will first acknowledge the command before doing the actual processing of the command. An **ACK** (AC-Knowledge) is sent when these conditions are met:

- The command format is correct
- The command and its parameters are valid
- The checksum is correct

When these conditions are not met, a **NACK** (Not ACKnowledge) is sent.

	ACK	NACK
Byte 1	`0x00`	`0x00`
Byte 2	`0x06`	`0x15`

When the sender receives a NACK message, it is up the sender to decide what should happen next: retry sending the command or discard the command.

Acknowledgements are not used in multicast communication.

Sending and receiving a command

A command which is sent to the device will consist of a request. A command which is received by the client will consist of a response.

Requests must be sent in the Barco Projection Protocol format: each request needs to be structured in the correct way before it is sent to the device. Responses are also sent in the Barco Projection Protocol format.

Keep in mind that:

- For Ethernet communication, the **Device address** must be set to 0.
- A correct **Checksum** must be generated for the command.

After a request has been sent to the device, the acknowledgement of the request must be read first. After the request has been acknowledged, the response from the device (if applicable) can be expected.

Example 1: The client wants to know the type of the device. It sends the following command: *projector type, read*. The device will acknowledge (ACK) the request and then send the response which contains the device type.

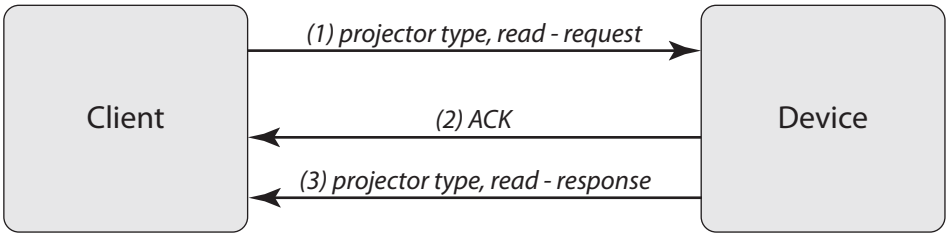

Image 2-2
Example 1

Example 2: The client sends an unknown command. The device doesn't recognize the command and sends a NACK.

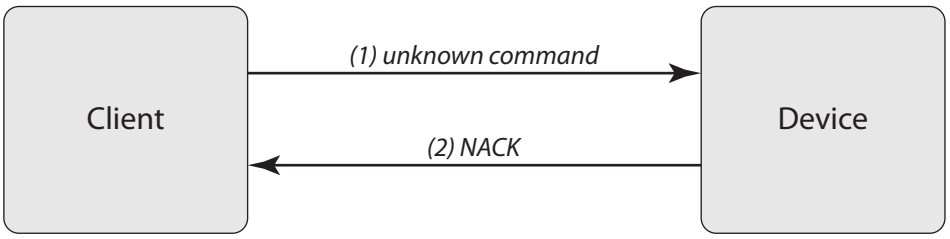

Image 2-3
Example 2

How to handle failing communication?

When a sender fails to send a command, or a receiver fails to return the expected response (ACK, NACK or response), some steps must be followed to handle this failing communication.

There are 2 possible failures:

- **Communication link problems:** if the sending of the commands itself doesn't work, it will be because the communication is broken (e.g. the receiver is disconnected from the network).
- **Answer back problems:** when commands can be sent out but no response is sent back, it means that the communication link is OK but the receiver is unable to answer back.

Each type of failure needs another way of handling.

Handling communication link problems

As communication link problems will most likely have a physical reason (cable disconnected, hub down, device down, …), the user must be notified and must be asked for his feedback. In most cases there will be a user intervention needed to correct this problem (connect the cable, reboot the hub, restart the device, …).

The actual implementation of this should be described in the specifications of the application.

Handling answer back problems

Answer back problems should be addressed in another way. When a receiver fails to answer back it might be that it is currently too busy to answer back. The application software should implement some simple mechanisms to avoid problems when this occurs:

1. **Timeout waiting**: the application should wait for a limited amount of time for an answer (e.g. max 10 seconds). This ensures that the application can react when a command doesn't get answered in time.
2. **Retry waiting**: if the timeout expires, one can retry waiting for the answer. By doing this, the user has the opportunity to cancel the action. If needed, the retry can even be repeated several times.
3. **Retry sending**: when a command does not get answered after the timout waiting and retry waiting, the command is considered to be lost in action and the application should send the command again.

This mechanism follows the sequence of the steps: first the timeout waiting is used, then the retry waiting and finally the retry sending. If all of these steps fail, there might be a major problem with the receiver. In this case the user should be notified of these problems so that he can check the status of the receiver.

2.2 Ethernet communication

Introduction

The communication follows a client/server model where the device is the server. This means that the device responds on requests that are sent by a client. The device will not send out messages on its own initiative.

The communication is *blocking* which means that when a request is sent to the device, no other requests can be sent until the device has responded on the first request. The communication blocks for each request.

The connector used for the Ethernet ports are of rugged Neutrik EtherCon RJ45 type, which is compatible with standard RJ45 cable connector. Straight (most common) as well as cross linked network cables can be used.

10/100 Base-T — RJ45 port	
Pin	**Description**
1	TXD+
2	TXD-
3	RXD+
4	—
5	—
6	RXD-
7	—
8	—

Making connection with the device

The device is listening on TCP port 0xAAA0 (43680) for incoming connections. The IP address can be retrieved using the local user interface or on the OSD menu of the device.

Device discovery

It is possible to discover all the devices on the network using a UDP broadcast. A UDP broadcast only works on IP networks and requires a special socket connection: the datagram connection.

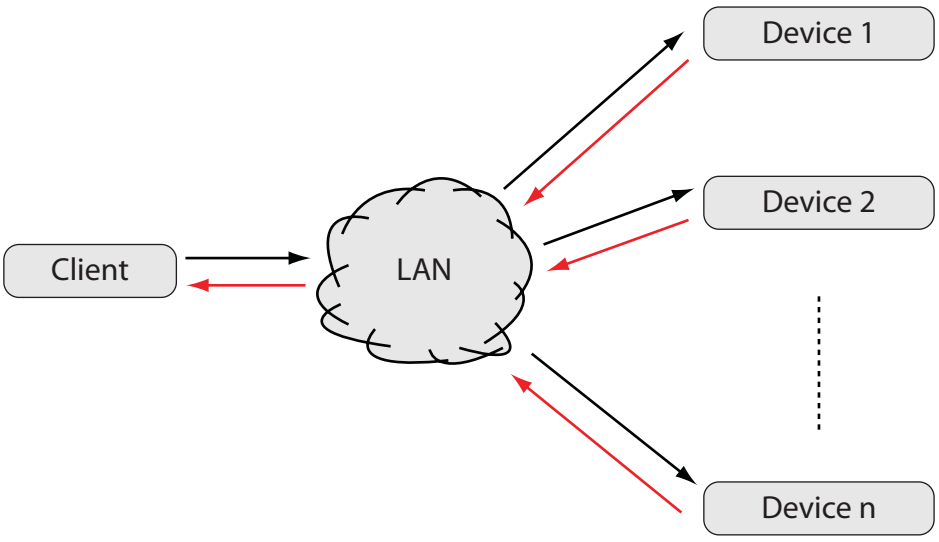

Image 2-4

To discover the devices, send a datagram packet to the broadcast address `255.255.255.255` on port `0xA001`.

The packet should contain 1 byte: `0x3F`, which represents the character '?'.

All the devices that support UDP broadcast discovery, will answer on the request by sending an array of (C-language) strings on the same socket. Each string represents a key-value pair with specific information about the device that has been discovered.

Typically, the following strings will be returned:

- **hostname=value**; the hostname of the device
- **ip-address=value**; the IP address of the device
- **mac-address=value**; the MAC address of the NIC on the device
- **type=value**; the device type (not for DP90/DP100 projectors)

Remarks:

- The broadcast does not follow the typical Barco Projection Protocol formatting: the request is just one byte (not marked up as Barco Projection Protocol command) and the devices answer back without sending an ACK and without formatting their response in the Barco Projection Protocol format.
- The size of the array is undetermined, but in most cases it will contain 4 strings. However, this is open to future expansion, so more strings can be added later.
- The strings normally appear in this order: *hostname, ip-address, mac-address* and *type*, but this cannot be guaranteed.

The used broadcast is a limited broadcast. This means that the broadcast message is transmitted to all NIC's which are on the same IP segment as the client. This type of broadcast is not forwarded by routers so it will not detect devices which are on another segment.

NIC

Network **I**nterface **C**ard

2.3 RS232/RS422/USB-B communication

RS232

An Electronic Industries Association (EIA) serial digital interface standard specifying the characteristics of the communication path between two devices using either D-SUB 9 pins or D-SUB 25 pins connectors. This standard is used for relatively short-range communications and does not specify balanced control lines. RS-232 is a serial control standard with a set number of conductors, data rate, word length and type of connector to be used. The standard specifies component connection standards with regard to computer interface. It is also called RS-232-C, which is the third version of the RS-232 standard, and is functionally identical to the CCITT V.24 standard. Logical '0' is > + 3V, Logical '1' is < - 3V. The range between -3V and +3V is the transition zone.

RS422

An EIA serial digital interface standard that specifies the electrical characteristics of balanced (differential) voltage, digital interface circuits. This standard is usable over longer distances than RS-232. This signal governs the asynchronous transmission of computer data at speeds of up to 920,000 bits per second. It is also used as the serial port standard for Macintosh computers. When the difference between the 2 lines is < - 0.2V that equals with a logical '0'. When the difference is > +0.2V that equals to a logical '1'..

Settings

Baud rate: Defines the speed of the data transfer. The baud rate can be set using the local user interface on the device. Consult the user manual of the device for more detailed information.

Data bits: Eight (8) data bits are used for each character of the data transfer.

Parity: There is no parity bit used to perform error checking.

Stop bit: One (1) stop bit is used to define the end of a character.

Hardware

RS232/422 input (Sub-D) port	
Pin	**Description**
1	DCD : Data Carrier Detect
2	RXD- : Receive Data
3	TXD- : Transmitted Data
4	DTR : Data Terminal Ready [RS232] TXD+ : Transmitted Data [RS422]
5	GND : Ground
6	DSR : Data Set Ready [RS232] RXD+ : Received Data [RS422]
7	— (not connected) —
8	CTS : Clear To Send
9	RI : Ring Indicator

2.4 The command representation in this manual

About the command representation in this manual

- **Title**: The title of a command is built up from its function (e.g. **network settings**), followed by its type (e.g. **read**).
- **Description**: A general description of the command is given in the *About this command* section.
- **Request/Response** table: Each row in the request/response table represents a datafield. A datafield contains 1 or more values.
  a) **Pos**: The position of the datafield. When the size of the datafield is greater than 1, the datafield will take more than 1 position.
  b) **Size**: The number of values the datafield **must** contain. This can be different from the total number of available values, dependent on the value groups.
  c) **Name**: The name of the datafield.
  d) **Description**: The description of the datafield.
  e) **Content**: The value(s) of the datafield. This column consists of the **value** itself, and a **value description**. Every value is displayed in a separate row. A datafield can have different value groups.
  Different value groups can be distinguished as follows:
  - If consecutive rows have different background colors, the values belong to another group.
  - If they have the same background color, the values belong to the same group.

  Only 1 value group per datafield may be choosen to be used in the command. All the values of a value group must appear together and in the same order.

Example: the datafield below contains 2 IP addresses. Only 1 of the 2 IP-addresses may be choosen in the command. The values of the IP-addresses must stay in the same order.

Pos	Size	Name	Description	Content	
0-3	4	IP-address	This is the IP-address datafield.	192	IP-address 1, value 1 (dec)
				168	IP-address 1, value 2 (dec)
				1	IP-address 1, value 3 (dec)
				1	IP-address 1, value 4 (dec)
				192	IP-address 2, value 1 (dec)
				168	IP-address 2, value 2 (dec)
				1	IP-address 2, value 3 (dec)
				2	IP-address 2, value 4 (dec)

Table 2-5
Example

3. COMMANDS

3.1 AV mute, read

About this command

This command reads the AV mute status. When AV mute is set to On, the screen will be black.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	AV mute		0xa9	

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	AV mute		0xa9	
2	1	AV mute status		0x00	Off (hex)
				0x01	On (hex)

3.2 AV mute, write

About this command

This command will turn the screen black when AV mute is set to On. When AV mute is set to Off, the screen will turn back to the original image.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	AV mute		0xa9	
2	1	AV mute status		0x00	Off (hex)
				0x01	On (hex)

3.3 decrement noise reduction, write

About this command

This command decrements the noise reduction by one.

Request

Pos	Size	Name	Description	Content	
0	1	dec adj	byte value known as "dec adj"	0x23	dec adj (hex)
1	1	adj noise reduction		0x73	adj noise reduction (hex)

3.4 get about info, read

About this command

This command gets the "about" info of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	get about info		0x2A	
				0x01	
				0xA2	

Response

Pos	Size	Name	Description	Content	
0-2	3	get about info		0x2A	
				0x01	
				0xA2	
3	1	model name		0x02	PGXG-61B (hex)
				0x03	PGWX-61B (hex)
				0x04	PGWU-61B (hex)
4-13	10	serial number			BYTE1 (hex)
					BYTE2 (hex)
					BYTE3 (hex)
					BYTE4 (hex)
					BYTE5 (hex)
					BYTE6 (hex)
					BYTE7 (hex)
					BYTE8 (hex)
					BYTE9 (hex)
					BYTE10 (hex)
14-19	6	system FW version			BYTE1 (hex)
					BYTE2 (hex)
					BYTE3 (hex)
					BYTE4 (hex)
					BYTE5 (hex)
					BYTE6 (hex)
20	1	main source		0x00	HDMI (hex)
				0x01	VGA (hex)
				0x02	DVI (hex)
				0x03	BNC (hex)
				0x04	CVBS (hex)
				0x1A	invalid (hex)
21	1	PIP source		0x00	HDMI (hex)
				0x01	VGA (hex)
				0x02	DVI (hex)
				0x03	BNC (hex)
				0x04	CVBS (hex)
				0x1A	invalid (hex)
22	1	pixel clock	pixel clock (MHz) (integer)		pixel clock (dec)

Pos	Size	Name	Description	Content	
23	1	pixel clock	pixel clock (MHz) (decimal fraction * 256)		pixel clock (dec)
24	1	vertical refresh rate	vertical refresh rate (Hz)		vertical refresh rate (hex)
25	1	horizontal refresh rate	horizontal refresh rate (kHz) (integer)		horizontal refresh rate (hex)
26	1	horizontal refresh rate	horizontal refresh rate (kHz) (decimal fraction * 256)		horizontal refresh rate (hex)
27	1	signal format		0x01	separate (hex)
				0x02	sync on green (hex)
				0x03	TBD (reserved) (hex)
				0x00	invalid (hex)
28-31	4	lamp runtime	runtime in hours as DWORD		MSB (hex)
					BYTE 1 (hex)
					BYTE 2 (hex)
					LSB (hex)
32-35	4	TBD			TBD (reserved) (hex)
					TBD (reserved) (hex)
					TBD (reserved) (hex)
					TBD (reserved) (hex)
36	1	lamp status		0x00	lamp off (hex)
				0x01	lamp on (hex)
37	1	TBD			TBD (reserved) (hex)
38-41	4	projector runtime	runtime in seconds as DWORD		MSB (hex)
					BYTE 1 (hex)
					BYTE 2 (hex)
					LSB (hex)
42	1	projector status		0x00	Off (hex)
				0x01	On (hex)
43	1	rear projection mode status		0x00	Off (hex)
				0x01	On (hex)
44	1	ceiling mode status		0x00	Off (hex)
				0x01	On (hex)
45	1	format (color space)		0x00	invalid (hex)
				0x01	auto (hex)
				0x02	RGB (hex)
				0x03	YUV (hex)

3.5 get advanced control info, read

About this command

This command gets the "advanced control info" of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	get advanced control info		0x2A	
				0x05	
				0xA2	

Response

Pos	Size	Name	Description	Content	
0-2	3	get advanced control info		0x2A	
				0x05	
				0xA2	
3	1	color temperature value		0x00	invalid (hex)
				0x01	native (hex)
				0x02	3200K (hex)
				0x03	5400K (hex)
				0x04	6500K (hex)
				0x05	8800K (hex)
4	1	gain R	range 0->100 (OSD range 0->100)		gain R (hex)
5	1	gain G	range 0->100 (OSD range 0->100)		gain G (hex)
6	1	gain B	range 0->100 (OSD range 0->100)		gain B (hex)
7	1	offset R	range 0->100 (OSD range 0->100)		offset R (hex)
8	1	offset G	range 0->100 (OSD range 0->100)		offset G (hex)
9	1	offset B	range 0->100 (OSD range 0->100)		offset B (hex)
10	1	TBD			TBD (reserved) (hex)

3.6 get aspect ratio file, read

About this command

This command gets the aspect ratio file value.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj aspect ratio		0x0B	adj aspect ratio (hex)
2	1	aspect ratio file		0xC0	aspect ratio file (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj aspect ratio		0x0B	adj aspect ratio (hex)
2	1	aspect ratio file		0xC0	aspect ratio file (hex)
3	1	aspect ratio		0x00	invalid (hex)
				0x01	4:3 (hex)
				0x02	16:10 (hex)
				0x03	native (hex)
				0x04	auto (hex)

3.7 get auto image adjust, read

About this command

This command gets the auto image adjust mode.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj auto image		0xa8	adj auto image (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj auto image		0xa8	adj auto image (hex)
2	1	auto image adjust status		0x00	Off (hex)
				0x01	always (hex)
				0x02	auto (hex)

3.8 get auto power off, read

About this command

This command gets the auto power off mode.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj auto power off		0xA6	adj auto power off (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj auto power off		0xA6	adj auto power off (hex)
2	1	auto power off status		0x00	Off (hex)
				0x01	On (hex)

3.9 get auto power on, read

About this command

This command gets the auto power on mode.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj auto power on		0xA7	adj auto power on (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj auto power on		0xA7	adj auto power on (hex)
2	1	auto power on status		0x00	Off (hex)
				0x01	On (hex)

3.10 get auto source, read

About this command

This command gets the auto source status.

Request

Pos	Size	Name	Description	Content	
0	1	get auto source		0x91	get auto source (hex)
1	1	get auto source		0x01	get auto source (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get auto source		0x91	get auto source (hex)
1	1	get auto source		0x01	get auto source (hex)
2	1	auto source status		0x00	Off (hex)
				0x01	On (hex)

3.11 get brightness, read

About this command

This command gets the brightness value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj brightness		0x02	adj brightness (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj brightness		0x02	adj brightness (hex)
2	1	brightness value	range 0->100		brightness value (hex)

3.12 get ceiling mode, read

About this command

This command gets the ceiling mode.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj ceiling		0xA3	adj ceiling (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj ceiling		0xA3	adj ceiling (hex)
2	1	ceiling mode status		0x00	Off (hex)
				0x01	On (hex)

3.13 get color temperature, read

About this command

This command sets the color temperature of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj color temperature		0x45	

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj color temperature		0x45	
2	1	color temperature value		0x00	invalid (hex)
				0x01	native (hex)
				0x02	3200K (hex)
				0x03	5400K (hex)
				0x04	6500K (hex)
				0x05	8800K (hex)

3.14 get color wheel index, read

About this command

This command gets the color wheel index.

Request

Pos	Size	Name	Description	Content	
0	1	get color wheel index		0x58	get color wheel index (hex)
1	1	get color wheel index		0x21	get color wheel index (hex)
2	1	get color wheel index		0x41	get color wheel index (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get color wheel index		0x58	get color wheel index (hex)
1	1	get color wheel index		0x21	get color wheel index (hex)
2	1	get color wheel index		0x41	get color wheel index (hex)
3-4	2	color wheel index			MSB (hex)
					LSB (hex)

3.15 get contrast, read

About this command

This command gets the contrast value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj contrast		0x01	adj contrast (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj contrast		0x01	adj contrast (hex)
2	1	contrast value	range 0->100		contrast value (hex)

3.16 get diagnostics info, read

About this command

This command gets the "diagnostics" info of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	get diagnostics info		0x2A	
				0x07	
				0xA2	

Response

Pos	Size	Name	Description	Content	
0-2	3	get diagnostics info		0x2A	
				0x07	
				0xA2	
3	1	error code		0x00	lamp 1 failure (hex)
				0x01	TBD (reserved) (hex)
				0x02	TBD (reserved) (hex)
				0x03	F-type fan error (hex)
				0x04	R-type fan error (hex)
				0x05	DDP442x not ready (hex)
				0x06	TBD (reserved) (hex)
				0x07	overtemperature (hex)
				0x08	lamp 1 strike failure (hex)
				0x09	TBD (reserved) (hex)
				0x0A	TBD (reserved) (hex)
				0x0B	color wheel error (hex)
				0x0C	TBD (reserved) (hex)
				0x0D	system standby (hex)
				0x0E	system encoding (hex)
				0x0F	system warm up (hex)
				0x10	system normal operating (hex)

3.17 get dimming, read

About this command

This command gets the dimming value.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj dimming		0x0D	adj dimming (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj dimming		0x0D	adj dimming (hex)
2	1	dimming value	lamp power (Watt)	0x00	276.4W (hex)
				0x01	300W (hex)
				0x02	321W (hex)
				0x03	343.1W (hex)
				0x04	360W (hex)
				0x05	378W (hex)
				0x06	400W (hex)
				0x07	420W (hex)
				0x08	442W (hex)
				0x09	462W (hex)

3.18 get display mode, read

About this command

This command gets the display mode of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj display mode		0x15	adj display mode (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj display mode		0x15	adj display mode (hex)
2	1	display mode status		0x00	presentation (hex)
				0x01	video (hex)
				0x02	bright (hex)

3.19 get format, read

About this command

This command gets the input format of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj input format		0x14	adj input format (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj input format		0x14	adj input format (hex)
2	1	format (color space)		0x00	invalid (hex)
				0x01	auto (hex)
				0x02	RGB (hex)
				0x03	YUV (hex)

3.20 get freeze, read

About this command

This command gets the freeze status.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	freeze		0xac	set freeze (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	freeze		0xac	set freeze (hex)
2	1	freeze value		0x00	off (hex)
				0x01	on (hex)

3.21 get gamma, read

About this command

This command gets the gamma value.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj gamma		0x70	adj gamma (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj gamma		0x70	adj gamma (hex)
2	1	gamma value		0x00	film (hex)
				0x01	video (hex)
				0x02	graphics (hex)
				0x03	standard (hex)

3.22 get general info, read

About this command

This command gets the "general" info of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	get general info		0x2A	
				0x02	
				0xA2	

Response

Pos	Size	Name	Description	Content	
0-2	3	get general info		0x2A	
				0x02	
				0xA2	
3	1	projector status		0x00	Off (hex)
				0x01	On (hex)
4	1	TBD			TBD (reserved) (hex)
5	1	TBD			TBD (reserved) (hex)
6	1	main source		0x00	HDMI (hex)
				0x01	VGA (hex)
				0x02	DVI (hex)
				0x03	BNC (hex)
				0x04	CVBS (hex)
				0x1A	invalid (hex)

3.23 get geometry adjust info, read

About this command

This command gets the "geometry adjust info" of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	get geometry adjust info		0x2A	
				0x04	
				0xA2	

Response

Pos	Size	Name	Description	Content	
0-2	3	get geometry adjust info		0x2A	
				0x04	
				0xA2	
3	1	TBD			TBD (reserved) (hex)
4	1	keystone value	range 0->40 (OSD range -20->20)		keystone value (hex)
5	1	TBD			TBD (reserved) (hex)
6	1	TBD			TBD (reserved) (hex)
7	1	aspect ratio		0x00	invalid (hex)
				0x01	4:3 (hex)
				0x02	16:10 (hex)
				0x03	native (hex)
				0x04	auto (hex)

3.24 get H start, read

About this command

This command gets the horizontal start pixel for the VGA and BNC inputs.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	get H start		0x11	get H start (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	get H start		0x11	get H start (hex)
2	1	H start value	range 0->100 (OSD range 0->100)		H start value (hex)

3.25 get high altitude, read

About this command

This command gets the high altitude setting.

Request

Pos	Size	Name	Description	Content	
0	1	get high altitude		0x69	get high altitude (hex)
1	1	get high altitude		0x41	get high altitude (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get high altitude		0x69	get high altitude (hex)
1	1	get high altitude		0x41	get high altitude (hex)
2	1	high altitude status		0x00	Off (hex)
				0x01	On (hex)

3.26 get image setting info, read

About this command

This command gets the "image setting" info of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	get image setting info		0x2A	
				0x03	
				0xA2	

Response

Pos	Size	Name	Description	Content	
0-2	3	get image setting info		0x2A	
				0x03	
				0xA2	
3	1	contrast value	range 0->100		contrast value (hex)
4	1	brightness value	range 0->100		brightness value (hex)
5	1	saturation value	range 0->100		saturation value (hex)
6	1	tint value	range 0->100		tint value (hex)
7	1	sharpness value	range 0->14 (OSD range -7->+7)		sharpness value (hex)
8	1	TBD			TBD (reserved) (hex)
9	1	gamma value		0x00	film (hex)
				0x01	video (hex)
				0x02	graphics (hex)
				0x03	standard (hex)

3.27 get input black balance, read

About this command

This command gets the input black balance value of the active source. This is applicable for the specified color.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj input black balance		0x6E	adj inp black balance (hex)
2	1	color	color specification	0x00	red (hex)
				0x01	green (hex)
				0x02	blue (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj input black balance		0x6E	adj inp black balance (hex)
2	1	color	color specification	0x00	red (hex)
				0x01	green (hex)
				0x02	blue (hex)
3	1	balance value	range 0->100 (OSD range 0->100)		balance value (hex)

3.28 get input selection, read

About this command

This command gets the input of the projector.

Request

Pos	Size	Name	Description	Content	
0	1	read input selection		0x34	read input selection (hex)

Response

Pos	Size	Name	Description	Content	
0	1	read input selection		0x34	read input selection (hex)
1	1	input slot		0x00	HDMI (hex)
				0x01	VGA (hex)
				0x02	DVI (hex)
				0x03	BNC (hex)
				0x04	CVBS (hex)

3.29 get input white balance, read

About this command

This command gets the input white balance value of the active source. This is applicable for the specified color.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj input white balance		0x6F	adj input white balance (hex)
2	1	color	color specification	0x00	red (hex)
				0x01	green (hex)
				0x02	blue (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj input white balance		0x6F	adj input white balance (hex)
2	1	color	color specification	0x00	red (hex)
				0x01	green (hex)
				0x02	blue (hex)
3	1	balance value	range 0->100 (OSD range 0->100)		balance value (hex)

3.30 get internal pattern, read

About this command

This command gets the internal pattern.

Request

Pos	Size	Name	Description	Content	
0	1	get internal pattern		0x42	get internal pattern (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get internal pattern		0x42	get internal pattern (hex)
1	1	internal pattern number		0x00	none (hex)
				0x01	white (hex)
				0x02	grid (hex)

3.31 get IP configuration info, read

About this command

This command gets the "IP configuration info" of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	get IP configuration info		0x2A	
				0x06	
				0xA2	

Response

Pos	Size	Name	Description	Content	
0-2	3	get IP configuration info		0x2A	
				0x06	
				0xA2	
3-6	4	IP address			first octet (hex)
					second octet (hex)
					third octet (hex)
					fourth octet (hex)
7-10	4	subnet mask			first octet (hex)
					second octet (hex)
					third octet (hex)
					fourth octet (hex)
11-14	4	default gateway			first octet (hex)
					second octet (hex)
					third octet (hex)
					fourth octet (hex)
15	1	DHCP		0x00	Off (hex)
				0x01	On (hex)
16-21	6	LAN FW version			BYTE1 (hex)
					BYTE2 (hex)
					BYTE3 (hex)
					BYTE4 (hex)
					BYTE5 (hex)
					BYTE6 (hex)
22-27	6	MAC address			first octet (hex)
					second octet (hex)
					third octet (hex)
					fourth octet (hex)
					fifth octet (hex)
					sixth octet (hex)

3.32 get lamp max runtime, read

About this command

This command gets the maximum runtime of the lamp.

Request

Pos	Size	Name	Description	Content	
0	1	lamp		0x76	lamp (hex)
1	1	get lamp max runtime		0x89	get lamp max runtime (hex)
2	1	lamp number		0x01	lamp 1 (hex)
				0x02	lamp 2 (hex)
				0x03	lamp 3 (hex)
				0x04	lamp 4 (hex)

Response

Pos	Size	Name	Description	Content	
0	1	lamp		0x76	lamp (hex)
1	1	get lamp max runtime		0x89	get lamp max runtime (hex)
2	1	lamp number		0x01	lamp 1 (hex)
				0x02	lamp 2 (hex)
				0x03	lamp 3 (hex)
				0x04	lamp 4 (hex)
3-6	4	lamp max runtime	maximum runtime in hours as DWORD		MSB (hex)
					BYTE 1 (hex)
					BYTE 2 (hex)
					LSB (hex)

3.33 get lamp on, read

About this command

This command gets the status of the lamp.

Request

Pos	Size	Name	Description	Content	
0	1	lamp		0x76	lamp (hex)
1	1	get lamp on		0x9A	get lamp on (hex)
2	1	lamp number		0x01	lamp 1 (hex)
				0x02	lamp 2 (hex)
				0x03	lamp 3 (hex)
				0x04	lamp 4 (hex)

Response

Pos	Size	Name	Description	Content	
0	1	lamp		0x76	lamp (hex)
1	1	get lamp on		0x9A	get lamp on (hex)
2	1	lamp number		0x01	lamp 1 (hex)
				0x02	lamp 2 (hex)
				0x03	lamp 3 (hex)
				0x04	lamp 4 (hex)
3	1	lamp status		0x00	lamp off (hex)
				0x01	lamp on (hex)

3.34 get lamp runtime, read

About this command

This command gets the runtime of the lamp.

Request

Pos	Size	Name	Description	Content	
0	1	lamp		0x76	lamp (hex)
1	1	get lamp runtime		0x90	get lamp runtime (hex)
2	1	lamp number		0x01	lamp 1 (hex)
				0x02	lamp 2 (hex)
				0x03	lamp 3 (hex)
				0x04	lamp 4 (hex)

Response

Pos	Size	Name	Description	Content	
0	1	lamp		0x76	lamp (hex)
1	1	get lamp runtime		0x90	get lamp runtime (hex)
2	1	lamp number		0x01	lamp 1 (hex)
				0x02	lamp 2 (hex)
				0x03	lamp 3 (hex)
				0x04	lamp 4 (hex)
3-6	4	lamp runtime	runtime in hours as DWORD		MSB (hex)
					BYTE 1 (hex)
					BYTE 2 (hex)
					LSB (hex)

3.35 get lamp status, read

About this command

This command gets the status of the lamp(s).

Request

Pos	Size	Name	Description	Content	
0	1	get lamp status		0x67	get lamp status (hex)
1	1	get lamp status		0x40	get lamp status (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get lamp status		0x67	get lamp status (hex)
1	1	get lamp status		0x40	get lamp status (hex)
2	1	lamp status		0x00	lamp(s) off (hex)
				0x01	lamp(s) on (hex)

3.36 get language, read

About this command

This command gets the language.

Request

Pos	Size	Name	Description	Content	
0-1	2	get language		0x52	
				0x01	

Response

Pos	Size	Name	Description	Content	
0-1	2	get language		0x52	
				0x01	
2	1	language values		0x00	English (hex)
				0x01	French (hex)
				0x02	Spanish (hex)
				0x03	German (hex)
				0x04	Simplified Chinese (hex)
				0x05	Japanese (hex)
				0x06	Russian (hex)
				0x07	Korean (hex)
				0x08	Turkish (hex)

3.37 get main zoom, read

About this command

This command gets the main zoom in/out.

Request

Pos	Size	Name	Description	Content	
0	1	get main zoom		0xA1	get main zoom (hex)
1	1	get main zoom		0x00	get main zoom (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get main zoom		0xA1	get main zoom (hex)
1	1	get main zoom		0x00	get main zoom (hex)
2	1	main zoom value	range 0->70 (OSD range -20->+10)		main zoom value (hex)

3.38 get menu position, read

About this command

This command gets the menu position.

Request

Pos	Size	Name	Description	Content	
0	1	get menu position		0x91	get menu position (hex)
1	1	get menu position		0x02	get menu position (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get menu position		0x91	get menu position (hex)
1	1	get menu position		0x02	get menu position (hex)
2	1	menu position value		0x00	top left (hex)
				0x01	top right (hex)
				0x02	center (hex)
				0x03	bottom left (hex)
				0x04	bottom right (hex)

3.39 get no signal color logo, read

About this command

This command gets the blanking color value and logo status, used when no signal is connected.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj no signal color		0x7B	adj no signal color (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj no signal color		0x7B	adj no signal color (hex)
2	1	value	background color value	0x01	logo (hex)
				0x02	blue (hex)
				0x03	black (hex)
				0x04	white (hex)

3.40 get noise reduction, read

About this command

This command gets the noise reduction value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj noise reduction		0x73	adj noise reduction (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj noise reduction		0x73	adj noise reduction (hex)
2	1	noise reduction value	range 0->32		noise reduction value (hex)

3.41 get phase, read

About this command

This command gets the phase value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj phase		0x06	adj phase (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj phase		0x06	adj phase (hex)
2	1	phase value	range 0->63 (OSD range 0->63)		phase value (hex)

3.42 get PIP enable, read

About this command

This command gets the "enable PIP" value.

Request

Pos	Size	Name	Description	Content	
0	1	get PIP enable		0xA1	get PIP enable (hex)
1	1	get PIP enable		0x01	get PIP enable (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get PIP enable		0xA1	get PIP enable (hex)
1	1	get PIP enable		0x01	get PIP enable (hex)
2	1	PIP enable value		0x00	Off (hex)
				0x01	On (hex)

3.43 get PIP position, write

About this command

This command gets the PIP position.

Request

Pos	Size	Name	Description	Content	
0	1	get PIP position		0xA1	get PIP position (hex)
1	1	get PIP position		0x04	get PIP position (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get PIP position		0xA1	get PIP position (hex)
1	1	get PIP position		0x04	get PIP position (hex)
2	1	PIP position value		0x00	top left (hex)
				0x01	top right (hex)
				0x02	bottom left (hex)
				0x03	bottom right (hex)

3.44 get PIP select, read

About this command

This command gets the PIP select value.

Request

Pos	Size	Name	Description	Content	
0	1	get PIP select		0xA1	get PIP select (hex)
1	1	get PIP select		0x02	get PIP select (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get PIP select		0xA1	get PIP select (hex)
1	1	get PIP select		0x02	get PIP select (hex)
2	1	PIP select value		0x00	HDMI (hex)
				0x01	VGA (hex)
				0x02	DVI (hex)
				0x03	BNC (hex)
				0x04	CVBS (hex)

3.45 get PIP size, read

About this command

This command gets the PIP size.

Request

Pos	Size	Name	Description	Content	
0	1	get PIP size		0xA1	get PIP size (hex)
1	1	get PIP size		0x03	get PIP size (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get PIP size		0xA1	get PIP size (hex)
1	1	get PIP size		0x03	get PIP size (hex)
2	1	PIP size value		0x00	Small (hex)
				0x01	Medium (hex)
				0x02	Large (hex)

3.46 get rear projection mode, read

About this command

This command gets the rear projection mode.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj rear		0xA2	adj rear (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj rear		0xA2	adj rear (hex)
2	1	rear projection mode status		0x00	Off (hex)
				0x01	On (hex)

3.47 get resolution, read

About this command

This command gets the resolution.

Request

Pos	Size	Name	Description	Content	
0	1	get resolution		0xF0	get resolution (hex)
1	1	get resolution		0x01	get resolution (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get resolution		0xF0	get resolution (hex)
1	1	get resolution		0x01	get resolution (hex)
2-5	4	resolution value	Resolution can be calculated from the 4 bytes: X-resolution = BYTE1 * 256 + BYTE2 Y-resolution = BYTE3 * 256 + BYTE4		BYTE 1 (hex)
					BYTE 2 (hex)
					BYTE 3 (hex)
					BYTE 4 (hex)

3.48 get saturation, read

About this command

This command gets the saturation value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj saturation		0x03	adj saturation (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj saturation		0x03	adj saturation (hex)
2	1	saturation value	range 0->100		saturation value (hex)

3.49 get serial number, read

About this command

This command gets the serial number of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	get serial number		0x2A	
				0x08	
				0xA2	

Response

Pos	Size	Name	Description	Content	
0-2	3	get serial number		0x2A	
				0x08	
				0xA2	
3-12	10	serial number			BYTE1 (hex)
					BYTE2 (hex)
					BYTE3 (hex)
					BYTE4 (hex)
					BYTE5 (hex)
					BYTE6 (hex)
					BYTE7 (hex)
					BYTE8 (hex)
					BYTE9 (hex)
					BYTE10 (hex)

3.50 get sharpness, read

About this command

This command gets the sharpness value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj sharpness		0x05	adj sharpness (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj sharpness		0x05	adj sharpness (hex)
2	1	sharpness value	range 0->14 (OSD range -7->+7)		sharpness value (hex)

3.51 get tint, read

About this command

This command gets the tint value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj tint		0x04	adj tint (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj tint		0x04	adj tint (hex)
2	1	tint value	range 0->100		tint value (hex)

3.52 get V start, read

About this command

This command gets the vertical start pixel for the VGA and BNC inputs.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	get V start		0x12	get V start (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	get V start		0x12	get V start (hex)
2	1	V start value	range 0->20 (OSD range -10->10)		V start value (hex)

3.53 get versions, read

About this command

This command is used to get the version(s).

Request

Pos	Size	Name	Description	Content	
0	1	get versions		0x60	get versions (hex)
1	1	from data index		0x00	PW392 (hex)
				0x06	DDP442x (hex)
				0x0C	PIC (hex)
				0x12	Lan Module (hex)
				0x18	Waveform (hex)
				0x1E	EDID (hex)
2	1	to data index		0x00	PW392 (hex)
				0x01	DDP442x (hex)
				0x08	PIC (hex)
				0x0C	Lan module (hex)
				0x10	Waveform (hex)
				0x14	EDID (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get versions		0x60	get versions (hex)
1	1	from data index		0x00	PW392 (hex)
				0x06	DDP442x (hex)
				0x0C	PIC (hex)
				0x12	Lan Module (hex)
				0x18	Waveform (hex)
				0x1E	EDID (hex)
2	1	to data index		0x00	PW392 (hex)
				0x01	DDP442x (hex)
				0x08	PIC (hex)
				0x0C	Lan module (hex)
				0x10	Waveform (hex)
				0x14	EDID (hex)
3-8	6	version	Each version consists of 6 bytes:		major version (MSB) (hex)
			- Byte 0-1: major version number		major version (LSB) (hex)
			- Byte 2-3: build number		build number (MSB) (hex)
			- Byte 4-5: build number		build number (hex)
					build number (hex)
					build number (LSB) (hex)

3.54 get warp keystone vertical, read

About this command

This command gets the warp keystone vertical value.

Request

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj warp		0xA1	adj warp (hex)
2	1	warp keystone vertical		0x01	warp keystone vertical (hex)

Response

Pos	Size	Name	Description	Content	
0	1	get adj	byte value known as "get adj"	0x21	get adj (hex)
1	1	adj warp		0xA1	adj warp (hex)
2	1	warp keystone vertical		0x01	warp keystone vertical (hex)
3	1	keystone value	range 0->40 (OSD range -20->20)		keystone value (hex)

3.55 increment noise reduction, write

About this command

This command increments the noise reduction by one.

Request

Pos	Size	Name	Description	Content	
0	1	inc adj	byte value known as "inc adj"	0x22	inc adj (hex)
1	1	adj noise reduction		0x73	adj noise reduction (hex)

3.56 reset settings to factory defaults, write

About this command

This command resets the settings to factory defaults.

Request

Pos	Size	Name	Description	Content	
0	1	factory defaults		0x31	factory defaults (hex)

3.57 set aspect ratio file, write

About this command

This command sets the aspect ratio file value.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj aspect ratio		0x0B	adj aspect ratio (hex)
2	1	aspect ratio file		0xC0	aspect ratio file (hex)
3	1	aspect ratio		0x00	invalid (hex)
				0x01	4:3 (hex)
				0x02	16:10 (hex)
				0x03	native (hex)
				0x04	auto (hex)

3.58 set auto image adjust, write

About this command

This command sets the auto image adjust mode.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj auto image		0xA8	adj auto image (hex)
2	1	auto image adjust status		0x00	Off (hex)
				0x01	always (hex)
				0x02	auto (hex)

3.59 set auto power off, write

About this command

This command sets the auto power off mode.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj auto power off		0xA6	adj auto power off (hex)
2	1	auto power off status		0x00	Off (hex)
				0x01	On (hex)

3.60 set auto power on, write

About this command

This command sets the auto power on mode.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj auto power on		0xA7	adj auto power on (hex)
2	1	auto power on status		0x00	Off (hex)
				0x01	On (hex)

3.61 set auto source, write

About this command

This command sets the auto source status.

Request

Pos	Size	Name	Description	Content	
0	1	set auto source		0x90	set auto source (hex)
1	1	set auto source		0x01	set auto source (hex)
2	1	auto source status		0x00	Off (hex)
				0x01	On (hex)

3.62 set brightness, write

About this command

This command sets the brightness value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj brightness		0x02	adj brightness (hex)
2	1	brightness value	range 0->100		brightness value (hex)

3.63 set ceiling mode, write

About this command

This command sets the ceiling mode.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj ceiling		0xA3	adj ceiling (hex)
2	1	ceiling mode status		0x00	Off (hex)
				0x01	On (hex)

3.64 set color temperature, write

About this command

This command sets the color temperature of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj color temperature		0x45	
2	1	color temperature value		0x00	invalid (hex)
				0x01	native (hex)
				0x02	3200K (hex)
				0x03	5400K (hex)
				0x04	6500K (hex)
				0x05	8800K (hex)

3.65 set color wheel index, write

About this command

This command sets the color wheel index.

Request

Pos	Size	Name	Description	Content	
0	1	set color wheel index		0x58	set color wheel index (hex)
1	1	set color wheel index		0x20	set color wheel index (hex)
2	1	set color wheel index		0x41	set color wheel index (hex)
3-4	2	color wheel index			MSB (hex)
					LSB (hex)

3.66 set contrast, write

About this command

This command sets the contrast value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj contrast		0x01	adj contrast (hex)
2	1	contrast value	range 0->100		contrast value (hex)

3.67 set dimming, write

About this command

This command sets the dimming value.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj dimming		0x0D	adj dimming (hex)
2	1	dimming value	lamp power (Watt)	0x00	276.4W (hex)
				0x01	300W (hex)
				0x02	321W (hex)
				0x03	343.1W (hex)
				0x04	360W (hex)
				0x05	378W (hex)
				0x06	400W (hex)
				0x07	420W (hex)
				0x08	442W (hex)
				0x09	462W (hex)

3.68 set display mode, write

About this command

This command sets the display mode of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj display mode		0x15	adj display mode (hex)
2	1	display mode status		0x00	presentation (hex)
				0x01	video (hex)
				0x02	bright (hex)

3.69 set format, write

About this command

This command sets the input format of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj input format		0x14	adj input format (hex)
2	1	format (color space)		0x00	invalid (hex)
				0x01	auto (hex)
				0x02	RGB (hex)
				0x03	YUV (hex)

3.70 set freeze, write

About this command

This command sets the freeze status.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	freeze		0xac	set freeze (hex)
2	1	freeze value		0x00	off (hex)
				0x01	on (hex)

3.71 set gamma, write

About this command

This command sets the gamma value.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj gamma		0x70	adj gamma (hex)
2	1	gamma value		0x00	film (hex)
				0x01	video (hex)
				0x02	graphics (hex)
				0x03	standard (hex)

3.72 set H start, write

About this command

This command sets the horizontal start pixel for the VGA and BNC inputs.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	set H start		0x11	set H start (hex)
2	1	H start value	range 0->100 (OSD range 0->100)		H start value (hex)

3.73 set high altitude, write

About this command

This command sets the high altitude setting.

Request

Pos	Size	Name	Description	Content	
0	1	set high altitude		0x69	set high altitude (hex)
1	1	set high altitude		0x40	set high altitude (hex)
2	1	high altitude status		0x00	Off (hex)
				0x01	On (hex)

3.74 set input black balance, write

About this command

This command sets the input black balance value of the active source. This is applicable for the specified color.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj input black balance		0x6E	adj inp black balance (hex)
2	1	color	color specification	0x00	red (hex)
				0x01	green (hex)
				0x02	blue (hex)
3	1	balance value	range 0->100 (OSD range 0->100)		balance value (hex)

3.75 set input selection, write

About this command

This command sets the input of the projector.

Request

Pos	Size	Name	Description	Content	
0	1	write input selection		0x33	write input selection (hex)
1	1	input slot		0x00	HDMI (hex)
				0x01	VGA (hex)
				0x02	DVI (hex)
				0x03	BNC (hex)
				0x04	CVBS (hex)

3.76 set input white balance, write

About this command

This command sets the input white balance value of the active source. This is applicable for the specified color.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj input white balance		0x6F	adj input white balance (hex)
2	1	color	color specification	0x00	red (hex)
				0x01	green (hex)
				0x02	blue (hex)
3	1	balance value	range 0->100 (OSD range 0->100)		balance value (hex)

3.77 set internal pattern, write

About this command

This command sets the internal pattern.

Request

Pos	Size	Name	Description	Content	
0	1	set internal pattern		0x41	set internal pattern (hex)
1	1	internal pattern number		0x00	none (hex)
				0x01	white (hex)
				0x02	grid (hex)

3.78 set language, write

About this command

This command sets the language.

Request

Pos	Size	Name	Description	Content	
0-1	2	set language		0x52	
				0x00	
2	1	language values		0x00	English (hex)
				0x01	French (hex)
				0x02	Spanish (hex)
				0x03	German (hex)
				0x04	Simplified Chinese (hex)
				0x05	Japanese (hex)
				0x06	Russian (hex)
				0x07	Korean (hex)
				0x08	Turkish (hex)

3.79 set lens center, write

About this command

This command sets the lens to the center.

Request

Pos	Size	Name	Description	Content	
0	1	lens		0xF4	lens (hex)
1	1	set lens center		0x88	set lens center (hex)

3.80 set lens focus, write

About this command

This command sets the lens focus.

Request

Pos	Size	Name	Description	Content	
0	1	lens		0xF4	lens (hex)
1	1	set lens focus		0x83	set lens focus (hex)
2	1	lens focus value	focus direction	0x00	focus out (hex)
				0x01	focus in (hex)

3.81 set lens shift, write

About this command

This command sets the lens shift.

Request

Pos	Size	Name	Description	Content	
0	1	lens		0xF4	lens (hex)
1	1	set lens shift		0x81	set lens shift (hex)
2	1	lens shift value	shift direction	0x00	shift up (hex)
				0x01	shift down (hex)
				0x02	shift left (hex)
				0x03	shift right (hex)

3.82 set lens zoom, write

About this command

This command sets the lens zoom.

Request

Pos	Size	Name	Description	Content	
0	1	lens		0xF4	lens (hex)
1	1	set lens zoom		0x82	set lens zoom (hex)
2	1	lens zoom value	zoom direction	0x00	zoom in (hex)
				0x01	zoom out (hex)

3.83 set main zoom, write

About this command

This command sets the main zoom in/out.

Request

Pos	Size	Name	Description	Content	
0	1	set main zoom		0xA0	set main zoom (hex)
1	1	set main zoom		0x00	set main zoom (hex)
2	1	main zoom value	range 0->70 (OSD range -20->+10)		main zoom value (hex)

3.84 set menu position, write

About this command

This command sets the menu position.

Request

Pos	Size	Name	Description	Content	
0	1	set menu position		0x90	set menu position (hex)
1	1	set menu position		0x02	set menu position (hex)
2	1	menu position value		0x00	top left (hex)
				0x01	top right (hex)
				0x02	center (hex)
				0x03	bottom left (hex)
				0x04	bottom right (hex)

3.85 set no signal color logo, write

About this command

This command sets the blanking color value and logo status, used when no signal is connected.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj no signal color		0x7B	adj no signal color (hex)
2	1	background color		0x01	logo (hex)
				0x02	blue (hex)
				0x03	black (hex)
				0x04	white (hex)

3.86 set noise reduction, write

About this command

This command sets the noise reduction value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj noise reduction		0x73	adj noise reduction (hex)
2	1	noise reduction value	range 0->32		noise reduction value (hex)

3.87 set phase, write

About this command

This command sets the phase value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj phase		0x06	adj phase (hex)
2	1	phase value	range 0->63 (OSD range 0->63)		phase value (hex)

3.88 set PIP enable, write

About this command

This command sets the "enable PIP" value.

Request

Pos	Size	Name	Description	Content	
0	1	set PIP enable		0xA0	set PIP enable (hex)
1	1	set PIP enable		0x01	set PIP enable (hex)
2	1	PIP enable value		0x00	Off (hex)
				0x01	On (hex)

3.89 set PIP position, write

About this command

This command sets the PIP position.

Request

Pos	Size	Name	Description	Content	
0	1	set PIP position		0xA0	set PIP position (hex)
1	1	set PIP position		0x04	set PIP position (hex)
2	1	PIP position value		0x00	top left (hex)
				0x01	top right (hex)
				0x02	bottom left (hex)
				0x03	bottom right (hex)

3.90 set PIP select, write

About this command

This command sets the PIP select value.

Request

Pos	Size	Name	Description	Content	
0	1	set PIP select		0xA0	set PIP select (hex)
1	1	set PIP select		0x02	set PIP select (hex)
2	1	PIP select value		0x00	HDMI (hex)
				0x01	VGA (hex)
				0x02	DVI (hex)
				0x03	BNC (hex)
				0x04	CVBS (hex)

3.91 set PIP size, write

About this command

This command sets the PIP size.

Request

Pos	Size	Name	Description	Content	
0	1	set PIP size		0xA0	set PIP size (hex)
1	1	set PIP size		0x03	set PIP size (hex)
2	1	PIP size value		0x00	Small (hex)
				0x01	Medium (hex)
				0x02	Large (hex)

3.92 set projector power on/off, write

About this command

This commands sets the projector on/off.

Request

Pos	Size	Name	Description	Content	
0	1	set projector power		0x58	set projector power (hex)
1	1	power status		0x00	Off (hex)
				0x03	On (hex)

3.93 set rear projection mode, write

About this command

This command sets the rear projection mode.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj rear		0xA2	adj rear (hex)
2	1	rear projection mode status		0x00	Off (hex)
				0x01	On (hex)

3.94 set saturation, write

About this command

This command sets the saturation value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj saturation		0x03	adj saturation (hex)
2	1	saturation value	range 0->100		saturation value (hex)

3.95 set sharpness, write

About this command

This command sets the sharpness value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj sharpness		0x05	adj sharpness (hex)
2	1	sharpness value	range 0->14 (OSD range -7->+7)		sharpness value (hex)

3.96 set TCP/IP, write

About this command

This command sets the TCP/IP settings of the projector.

Request

Pos	Size	Name	Description	Content	
0-2	3	set TCP/IP		0x2A	
				0x01	
				0xA3	
3-6	4	IP address			first octet (hex)
					second octet (hex)
					third octet (hex)
					fourth octet (hex)
7-10	4	subnet mask			first octet (hex)
					second octet (hex)
					third octet (hex)
					fourth octet (hex)
11-14	4	default gateway			first octet (hex)
					second octet (hex)
					third octet (hex)
					fourth octet (hex)
15	1	DHCP		0x00	Off (hex)
				0x01	On (hex)

3.97 set tint, write

About this command

This command sets the tint value of the active source.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj tint		0x04	adj tint (hex)
2	1	tint value	range 0->100		tint value (hex)

3.98 set V start, write

About this command

This command sets the vertical start pixel for the VGA and BNC inputs.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	set V start		0x12	set V start (hex)
2	1	V start value	range 0->20 (OSD range -10->10)		V start value (hex)

3.99 set warp keystone vertical, write

About this command

This command sets the warp keystone vertical value.

Request

Pos	Size	Name	Description	Content	
0	1	set adj	byte value known as "set adj"	0x20	set adj (hex)
1	1	adj warp		0xA1	adj warp (hex)
2-3	2	warp keystone vertical		0x01	warp keystone vertical (hex)
				0x00	warp keystone vertical (hex)
4	1	keystone value	range 0->40 (OSD range -20->20)		keystone value (hex)

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