

**Touchboards 1-866-942-6273**

205 Westwood Ave, Long Branch, NJ 07740

## **WolfVision Command List**

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# 1. General Information

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## 1.1. About WolfVision Command List

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No: T-08/01

Revised 1<sup>st</sup> December 2010 / AR

This Command list includes all commands for:

- EYE-12 and SCB-12 - all units
- VZ-9plus with serial number # 1008068 and higher
- VZ-9plus<sup>3</sup> - all units
- VZ-C12<sup>2</sup> with serial number #1009412 and higher
- VZ-C32 with serial number #1011797 and higher
- VZ-C12<sup>3</sup> - all units
- VZ-C32<sup>3</sup> - all units
- VZ-P18 - all units
- VZ-P38 - all units.

### Introduction

All Visualizers can be controlled via RS-232, USB or Ethernet.

The control system can be a computer, room management system or something else.

It is possible to perform all functions of the IR-remote-control and the key-panel on the unit such as Zoom, Focus, Presets, etc. as well as a lot of other functions like reading and setting zoom-position, OSD-settings.

Each command exists of at least 3 Bytes up to 259 Bytes). All commands are coded in network byte order *Big Endian*.

The commands are split into SET-, GET- and GET-Block commands.

The WolfVision Command list supports 2 different command input modes:

- Control System Mode
- Terminal Input Mode

### Control System Mode

The commands are binary hex codes and have to be send with an application. Each command has a defined answer.

### Terminal Input Mode

The control of the Visualizer is done by sending codes to the Visualizer by using terminal software.

These codes perform the desired action. There is no need for Carriage Return, Linefeed or something similar. By default the Visualizer does not respond to the commands on the serial-port (except commands which return status information like zoom-position or get light on/off, etc.).

The ASCII mode is human readable. For automated control, the Control System (binary) mode has to be used.

### Future

The commands of all WolfVision Visualizers are structured the same. Only some commands are not supported on different Visualizer models due to the different technologies, design and features (i.e. no arm function on a Ceiling Visualizer).

In the future (with higher firmware-versions) further commands may be added which are not supported yet.

## 1.2. Legal Information

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Before the WolfVision command list is being used, please note that with the usage the following is being accepted:

- Any reverse engineering (i.e. to de-compile or to de-assemble the software) is prohibited.
- Ownership and copyright of the units' software are reserved for WolfVision GmbH.
- WolfVision GmbH does not give any warranty for faultlessness of the software.
- WolfVision GmbH does not give any warranty for faultlessness of the command list.
- WolfVision GmbH is not liable for any damages that may be caused by the usage of the command list.

## 1.3. Copyright

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## 3. Instructions

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### 3.1. Minimum System Requirements

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#### Software Requirements

##### IBM-Compatible Computer

Microsoft Windows 95, 98, ME, NT 4.0, 2000, XP, Vista, Win7  
Terminal Software

To read the command list, following software is necessary:

Web Browser  
Adobe Acrobat Reader

##### Apple Macintosh Computer

Mac OS 10.2 or higher  
Terminal Software

To read the command list, following software is necessary:

Web Browser  
Adobe Acrobat Reader

#### Hardware Requirements to for Terminal connection

##### IBM-Compatible Computer

Pentium II 500 MHz (Pentium III 1GHz or more recommended)  
32 Mbytes RAM (more recommended)  
400 Mbytes available disk space (more recommended)  
Display resolution of 800 x 600 (1024 x 768 or more recommended)  
256 colors (65535 colors or more recommended)  
One free 10BASE-T port (100BASE-TX recommended)

or

One free RS-232 port (supported speed is depending on the setting of the Visualizer, 9600Baud/s up to 115200Baud/s)

or

One free USB port (USB 2.0 standard recommended)

##### Apple Macintosh Computer

G4 with 1 GHz or better  
256 Mbytes RAM (512 Mbytes recommended)  
400 Mbytes available disk space (more recommended)  
Display resolution of 800 x 600 (1024 x 768 or more recommended)  
256 colors (65535 colors or more recommended)  
One free 10BASE-T port (100BASE-TX recommended)

or

One free RS-232 port (supported speed is depending on the setting of the Visualizer, 9600Baud/s up to 115200Baud/s)

or

One free USB port (USB 2.0 standard recommended)

## 3.2. Connection

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### RS-232

The serial port of the Visualizer is a standard 9-pin-Sub-D-connector which can be found on most computers. Only pin 2 (RxD), 3 (TxD) and 5 (GND) must be connected. The baud rate is by default set to 115200Baud/s and can be changed in the extra menu. There is no parity, 8 data-bits and 1 stop-bit. It is possible to change the baud rate from 115200 to 9600, 19200, 38400, 115200 or 57600. To change the baud rate switch the unit on and press the MENU-key on the remote control or unit for 4 seconds until the Extra-Menu appears. Then enter the Serial Port-Sub-Menu. This is where the baud rate can be changed.

### Please note

In case your computer has no RS-232, a USB to RS-232 adapter can be used.

### USB

The USB port of the Visualizer is a standard USB socket type B.

WolfVision Visualizers released 2007 and later support standard USB 2.0. The units are backward compatible with USB 1.0 and USB 1.1 but with lower speed.

### Ethernet

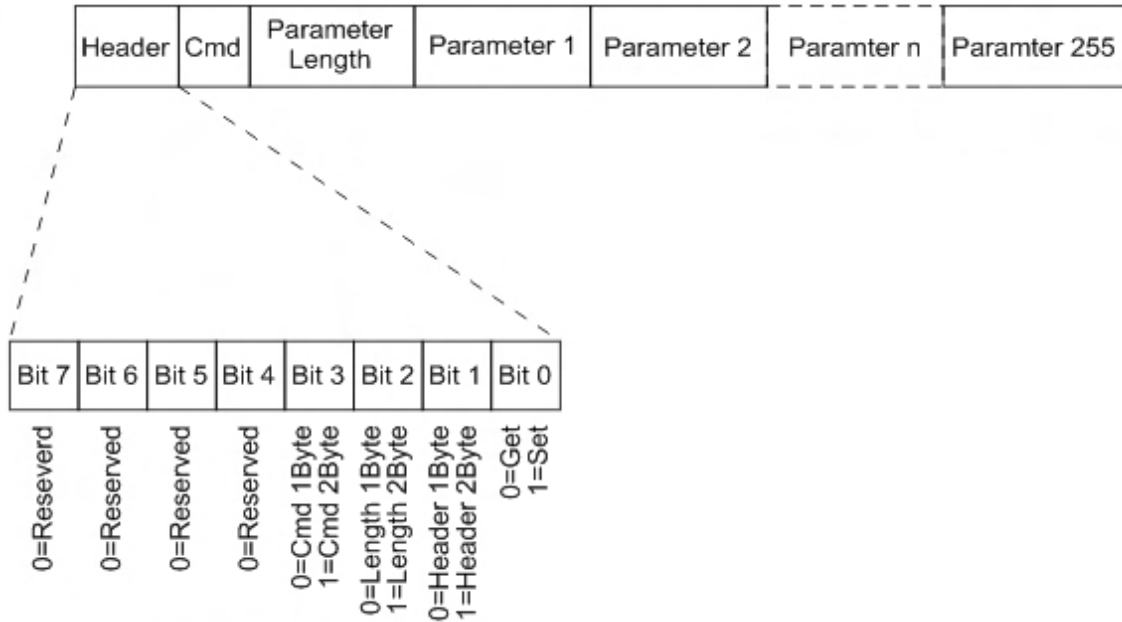
The LAN port (10BASE-T/100BASE-TX) of the Visualizer is a standard RJ45 jack and auto negotiation is supported.

For the right settings of the Visualizer see help document for "WolfVision Web Server".

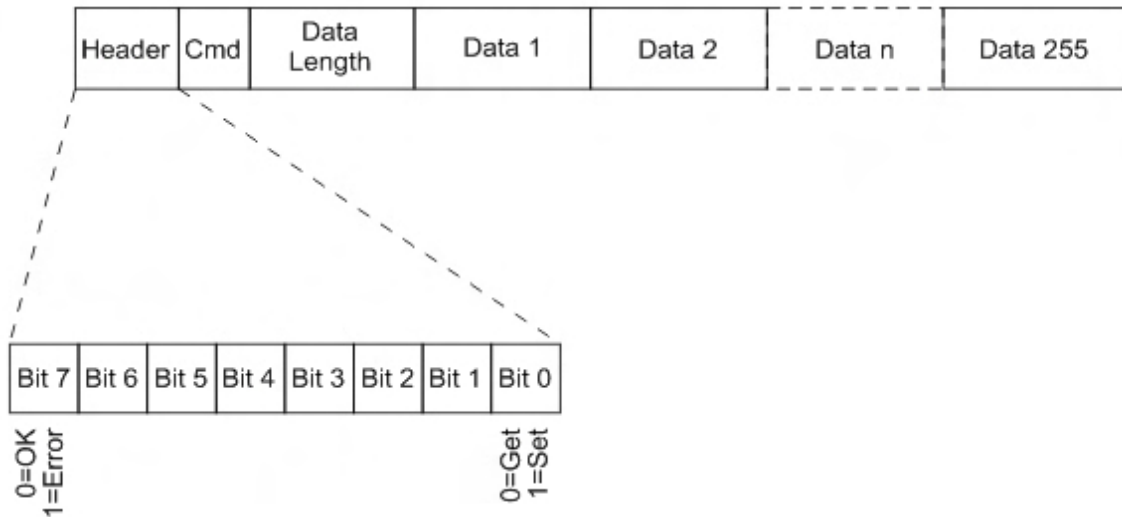
Currently the EYE-12 supports Power over Ethernet (PoE) - see respective user manual.

### 3.3. Packet Structure

#### GET/SET Commands



#### OK Reply



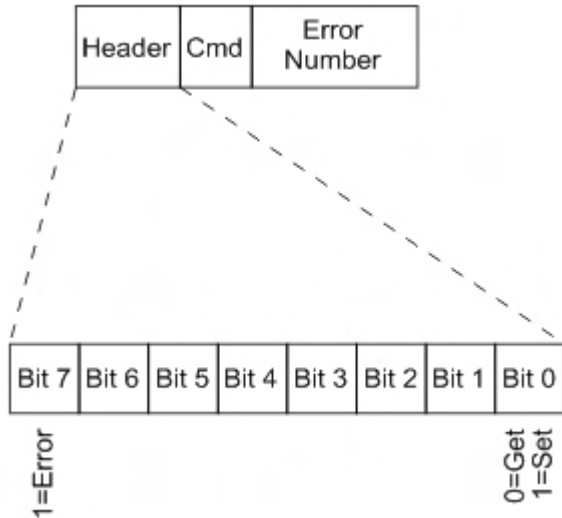
**Please note**

The command 0xFF is reserved as an Error Code (unknown command).

The reply mode for RS-232 is de-activated by default. If activated, senseless characters will be replied.



### Error Reply



### Error Numbers

1	Time out <sup>'1)</sup>
2	Invalid <i>Cmd</i>
3	Invalid Parameter
4	Invalid Length
5	FiFo Full
6	Firmware Update Error
7	Access Denied <sup>'2)</sup>
8	<i>AUTH</i> Required <sup>'3)</sup>
9	Busy

### Please note

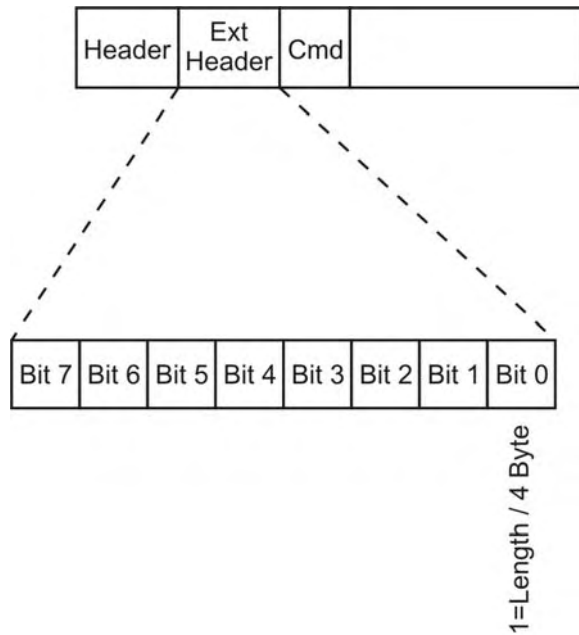
The reply mode for RS-232 is de-activated by default. If activated, senseless characters will be replied.

\*1) If time out happens after header was transmitted, then 0xFF (Unknown *Cmd*) will be sent back

\*2) If Ethernet-Mode is *AUTH* (Ethernet Settings in the on-screen menu) and login data are wrong.

\*3) If Ethernet-Mode is *AUTH* (Ethernet Settings in the on-screen menu) and no login data will be sent.

### Extended Header



### Examples

	Command	Reply	
<b>SET Power to On</b>	01 30 01 01	01 30 00	OK
	01 30 01 80	81 30 03	Error: Invalid Parameter
	01 11 01 01	81 11 02	Error: Invalid Command
<b>GET Power</b>	00 30 00	00 30 01 01	OK: Power On
	00 30 01 01	80 30 03	Error: Invalid Parameter
	00 11 01 01	81 11 02	Error: Invalid Command

### Please note

The reply mode for RS-232 is de-activated by default. If activated, senseless characters will be replied.

## 3.4. Input Modes

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WolfVision Visualizers are supporting two input modes: Control System mode (Binary) and Terminal Input mode (ASCII)

Control System mode is a mode where commands are sent by means of an application like a room control system.

Terminal Input mode is a mode where commands are sent by using a terminal like HyperTerminal or Telnet for test purposes.

### Control System

#### Ethernet:

Communication should use BSD sockets.

Protocol is TCP/IP.

Port is 50915.

It is recommended to open a connection, issue various commands and then close the connection.

Response time: 15 to 100 ms on average.

#### RS232:

Handshake: None.

Dataformat: 8 Databits, 1 Stopbit, No parity.

Baudrates: 9600, 19200, 38400, 57600, 115200 (default)

Response time: 15 to 100 ms on average.

#### USB:

Output pipe: 4

Input pipe: 2

Identifier: VID\_0A1B&PID\_0001

Response time: 15 to 100 ms on average.

### Terminal Input

All inputs and outputs are in hex numbers.

For easier use with a terminal software (like HyperTerminal or Telnet) three short cuts are added (on previous Visualizer models only the shortcut "\_" was available)

Please note, not all commands are implemented for Terminal Input Mode.

### GET-Mode

Send "\*" to start the GET-mode. The desired commands have to be entered within 3 seconds (i.e. "30" for "Get Power").

The Visualizer sends back the requested data.

If the requested data is in hex, then the Visualizer outputs the prefix "0x" (i.e. "0x01" when power is on).

## **SET-Mode**

### **Long Mode**

Send "+" to start the Long SET-mode. Then the Visualizer waits for 3 seconds for a command as a 4 digit hex number in ASCII input. The first two digits are the command and the last 2 digits are the Length (i.e. "3001" for "Set Power"). The Visualizer replies with a question mark "?" and is waiting for 3 seconds for an input of a value. This value has to be as many digits as the defined Length in hex (ASCII) with character range of 0 to F (i.e. "01" for Power On). The Visualizer performs the command immediately.

The Long SET-mode complies exactly with the protocol specification and can be used all SET-commands inclusive short commands with 1 Byte.

In the SET-mode the Visualizer sends only the reply the "Timeout" (no command within 3 seconds).

### **Short Mode**

Send "/" to start the Short SET-mode. Then the Visualizer waits for 3 seconds for a command as a 2 digit number in ASCII input (i.e. "30" for "Set Power"). The Visualizer replies with a question mark "?" and is waiting for 3 second for an input of a value. This value has to be a 1 digit number in hex (ASCII) in the range of 0 to 9 (i.e. "1" for Power On). The Visualizer performs the command immediately.

Only commands with a length of 1 Byte can be executed in the Short SET-mode.

## 3.5. Device Discovery

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Because multiple devices can be connected via Ethernet it is necessary to have a possibility to scan the devices on the network.

- Protocol is UDP.
- Port is 50913.
- Response time: 30 ms on average

Devices can be discovered by sending out a request by broadcast. The clients then answer with an identification string.

The device discovery protocol works for all current WolfVision Visualizers and WolfVision Cameras. Broadcast can only be used on the local network.

To get the device information from a device outside the local network it is possible to send the request to a specific IP address.

### Request:

req\_vz\_list

Reply: req\_vz\_list?<Serialnumber>&<Version>&<Model>[&<Protocol>]

### Examples:

Unit / Model	Reply	Comment
VZ-9plus	req_vz_list?09030815&V2.06&VZ9P	VZ-9 plus with FB3 mainboard (not supporting Wolfprot)

Unit / Model	Reply	Comment
VZ-9plus	req_vz_list?01012413&V1.10a&VZ9P&PROT2	VZ-9 plus with FB4 mainboard (supporting Wolfprot)

Unit / Model	Reply	Comment
EYE-12	req_vz_list?01001237&V1.20b&EYE-12&PROT2	Eye-12 (supporting Wolfprot)

Units which do not support the WolfVision Command List will support the old protocol.

## 3.6. Backward Compatibility

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The first Byte is being used for differentiation. For the WolfVision Command List (supported by units released 2007 and later only) the first *nibble* of the first Byte is "0". Otherwise the command is corresponding to Protocol 1 (supported by all WolfVision Visualizers).

### Please note

- units released 2007 and later:
  - EYE-12 and SCB-12 - all units
  - VZ-9plus with serial number # 1008068 and higher
  - VZ-C12<sup>2</sup> with serial number #1009412 and higher
  - VZ-C32 with serial number #1011797 and higher
  - VZ-C12<sup>3</sup> - all units
  - VZ-C32<sup>3</sup> - all units
  - VZ-P18 - all units
  - VZ-P38 - all units.
  
- following WolfVision Visualizers do not support the Protocol 1:
  - SCB-1, PSM-10 and EYE-10 are not supported.
  - These three units are using a special protocol which is incompatible to all other Visualizers.
  - The special protocol will be found on [http://www.wolfvision.com/wolf/techinfo\\_protocols.html](http://www.wolfvision.com/wolf/techinfo_protocols.html).

The Protocol 1 and the special protocol for SCB-1/PSM-10/EYE-10 will be found on [http://www.wolfvision.com/wolf/techinfo\\_protocols.html](http://www.wolfvision.com/wolf/techinfo_protocols.html).

## 4. Protocol

### 4.1. General Information to the Protocol

All commands are in hexadecimal.

To handle the tables, select the respective sheet (SET, GET or GET-block).

#### SET Commands

I.e. Power part of the SET command list:

Function / Command Description	Command Packet [hex]	Comment	Reply Packet [hex]
<b>Power Control</b>			
Power On/Off	01 30 01 00	Power Off	01 30 00
	01 30 01 01	Power On	
	01 30 01 02	Power Toggle	
PowerOn Preset	01 34 01 00	PowerOn Preset Off	01 34 00
	01 34 01 01	PowerOn Preset On	
	01 34 01 02	PowerOn Preset Toggle	
Display Logo	01 35 01 00	Display Logo Off	01 35 00
	01 35 01 01	Display Logo On	
	01 35 01 02	Display Logo Toggle	
Mains-On	01 36 01 00	Mains-On Off	01 36 00
	01 36 01 01	Mains-On On	
	01 36 01 02	Mains-On Toggle	
Auto-Power-Off Time	01 37 01 FF	Auto-Power-Off function Off	01 37 00
	01 37 01 1E	30min until Auto-Power-Off	
	01 37 01 3C	1h until Auto-Power-Off	
	01 37 01 78	2h until Auto-Power-Off	
	01 37 01 B4	3h until Auto-Power-Off	
	01 37 01 F0	4h until Auto-Power-Off	

## GET Commands

I.e. Power part of the GET command list:

Function / Command Description	Command Packet [hex]	Comment	Reply Packet [hex]	Comment
<b>Power Control</b>				
Power On/Off	00 30 00		00 30 01 00	Power Off
			00 30 01 01	Power On
PowerOn Preset	00 34 00		00 34 01 00	PowerOn Preset Off
			00 34 01 01	PowerOn Preset On
Display Logo	00 35 00		00 35 01 00	Display Logo Off
			00 35 01 01	Display Logo On
Mains-On	00 36 00		00 36 01 00	Mains-On Off
			00 36 01 01	Mains-On On
Auto-Power-Off Time	00 37 00		00 37 01 FF	Auto-Power-Off function Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off



## **4.2. Protocol of SCB-12 and EYE-12 with firmware v1.30c**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors				
	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom				
	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
		d0, d1: 0x00 .. 0x0f		
<b>Digital Zoom</b>				
Set Digital Zoom				
	01 28 02 d0 d1	Set digital zoom position absolutely	01 28 00	
		d0 d1: 0x0002..0x0FFF		
<b>Focus Control</b>				
Focus				
	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x0001 .. 0x000F, 0x0000 Stop)		
		d0, d1: 0x0000 .. 0x000F		
Auto Focus				
	01 31 01 00	AF Off	01 31 00	
	01 31 01 01	AF On		
	01 31 01 02	AF Toggle		
<b>Iris Control</b>				
Iris				
	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b> <span style="float: right;"><i>continued</i></span>				
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF) d0 d1: 0x0000..0x0FFF		
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x0001 normal spd, 0x0002 full Spd, 0x0000 d0, d1: 0x0000..0x0002		
Auto Iris				
	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
<b>Preset Control</b>				
Preset Special Function Key		Preset 1		
	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 0C	Image Turn		
Preset Special Function Key		Preset 2		
	01 42 02 02 00	Preset		
	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		
	01 42 02 02 06	Image		
	01 42 02 02 0C	Image Turn		
Preset Special Function Key		Preset 3		
	01 42 02 03 00	Preset		
	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 0C	Image Turn		
Recall Preset				
	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
Store Preset	01 41 01 00			
	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
<b>Power Control</b>				
PowerOn Preset				
	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Store Power-On Preset				
Display Logo				
	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On				
	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time				
	01 37 01 FF	Off	01 37 00	
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power On/Off				
	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
<b>ImageTurn Command</b>				
Image Turn On/Off				
	01 83 01 00	Image Turn Off	01 83 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>ImageTurn Command</b>				<i>continued</i>
	01 83 01 02	Image Turn Toggle		
<b>Misc. Command</b>				
IR Code				
	01 81 01 1C	Code A	01 81 00	
	01 81 01 1D	Code B		
	01 81 01 1E	Code C		
	01 81 01 1F	Code D		
	01 81 01 96	Code 1		
	01 81 01 98	Code 2		
	01 81 01 99	Code 3		
	01 81 01 9A	Code 4		
	01 81 01 9B	Code 5		
	01 81 01 9C	Code 6		
	01 81 01 9D	Code 7		
	01 81 01 9E	Code 8		
	01 81 01 9F	Code 9		
Erase Memory Behaviour				
	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
ImageTurn Rotation				
	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (clockwise)		
	01 84 01 02	180°		
	01 84 01 03	+90° (counter clockwise)		
Digital Zoom				
	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning				
	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
Keylock On/Off				
	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
Number of IR Codes				
	01 18 01 00	Number of IR Codes 4	01 18 00	
	01 18 01 01	Number of IR Codes 9		
Mounting Position				
	01 19 01 00	Mounting Position Regular	01 19 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
	01 19 01 01	Mounting Position Flipped		
Image On/Off				
	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off				
	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Baudrate				
	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		
	01 89 01 04	115200 Baud		
Recall Factory Settings				
	01 8F 01 00		01 8F 00	
Noise Suppression				
	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off				
	01 98 01 00	Menu Off	01 98 00	
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu				
	01 9A 01 00		01 9A 00	
Unlock Extra Menu				
	01 9B 01 00		01 9B 00	
Menu Control				
	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		
<b>Output Control</b>				
Detail				
	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b> <span style="float: right;"><i>continued</i></span>				
Resolution DVI / RGB	01 53 01 03	High		
	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 05	XGA/75		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 09	SXGA-/85		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0B	SXGA/75		
	01 51 01 12	SXGA+/60 (1400x1050)		
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1D	WXGA+/60 (1440x900)		
	01 51 01 1E	WXGA*/60 (1280x800)		
Freeze On/Off				
	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
<b>Image Storing Cmd</b>				
Memory Off				
	01 90 01 00		01 90 00	
Memory Recall				
	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store				
	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Image Storing Cmd</b>				<i>continued</i>
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off				
	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
<b>Exposure</b>				
Gain				
	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		
	01 60 01 C0	Auto High		
Shutter				
	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
Speed (Shutter=step)				



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
Speed (Shutter=variable)				
	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	
				d0 d1: Min: 0x0009 Max: 0x03D0
Trigger Mode On/Off				
	01 6A 01 00	Trigger Mode Off	01 6A 00	
	01 6A 01 01	Trigger Mode On		
	01 6A 01 02	Trigger Mode Toggle		
Trigger Edge Pos/Neg				
	01 6B 01 00	Trigger Edge Positive	01 6B 00	
	01 6B 01 01	Trigger Edge Negative		
	01 6B 01 02	Trigger Edge Toggle		
Iris Priority				
	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
Image Brightness				
	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b> <span style="float: right;"><i>continued</i></span>				
	01 64 01 07	+7		
	01 64 01 08	+8		
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation				
	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance				
	01 65 01 00	White Balance AUTO	01 65 00	
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)				
	01 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F) d0: -64..+63 (0x00..0x7F)	01 66 00	
B Gain (WB=Manual)				
	01 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F) d0: -64..+63 (0x00..0x7F)	01 67 00	
Color Mode				
	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Gamma Normal Mode				
	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03) d0: 0x00..0x03	01 68 00	
Saturation				
	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL d0: 0 %...150% (0x00..0x96)	01 6E 00	
Pos/Neg/Blue				
	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		
<b>Ethernet</b>				
DHCP On/Off				
	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b> <span style="float: right;"><i>continued</i></span>				
IP Address	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 71 00	
Subnet Mask	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 72 00	
Gateway IP	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 73 00	
<b>Streaming</b>				
Multicast IP Address	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 225.0.0.0..238.255.255.255 d0 d1 d2 d3: 0xE1000000..EEFFFFFF	01 77 00	
Multicast Port	01 78 02 d0 d1	Port 8800 to 9000 in hex d0 d1: 0x2260..0x2328	01 78 00	
Streaming Mode	01 75 01 00 01 75 01 01 01 75 01 02	Off Auto Continuous	01 75 00	
Streaming Format	01 79 01 00 01 79 01 01 01 79 01 03	SXGA- / 720p / WXGA* XGA / 576p / XGA* VGA / 288p / VGA*	01 79 00	
Streaming Framerate	01 7A 01 00 01 7A 01 01 01 7A 01 02	Low Medium High	01 7A 00	
<b>Security</b>				
Ethernet Mode	01 74 01 00 01 74 01 01 01 74 01 02 01 74 01 03 01 74 01 04 01 74 01 05 01 74 01 06 01 74 01 07 01 74 01 08	(RS232 and USB only) Off Image Only Control Only Image and Control FW Update Only Image and FW Update Control and FW Update Image, Control and FW Update Auth	01 74 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Firmware Update</b>				
Firmware Upload Erase Flash	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start	01 B1 04 d0 d1 d2 d3	Length of firmware data d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 B1 00 01 B1 00	
Firmware Upload Data	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data	01 B2 00	
Firmware Upload Data Stop	01 B3 01 00		01 B3 00	
Firmware Downgrade	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		
Size	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		
	01 C5 01 3C	Cyan		
	01 C5 01 3F	White		
Selected Text Color				
	01 C6 01 00	Black	01 C6 00	
	01 C6 01 03	Red		
	01 C6 01 0B	Orange		
	01 C6 01 0C	Green		
	01 C6 01 15	Darkgrey		
	01 C6 01 28	Mint		
	01 C6 01 2A	Grey		
	01 C6 01 2F	Yellow		
	01 C6 01 30	Blue		
	01 C6 01 33	Magenta		
	01 C6 01 3C	Cyan		
	01 C6 01 3F	White		
Menu Text Color				
	01 C7 01 00	Black	01 C7 00	
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
Menu Headline Color				
	01 C8 01 00	Black	01 C8 00	
	01 C8 01 03	Red		
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color				
	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		
<b>Date/Time</b>				
Time Source				
	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Timeserver IP				
	01 7C 04 d0 d1 d2 d3	d0 d1 d2 d3: Timeserver IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 7C 00	
Timezone				
	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los_Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
	01 7D 01 0D	America/Caracas		
	01 7D 01 0E	America/Halifax		
	01 7D 01 0F	America/Santiago		
	01 7D 01 10	America/La_Paz		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 11	America/St_Johns		
	01 7D 01 12	America/Sao_Paulo		
	01 7D 01 13	America/Buenos_Aires		
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
Date Format				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	01 45 01 00	DDMMYYYY/24H	01 45 00	
	01 45 01 01	MMDDYYYY/12H		
Date/Time				
	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B) d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B	01 7E 00	
<b>Authentication</b>				
Login				
	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes>Password=10Bytes,I P=4Bytes	01 D4 00	
Logout				
	01 D5 01 00		01 D5 00	



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Zoom Position				
	00 20 00		00 20 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Digital Zoom</b>				
Digital Zoom Position				
	00 28 00		00 28 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Focus Control</b>				
Focus Position				
	00 21 00		00 21 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
AF				
	00 31 00		00 31 01 00	Off
			00 31 01 01	On
<b>Iris Control</b>				
Iris Position				
	00 22 00		00 22 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
Auto Iris				
	00 32 00		00 32 01 00	Off
			00 32 01 01	On
<b>Preset Control</b>				
Preset Special Function Key		Preset1		
	00 42 01 01		00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 0C	Image Turn
		Preset2		
	00 42 01 02		00 42 02 02 00	Preset
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 02 06	Image
			00 42 02 02 0C	Image Turn
		Preset3		
	00 42 01 03		00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 0C	Image Turn
List of SFK functions				
	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture
<b>Power Control</b>				
Power On Preset				
	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo				
	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On				
	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time				
	00 37 00		00 37 01 FF	Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Power Control</b>				<i>continued</i>
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
Power			00 37 01 F0	4h until Auto-Power-Off
	00 30 00		00 30 01 00	Off
			00 30 01 01	On
<b>ImageTurn Command</b>				
Image Turn				
	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°
			00 83 01 03	90°
<b>Misc. Command</b>				
IR Code				
	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D
			00 81 01 96	Code 1
			00 81 01 98	Code 2
			00 81 01 99	Code 3
			00 81 01 9A	Code 4
			00 81 01 9B	Code 5
			00 81 01 9C	Code 6
			00 81 01 9D	Code 7
			00 81 01 9E	Code 8
			00 81 01 9F	Code 9
Erase Memory				
	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby
ImageTurn Rotation				
	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°
			00 84 01 03	90°
Digital Zoom Mode				
	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning				
	00 2A 00		00 2A 01 00	Stop

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
			00 2A 01 01	Message
			00 2A 01 02	None
Keylock				
	00 80 00		00 80 01 00	Off
			00 80 01 01	On
Image				
	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug				
	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On
Baudrate				
	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Number IR Codes				
	00 18 00		00 18 01 00	Number of IR Codes 4
			00 18 01 01	Number of IR Codes 9
Mounting Position				
	00 19 00		00 19 01 00	Mounting Position Regular
			00 19 01 01	Mounting Position Flipped
Temperature				
	00 7F 00		00 7F 01 d0	d0: Temperature in °C
Noise Suppression				
	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu				
	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu
Menu Standard Unlock				
	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock				
	00 9B 00		00 9B 01 00	Off
			00 9B 01 01	On
Command Check				
	00 9C 00		00 9C 01 00	Ok

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>VZ Menu Control</b>				<i>continued</i>
			00 9C 01 01	Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Detail				
	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High
Resolution DVI / RGB				
	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 05	XGA/75
			00 51 01 08	SXGA-/60 (1280x960)
			00 51 01 09	SXGA-/85
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0B	SXGA/75
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)
Freeze				
	00 56 00		00 56 01 00	Off
			00 56 01 01	On
<b>Image Storing Cmd</b>				
ShowAll				
	00 93 00		00 93 01 00	Off
			00 93 01 01	On
<b>Exposure</b>				
Gain				
	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter				
	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)				
	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)				
	00 63 00		00 63 02 d0 d1	d0 d1: Exposure time in lines d0 d1: Min: 0x0009 Max: 0x03D0
Trigger Mode				
	00 6A 00		00 6A 01 00	Trigger Off
			00 6A 01 01	Trigger On
Trigger Edge				
	00 6B 00		00 6B 01 00	Positive Edge
			00 6B 01 01	Negative Edge

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
Iris Priority	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
Image Brightness	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High
<b>Color</b>				
White Balance	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)	00 66 00		00 66 01 d0	d0: -64..+63 (0x00..0x7F)
B Gain (WB=Manual)	00 67 00		00 67 01 d0	d0: -64..+63 (0x00..0x7F)
Color Mode	00 6D 00		00 6D 01 00	Black/White

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Color</b> <span style="float: right;"><i>continued</i></span>				
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Gamma Normal Mode	00 68 00		00 68 01 d0	d0: Gamma Curves d0: 0x00..0x03
Saturation	00 6E 00		00 6E 01 d0	d0: Saturation in percent d0: 0 %...150% (0x00..0x96)
Pos/Neg/Blue	00 54 00		00 54 01 00	Pos
			00 54 01 01	Neg
			00 54 01 02	Blue
<b>Ethernet</b>				
DHCP	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address	00 71 00		00 71 04 d0 d1 d2 d3	d0 d1 d2 d3: IP Address in hex (0x00 to 0xFF for each packet)
Subnet Mask	00 72 00		00 72 04 d0 d1 d2 d3	d0 d1 d2 d3: Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP	00 73 00		00 73 04 d0 d1 d2 d3	d0 d1 d2 d3: Gateway IP Address in hex (0x00 to 0xFF for each packet)
<b>Streaming</b>				
Multicast IP Address	00 77 00		00 77 04 d0 d1 d2 d3	d0 d1 d2 d3: Multicast IP Address in hex (0x00 to 0xFF for each packet)Valid range: 225.0.0.0..238.255.255.255
Multicast Port	00 78 00		00 78 02 d0 d1	d0 d1: Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Mode	00 75 00		00 75 01 00	Off
			00 75 01 01	Auto
			00 75 01 02	Continuous



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Streaming</b>				<i>continued</i>
Streaming Format	00 79 00		00 79 01 00	SXGA- / 720p / WXGA*
			00 79 01 01	XGA / 576p / XGA*
			00 79 01 03	VGA / 288p / VGA*
Streaming Framerate	00 7A 00		00 7A 01 00	Low
			00 7A 01 01	Medium
			00 7A 01 02	High
Multicast Resolution Table	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Security</b>				
Ethernet Mode	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On
<b>Unit</b>				
Model	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String"VZ9P","VZ9P-3","VZ-C12-II","VZ-C12-3","VZ-C32","EYE-12","SCB-12","VZ-C32-3","VZ-P18","VZ-P38"
Serialnumber	00 12 00		00 12 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Version	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: StringExample: "V1.10a"
Adjuster	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: StringExample: "MSc"
Production Date	00 15 00		00 15 02 d0 d1	d0: week d1: year
Features	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control d0: Byte0

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
				Bit7:Zoom
				Bit6:Iris
				Bit4:Focus
				Bit3:AF
				Bit2:Power
				d1: Byte1
				Bit6:WB
				Bit4:Image
				Bit3:ImageTurn
				Bit2:Freeze
				d2: Byte2
				Bit7:Preset1
				Bit6:Preset2
				Bit5:Preset3
				d3: Byte3
				Bit6:Memory1
				Bit5:Memory2
				Bit4:Memory3
				Bit3:Memory4
				Bit2:Memory5
				Bit1:Memory6
				Bit0:Memory7
				d4: Byte4
				Bit7:Memory8
				Bit6:Memory9
				Bit5>ShowAll
				d5: Byte5
				Bit7:FWUpdate
				Bit6:PT_dZoom
				Bit5:PT_ImageTurn
Resolution Table				
	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn:16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Firmware Update</b>				
Firmware Upload Erase Flash				
	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased. State of firmware erasing, counts from 100 down to 00% = Flash erased d0: 0x64..0x00

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				
Picture Header	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not ID), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9, 1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated:Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3, 1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)
Get Picture Block (USB only)				
	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed
Get Picture Block2 (ETH only)				
	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				
OSD Level				
	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency				
	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size				
	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position				
	00 C2 00		00 C2 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position				
	00 C3 00		00 C3 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Status Position				
	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color				
	00 C5 00		00 C5 01 00	Black
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color				
	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
			00 C6 01 3F	White
Menu Text Color				
	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color				
	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color				
	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White
<b>Date/Time</b>				
Time Source				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Timeserver IP				
	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone				
	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Date Format				
	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
Date/Time				
	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
				d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B
<b>Authentication</b>				
SessionID (ETH only)				
	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber
				d0 d1 d2 d3: 0x00000000..0xFFFFFFFF

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				
Positions(deprecated)				
	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information(deprecated)				
	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions				
	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information				
	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit5,4,3,2: Arm Bit1,0: Reserved

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version d19: Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view) Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved
Menu Ethernet				
	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port

### **4.3. Protocol of VZ-9plus with firmware v1.20b**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely (0x0000..0x0FFF)		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
<b>Digital Zoom</b>				
Set Digital Zoom	01 28 02 d0 d1	Set digital zoom position absolutely (0x0002..0x0FFF)	01 28 00	
	01 28 03 ab d0 d1	Memory Zoom Navigation ab: Direction (0x01 Up-Left, 0x02 Up, 0x03 Up-Right, 0x04 Left, 0x06 Right, 0x07 Down-Left, 0x08 Down, 0x09 Down-Right) d0,d1: Speed (0x01 .. 0x14, 0x00 Stop)		
Digital Zoom	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
<b>Focus Control</b>				
Focus	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely (0x0000..0x0FFF)		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
	01 31 01 10	One-Push-AF		
<b>Iris Control</b>				
Iris	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF)		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b>				<i>continued</i>
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x01 normal spd, 0x02 full Spd, 0x00 Stop)		
Auto Iris	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
Iris Priority	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
<b>Preset Control</b>				
Recall Preset	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
Store Preset	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
Preset Special Function Key (Preset1)	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 07	Onepush_AF		
	01 42 02 01 08	Light_On_Off		
	01 42 02 01 0A	Text		
	01 42 02 01 0C	Image Turn		
	01 42 02 01 0D	Picture in Picture		
Preset Special Function Key (Preset2)	01 42 02 02 00	Preset		
	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	01 42 02 02 06	Image		
	01 42 02 02 07	Onepush_AF		
	01 42 02 02 08	Light_On_Off		
	01 42 02 02 0A	Text		
	01 42 02 02 0C	Image Turn		
	01 42 02 02 0D	Picture in Picture		
Preset Special Function Key (Preset3)	01 42 02 03 00	Preset		
	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 07	Onepush_AF		
	01 42 02 03 08	Light_On_Off		
	01 42 02 03 0A	Text		
	01 42 02 03 0C	Image Turn		
	01 42 02 03 0D	Picture in Picture		
<b>Power Control</b>				
Power On/Off	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
PowerOn Preset	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Display Logo	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time	01 37 01 FF	Off	01 37 00	
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power Down Mode	01 39 01 00	Normal	01 39 00	
	01 39 01 01	Deep		
	01 39 01 02	Toggle		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Light Control</b>				
Light, Lightbox On/Off	01 A0 01 00	Light Off, LB Off	01 A0 00	
	01 A0 01 01	Light On, LB Off		
Reset Lamp 1 Hours	01 A3 01 81		01 A3 00	
<b>ImageTurn Command</b>				
Image Turn On/Off	01 83 01 00	Image Turn Off	01 83 00	
	01 83 01 02	Image Turn Toggle		
ImageTurn Rotation	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (Rechts)		
	01 84 01 02	180°		
	01 84 01 03	+90° (Links)		
<b>Misc. Command</b>				
Fading	01 8A 01 00	Fading Off	01 8A 00	
	01 8A 01 02	Fading Slow		
	01 8A 01 04	Fading Standard		
	01 8A 01 08	Fading Fast		
Keylock On/Off	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
IR Code	01 81 01 1C	Code A	01 81 00	
	01 81 01 1D	Code B		
	01 81 01 1E	Code C		
	01 81 01 1F	Code D		
Text Enhancer On/Off	01 85 01 00	Text Enhancer Off	01 85 00	
	01 85 01 01	Text Enhancer On		
	01 85 01 02	Text Enhancer Toggle		
Image On/Off	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Baudrate	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		
	01 89 01 04	115200 Baud		
Recall Factory Settings	01 8F 01 00		01 8F 00	
Noise Suppression	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off	01 98 01 00	Menu Off	01 98 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Device Menu Control</b>				<i>continued</i>
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu	01 9A 01 00		01 9A 00	
Unlock Extra Menu	01 9B 01 00		01 9B 00	
Menu Control	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		
	01 99 01 01	Backward		
	01 99 01 03	Forward		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		
<b>Output Control</b>				
Resolution RGB / Preview	01 50 01 FF	Off	01 50 00	
	01 50 01 00	Auto		
	01 50 01 01	SVGA/60 (800x600)		
	01 50 01 04	XGA/60 (1024x768)		
	01 50 01 08	SXGA-/60 (1280x960)		
	01 50 01 0A	SXGA/60 (1280x1024)		
	01 50 01 0D	UXGA/60 (1600x1200)		
	01 50 01 12	SXGA+/60 (1400x1050)		
	01 50 01 14	VGA/60 (640x480)		
	01 50 01 15	720p/50 (1280x720)		
	01 50 01 16	720p/60		
	01 50 01 17	1080p/50 (1920x1050)		
	01 50 01 18	1080p/60		
	01 50 01 1A	WSXGA/60 (1680x1050)		
	01 50 01 1B	WXGA/60 (1366x768)		
	01 50 01 1C	WUXGA/60 (1920x1200)		
	01 50 01 1D	WXGA+/60 (1440x900)		
	01 50 01 1E	WXGA*/60 (1280x800)		
	01 50 01 20	1080p/30		
Resolution DVI / RGB	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0D	UXGA/60 (1600x1200)		
	01 51 01 12	SXGA+/60 (1400x1050)		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1C	WUXGA/60 (1920x1200)		
	01 51 01 1D	WXGA+/60 (1440x900)		
	01 51 01 1E	WXGA*/60 (1280x800)		
	01 51 01 20	1080p/30		
Detail	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		
	01 53 01 03	High		
Pos/Neg/Blue	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		
Freeze On/Off	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
Intern/Extern	01 57 01 00	Intern On	01 57 00	
	01 57 01 01	Extern On		
	01 57 01 02	Intern/Extern Toggle		
AutoSense ExternIn On/Off	01 58 01 00	AutoSense ExternIn Off	01 58 00	
	01 58 01 01	AutoSense ExternIn On		
	01 58 01 02	AutoSense ExternIn Toggle		
Keystone	01 5C 01 00	Off	01 5C 00	
	01 5C 01 01	On		
Extern/Freeze Output	01 59 02 00 00	No, Freeze RGB / Preview	01 59 00	
	01 59 02 00 01	Yes, Freeze RGB / Preview		
	01 59 02 01 00	No, Freeze DVI / RGB		
	01 59 02 01 01	Yes, Freeze DVI / RGB		
	01 59 02 02 00	No, Freeze ETH / USB		
	01 59 02 02 01	Yes, Freeze ETH / USB		
	01 59 02 04 00	No, Extin RGB / Preview		
	01 59 02 04 01	Yes, Extin RGB / Preview		
	01 59 02 05 00	No, Extin DVI / RGB		
	01 59 02 05 01	Yes, Extin DVI / RGB		
Preview Ouput control	01 5A 01 00	Preview Ouput is Preview	01 5A 00	
	01 5A 01 01	Preview Ouput is Regular		
	01 5A 01 02	Preview Output Toggle		
Image Mirror	01 5B 01 00	Off	01 5B 00	
	01 5B 01 01	Horizontal		
	01 5B 01 02	Vertical		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 5B 01 03	H+V		
	01 5B 01 04	H Toggle		
	01 5B 01 08	V Toggle		
	01 5B 01 10	H Off		
	01 5B 01 20	V Off		
Picture in Picture	01 5D 01 00	PiP Off	01 5D 00	
	01 5D 01 01	PiP On		
	01 5D 01 02	PiP Toggle		
<b>Image Storing Cmd</b>				
Memory Off	01 90 01 00		01 90 00	
Memory Recall	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
Erase Memory Behaviour	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
Snapshot	01 95 01 00	Store Picture	01 95 00	
	01 95 01 01	Overwrite		
<b>Exposure</b>				
Gain	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		
	01 60 01 13	19dB		
	01 60 01 14	20dB		
	01 60 01 15	21dB		
	01 60 01 16	22dB		
	01 60 01 17	23dB		
	01 60 01 18	24dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		
	01 60 01 C0	Auto High		
Shutter	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
Speed (Shutter=step)	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
Speed (Shutter=variable)	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	
Image Brightness	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b> <span style="float: right;"><i>continued</i></span>				
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		
	01 64 01 07	+7		
	01 64 01 08	+8		
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance	01 65 01 00	White Balance AUTO	01 65 00	
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)	01 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 66 00	
B Gain (WB=Manual)	01 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 67 00	
Gamma Normal Mode	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03)	01 68 00	
Color Mode	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Saturation	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL	01 6E 00	
<b>Ethernet</b>				
DHCP On/Off	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		
IP Address	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet)	01 71 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
Subnet Mask	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet)	01 72 00	
Gateway IP	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet)	01 73 00	
Ethernet Mode	01 74 01 00	Off	01 74 00	
(RS232 and USB only)	01 74 01 01	Image Only		
	01 74 01 02	Control Only		
	01 74 01 03	Image and Control		
	01 74 01 04	FW Update Only		
	01 74 01 05	Image and FW Update		
	01 74 01 06	Control and FW Update		
	01 74 01 07	Image, Control and FW Update		
	01 74 01 08	Auth		
Streaming Mode	01 75 01 00	Off	01 75 00	
	01 75 01 01	Auto		
	01 75 01 02	Continuous		
Multicast IP Address	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 224.0.1.0..239.255.255.255	01 77 00	
Multicast Port	01 78 02 d0 d1	Port 8800 to 9000 in hex (0x2260..0x2328)	01 78 00	
Streaming Format	01 79 01 00	SXGA- / 720p / WXGA*	01 79 00	
	01 79 01 01	XGA / 576p / XGA*		
	01 79 01 03	VGA / 288p / VGA*		
Streaming Framerate	01 7A 01 00	Low	01 7A 00	
	01 7A 01 01	Medium		
	01 7A 01 02	High		
<b>Firmware Update</b>				
Firmware Upload Erase Flash	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start	01 B1 04 d0 d1 d2 d3	Length of firmware data	01 B1 00	
Firmware Upload Data	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data	01 B2 00	
Firmware Upload Data Stop	01 B3 01 00		01 B3 00	
Firmware Downgrade	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
Size	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		
	01 C5 01 3C	Cyan		
	01 C5 01 3F	White		
	Selected Text Color	01 C6 01 00		Black
01 C6 01 03		Red		
01 C6 01 0B		Orange		
01 C6 01 0C		Green		
01 C6 01 15		Darkgrey		
01 C6 01 28		Mint		
01 C6 01 2A		Grey		
01 C6 01 2F		Yellow		
01 C6 01 30		Blue		
01 C6 01 33		Magenta		
01 C6 01 3C		Cyan		
01 C6 01 3F		White		
Menu Text Color		01 C7 01 00	Black	01 C7 00
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
	Menu Headline Color	01 C8 01 00	Black	
01 C8 01 03		Red		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		
<b>USB Settings</b>				
Picture Folder	01 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String	01 D0 00	
Picture Number	01 D1 04 d0 d1 d2 d3	Index for pictures: Format WV# d0 .. d3: Number	01 D1 00	
Load Settings	01 D6 01 00	Off	01 D6 00	
	01 D6 01 01	Auto		
	01 D6 01 02	Confirm		
Store Settings	01 D7 01 00		01 D7 00	
<b>Date/Time</b>				
Date/Time	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B)	01 7E 00	
Timeserver IP	01 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)	01 7C 00	
Timezone	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los_Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
	01 7D 01 0D	America/Caracas		
	01 7D 01 0E	America/Halifax		
	01 7D 01 0F	America/Santiago		
	01 7D 01 10	America/La_Paz		
	01 7D 01 11	America/St_Johns		
	01 7D 01 12	America/Sao_Paulo		
	01 7D 01 13	America/Buenos_Aires		
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
Time Source	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Date Format	01 45 01 00	DDMMYYYY/24H	01 45 00	
	01 45 01 01	MMDDYYYY/12H		
<b>Authentication</b>				
Login	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes>Password=10Bytes,I P=4Bytes	01 D4 00	
Logout	01 D5 01 00		01 D5 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Position	00 20 00		00 20 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
<b>Digital Zoom</b>				
Digital Zoom Position	00 28 00		00 28 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
Digital Zoom Mode	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning	00 2A 00		00 2A 01 00	Stop
			00 2A 01 01	Message
			00 2A 01 02	None
<b>Focus Control</b>				
Position	00 21 00		00 21 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
AF	00 31 00		00 31 01 00	Off
<b>Iris Control</b>				
Position	00 22 00		00 22 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
Auto Iris	00 32 00		00 32 01 00	Off
			00 32 01 01	On
Iris Priority	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
<b>Preset Control</b>				
Preset Special Function Key	00 42 01 01	Preset1	00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 07	Onepush_AF
			00 42 02 01 08	Light_On_Off
			00 42 02 01 0A	Text
			00 42 02 01 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
	00 42 01 02	Preset2	00 42 02 02 00	Preset
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze
			00 42 02 02 06	Image

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 02 07	Onepush_AF
			00 42 02 02 08	Light_On_Off
			00 42 02 02 0A	Text
			00 42 02 02 0C	Image Turn
			00 42 02 02 0D	Picture in Picture
	00 42 01 03	Preset3	00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 07	Onepush_AF
			00 42 02 03 08	Light_On_Off
			00 42 02 03 0A	Text
			00 42 02 03 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
List of SFK functions	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture
Preset Height	00 4E 01 01	Preset1	00 4E 02 01 00	Disabled
			00 4E 02 01 01	Default
			00 4E 02 01 02	Set
	00 4E 01 02	Preset2	00 4E 02 02 00	Disabled
			00 4E 02 02 01	Default
			00 4E 02 02 02	Set
	00 4E 01 03	Preset3	00 4E 02 03 00	Disabled
			00 4E 02 03 01	Default
			00 4E 02 03 02	Set

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Power Control</b>				
Power	00 30 00		00 30 01 00	Off
			00 30 01 01	On
Power On Preset	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time	00 37 00		00 37 01 FF	Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off
Power Down Mode	00 39 00		00 39 01 00	Normal
			00 39 01 01	Deep
<b>Light Control</b>				
Light	00 A0 00		00 A0 01 00	Off
			00 A0 01 01	Light On, LB Off
Lamp 1 Hours	00 A3 00		00 A3 02 d0 d1	in hours (0x0000..0xFFFF)
<b>ImageTurn Command</b>				
Image Turn	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°
			00 83 01 03	90°
ImageTurn Rotation	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°
			00 84 01 03	90°
<b>Misc. Command</b>				
Fading	00 8A 00		00 8A 01 00	Off
			00 8A 01 02	Slow
			00 8A 01 04	Standard
			00 8A 01 08	Fast
Keylock	00 80 00		00 80 01 00	Off
			00 80 01 01	On
IR Code	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
Text Enhancer	00 85 00		00 85 01 00	Off
			00 85 01 01	On
Image	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On
Baudrate	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Noise Suppression	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu
			00 98 01 03	View Menu
Menu Standard Unlock	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock	00 9B 00		00 9B 01 00	Off
			00 9B 01 01	On
Command Check	00 9C 00		00 9C 01 00	Ok
			00 9C 01 01	Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Resolution RGB / Preview	00 50 00		00 50 01 FF	Off
			00 50 01 00	Auto
			00 50 01 01	SVGA/60 (800x600)
			00 50 01 04	XGA/60 (1024x768)
			00 50 01 08	SXGA-/60 (1280x960)
			00 50 01 0A	SXGA/60
			00 50 01 0D	UXGA/60 (1600x1200)
			00 50 01 12	SXGA+/60 (1400x1050)
			00 50 01 14	VGA/60 (640x480)
			00 50 01 15	720p/50 (1280x720)
			00 50 01 16	720p/60
			00 50 01 17	1080p/50 (1920x1050)
			00 50 01 18	1080p/60
			00 50 01 1A	WSXGA/60 (1680x1050)
			00 50 01 1B	WXGA/60 (1366x768)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
			00 50 01 1C	WUXGA/60 (1920x1200)
			00 50 01 1D	WXGA+/60 (1440x900)
			00 50 01 1E	WXGA*/60 (1280x800)
			00 50 01 20	1080p/30
Resolution DVI / RGB	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 08	SXGA-/60 (1280x960)
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0D	UXGA/60 (1600x1200)
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1C	WUXGA/60 (1920x1200)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)
			00 51 01 20	1080p/30
Detail	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High
Pos/Neg/Blue	00 54 00		00 54 01 00	Pos
			00 54 01 01	Neg
			00 54 01 02	Blue
Freeze	00 56 00		00 56 01 00	Off
			00 56 01 01	On
Ext/Int	00 57 00		00 57 01 00	Intern
			00 57 01 01	Extern
Keystone	00 5C 00		00 5C 01 00	Off
			00 5C 01 01	On
Autosense Ext/Int	00 58 00		00 58 01 00	Off (Stays on extern)
			00 58 01 01	On (Switch to intern if no external signal)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
Extern/Freeze Output	00 59 00		00 59 07 d0 d1 d2 d3 d4 d5 d6	d0: Freeze RGB / Preview 00=No, 01=Yes, 02=N/A d1: Freeze DVI / RGB 00=No, 01=Yes, 02=N/A d2: Freeze ETH / USB 00=No, 01=Yes, 02=N/A d3: Freeze LCD 00=No, 01=Yes, 02=N/A d4: Ext In RGB / Preview 00=No, 01=Yes, 02=N/A d5: Ext In DVI / RGB 00=No, 01=Yes, 02=N/A d6: Ext In LCD 00=No, 01=Yes, 02=N/A
Preview Output	00 5A 00		00 5A 01 00	Preview
			00 5A 01 01	Regular
Image Mirror	00 5B 00		00 5B 01 00	Off
			00 5B 01 01	Horizontal
			00 5B 01 02	Vertical
			00 5B 01 03	H+V
Picture in Picture	00 5D 00		00 5D 01 00	PiP Off
			00 5D 01 01	Pip On
<b>Image Storing Cmd</b>				
ShowAll	00 93 00		00 93 01 00	Off
			00 93 01 01	On
			00 93 01 02	ViewModeSingle (Single Picture Selected While in ViewMode)
Erase Memory	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby
<b>Exposure</b>				
Gain	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB
			00 60 01 13	19dB
			00 60 01 14	20dB
			00 60 01 15	21dB
			00 60 01 16	22dB
			00 60 01 17	23dB
			00 60 01 18	24dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)	00 63 00		00 63 02 d0 d1	d0 d1 ... Exposure time in lines (0x0000..0x0FFF)
Image Brightness	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High
<b>Color</b>				
White Balance AUTO	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)	00 66 00		00 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)
B Gain (WB=Manual)	00 67 00		00 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)
Gamma Normal Mode	00 68 00		00 68 01 d0	0x00..0x03
Color Mode	00 6D 00		00 6D 01 00	Black/White
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Saturation	00 6E 00		00 6E 01 d0	0 %...150% (0x00..0x96)
<b>Ethernet</b>				
DHCP	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address	00 71 00		00 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each packet)
Subnet Mask	00 72 00		00 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP	00 73 00		00 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each packet)
Ethernet Mode	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
Streaming Mode	00 75 00		00 75 01 00	Off
			00 75 01 01	Auto
			00 75 01 02	Continuous
Multicast IP Address	00 77 00		00 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each packet) Valid range: 224.0.1.0..239.255.255.255
Multicast Port	00 78 00		00 78 02 d0 d1	Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Format	00 79 00		00 79 01 00	SXGA- / 720p / WXGA*
			00 79 01 01	XGA / 576p / XGA*
			00 79 01 03	VGA / 288p / VGA*
Streaming Framerate	00 7A 00		00 7A 01 00	Low
			00 7A 01 01	Medium
			00 7A 01 02	High
Multicast Resolution Table	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data 16*14Byte: Name (8Bytes), Width (2Bytes), Height (2Bytes), Id (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Unit</b>				
Model	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String "VZ9P", "VZ9P-3", "VZ-C12-II", "VZ-C12-3", "VZ-C32", "EYE-12", "SCB-12", "VZ-C32-3"
Serialnumber	00 12 00		00 12 04 d0 d1 d2 d3	0x00000000..0xFFFFFFFF
Version	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: String Example: "V1.10a"
Adjuster	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String Example: "MSc"
Production Date	00 15 00		00 15 02 d0 d1	d0: week d1: year
Features	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control d0: Byte0
				Bit7:Zoom
				Bit6:Iris
				Bit4:Focus
				Bit2:Power
				Bit1:Light
				Bit0:ExtIn
				d1: Byte1
				Bit7:Text
				Bit6:WB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
				Bit4:Image
				Bit3:ImageTurn
				Bit2:Freeze
				d2: Byte2
				Bit7:Preset1
				Bit6:Preset2
				Bit5:Preset3
				d3: Byte3
				Bit6:Memory1
				Bit5:Memory2
				Bit4:Memory3
				Bit3:Memory4
				Bit2:Memory5
				Bit1:Memory6
				Bit0:Memory7
				d4: Byte4
				Bit7:Memory8
				Bit6:Memory9
				Bit5:ShowAll
				Bit3:OnePushAF
				Bit2:Snapshot
				d5: Byte5
				Bit7:FWUpdate
				Bit6:PT_dZoom
				Bit5:PT_ImageTurn
				Bit3:PT_dem_Odeg
Resolution Table	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn: 16*14Byte: Name (8Bytes), Width (2Bytes), Height (2Bytes), Id (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Firmware Update</b>				
Firmware Upload Erase Flash	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased (0x64..0x00) State of firmware erasing, counts from 100 down to 0 0% = Flash erased

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				
Picture Header	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not Id), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9,1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated:Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3,1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00 d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)
Get Picture Block (USB only)	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed
Get Picture Block2 (ETH only)	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				
OSD Level	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position	00 C2 00		00 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position	00 C3 00		00 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64)
Status Position	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color	00 C5 00		00 C5 01 00	Black
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan
			00 C6 01 3F	White
Menu Text Color	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White
<b>USB Settings</b>				
Picture Folder	00 D0 00		00 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String
Picture Number	00 D1 00		00 D1 04 d0 d1 d2 d3	(0x00000000..0xFFFFFFFF)
Picture Format	00 D2 00		00 D2 01 00	Bmp
			00 D2 01 01	Jpg
Load Settings	00 D6 00		00 D6 01 00	Off
			00 D6 01 01	Auto
			00 D6 01 02	Confirm

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				
Date/Time	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
Timeserver IP	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Time Source	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Date Format	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
<b>Authentication</b>				
SessionID (ETH only)	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber (0x00000000..0xFFFFFFFF)
<b>Block Inquiry</b>				
Positions (deprecated)	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply  d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b> <span style="float: right;"><i>continued</i></span>				
Flags and Unit Information (deprecated)	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply  d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
Flags and Unit Information	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	d12,13: Mirror Y Position d14,15: Light Focus Position 0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version d19: Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved
Menu Ethernet	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port

#### **4.4. Protocol of VZ-9plus<sup>3</sup> with firmware v1.20b**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely (0x0000..0x0FFF)		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
<b>Digital Zoom</b>				
Set Digital Zoom	01 28 02 d0 d1	Set digital zoom position absolutely (0x0002..0x0FFF)	01 28 00	
	01 28 03 ab d0 d1	Memory Zoom Navigation ab: Direction (0x01 Up-Left, 0x02 Up, 0x03 Up-Right, 0x04 Left, 0x06 Right, 0x07 Down-Left, 0x08 Down, 0x09 Down-Right) d0,d1: Speed (0x01 .. 0x14, 0x00 Stop)		
Digital Zoom	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
<b>Focus Control</b>				
Focus	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely (0x0000..0x0FFF)		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
Auto Focus	01 31 01 00	AF Off	01 31 00	
	01 31 01 01	AF On		
	01 31 01 02	AF Toggle		
<b>Iris Control</b>				
Iris	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b>				<i>continued</i>
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF)		
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x01 normal spd, 0x02 full Spd, 0x00 Stop)		
Auto Iris	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
Iris Priority	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
<b>Preset Control</b>				
Recall Preset	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
	01 40 01 EC	Preset Slide		
	01 40 01 ED	Preset X-Ray, DINA4-Lightbox		
	01 40 01 EE	Preset X-Ray, DINA5-Lightbox		
Store Preset	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
Preset Special Function Key (Preset1)	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 08	Light_On_Off		
	01 42 02 01 09	Slide_On_Off		
	01 42 02 01 0A	Text		
	01 42 02 01 0B	Light_LB_Off		
	01 42 02 01 0C	Image Turn		
	01 42 02 01 0D	Picture in Picture		
Preset Special Function Key	01 42 02 02 00	Preset		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
(Preset2)	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		
	01 42 02 02 06	Image		
	01 42 02 02 08	Light_On_Off		
	01 42 02 02 09	Slide_On_Off		
	01 42 02 02 0A	Text		
	01 42 02 02 0B	Light_LB_Off		
	01 42 02 02 0C	Image Turn		
	01 42 02 02 0D	Picture in Picture		
Preset Special Function Key	01 42 02 03 00	Preset		
(Preset3)	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 08	Light_On_Off		
	01 42 02 03 09	Slide_On_Off		
	01 42 02 03 0A	Text		
	01 42 02 03 0B	Light_LB_Off		
	01 42 02 03 0C	Image Turn		
	01 42 02 03 0D	Picture in Picture		
<b>Power Control</b>				
Power On/Off	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
PowerOn Preset	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Display Logo	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time	01 37 01 FF	Off	01 37 00	
	01 37 01 FE	Power Off if Arm Down		
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Power Control</b>				<i>continued</i>
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power Off Confirmation	01 38 01 00	Off	01 38 00	
	01 38 01 01	On		
	01 38 01 02	Toggle		
Power Down Mode	01 39 01 00	Normal	01 39 00	
	01 39 01 01	Deep		
	01 39 01 02	Toggle		
<b>Light Control</b>				
Light, Lightbox On/Off	01 A0 01 00	Light Off, LB Off	01 A0 00	
	01 A0 01 01	Light On, LB Off		
	01 A0 01 02	Light Off, LB On		
	01 A0 01 03	Light Off, SlideBox On		
	01 A0 01 10	Light Toggle (Light->LB->Off)		
Reset Lamp 1 Hours	01 A3 01 81		01 A3 00	
Laser Marker Portable	01 A7 01 00	Off	01 A7 00	
	01 A7 01 01	On		
	01 A7 01 02	Toggle		
<b>ImageTurn Command</b>				
Image Turn On/Off	01 83 01 00	Image Turn Off	01 83 00	
	01 83 01 02	Image Turn Toggle		
ImageTurn Rotation	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (Rechts)		
	01 84 01 02	180°		
	01 84 01 03	+90° (Links)		
<b>Misc. Command</b>				
Fading	01 8A 01 00	Fading Off	01 8A 00	
	01 8A 01 02	Fading Slow		
	01 8A 01 04	Fading Standard		
	01 8A 01 08	Fading Fast		
Keylock On/Off	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
IR Code	01 81 01 1C	Code A	01 81 00	
	01 81 01 1D	Code B		
	01 81 01 1E	Code C		
	01 81 01 1F	Code D		
	01 81 01 96	Code 1		
	01 81 01 98	Code 2		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
	01 81 01 99	Code 3		
	01 81 01 9A	Code 4		
	01 81 01 9B	Code 5		
	01 81 01 9C	Code 6		
	01 81 01 9D	Code 7		
	01 81 01 9E	Code 8		
	01 81 01 9F	Code 9		
Number of IR Codes	01 18 01 00	Number of IR Codes 4	01 18 00	
	01 18 01 01	Number of IR Codes 9		
Text Enhancer On/Off	01 85 01 00	Text Enhancer Off	01 85 00	
	01 85 01 01	Text Enhancer On		
	01 85 01 02	Text Enhancer Toggle		
Image On/Off	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Baudrate	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		
	01 89 01 04	115200 Baud		
Recall Factory Settings	01 8F 01 00		01 8F 00	
Noise Suppression	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off	01 98 01 00	Menu Off	01 98 00	
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu	01 9A 01 00		01 9A 00	
Unlock Extra Menu	01 9B 01 00		01 9B 00	
Menu Control	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		
	01 99 01 01	Backward		
	01 99 01 03	Forward		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				
Resolution RGB / Preview	01 50 01 FF	Off	01 50 00	
	01 50 01 00	Auto		
	01 50 01 01	SVGA/60 (800x600)		
	01 50 01 04	XGA/60 (1024x768)		
	01 50 01 08	SXGA-/60 (1280x960)		
	01 50 01 0A	SXGA/60 (1280x1024)		
	01 50 01 0D	UXGA/60 (1600x1200)		
	01 50 01 12	SXGA+/60 (1400x1050)		
	01 50 01 14	VGA/60 (640x480)		
	01 50 01 15	720p/50 (1280x720)		
	01 50 01 16	720p/60		
	01 50 01 17	1080p/50 (1920x1050)		
	01 50 01 18	1080p/60		
	01 50 01 1A	WSXGA/60 (1680x1050)		
	01 50 01 1B	WXGA/60 (1366x768)		
	01 50 01 1C	WUXGA/60 (1920x1200)		
	01 50 01 1D	WXGA+/60 (1440x900)		
	01 50 01 1E	WXGA*/60 (1280x800)		
	01 50 01 20	1080p/30		
Resolution DVI / RGB	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0D	UXGA/60 (1600x1200)		
	01 51 01 12	SXGA+/60 (1400x1050)		
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1C	WUXGA/60 (1920x1200)		
	01 51 01 1D	WXGA+/60 (1440x900)		
	01 51 01 1E	WXGA*/60 (1280x800)		
	01 51 01 20	1080p/30		
Detail	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		
	01 53 01 03	High		
Pos/Neg/Blue	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
Freeze On/Off	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
Intern/Extern	01 57 01 00	Intern On	01 57 00	
	01 57 01 01	Extern On		
	01 57 01 02	Intern/Extern Toggle		
AutoSense ExternIn On/Off	01 58 01 00	AutoSense ExternIn Off	01 58 00	
	01 58 01 01	AutoSense ExternIn On		
	01 58 01 02	AutoSense ExternIn Toggle		
Extern/Freeze Output	01 59 02 00 00	No, Freeze RGB / Preview	01 59 00	
	01 59 02 00 01	Yes, Freeze RGB / Preview		
	01 59 02 01 00	No, Freeze DVI / RGB		
	01 59 02 01 01	Yes, Freeze DVI / RGB		
	01 59 02 02 00	No, Freeze ETH / USB		
	01 59 02 02 01	Yes, Freeze ETH / USB		
	01 59 02 03 00	No, Freeze LCD		
	01 59 02 03 01	Yes, Freeze LCD		
	01 59 02 04 00	No, Extin RGB / Preview		
	01 59 02 04 01	Yes, Extin RGB / Preview		
	01 59 02 05 00	No, Extin DVI / RGB		
	01 59 02 05 01	Yes, Extin DVI / RGB		
	01 59 02 06 00	No, Extin LCD		
	01 59 02 06 01	Yes, Extin LCD		
Image Mirror	01 5B 01 00	Off	01 5B 00	
	01 5B 01 01	Horizontal		
	01 5B 01 02	Vertical		
	01 5B 01 03	H+V		
	01 5B 01 04	H Toggle		
	01 5B 01 08	V Toggle		
	01 5B 01 10	H Off		
	01 5B 01 20	V Off		
Picture in Picture	01 5D 01 00	PiP Off	01 5D 00	
	01 5D 01 01	PiP On		
	01 5D 01 02	PiP Toggle		
<b>Image Storing Cmd</b>				
Memory Off	01 90 01 00		01 90 00	
Memory Recall	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Image Storing Cmd</b>				<i>continued</i>
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
Erase Memory Behaviour	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
Snapshot	01 95 01 00	Store Picture	01 95 00	
	01 95 01 01	Overwrite		
<b>Exposure</b>				
Gain	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
	01 60 01 13	19dB		
	01 60 01 14	20dB		
	01 60 01 15	21dB		
	01 60 01 16	22dB		
	01 60 01 17	23dB		
	01 60 01 18	24dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		
	01 60 01 C0	Auto High		
Shutter	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
Speed (Shutter=step)	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
Speed (Shutter=variable)	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	
Image Brightness	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		
	01 64 01 07	+7		
	01 64 01 08	+8		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b> <span style="float: right;"><i>continued</i></span>				
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance	01 65 01 00	White Balance AUTO	01 65 00	
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)	01 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 66 00	
B Gain (WB=Manual)	01 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 67 00	
Gamma Normal Mode	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03)	01 68 00	
Color Mode	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Saturation	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL	01 6E 00	
<b>Ethernet</b>				
DHCP On/Off	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		
IP Address	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet)	01 71 00	
Subnet Mask	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet)	01 72 00	
Gateway IP	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet)	01 73 00	
Ethernet Mode	01 74 01 00	Off	01 74 00	
(RS232 and USB only)	01 74 01 01	Image Only		
	01 74 01 02	Control Only		
	01 74 01 03	Image and Control		
	01 74 01 04	FW Update Only		
	01 74 01 05	Image and FW Update		
	01 74 01 06	Control and FW Update		
	01 74 01 07	Image, Control and FW Update		
	01 74 01 08	Auth		
Streaming Mode	01 75 01 00	Off	01 75 00	
	01 75 01 01	Auto		
	01 75 01 02	Continuous		
Multicast IP Address	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 224.0.1.0..239.255.255.255	01 77 00	
Multicast Port	01 78 02 d0 d1	Port 8800 to 9000 in hex (0x2260..0x2328)	01 78 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
Streaming Format	01 79 01 00	SXGA- / 720p / WXGA*	01 79 00	
	01 79 01 01	XGA / 576p / XGA*		
	01 79 01 03	VGA / 288p / VGA*		
Streaming Framerate	01 7A 01 00	Low	01 7A 00	
	01 7A 01 01	Medium		
	01 7A 01 02	High		
<b>Firmware Update</b>				
Firmware Upload Erase Flash	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start	01 B1 04 d0 d1 d2 d3	Length of firmware data	01 B1 00	
Firmware Upload Data	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data		
Firmware Upload Data Stop	01 B3 01 00		01 B3 00	
Firmware Downgrade	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		
Size	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		
	01 C5 01 3C	Cyan		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C5 01 3F	White		
Selected Text Color	01 C6 01 00	Black	01 C6 00	
	01 C6 01 03	Red		
	01 C6 01 0B	Orange		
	01 C6 01 0C	Green		
	01 C6 01 15	Darkgrey		
	01 C6 01 28	Mint		
	01 C6 01 2A	Grey		
	01 C6 01 2F	Yellow		
	01 C6 01 30	Blue		
	01 C6 01 33	Magenta		
	01 C6 01 3C	Cyan		
	01 C6 01 3F	White		
Menu Text Color	01 C7 01 00	Black	01 C7 00	
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
Menu Headline Color	01 C8 01 00	Black	01 C8 00	
	01 C8 01 03	Red		
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		
<b>USB Settings</b>				
Picture Folder	01 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String	01 D0 00	
Picture Number	01 D1 04 d0 d1 d2 d3	Index for pictures: Format WV# d0 .. d3: Number	01 D1 00	
Load Settings	01 D6 01 00	Off	01 D6 00	
	01 D6 01 01	Auto		
	01 D6 01 02	Confirm		
Store Settings	01 D7 01 00		01 D7 00	
<b>Date/Time</b>				
Date/Time	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B)	01 7E 00	
Timeserver IP	01 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)	01 7C 00	
Timezone	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los_Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
01 7D 01 0D	America/Caracas			
01 7D 01 0E	America/Halifax			
01 7D 01 0F	America/Santiago			
01 7D 01 10	America/La_Paz			
01 7D 01 11	America/St_Johns			
01 7D 01 12	America/Sao_Paulo			

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 13	America/Buenos_Aires		
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
Time Source	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Date Format	01 45 01 00	DDMMYYYY/24H	01 45 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	01 45 01 01	MMDDYYYY/12H		
<b>Authentication</b>				
Login	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes>Password=10Bytes,I P=4Bytes	01 D4 00	
Logout	01 D5 01 00		01 D5 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Position	00 20 00		00 20 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
<b>Digital Zoom</b>				
Digital Zoom Position	00 28 00		00 28 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
Digital Zoom Mode	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning	00 2A 00		00 2A 01 00	Stop
			00 2A 01 01	Message
			00 2A 01 02	None
<b>Focus Control</b>				
Position	00 21 00		00 21 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
AF	00 31 00		00 31 01 00	Off
			00 31 01 01	On
<b>Iris Control</b>				
Position	00 22 00		00 22 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
Auto Iris	00 32 00		00 32 01 00	Off
			00 32 01 01	On
Iris Priority	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
<b>Arm and Mirror Control</b>				
Arm	00 23 00		00 23 01 00	Opened
			00 23 01 01	Closed
<b>Preset Control</b>				
Preset Special Function Key	00 42 01 01	Preset1	00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 08	Light_On_Off
			00 42 02 01 09	Slide_On_Off
			00 42 02 01 0A	Text
			00 42 02 01 0B	Light_LB_Off
			00 42 02 01 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
	00 42 01 02	Preset2	00 42 02 02 00	Preset

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze
			00 42 02 02 06	Image
			00 42 02 02 08	Light_On_Off
			00 42 02 02 09	Slide_On_Off
			00 42 02 02 0A	Text
			00 42 02 02 0B	Light_LB_Off
			00 42 02 02 0C	Image Turn
			00 42 02 02 0D	Picture in Picture
	00 42 01 03	Preset3	00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 08	Light_On_Off
			00 42 02 03 09	Slide_On_Off
			00 42 02 03 0A	Text
			00 42 02 03 0B	Light_LB_Off
			00 42 02 03 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
List of SFK functions	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Power Control</b>				
Power	00 30 00		00 30 01 00	Off
			00 30 01 01	On
Power On Preset	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time	00 37 00		00 37 01 FF	Off
			00 37 01 FE	Power Off if Arm Down
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off
Power Off Confirmation	00 38 00		00 38 01 00	Off
			00 38 01 01	On
Power Down Mode	00 39 00		00 39 01 00	Normal
			00 39 01 01	Deep
<b>Light Control</b>				
Light	00 A0 00		00 A0 01 00	Off
			00 A0 01 01	Light On, LB Off
			00 A0 01 02	LB On, Light Off
			00 A0 01 03	Slidebox On
Lamp Blown	00 A5 00		00 A5 01 d0	Bit0: Lamp Blown / Lamp1 Blown 0=Not Blown, 1=Blown
Lightbox	00 A6 00		00 A6 01 00	No Lightbox
			00 A6 01 01	Lightbox
Lamp 1 Hours	00 A3 00		00 A3 02 d0 d1	in hours (0x0000..0xFFFF)
Laser Marker Portable	00 A7 00		00 A7 01 00	Off
			00 A7 01 01	On
<b>ImageTurn Command</b>				
Image Turn	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°
			00 83 01 03	90°
ImageTurn Rotation	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°
			00 84 01 03	90°

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				
Fading	00 8A 00		00 8A 01 00	Off
			00 8A 01 02	Slow
			00 8A 01 04	Standard
			00 8A 01 08	Fast
Keylock	00 80 00		00 80 01 00	Off
			00 80 01 01	On
IR Code	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D
			00 81 01 96	Code 1
			00 81 01 98	Code 2
			00 81 01 99	Code 3
			00 81 01 9A	Code 4
			00 81 01 9B	Code 5
			00 81 01 9C	Code 6
			00 81 01 9D	Code 7
			00 81 01 9E	Code 8
			00 81 01 9F	Code 9
Text Enhancer	00 85 00		00 85 01 00	Off
			00 85 01 01	On
Image	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On
Baudrate	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Number IR Codes	00 18 00		00 18 01 00	Number of IR Codes 4
			00 18 01 01	Number of IR Codes 9
Noise Suppression	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu
			00 98 01 03	View Menu
Menu Standard Unlock	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock	00 9B 00		00 9B 01 00	Off

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>VZ Menu Control</b>				<i>continued</i>
Command Check	00 9C 00		00 9B 01 01 00 9C 01 00 00 9C 01 01	On Ok Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Resolution RGB / Preview	00 50 00		00 50 01 FF	Off
			00 50 01 00	Auto
			00 50 01 01	SVGA/60 (800x600)
			00 50 01 04	XGA/60 (1024x768)
			00 50 01 08	SXGA-/60 (1280x960)
			00 50 01 0A	SXGA/60
			00 50 01 0D	UXGA/60 (1600x1200)
			00 50 01 12	SXGA+/60 (1400x1050)
			00 50 01 14	VGA/60 (640x480)
			00 50 01 15	720p/50 (1280x720)
			00 50 01 16	720p/60
			00 50 01 17	1080p/50 (1920x1050)
			00 50 01 18	1080p/60
			00 50 01 1A	WSXGA/60 (1680x1050)
			00 50 01 1B	WXGA/60 (1366x768)
			00 50 01 1C	WUXGA/60 (1920x1200)
			00 50 01 1D	WXGA+/60 (1440x900)
			00 50 01 1E	WXGA*/60 (1280x800)
			00 50 01 20	1080p/30
Resolution DVI / RGB	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 08	SXGA-/60 (1280x960)
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0D	UXGA/60 (1600x1200)
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1C	WUXGA/60 (1920x1200)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
			00 51 01 20	1080p/30
Detail	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High
Pos/Neg/Blue	00 54 00		00 54 01 00	Pos
			00 54 01 01	Neg
			00 54 01 02	Blue
Freeze	00 56 00		00 56 01 00	Off
			00 56 01 01	On
Ext/Int	00 57 00		00 57 01 00	Intern
			00 57 01 01	Extern
Autosense Ext/Int	00 58 00		00 58 01 00	Off (Stays on extern)
			00 58 01 01	On (Switch to intern if no external signal)
Extern/Freeze Output	00 59 00		00 59 07 d0 d1 d2 d3 d4 d5 d6	d0: Freeze RGB / Preview 00=No, 01=Yes, 02=N/A d1: Freeze DVI / RGB 00=No, 01=Yes, 02=N/A d2: Freeze ETH / USB 00=No, 01=Yes, 02=N/A d3: Freeze LCD 00=No, 01=Yes, 02=N/A d4: Ext In RGB / Preview 00=No, 01=Yes, 02=N/A d5: Ext In DVI / RGB 00=No, 01=Yes, 02=N/A d6: Ext In LCD 00=No, 01=Yes, 02=N/A
Preview Output	00 5A 00		00 5A 01 00	Preview
			00 5A 01 01	Regular
Image Mirror	00 5B 00		00 5B 01 00	Off
			00 5B 01 01	Horizontal
			00 5B 01 02	Vertical
			00 5B 01 03	H+V
Picture in Picture	00 5D 00		00 5D 01 00	PiP Off
			00 5D 01 01	Pip On
<b>Image Storing Cmd</b>				
ShowAll	00 93 00		00 93 01 00	Off
			00 93 01 01	On
			00 93 01 02	ViewModeSingle (Single Picture Selected While in ViewMode)
Erase Memory	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				
Gain	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB
			00 60 01 13	19dB
			00 60 01 14	20dB
			00 60 01 15	21dB
			00 60 01 16	22dB
			00 60 01 17	23dB
			00 60 01 18	24dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)	00 63 00		00 63 02 d0 d1	d0 d1 ... Exposure time in lines (0x0000..0x0FFF)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
Image Brightness	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High
<b>Color</b>				
White Balance AUTO	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)	00 66 00		00 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)
B Gain (WB=Manual)	00 67 00		00 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)
Gamma Normal Mode	00 68 00		00 68 01 d0	0x00..0x03
Color Mode	00 6D 00		00 6D 01 00	Black/White
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Saturation	00 6E 00		00 6E 01 d0	0 %...150% (0x00..0x96)
<b>Ethernet</b>				
DHCP	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address	00 71 00		00 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each packet)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
Subnet Mask	00 72 00		00 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP	00 73 00		00 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each packet)
Ethernet Mode	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On
Streaming Mode	00 75 00		00 75 01 00	Off
			00 75 01 01	Auto
			00 75 01 02	Continuous
Multicast IP Address	00 77 00		00 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each packet) Valid range: 224.0.1.0..239.255.255.255
Multicast Port	00 78 00		00 78 02 d0 d1	Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Format	00 79 00		00 79 01 00	SXGA- / 720p / WXGA*
			00 79 01 01	XGA / 576p / XGA*
			00 79 01 03	VGA / 288p / VGA*
Streaming Framerate	00 7A 00		00 7A 01 00	Low
			00 7A 01 01	Medium
			00 7A 01 02	High
Multicast Resolution Table	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data 16*14Byte: Name (8Bytes), Width (2Bytes), Height (2Bytes), Id (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Unit</b>				
Model	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String "VZ9P","VZ9P-3","VZ-C12-II","VZ-C12-3", "VZ-C32","EYE-12","SCB-12","VZ-C32-3"
Serialnumber	00 12 00		00 12 04 d0 d1 d2 d3	0x00000000..0xFFFFFFFF
Version	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: String Example: "V1.10a"
Adjuster	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String Example: "MSc"
Production Date	00 15 00		00 15 02 d0 d1	d0: week d1: year

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
Features	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control d0: Byte0 Bit7:Zoom Bit6:Iris Bit4:Focus Bit3:AF Bit2:Power Bit1:Light Bit0:ExtIn d1: Byte1 Bit7:Text Bit6:WB Bit4:Image Bit3:ImageTurn Bit2:Freeze d2: Byte2 Bit7:Preset1 Bit6:Preset2 Bit5:Preset3 d3: Byte3 Bit6:Memory1 Bit5:Memory2 Bit4:Memory3 Bit3:Memory4 Bit2:Memory5 Bit1:Memory6 Bit0:Memory7 d4: Byte4 Bit7:Memory8 Bit6:Memory9 Bit5:ShowAll Bit2:Snapshot d5: Byte5 Bit7:FWUpdate Bit6:PT_dZoom Bit5:PT_ImageTurn Bit3:PT_dem_0deg
Resolution Table	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn: 16*14Byte: Name (8Bytes), Width (2Bytes), Height (2Bytes), Id (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Firmware Update</b>				
Firmware Upload Erase Flash	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased (0x64..0x00) State of firmware erasing, counts from 100 down to 0 0% = Flash erased
<b>Picture Transfer</b>				
Picture Header	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not Id), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9,1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated:Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3,1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00 d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)
Get Picture Block (USB only)	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				<i>continued</i>
Get Picture Block2 (ETH only)	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data
<b>OSD</b>				
OSD Level	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position	00 C2 00		00 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position	00 C3 00		00 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64)
Status Position	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color	00 C5 00		00 C5 01 00	Black
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan
			00 C6 01 3F	White
Menu Text Color	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>USB Settings</b>				
Picture Folder	00 D0 00		00 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String
Picture Number	00 D1 00		00 D1 04 d0 d1 d2 d3	(0x00000000..0xFFFFFFFF)
Picture Format	00 D2 00		00 D2 01 00	Bmp
			00 D2 01 01	Jpg
Load Settings	00 D6 00		00 D6 01 00	Off
			00 D6 01 01	Auto
			00 D6 01 02	Confirm
<b>Date/Time</b>				
Date/Time	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
Timeserver IP	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Time Source	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Date Format	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
<b>Authentication</b>				
SessionID (ETH only)	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber (0x00000000..0xFFFFFFFF)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				
Positions (deprecated)	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply  d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information (deprecated)	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply  d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version d19: Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view) Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved
Menu Ethernet	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port

## **4.5. Protocol of VZ-C12<sup>2</sup> with firmware v1.20b**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely (0x0000..0x0FFF)		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
<b>Digital Zoom</b>				
Set Digital Zoom	01 28 02 d0 d1	Set digital zoom position absolutely (0x0002..0x0FFF)	01 28 00	
	01 28 03 ab d0 d1	Memory Zoom Navigation ab: Direction (0x01 Up-Left, 0x02 Up, 0x03 Up-Right, 0x04 Left, 0x06 Right, 0x07 Down-Left, 0x08 Down, 0x09 Down-Right) d0,d1: Speed (0x01 .. 0x14, 0x00 Stop)		
Digital Zoom	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
<b>Focus Control</b>				
Focus	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely (0x0000..0x0FFF)		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
	01 31 01 10	One-Push-AF		
<b>Iris Control</b>				
Iris	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF)		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b>				<i>continued</i>
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x01 normal spd, 0x02 full Spd, 0x00 Stop)		
Auto Iris	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
Iris Priority	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
<b>Preset Control</b>				
Recall Preset	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
Store Preset	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
Preset Special Function Key (Preset1)	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 07	Onepush_AF		
	01 42 02 01 08	Light_On_Off		
	01 42 02 01 0A	Text		
	01 42 02 01 0C	Image Turn		
	01 42 02 01 0D	Picture in Picture		
Preset Special Function Key (Preset2)	01 42 02 02 00	Preset		
	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	01 42 02 02 06	Image		
	01 42 02 02 07	Onepush_AF		
	01 42 02 02 08	Light_On_Off		
	01 42 02 02 0A	Text		
	01 42 02 02 0C	Image Turn		
	01 42 02 02 0D	Picture in Picture		
Preset Special Function Key (Preset3)	01 42 02 03 00	Preset		
	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 07	Onepush_AF		
	01 42 02 03 08	Light_On_Off		
	01 42 02 03 0A	Text		
	01 42 02 03 0C	Image Turn		
	01 42 02 03 0D	Picture in Picture		
<b>Power Control</b>				
Power On/Off	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
PowerOn Preset	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Display Logo	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time	01 37 01 FF	Off	01 37 00	
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power Down Mode	01 39 01 00	Normal	01 39 00	
	01 39 01 01	Deep		
	01 39 01 02	Toggle		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Light Control</b>				
Light, Lightbox On/Off	01 A0 01 00	Light Off, LB Off	01 A0 00	
	01 A0 01 01	Light On, LB Off		
Reset Lamp 1 Hours	01 A3 01 81		01 A3 00	
<b>ImageTurn Command</b>				
Image Turn On/Off	01 83 01 00	Image Turn Off	01 83 00	
	01 83 01 02	Image Turn Toggle		
ImageTurn Rotation	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (Rechts)		
	01 84 01 02	180°		
	01 84 01 03	+90° (Links)		
<b>Misc. Command</b>				
Fading	01 8A 01 00	Fading Off	01 8A 00	
	01 8A 01 02	Fading Slow		
	01 8A 01 04	Fading Standard		
	01 8A 01 08	Fading Fast		
Keylock On/Off	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
IR Code	01 81 01 1C	Code A	01 81 00	
	01 81 01 1D	Code B		
	01 81 01 1E	Code C		
	01 81 01 1F	Code D		
Text Enhancer On/Off	01 85 01 00	Text Enhancer Off	01 85 00	
	01 85 01 01	Text Enhancer On		
	01 85 01 02	Text Enhancer Toggle		
Image On/Off	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Baudrate	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		
	01 89 01 04	115200 Baud		
Recall Factory Settings	01 8F 01 00		01 8F 00	
Noise Suppression	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off	01 98 01 00	Menu Off	01 98 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Device Menu Control</b>				<i>continued</i>
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu	01 9A 01 00		01 9A 00	
Unlock Extra Menu	01 9B 01 00		01 9B 00	
Menu Control	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		
	01 99 01 01	Backward		
	01 99 01 03	Forward		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		
<b>Output Control</b>				
Resolution RGB / Preview	01 50 01 FF	Off	01 50 00	
	01 50 01 00	Auto		
	01 50 01 01	SVGA/60 (800x600)		
	01 50 01 04	XGA/60 (1024x768)		
	01 50 01 08	SXGA-/60 (1280x960)		
	01 50 01 0A	SXGA/60 (1280x1024)		
	01 50 01 0D	UXGA/60 (1600x1200)		
	01 50 01 12	SXGA+/60 (1400x1050)		
	01 50 01 14	VGA/60 (640x480)		
	01 50 01 15	720p/50 (1280x720)		
	01 50 01 16	720p/60		
	01 50 01 17	1080p/50 (1920x1050)		
	01 50 01 18	1080p/60		
	01 50 01 1A	WSXGA/60 (1680x1050)		
	01 50 01 1B	WXGA/60 (1366x768)		
	01 50 01 1C	WUXGA/60 (1920x1200)		
	01 50 01 1D	WXGA+/60 (1440x900)		
	01 50 01 1E	WXGA*/60 (1280x800)		
	01 50 01 20	1080p/30		
Resolution DVI / RGB	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0D	UXGA/60 (1600x1200)		
	01 51 01 12	SXGA+/60 (1400x1050)		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1C	WUXGA/60 (1920x1200)		
	01 51 01 1D	WXGA+/60 (1440x900)		
	01 51 01 1E	WXGA*/60 (1280x800)		
	01 51 01 20	1080p/30		
Detail	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		
	01 53 01 03	High		
Pos/Neg/Blue	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		
Freeze On/Off	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
Intern/Extern	01 57 01 00	Intern On	01 57 00	
	01 57 01 01	Extern On		
	01 57 01 02	Intern/Extern Toggle		
AutoSense ExternIn On/Off	01 58 01 00	AutoSense ExternIn Off	01 58 00	
	01 58 01 01	AutoSense ExternIn On		
	01 58 01 02	AutoSense ExternIn Toggle		
Keystone	01 5C 01 00	Off	01 5C 00	
	01 5C 01 01	On		
Extern/Freeze Output	01 59 02 00 00	No, Freeze RGB / Preview	01 59 00	
	01 59 02 00 01	Yes, Freeze RGB / Preview		
	01 59 02 01 00	No, Freeze DVI / RGB		
	01 59 02 01 01	Yes, Freeze DVI / RGB		
	01 59 02 02 00	No, Freeze ETH / USB		
	01 59 02 02 01	Yes, Freeze ETH / USB		
	01 59 02 04 00	No, Extin RGB / Preview		
	01 59 02 04 01	Yes, Extin RGB / Preview		
	01 59 02 05 00	No, Extin DVI / RGB		
	01 59 02 05 01	Yes, Extin DVI / RGB		
Preview Ouput control	01 5A 01 00	Preview Ouput is Preview	01 5A 00	
	01 5A 01 01	Preview Ouput is Regular		
	01 5A 01 02	Preview Output Toggle		
Image Mirror	01 5B 01 00	Off	01 5B 00	
	01 5B 01 01	Horizontal		
	01 5B 01 02	Vertical		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 5B 01 03	H+V		
	01 5B 01 04	H Toggle		
	01 5B 01 08	V Toggle		
	01 5B 01 10	H Off		
	01 5B 01 20	V Off		
Picture in Picture	01 5D 01 00	PiP Off	01 5D 00	
	01 5D 01 01	PiP On		
	01 5D 01 02	PiP Toggle		
<b>Image Storing Cmd</b>				
Memory Off	01 90 01 00		01 90 00	
Memory Recall	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
Erase Memory Behaviour	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
Snapshot	01 95 01 00	Store Picture	01 95 00	
	01 95 01 01	Overwrite		
<b>Exposure</b>				
Gain	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		
	01 60 01 13	19dB		
	01 60 01 14	20dB		
	01 60 01 15	21dB		
	01 60 01 16	22dB		
	01 60 01 17	23dB		
	01 60 01 18	24dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		
	01 60 01 C0	Auto High		
Shutter	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
Speed (Shutter=step)	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
Speed (Shutter=variable)	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	
Image Brightness	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b> <span style="float: right;"><i>continued</i></span>				
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		
	01 64 01 07	+7		
	01 64 01 08	+8		
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance	01 65 01 00	White Balance AUTO	01 65 00	
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)	01 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 66 00	
B Gain (WB=Manual)	01 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 67 00	
Gamma Normal Mode	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03)	01 68 00	
Color Mode	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Saturation	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL	01 6E 00	
<b>Ethernet</b>				
DHCP On/Off	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		
IP Address	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet)	01 71 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
Subnet Mask	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet)	01 72 00	
Gateway IP	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet)	01 73 00	
Ethernet Mode	01 74 01 00	Off	01 74 00	
(RS232 and USB only)	01 74 01 01	Image Only		
	01 74 01 02	Control Only		
	01 74 01 03	Image and Control		
	01 74 01 04	FW Update Only		
	01 74 01 05	Image and FW Update		
	01 74 01 06	Control and FW Update		
	01 74 01 07	Image, Control and FW Update		
	01 74 01 08	Auth		
Streaming Mode	01 75 01 00	Off	01 75 00	
	01 75 01 01	Auto		
	01 75 01 02	Continuous		
Multicast IP Address	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 224.0.1.0..239.255.255.255	01 77 00	
Multicast Port	01 78 02 d0 d1	Port 8800 to 9000 in hex (0x2260..0x2328)	01 78 00	
Streaming Format	01 79 01 00	SXGA- / 720p / WXGA*	01 79 00	
	01 79 01 01	XGA / 576p / XGA*		
	01 79 01 03	VGA / 288p / VGA*		
Streaming Framerate	01 7A 01 00	Low	01 7A 00	
	01 7A 01 01	Medium		
	01 7A 01 02	High		
<b>Firmware Update</b>				
Firmware Upload Erase Flash	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start	01 B1 04 d0 d1 d2 d3	Length of firmware data	01 B1 00	
Firmware Upload Data	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data	01 B2 00	
Firmware Upload Data Stop	01 B3 01 00		01 B3 00	
Firmware Downgrade	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
Size	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		
	01 C5 01 3C	Cyan		
	01 C5 01 3F	White		
	Selected Text Color	01 C6 01 00		Black
01 C6 01 03		Red		
01 C6 01 0B		Orange		
01 C6 01 0C		Green		
01 C6 01 15		Darkgrey		
01 C6 01 28		Mint		
01 C6 01 2A		Grey		
01 C6 01 2F		Yellow		
01 C6 01 30		Blue		
01 C6 01 33		Magenta		
01 C6 01 3C		Cyan		
01 C6 01 3F		White		
Menu Text Color		01 C7 01 00	Black	01 C7 00
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
	Menu Headline Color	01 C8 01 00	Black	
01 C8 01 03		Red		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		
<b>USB Settings</b>				
Picture Folder	01 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String	01 D0 00	
Picture Number	01 D1 04 d0 d1 d2 d3	Index for pictures: Format WV# d0 .. d3: Number	01 D1 00	
Load Settings	01 D6 01 00	Off	01 D6 00	
	01 D6 01 01	Auto		
	01 D6 01 02	Confirm		
Store Settings	01 D7 01 00		01 D7 00	
<b>Date/Time</b>				
Date/Time	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B)	01 7E 00	
Timeserver IP	01 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)	01 7C 00	
Timezone	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los_Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
	01 7D 01 0D	America/Caracas		
	01 7D 01 0E	America/Halifax		
	01 7D 01 0F	America/Santiago		
	01 7D 01 10	America/La_Paz		
	01 7D 01 11	America/St_Johns		
	01 7D 01 12	America/Sao_Paulo		
	01 7D 01 13	America/Buenos_Aires		
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
Time Source	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Date Format	01 45 01 00	DDMMYYYY/24H	01 45 00	
	01 45 01 01	MMDDYYYY/12H		
<b>Authentication</b>				
Login	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes>Password=10Bytes,I P=4Bytes	01 D4 00	
Logout	01 D5 01 00		01 D5 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Position	00 20 00		00 20 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
<b>Digital Zoom</b>				
Digital Zoom Position	00 28 00		00 28 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
Digital Zoom Mode	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning	00 2A 00		00 2A 01 00	Stop
			00 2A 01 01	Message
			00 2A 01 02	None
<b>Focus Control</b>				
Position	00 21 00		00 21 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
AF	00 31 00		00 31 01 00	Off
<b>Iris Control</b>				
Position	00 22 00		00 22 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
Auto Iris	00 32 00		00 32 01 00	Off
			00 32 01 01	On
Iris Priority	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
<b>Preset Control</b>				
Preset Special Function Key	00 42 01 01	Preset1	00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 07	Onepush_AF
			00 42 02 01 08	Light_On_Off
			00 42 02 01 0A	Text
			00 42 02 01 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
	00 42 01 02	Preset2	00 42 02 02 00	Preset
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze
			00 42 02 02 06	Image

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 02 07	Onepush_AF
			00 42 02 02 08	Light_On_Off
			00 42 02 02 0A	Text
			00 42 02 02 0C	Image Turn
			00 42 02 02 0D	Picture in Picture
	00 42 01 03	Preset3	00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 07	Onepush_AF
			00 42 02 03 08	Light_On_Off
			00 42 02 03 0A	Text
			00 42 02 03 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
List of SFK functions	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture
Preset Height	00 4E 01 01	Preset1	00 4E 02 01 00	Disabled
			00 4E 02 01 01	Default
			00 4E 02 01 02	Set
	00 4E 01 02	Preset2	00 4E 02 02 00	Disabled
			00 4E 02 02 01	Default
			00 4E 02 02 02	Set
	00 4E 01 03	Preset3	00 4E 02 03 00	Disabled
			00 4E 02 03 01	Default
			00 4E 02 03 02	Set

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Power Control</b>				
Power	00 30 00		00 30 01 00	Off
			00 30 01 01	On
Power On Preset	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time	00 37 00		00 37 01 FF	Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off
Power Down Mode	00 39 00		00 39 01 00	Normal
			00 39 01 01	Deep
<b>Light Control</b>				
Light	00 A0 00		00 A0 01 00	Off
			00 A0 01 01	Light On, LB Off
Lamp 1 Hours	00 A3 00		00 A3 02 d0 d1	in hours (0x0000..0xFFFF)
<b>ImageTurn Command</b>				
Image Turn	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°
			00 83 01 03	90°
ImageTurn Rotation	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°
			00 84 01 03	90°
<b>Misc. Command</b>				
Fading	00 8A 00		00 8A 01 00	Off
			00 8A 01 02	Slow
			00 8A 01 04	Standard
			00 8A 01 08	Fast
Keylock	00 80 00		00 80 01 00	Off
			00 80 01 01	On
IR Code	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
Text Enhancer	00 85 00		00 85 01 00	Off
			00 85 01 01	On
Image	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On
Baudrate	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Noise Suppression	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu
			00 98 01 03	View Menu
Menu Standard Unlock	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock	00 9B 00		00 9B 01 00	Off
			00 9B 01 01	On
Command Check	00 9C 00		00 9C 01 00	Ok
			00 9C 01 01	Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Resolution RGB / Preview	00 50 00		00 50 01 FF	Off
			00 50 01 00	Auto
			00 50 01 01	SVGA/60 (800x600)
			00 50 01 04	XGA/60 (1024x768)
			00 50 01 08	SXGA-/60 (1280x960)
			00 50 01 0A	SXGA/60
			00 50 01 0D	UXGA/60 (1600x1200)
			00 50 01 12	SXGA+/60 (1400x1050)
			00 50 01 14	VGA/60 (640x480)
			00 50 01 15	720p/50 (1280x720)
			00 50 01 16	720p/60
			00 50 01 17	1080p/50 (1920x1050)
			00 50 01 18	1080p/60
			00 50 01 1A	WSXGA/60 (1680x1050)
			00 50 01 1B	WXGA/60 (1366x768)



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
			00 50 01 1C	WUXGA/60 (1920x1200)
			00 50 01 1D	WXGA+/60 (1440x900)
			00 50 01 1E	WXGA*/60 (1280x800)
			00 50 01 20	1080p/30
Resolution DVI / RGB	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 08	SXGA-/60 (1280x960)
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0D	UXGA/60 (1600x1200)
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1C	WUXGA/60 (1920x1200)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)
			00 51 01 20	1080p/30
Detail	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High
Pos/Neg/Blue	00 54 00		00 54 01 00	Pos
			00 54 01 01	Neg
			00 54 01 02	Blue
Freeze	00 56 00		00 56 01 00	Off
			00 56 01 01	On
Ext/Int	00 57 00		00 57 01 00	Intern
			00 57 01 01	Extern
Keystone	00 5C 00		00 5C 01 00	Off
			00 5C 01 01	On
Autosense Ext/Int	00 58 00		00 58 01 00	Off (Stays on extern)
			00 58 01 01	On (Switch to intern if no external signal)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
Extern/Freeze Output	00 59 00		00 59 07 d0 d1 d2 d3 d4 d5 d6	d0: Freeze RGB / Preview 00=No, 01=Yes, 02=N/A d1: Freeze DVI / RGB 00=No, 01=Yes, 02=N/A d2: Freeze ETH / USB 00=No, 01=Yes, 02=N/A d3: Freeze LCD 00=No, 01=Yes, 02=N/A d4: Ext In RGB / Preview 00=No, 01=Yes, 02=N/A d5: Ext In DVI / RGB 00=No, 01=Yes, 02=N/A d6: Ext In LCD 00=No, 01=Yes, 02=N/A
Preview Output	00 5A 00		00 5A 01 00	Preview
			00 5A 01 01	Regular
Image Mirror	00 5B 00		00 5B 01 00	Off
			00 5B 01 01	Horizontal
			00 5B 01 02	Vertical
			00 5B 01 03	H+V
Picture in Picture	00 5D 00		00 5D 01 00	PiP Off
			00 5D 01 01	Pip On
<b>Image Storing Cmd</b>				
ShowAll	00 93 00		00 93 01 00	Off
			00 93 01 01	On
			00 93 01 02	ViewModeSingle (Single Picture Selected While in ViewMode)
Erase Memory	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby
<b>Exposure</b>				
Gain	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB
			00 60 01 13	19dB
			00 60 01 14	20dB
			00 60 01 15	21dB
			00 60 01 16	22dB
			00 60 01 17	23dB
			00 60 01 18	24dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)	00 63 00		00 63 02 d0 d1	d0 d1 ... Exposure time in lines (0x0000..0x0FFF)
Image Brightness	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High
<b>Color</b>				
White Balance AUTO	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)	00 66 00		00 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)
B Gain (WB=Manual)	00 67 00		00 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)
Gamma Normal Mode	00 68 00		00 68 01 d0	0x00..0x03
Color Mode	00 6D 00		00 6D 01 00	Black/White
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Saturation	00 6E 00		00 6E 01 d0	0 %...150% (0x00..0x96)
<b>Ethernet</b>				
DHCP	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address	00 71 00		00 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each packet)
Subnet Mask	00 72 00		00 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP	00 73 00		00 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each packet)
Ethernet Mode	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
Streaming Mode	00 75 00		00 75 01 00	Off
			00 75 01 01	Auto
			00 75 01 02	Continuous
Multicast IP Address	00 77 00		00 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each packet) Valid range: 224.0.1.0..239.255.255.255
Multicast Port	00 78 00		00 78 02 d0 d1	Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Format	00 79 00		00 79 01 00	SXGA- / 720p / WXGA*
			00 79 01 01	XGA / 576p / XGA*
			00 79 01 03	VGA / 288p / VGA*
Streaming Framerate	00 7A 00		00 7A 01 00	Low
			00 7A 01 01	Medium
			00 7A 01 02	High
Multicast Resolution Table	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data 16*14Byte: Name (8Bytes), Width (2Bytes), Height (2Bytes), Id (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Unit</b>				
Model	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String "VZ9P","VZ9P-3","VZ-C12-II","VZ-C12-3", "VZ-C32","EYE-12","SCB-12","VZ-C32-3"
Serialnumber	00 12 00		00 12 04 d0 d1 d2 d3	0x00000000..0xFFFFFFFF
Version	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: String Example: "V1.10a"
Adjuster	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String Example: "MSc"
Production Date	00 15 00		00 15 02 d0 d1	d0: week d1: year
Features	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control d0: Byte0
				Bit7:Zoom
				Bit6:Iris
				Bit4:Focus
				Bit2:Power
				Bit1:Light
				Bit0:ExtIn
				d1: Byte1
				Bit7:Text
				Bit6:WB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
				Bit4:Image
				Bit3:ImageTurn
				Bit2:Freeze
				d2: Byte2
				Bit7:Preset1
				Bit6:Preset2
				Bit5:Preset3
				d3: Byte3
				Bit6:Memory1
				Bit5:Memory2
				Bit4:Memory3
				Bit3:Memory4
				Bit2:Memory5
				Bit1:Memory6
				Bit0:Memory7
				d4: Byte4
				Bit7:Memory8
				Bit6:Memory9
				Bit5:ShowAll
				Bit3:OnePushAF
				Bit2:Snapshot
				d5: Byte5
				Bit7:FWUpdate
				Bit6:PT_dZoom
				Bit5:PT_ImageTurn
				Bit3:PT_dem_Odeg
Resolution Table	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn: 16*14Byte: Name (8Bytes), Width (2Bytes), Height (2Bytes), Id (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Firmware Update</b>				
Firmware Upload Erase Flash	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased (0x64..0x00) State of firmware erasing, counts from 100 down to 0 0% = Flash erased

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				
Picture Header	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not Id), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9,1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated:Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3,1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00 d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)
Get Picture Block (USB only)	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed
Get Picture Block2 (ETH only)	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				
OSD Level	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position	00 C2 00		00 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position	00 C3 00		00 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64)
Status Position	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color	00 C5 00		00 C5 01 00	Black
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan
			00 C6 01 3F	White
Menu Text Color	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White
<b>USB Settings</b>				
Picture Folder	00 D0 00		00 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String
Picture Number	00 D1 00		00 D1 04 d0 d1 d2 d3	(0x00000000..0xFFFFFFFF)
Picture Format	00 D2 00		00 D2 01 00	Bmp
			00 D2 01 01	Jpg
Load Settings	00 D6 00		00 D6 01 00	Off
			00 D6 01 01	Auto
			00 D6 01 02	Confirm

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				
Date/Time	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
Timeserver IP	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Time Source	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Date Format	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
<b>Authentication</b>				
SessionID (ETH only)	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber (0x00000000..0xFFFFFFFF)
<b>Block Inquiry</b>				
Positions (deprecated)	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply  d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b> <span style="float: right;"><i>continued</i></span>				
Flags and Unit Information (deprecated)	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply  d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
Flags and Unit Information	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	d12,13: Mirror Y Position d14,15: Light Focus Position 0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version d19: Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved
Menu Ethernet	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port

## **4.6. Protocol of VZ-C32 with firmware v1.20e**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors				
	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom				
	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
		d0, d1: 0x00 .. 0x0f		
<b>Digital Zoom</b>				
Set Digital Zoom				
	01 28 02 d0 d1	Set digital zoom position absolutely	01 28 00	
		d0 d1: 0x0002..0x0FFF		
	01 28 03 ab d0 d1	Memory Zoom Navigation ab: Direction (0x01 Up-Left, 0x02 Up, 0x03 Up-Right, 0x04 Left, 0x06 Right, 0x07 Down-Left, 0x08 Down, 0x09 Down-Right) d0,d1: Speed (0x0001 .. 0x0014, 0x0000 Stop)		
		d0,d1: 0x0000 .. 0x0014		
<b>Focus Control</b>				
Focus				
	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x0001 .. 0x000F, 0x0000 Stop)		
		d0, d1: 0x0000 .. 0x000F		
	01 31 01 10	One-Push-AF		
<b>Iris Control</b>				
Iris				
	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b>				<i>continued</i>
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF) d0 d1: 0x0000..0x0FFF		
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x0001 normal spd, 0x0002 full Spd, 0x0000 d0, d1: 0x0000..0x0002		
Auto Iris				
	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
<b>Preset Control</b>				
Preset Special Function Key		Preset 1		
	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 07	Onepush_AF		
	01 42 02 01 08	Light_On_Off		
	01 42 02 01 0A	Text		
	01 42 02 01 0C	Image Turn		
	01 42 02 01 0D	Picture in Picture		
Preset Special Function Key		Preset 2		
	01 42 02 02 00	Preset		
	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		
	01 42 02 02 06	Image		
	01 42 02 02 07	Onepush_AF		
	01 42 02 02 08	Light_On_Off		
	01 42 02 02 0A	Text		
	01 42 02 02 0C	Image Turn		
	01 42 02 02 0D	Picture in Picture		
Preset Special Function Key		Preset 3		
	01 42 02 03 00	Preset		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 07	Onepush_AF		
	01 42 02 03 08	Light_On_Off		
	01 42 02 03 0A	Text		
	01 42 02 03 0C	Image Turn		
	01 42 02 03 0D	Picture in Picture		
Recall Preset				
	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
<b>Power Control</b>				
PowerOn Preset				
	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Store Preset				
	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
Display Logo				
	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On				
	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Power Control</b>				<i>continued</i>
	01 37 01 FF	Off	01 37 00	
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power Down Mode				
	01 39 01 00	Normal	01 39 00	
	01 39 01 01	Deep		
	01 39 01 02	Toggle		
Power On/Off				
	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
<b>Light Control</b>				
Light, Lightbox On/Off				
	01 A0 01 00	Light Off, LB Off	01 A0 00	
	01 A0 01 01	Light On, LB Off		
	01 A0 01 80	Lampchange		
Reset Lamp 1 Hours				
	01 A3 01 81		01 A3 00	
Reset Lamp 2 Hours				
	01 A4 01 81		01 A4 00	
Lamp Voltage				
	01 A1 01 00	Bright	01 A1 00	
	01 A1 01 01	Economic		
	01 A1 01 02	Longlife		
<b>ImageTurn Command</b>				
Image Turn On/Off				
	01 83 01 00	Image Turn Off	01 83 00	
	01 83 01 02	Image Turn Toggle		
<b>Misc. Command</b>				
Fading				
	01 8A 01 00	Fading Off	01 8A 00	
	01 8A 01 02	Fading Slow		
	01 8A 01 04	Fading Standard		
	01 8A 01 08	Fading Fast		
IR Code				
	01 81 01 1C	Code A	01 81 00	
	01 81 01 1D	Code B		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
	01 81 01 1E	Code C		
	01 81 01 1F	Code D		
Erase Memory Behaviour				
	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
AutoSense ExternIn On/Off				
	01 58 01 00	AutoSense ExternIn Off	01 58 00	
	01 58 01 01	AutoSense ExternIn On		
	01 58 01 02	AutoSense ExternIn Toggle		
ImageTurn Rotation				
	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (clockwise)		
	01 84 01 02	180°		
	01 84 01 03	+90° (counter clockwise)		
Digital Zoom				
	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning				
	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
Keylock On/Off				
	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
Image On/Off				
	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off				
	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Recall Factory Settings				
	01 8F 01 00		01 8F 00	
<b>Extra Menu</b>				
Baudrate				
	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Extra Menu</b>				<i>continued</i>
	01 89 01 04	115200 Baud		
Noise Suppression				
	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off				
	01 98 01 00	Menu Off	01 98 00	
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu				
	01 9A 01 00		01 9A 00	
Unlock Extra Menu				
	01 9B 01 00		01 9B 00	
Menu Control				
	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		
	01 99 01 01	Backward		
	01 99 01 03	Forward		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		
<b>Output Control</b>				
Detail				
	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		
	01 53 01 03	High		
Resolution RGB / Preview				
	01 50 01 FF	Off	01 50 00	
	01 50 01 00	Auto		
	01 50 01 01	SVGA/60 (800x600)		
	01 50 01 02	SVGA/75		
	01 50 01 03	SVGA/85		
	01 50 01 04	XGA/60 (1024x768)		
	01 50 01 05	XGA/75		
	01 50 01 06	XGA/85		
	01 50 01 08	SXGA-/60 (1280x960)		
	01 50 01 09	SXGA-/85		
	01 50 01 0A	SXGA/60 (1280x1024)		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 50 01 0B	SXGA/75		
	01 50 01 0C	SXGA/85		
	01 50 01 0D	UXGA/60 (1600x1200)		
	01 50 01 12	SXGA+/60 (1400x1050)		
	01 50 01 13	SXGA+/75		
	01 50 01 14	VGA/60 (640x480)		
	01 50 01 15	720p/50 (1280x720)		
	01 50 01 16	720p/60		
	01 50 01 17	1080p/50 (1920x1050)		
	01 50 01 18	1080p/60		
	01 50 01 19	XGA 16:9 (1024x768)		
	01 50 01 1A	WSXGA/60 (1680x1050)		
	01 50 01 1B	WXGA/60 (1366x768)		
	01 50 01 1C	WUXGA/60 (1920x1200)		
	01 50 01 1D	WXGA+/60 (1440x900)		
	01 50 01 1E	WXGA*/60 (1280x800)		
	01 50 01 20	1080p/30		
<b>Resolution DVI / RGB</b>				
	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 02	SVGA/75		
	01 51 01 03	SVGA/85		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 05	XGA/75		
	01 51 01 06	XGA/85		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 09	SXGA-/85		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0B	SXGA/75		
	01 51 01 0C	SXGA/85		
	01 51 01 0D	UXGA/60 (1600x1200)		
	01 51 01 12	SXGA+/60 (1400x1050)		
	01 51 01 13	SXGA+/75		
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 19	XGA 16:9 (1024x768)		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1C	WUXGA/60 (1920x1200)		
	01 51 01 1D	WXGA+/60 (1440x900)		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 51 01 1E	WXGA*/60 (1280x800)		
	01 51 01 20	1080p/30		
Preview Ouput Control				
	01 5A 01 00	Preview Ouput is Preview	01 5A 00	
	01 5A 01 01	Preview Ouput is Regular		
	01 5A 01 02	Preview Output Toggle		
Keystone				
	01 5C 01 00	Off	01 5C 00	
	01 5C 01 01	On		
Freeze On/Off				
	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
Intern/Extern				
	01 57 01 00	Intern On	01 57 00	
	01 57 01 01	Extern On		
	01 57 01 02	Intern/Extern Toggle		
Image Mirror				
	01 5B 01 00	Off	01 5B 00	
	01 5B 01 01	Horizontal		
	01 5B 01 02	Vertical		
	01 5B 01 03	H+V		
	01 5B 01 04	H Toggle		
	01 5B 01 08	V Toggle		
	01 5B 01 10	H Off		
	01 5B 01 20	V Off		
Picture in Picture				
	01 5D 01 00	PiP Off	01 5D 00	
	01 5D 01 01	PiP On		
	01 5D 01 02	PiP Toggle		
<b>Extern/Freeze Settings</b>				
Extern/Freeze Output				
	01 59 02 00 00	No, Freeze RGB / Preview	01 59 00	
	01 59 02 00 01	Yes, Freeze RGB / Preview		
	01 59 02 01 00	No, Freeze DVI / RGB		
	01 59 02 01 01	Yes, Freeze DVI / RGB		
	01 59 02 02 00	No, Freeze ETH / USB		
	01 59 02 02 01	Yes, Freeze ETH / USB		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Extern/Freeze Settings</b>				<i>continued</i>
	01 59 02 04 00	No, Extin RGB / Preview		
	01 59 02 04 01	Yes, Extin RGB / Preview		
	01 59 02 05 00	No, Extin DVI / RGB		
	01 59 02 05 01	Yes, Extin DVI / RGB		
<b>Image Storing Cmd</b>				
Memory Off				
	01 90 01 00		01 90 00	
Memory Recall				
	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store				
	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off				
	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
Snapshot				
	01 95 01 00	Store Picture	01 95 00	
	01 95 01 01	Overwrite		
<b>Exposure</b>				
Gain				
	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		
	01 60 01 13	19dB		
	01 60 01 14	20dB		
	01 60 01 15	21dB		
	01 60 01 16	22dB		
	01 60 01 17	23dB		
	01 60 01 18	24dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		
	01 60 01 C0	Auto High		
<b>Shutter</b>				
	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
<b>Speed (Shutter=step)</b>				
	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
<b>Speed (Shutter=variable)</b>				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	d0 d1: Min: 0x0000 Max: 0x0000
Iris Priority				
	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
Image Brightness				
	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		
	01 64 01 07	+7		
	01 64 01 08	+8		
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation				
	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance				
	01 65 01 00	White Balance AUTO	01 65 00	
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)				
	01 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 66 00	
		d0: -191..-64..+63 (0x81..0x00..0x7F)		
B Gain (WB=Manual)				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Color</b> <span style="float: right;"><i>continued</i></span>				
	01 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F) d0: -191..-64..+63 (0x81..0x00..0x7F)	01 67 00	
Text Enhancer On/Off				
	01 85 01 00	Text Enhancer Off	01 85 00	
	01 85 01 01	Text Enhancer On		
	01 85 01 02	Text Enhancer Toggle		
Color Mode				
	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Gamma Normal Mode				
	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03) d0: 0x00..0x03	01 68 00	
Saturation				
	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL d0: 0 %...150% (0x00..0x96)	01 6E 00	
Pos/Neg/Blue				
	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		
<b>Ethernet</b>				
DHCP On/Off				
	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		
IP Address				
	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 71 00	
Subnet Mask				
	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 72 00	
Gateway IP				
	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 73 00	
<b>Streaming</b>				
Multicast IP Address				
	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 225.0.0.0..238.255.255.255 d0 d1 d2 d3: 0xE1000000..EEFFFFFF	01 77 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Streaming</b> <span style="float: right;"><i>continued</i></span>				
Multicast Port	01 78 02 d0 d1	Port 8800 to 9000 in hex d0 d1: 0x2260..0x2328	01 78 00	
Streaming Mode	01 75 01 00	Off	01 75 00	
	01 75 01 01	Auto		
	01 75 01 02	Continuous		
	01 79 01 01	XGA / 576p / XGA*		
	01 79 01 03	VGA / 288p / VGA*		
Streaming Framerate	01 7A 01 00	Low	01 7A 00	
	01 7A 01 01	Medium		
	01 7A 01 02	High		
<b>Security</b>				
Ethernet Mode		(RS232 and USB only)		
	01 74 01 00	Off	01 74 00	
	01 74 01 01	Image Only		
	01 74 01 02	Control Only		
	01 74 01 03	Image and Control		
	01 74 01 04	FW Update Only		
	01 74 01 05	Image and FW Update		
	01 74 01 06	Control and FW Update		
	01 74 01 07	Image, Control and FW Update		
	01 74 01 08	Auth		
<b>Firmware Update</b>				
Firmware Upload Erase Flash	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start	01 B1 04 d0 d1 d2 d3	Length of firmware data d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 B1 00 01 B1 00	
Firmware Upload Data	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data	01 B2 00	
Firmware Upload Data Stop	01 B3 01 00		01 B3 00	
Firmware Downgrade				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Firmware Update</b>				<i>continued</i>
	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level				
	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency				
	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		
Size				
	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position				
	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position				
	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position				
	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color				
	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		
	01 C5 01 3C	Cyan		
	01 C5 01 3F	White		
Selected Text Color				
	01 C6 01 00	Black	01 C6 00	
	01 C6 01 03	Red		
	01 C6 01 0B	Orange		
	01 C6 01 0C	Green		
	01 C6 01 15	Darkgrey		
	01 C6 01 28	Mint		
	01 C6 01 2A	Grey		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C6 01 2F	Yellow		
	01 C6 01 30	Blue		
	01 C6 01 33	Magenta		
	01 C6 01 3C	Cyan		
	01 C6 01 3F	White		
Menu Text Color				
	01 C7 01 00	Black	01 C7 00	
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
Menu Headline Color				
	01 C8 01 00	Black	01 C8 00	
	01 C8 01 03	Red		
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color				
	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>USB Settings</b>				
Picture Folder	01 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String	01 D0 00	
Picture Number	01 D1 04 d0 d1 d2 d3	Index for pictures: Format WV# d0 .. d3: Number	01 D1 00	
		d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 D1 00	
Load Settings				
	01 D6 01 00	Off	01 D6 00	
	01 D6 01 01	Auto		
	01 D6 01 02	Confirm		
Store Settings				
	01 D7 01 00		01 D7 00	
<b>Date/Time</b>				
Time Source				
	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Timeserver IP				
	01 7C 04 d0 d1 d2 d3	d0 d1 d2 d3: Timeserver IP Address in hex (0x00 to 0xFF for each octet)	01 7C 00	
		d0 d1 d2 d3: 0x00000000..0xFFFFFFFF		
Timezone				
	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los_Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
	01 7D 01 0D	America/Caracas		
	01 7D 01 0E	America/Halifax		
	01 7D 01 0F	America/Santiago		
	01 7D 01 10	America/La_Paz		
	01 7D 01 11	America/St_Johns		
	01 7D 01 12	America/Sao_Paulo		
	01 7D 01 13	America/Buenos_Aires		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
<b>Date Format</b>				
	01 45 01 00	DDMMYYYY/24H	01 45 00	
	01 45 01 01	MMDDYYYY/12H		
<b>Date/Time</b>				



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B) d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B	01 7E 00	
<b>Authentication</b>				
Login	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes>Password=10Bytes,I P=4Bytes	01 D4 00	
Logout	01 D5 01 00		01 D5 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Zoom Position				
	00 20 00		00 20 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Digital Zoom</b>				
Digital Zoom Position				
	00 28 00		00 28 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Focus Control</b>				
Focus Position				
	00 21 00		00 21 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
AF				
	00 31 00		00 31 01 00	Off
			00 31 01 01	On
<b>Iris Control</b>				
Iris Position				
	00 22 00		00 22 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
Auto Iris				
	00 32 00		00 32 01 00	Off
			00 32 01 01	On
<b>Preset Control</b>				
Preset Special Function Key		Preset1		
	00 42 01 01		00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 07	Onepush_AF
			00 42 02 01 08	Light_On_Off
			00 42 02 01 0A	Text
			00 42 02 01 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
		Preset2		
	00 42 01 02		00 42 02 02 00	Preset
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze
			00 42 02 02 06	Image
			00 42 02 02 07	Onepush_AF
			00 42 02 02 08	Light_On_Off
			00 42 02 02 0A	Text
			00 42 02 02 0C	Image Turn
			00 42 02 02 0D	Picture in Picture
		Preset3		
	00 42 01 03		00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 07	Onepush_AF
			00 42 02 03 08	Light_On_Off
			00 42 02 03 0A	Text
			00 42 02 03 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
List of SFK functions				
	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture
Preset Height				
	00 4E 01 01	Preset1	00 4E 02 01 00	Disabled
			00 4E 02 01 01	Default
			00 4E 02 01 02	Set
	00 4E 01 02	Preset2	00 4E 02 02 00	Disabled

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 4E 02 02 01	Default
			00 4E 02 02 02	Set
	00 4E 01 03	Preset3	00 4E 02 03 00	Disabled
			00 4E 02 03 01	Default
			00 4E 02 03 02	Set
<b>Power Control</b>				
Power On Preset				
	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo				
	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On				
	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time				
	00 37 00		00 37 01 FF	Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off
Power Down Mode				
	00 39 00		00 39 01 00	Normal
			00 39 01 01	Deep
Power				
	00 30 00		00 30 01 00	Off
			00 30 01 01	On
<b>Light Control</b>				
Light				
	00 A0 00		00 A0 01 00	Off
			00 A0 01 01	Light On, LB Off
Lamp Blown				
	00 A5 00		00 A5 01 d0	Bit0: Lamp Blown / Lamp1 Blown0=Not Blown, 1=Blown Bit1: Lamp2 Blown0=Not Blown, 1=Blown
Lamp 1 Hours				
	00 A3 00		00 A3 02 d0 d1	d0 d1: in hours (hex) d0 d1: 0x0000..0xFFFF
Lamp 2 Hours				
	00 A4 00		00 A4 02 d0 d1	d0 d1: in hours (hex)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Light Control</b>				<i>continued</i>
				d0 d1: 0x0000..0xFFFF
Lamp Voltage				
	00 A1 00		00 A1 01 00	Bright
			00 A1 01 01	Economic
			00 A1 01 02	Longlife
<b>ImageTurn Command</b>				
Image Turn				
	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°
			00 83 01 03	90°
<b>Misc. Command</b>				
IR Code				
	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D
Erase Memory				
	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby
Autosense Ext/Int				
	00 58 00		00 58 01 00	Off (Stays on extern)
			00 58 01 01	On (Switch to intern if no external signal)
ImageTurn Rotation				
	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°
			00 84 01 03	90°
Digital Zoom Mode				
	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning				
	00 2A 00		00 2A 01 00	Stop
			00 2A 01 01	Message
			00 2A 01 02	None
Fading				
	00 8A 00		00 8A 01 00	Off
			00 8A 01 02	Slow
			00 8A 01 04	Standard
			00 8A 01 08	Fast

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
Keylock	00 80 00		00 80 01 00	Off
			00 80 01 01	On
Image	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On
<b>Extra Menu</b>				
Baudrate	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Noise Suppression	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu
			00 98 01 03	View Menu
Menu Standard Unlock	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock	00 9B 00		00 9B 01 00	Off
			00 9B 01 01	On
Command Check	00 9C 00		00 9C 01 00	Ok
			00 9C 01 01	Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Detail	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
Resolution RGB / Preview	00 50 00		00 50 01 FF	Off
			00 50 01 00	Auto
			00 50 01 01	SVGA/60 (800x600)
			00 50 01 02	SVGA/75
			00 50 01 03	SVGA/85
			00 50 01 04	XGA/60 (1024x768)
			00 50 01 05	XGA/75
			00 50 01 06	XGA/85
			00 50 01 08	SXGA-/60 (1280x960)
			00 50 01 09	SXGA-/85
			00 50 01 0A	SXGA/60
			00 50 01 0B	SXGA/75 (1280x1024)
			00 50 01 0C	SXGA/85
			00 50 01 0D	UXGA/60 (1600x1200)
			00 50 01 12	SXGA+/60 (1400x1050)
			00 50 01 13	SXGA+/75
			00 50 01 14	VGA/60 (640x480)
			00 50 01 15	720p/50 (1280x720)
			00 50 01 16	720p/60
			00 50 01 17	1080p/50 (1920x1050)
			00 50 01 18	1080p/60
			00 50 01 19	XGA 16:9 (1024x768)
			00 50 01 1A	WSXGA/60 (1680x1050)
			00 50 01 1B	WXGA/60 (1366x768)
			00 50 01 1C	WUXGA/60 (1920x1200)
			00 50 01 1D	WXGA+/60 (1440x900)
			00 50 01 1E	WXGA*/60 (1280x800)
			00 50 01 20	1080p/30
Resolution DVI / RGB	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 02	SVGA/75
			00 51 01 03	SVGA/85
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 05	XGA/75
			00 51 01 06	XGA/85
			00 51 01 08	SXGA-/60 (1280x960)
			00 51 01 09	SXGA-/85
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0B	SXGA/75
			00 51 01 0C	SXGA/85
			00 51 01 0D	UXGA/60 (1600x1200)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 13	SXGA+/75
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 19	XGA 16:9 (1024x768)
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1C	WUXGA/60 (1920x1200)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)
			00 51 01 20	1080p/30
Preview Output				
	00 5A 00		00 5A 01 00	Preview
			00 5A 01 01	Regular
Keystone				
	00 5C 00		00 5C 01 00	Off
			00 5C 01 01	On
Freeze				
	00 56 00		00 56 01 00	Off
			00 56 01 01	On
Ext/Int				
	00 57 00		00 57 01 00	Intern
			00 57 01 01	Extern
Extern/Freeze Output				
	00 59 00		00 59 07 d0 d1 d2 d3 d4 d5 d6	d0: Freeze RGB / Preview 00=No, 01=Yes, 02=N/A d1: Freeze DVI / RGB 00=No, 01=Yes, 02=N/A d2: Freeze ETH / USB 00=No, 01=Yes, 02=N/A d3: Freeze LCD 00=No, 01=Yes, 02=N/A d4: Ext In RGB / Preview 00=No, 01=Yes, 02=N/A d5: Ext In DVI / RGB 00=No, 01=Yes, 02=N/A d6: Ext In LCD 00=No, 01=Yes, 02=N/A
Image Mirror				
	00 5B 00		00 5B 01 00	Off
			00 5B 01 01	Horizontal
			00 5B 01 02	Vertical
			00 5B 01 03	H+V
Picture in Picture				
	00 5D 00		00 5D 01 00	PiP Off
			00 5D 01 01	Pip On



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Image Storing Cmd</b>				
ShowAll	00 93 00		00 93 01 00	Off
			00 93 01 01	On
			00 93 01 02	ViewModeSingle (Single Picture Selected While in ViewMode)
<b>Exposure</b>				
Gain	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB
			00 60 01 13	19dB
			00 60 01 14	20dB
			00 60 01 15	21dB
			00 60 01 16	22dB
			00 60 01 17	23dB
			00 60 01 18	24dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)				
	00 63 00		00 63 02 d0 d1	d0 d1: Exposure time in lines d0 d1: Min: 0x0000 Max: 0x0000
Iris Priority				
	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
Image Brightness				
	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation				
	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Color</b>				
White Balance	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)	00 66 00		00 66 01 d0	d0: -191..-64..+63 (0x81..0x00..0x7F)
B Gain (WB=Manual)	00 67 00		00 67 01 d0	d0: -191..-64..+63 (0x81..0x00..0x7F)
Text Enhancer	00 85 00		00 85 01 00	Off
			00 85 01 01	On
Color Mode	00 6D 00		00 6D 01 00	Black/White
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Gamma Normal Mode	00 68 00		00 68 01 d0	d0: Gamma Curves d0: 0x00..0x03
Saturation	00 6E 00		00 6E 01 d0	d0: Saturation in percent d0: 0 %...150% (0x00..0x96)
Pos/Neg/Blue	00 54 00		00 54 01 00	Pos
			00 54 01 01	Neg
			00 54 01 02	Blue
<b>Ethernet</b>				
DHCP	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address	00 71 00		00 71 04 d0 d1 d2 d3	d0 d1 d2 d3: IP Address in hex (0x00 to 0xFF for each packet)
Subnet Mask	00 72 00		00 72 04 d0 d1 d2 d3	d0 d1 d2 d3: Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP	00 73 00		00 73 04 d0 d1 d2 d3	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
				d0 d1 d2 d3: Gateway IP Address in hex (0x00 to 0xFF for each packet)
<b>Streaming</b>				
Multicast IP Address	00 77 00		00 77 04 d0 d1 d2 d3	d0 d1 d2 d3: Multicast IP Address in hex (0x00 to 0xFF for each packet)Valid range: 225.0.0.0..238.255.255.255
Multicast Port	00 78 00		00 78 02 d0 d1	d0 d1: Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Mode	00 75 00		00 75 01 00 00 75 01 01 00 75 01 02	Off Auto Continuous
Streaming Format			00 79 01 01 00 79 01 03	XGA / 576p / XGA* VGA / 288p / VGA*
Streaming Framerate	00 7A 00		00 7A 01 00 00 7A 01 01 00 7A 01 02	Low Medium High
Multicast Resolution Table	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Security</b>				
Ethernet Mode	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On
<b>Unit</b>				
Model	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String"VZ9P","VZ9P-3","VZ-C12-II","VZ-C12-3","VZ-C32","EYE-12","SCB-12","VZ-C32-3","VZ-P18","VZ-P38"
Serialnumber				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
	00 12 00		00 12 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Version				
	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: StringExample: "V1.10a"
Adjuster				
	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: StringExample: "MSc"
Production Date				
	00 15 00		00 15 02 d0 d1	d0: week d1: year
Features				
	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control
				d0: Byte0
				Bit7:Zoom
				Bit6:Iris
				Bit4:Focus
				Bit2:Power
				Bit1:Light
				Bit0:ExtIn
				d1: Byte1
				Bit7:Text
				Bit6:WB
				Bit4:Image
				Bit3:ImageTurn
				Bit2:Freeze
				d2: Byte2
				Bit7:Preset1
				Bit6:Preset2
				Bit5:Preset3
				d3: Byte3
				Bit6:Memory1
				Bit5:Memory2
				Bit4:Memory3
				Bit3:Memory4
				Bit2:Memory5
				Bit1:Memory6
				Bit0:Memory7
				d4: Byte4
				Bit7:Memory8
				Bit6:Memory9
				Bit5:ShowAll
				Bit3:OnePushAF
				Bit2:Snapshot

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
				d5: Byte5
				Bit7:FWUpdate
				Bit6:PT_dZoom
				Bit5:PT_ImageTurn
				Bit3:PT_dem_0deg
Resolution Table				
	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn:16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
Description				
<b>Firmware Update</b>				
Firmware Upload Erase Flash				
	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased. State of firmware erasing, counts from 100 down to 00% = Flash erased d0: 0x64..0x00
<b>Picture Transfer</b>				
Picture Header				
	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not ID), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9,1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated:Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3,1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				<i>continued</i>
Get Picture Block (USB only)				
	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed
Get Picture Block2 (ETH only)				
	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data
<b>OSD</b>				
OSD Level				
	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency				
	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size				
	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position				
	00 C2 00		00 C2 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position				
	00 C3 00		00 C3 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Status Position				
	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color				
	00 C5 00		00 C5 01 00	Black

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color				
	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan
			00 C6 01 3F	White
Menu Text Color				
	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color				
	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White
<b>USB Settings</b>				
Picture Folder	00 D0 00		00 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String
Picture Number	00 D1 00		00 D1 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Picture Format	00 D2 00		00 D2 01 00	Bmp
			00 D2 01 01	Jpg
Load Settings	00 D6 00		00 D6 01 00	Off
			00 D6 01 01	Auto
			00 D6 01 02	Confirm
<b>Date/Time</b>				
Time Source	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Timeserver IP	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Date Format				
	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
Date/Time				
	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
				d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B
<b>Authentication</b>				
SessionID (ETH only)				
	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber
				d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
<b>Block Inquiry</b>				
Positions(deprecated)				
	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information(deprecated)				
	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b> <span style="float: right;"><i>continued</i></span>				
				d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information				
	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				d19: Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view) Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved
<b>Menu Ethernet</b>	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port

## **4.7. Protocol of VZ-C12<sup>3</sup> with firmware v1.20b**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely (0x0000..0x0FFF)		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
<b>Digital Zoom</b>				
Set Digital Zoom	01 28 02 d0 d1	Set digital zoom position absolutely (0x0002..0x0FFF)	01 28 00	
	01 28 03 ab d0 d1	Memory Zoom Navigation ab: Direction (0x01 Up-Left, 0x02 Up, 0x03 Up-Right, 0x04 Left, 0x06 Right, 0x07 Down-Left, 0x08 Down, 0x09 Down-Right) d0,d1: Speed (0x01 .. 0x14, 0x00 Stop)		
Digital Zoom	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
<b>Focus Control</b>				
Focus	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely (0x0000..0x0FFF)		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
	01 31 01 10	One-Push-AF		
<b>Iris Control</b>				
Iris	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF)		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b>		<i>continued</i>		
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x01 normal spd, 0x02 full Spd, 0x00 Stop)		
Auto Iris	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
Iris Priority	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
<b>Preset Control</b>				
Recall Preset	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
Store Preset	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
Preset Special Function Key (Preset1)	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 07	Onepush_AF		
	01 42 02 01 08	Light_On_Off		
	01 42 02 01 0A	Text		
	01 42 02 01 0C	Image Turn		
	01 42 02 01 0D	Picture in Picture		
Preset Special Function Key (Preset2)	01 42 02 02 00	Preset		
	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	01 42 02 02 06	Image		
	01 42 02 02 07	Onepush_AF		
	01 42 02 02 08	Light_On_Off		
	01 42 02 02 0A	Text		
	01 42 02 02 0C	Image Turn		
	01 42 02 02 0D	Picture in Picture		
Preset Special Function Key (Preset3)	01 42 02 03 00	Preset		
	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 07	Onepush_AF		
	01 42 02 03 08	Light_On_Off		
	01 42 02 03 0A	Text		
	01 42 02 03 0C	Image Turn		
	01 42 02 03 0D	Picture in Picture		
<b>Power Control</b>				
Power On/Off	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
PowerOn Preset	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Display Logo	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time	01 37 01 FF	Off	01 37 00	
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power Down Mode	01 39 01 00	Normal	01 39 00	
	01 39 01 01	Deep		
	01 39 01 02	Toggle		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Light Control</b>				
Light, Lightbox On/Off	01 A0 01 00	Light Off, LB Off	01 A0 00	
	01 A0 01 01	Light On, LB Off		
Reset Lamp 1 Hours	01 A3 01 81		01 A3 00	
<b>ImageTurn Command</b>				
Image Turn On/Off	01 83 01 00	Image Turn Off	01 83 00	
	01 83 01 02	Image Turn Toggle		
ImageTurn Rotation	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (Rechts)		
	01 84 01 02	180°		
	01 84 01 03	+90° (Links)		
<b>Misc. Command</b>				
Fading	01 8A 01 00	Fading Off	01 8A 00	
	01 8A 01 02	Fading Slow		
	01 8A 01 04	Fading Standard		
	01 8A 01 08	Fading Fast		
Keylock On/Off	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
IR Code	01 81 01 1C	Code A	01 81 00	
	01 81 01 1D	Code B		
	01 81 01 1E	Code C		
	01 81 01 1F	Code D		
Text Enhancer On/Off	01 85 01 00	Text Enhancer Off	01 85 00	
	01 85 01 01	Text Enhancer On		
	01 85 01 02	Text Enhancer Toggle		
Image On/Off	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Baudrate	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		
	01 89 01 04	115200 Baud		
Recall Factory Settings	01 8F 01 00		01 8F 00	
Noise Suppression	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off	01 98 01 00	Menu Off	01 98 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Device Menu Control</b>				<i>continued</i>
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu	01 9A 01 00		01 9A 00	
Unlock Extra Menu	01 9B 01 00		01 9B 00	
Menu Control	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		
	01 99 01 01	Backward		
	01 99 01 03	Forward		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		
<b>Output Control</b>				
Resolution RGB / Preview	01 50 01 FF	Off	01 50 00	
	01 50 01 00	Auto		
	01 50 01 01	SVGA/60 (800x600)		
	01 50 01 04	XGA/60 (1024x768)		
	01 50 01 08	SXGA-/60 (1280x960)		
	01 50 01 0A	SXGA/60 (1280x1024)		
	01 50 01 0D	UXGA/60 (1600x1200)		
	01 50 01 12	SXGA+/60 (1400x1050)		
	01 50 01 14	VGA/60 (640x480)		
	01 50 01 15	720p/50 (1280x720)		
	01 50 01 16	720p/60		
	01 50 01 17	1080p/50 (1920x1050)		
	01 50 01 18	1080p/60		
	01 50 01 1A	WSXGA/60 (1680x1050)		
	01 50 01 1B	WXGA/60 (1366x768)		
	01 50 01 1C	WUXGA/60 (1920x1200)		
	01 50 01 1D	WXGA+/60 (1440x900)		
	01 50 01 1E	WXGA*/60 (1280x800)		
	01 50 01 20	1080p/30		
Resolution DVI / RGB	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0D	UXGA/60 (1600x1200)		
	01 51 01 12	SXGA+/60 (1400x1050)		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1C	WUXGA/60 (1920x1200)		
	01 51 01 1D	WXGA+/60 (1440x900)		
	01 51 01 1E	WXGA*/60 (1280x800)		
	01 51 01 20	1080p/30		
Detail	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		
	01 53 01 03	High		
Pos/Neg/Blue	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		
Freeze On/Off	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
Intern/Extern	01 57 01 00	Intern On	01 57 00	
	01 57 01 01	Extern On		
	01 57 01 02	Intern/Extern Toggle		
AutoSense ExternIn On/Off	01 58 01 00	AutoSense ExternIn Off	01 58 00	
	01 58 01 01	AutoSense ExternIn On		
	01 58 01 02	AutoSense ExternIn Toggle		
Keystone	01 5C 01 00	Off	01 5C 00	
	01 5C 01 01	On		
Extern/Freeze Output	01 59 02 00 00	No, Freeze RGB / Preview	01 59 00	
	01 59 02 00 01	Yes, Freeze RGB / Preview		
	01 59 02 01 00	No, Freeze DVI / RGB		
	01 59 02 01 01	Yes, Freeze DVI / RGB		
	01 59 02 02 00	No, Freeze ETH / USB		
	01 59 02 02 01	Yes, Freeze ETH / USB		
	01 59 02 04 00	No, Extin RGB / Preview		
	01 59 02 04 01	Yes, Extin RGB / Preview		
	01 59 02 05 00	No, Extin DVI / RGB		
	01 59 02 05 01	Yes, Extin DVI / RGB		
Preview Ouput control	01 5A 01 00	Preview Ouput is Preview	01 5A 00	
	01 5A 01 01	Preview Ouput is Regular		
	01 5A 01 02	Preview Output Toggle		
Image Mirror	01 5B 01 00	Off	01 5B 00	
	01 5B 01 01	Horizontal		
	01 5B 01 02	Vertical		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b> <span style="float: right;"><i>continued</i></span>				
	01 5B 01 03	H+V		
	01 5B 01 04	H Toggle		
	01 5B 01 08	V Toggle		
	01 5B 01 10	H Off		
	01 5B 01 20	V Off		
Picture in Picture	01 5D 01 00	PiP Off	01 5D 00	
	01 5D 01 01	PiP On		
	01 5D 01 02	PiP Toggle		
<b>Image Storing Cmd</b>				
Memory Off	01 90 01 00		01 90 00	
Memory Recall	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
Erase Memory Behaviour	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
Snapshot	01 95 01 00	Store Picture	01 95 00	
	01 95 01 01	Overwrite		
<b>Exposure</b>				
Gain	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		
	01 60 01 13	19dB		
	01 60 01 14	20dB		
	01 60 01 15	21dB		
	01 60 01 16	22dB		
	01 60 01 17	23dB		
	01 60 01 18	24dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		
	01 60 01 C0	Auto High		
Shutter	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
Speed (Shutter=step)	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
Speed (Shutter=variable)	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	
Image Brightness	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b> <span style="float: right;"><i>continued</i></span>				
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		
	01 64 01 07	+7		
	01 64 01 08	+8		
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance	01 65 01 00	White Balance AUTO	01 65 00	
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)	01 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 66 00	
B Gain (WB=Manual)	01 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)	01 67 00	
Gamma Normal Mode	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03)	01 68 00	
Color Mode	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Saturation	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL	01 6E 00	
<b>Ethernet</b>				
DHCP On/Off	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		
IP Address	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet)	01 71 00	



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
Subnet Mask	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet)	01 72 00	
Gateway IP	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet)	01 73 00	
Ethernet Mode	01 74 01 00	Off	01 74 00	
(RS232 and USB only)	01 74 01 01	Image Only		
	01 74 01 02	Control Only		
	01 74 01 03	Image and Control		
	01 74 01 04	FW Update Only		
	01 74 01 05	Image and FW Update		
	01 74 01 06	Control and FW Update		
	01 74 01 07	Image, Control and FW Update		
	01 74 01 08	Auth		
Streaming Mode	01 75 01 00	Off	01 75 00	
	01 75 01 01	Auto		
	01 75 01 02	Continuous		
Multicast IP Address	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 224.0.1.0..239.255.255.255	01 77 00	
Multicast Port	01 78 02 d0 d1	Port 8800 to 9000 in hex (0x2260..0x2328)	01 78 00	
Streaming Format	01 79 01 00	SXGA- / 720p / WXGA*	01 79 00	
	01 79 01 01	XGA / 576p / XGA*		
	01 79 01 03	VGA / 288p / VGA*		
Streaming Framerate	01 7A 01 00	Low	01 7A 00	
	01 7A 01 01	Medium		
	01 7A 01 02	High		
<b>Firmware Update</b>				
Firmware Upload Erase Flash	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start	01 B1 04 d0 d1 d2 d3	Length of firmware data	01 B1 00	
Firmware Upload Data	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data	01 B2 00	
Firmware Upload Data Stop	01 B3 01 00		01 B3 00	
Firmware Downgrade	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
Size	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		
	01 C5 01 3C	Cyan		
	01 C5 01 3F	White		
	Selected Text Color	01 C6 01 00		Black
01 C6 01 03		Red		
01 C6 01 0B		Orange		
01 C6 01 0C		Green		
01 C6 01 15		Darkgrey		
01 C6 01 28		Mint		
01 C6 01 2A		Grey		
01 C6 01 2F		Yellow		
01 C6 01 30		Blue		
01 C6 01 33		Magenta		
01 C6 01 3C		Cyan		
01 C6 01 3F		White		
Menu Text Color		01 C7 01 00	Black	01 C7 00
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
	Menu Headline Color	01 C8 01 00	Black	
01 C8 01 03		Red		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		
<b>USB Settings</b>				
Picture Folder	01 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String	01 D0 00	
Picture Number	01 D1 04 d0 d1 d2 d3	Index for pictures: Format WV# d0 .. d3: Number	01 D1 00	
Load Settings	01 D6 01 00	Off	01 D6 00	
	01 D6 01 01	Auto		
	01 D6 01 02	Confirm		
Store Settings	01 D7 01 00		01 D7 00	
<b>Date/Time</b>				
Date/Time	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B)	01 7E 00	
Timeserver IP	01 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)	01 7C 00	
Timezone	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los_Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
	01 7D 01 0D	America/Caracas		
	01 7D 01 0E	America/Halifax		
	01 7D 01 0F	America/Santiago		
	01 7D 01 10	America/La_Paz		
	01 7D 01 11	America/St_Johns		
	01 7D 01 12	America/Sao_Paulo		
	01 7D 01 13	America/Buenos_Aires		
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
Time Source	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Date Format	01 45 01 00	DDMMYYYY/24H	01 45 00	
	01 45 01 01	MMDDYYYY/12H		
<b>Authentication</b>				
Login	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes>Password=10Bytes,I P=4Bytes	01 D4 00	
Logout	01 D5 01 00		01 D5 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Position	00 20 00		00 20 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
<b>Digital Zoom</b>				
Digital Zoom Position	00 28 00		00 28 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
Digital Zoom Mode	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning	00 2A 00		00 2A 01 00	Stop
			00 2A 01 01	Message
			00 2A 01 02	None
<b>Focus Control</b>				
Position	00 21 00		00 21 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
AF	00 31 00		00 31 01 00	Off
<b>Iris Control</b>				
Position	00 22 00		00 22 02 d0 d1	d0 d1 ... Position (0x0000..0x0FFF)
Auto Iris	00 32 00		00 32 01 00	Off
			00 32 01 01	On
Iris Priority	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
<b>Preset Control</b>				
Preset Special Function Key	00 42 01 01	Preset1	00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 07	Onepush_AF
			00 42 02 01 08	Light_On_Off
			00 42 02 01 0A	Text
			00 42 02 01 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
	00 42 01 02	Preset2	00 42 02 02 00	Preset
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze
			00 42 02 02 06	Image

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 02 07	Onepush_AF
			00 42 02 02 08	Light_On_Off
			00 42 02 02 0A	Text
			00 42 02 02 0C	Image Turn
			00 42 02 02 0D	Picture in Picture
	00 42 01 03	Preset3	00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 07	Onepush_AF
			00 42 02 03 08	Light_On_Off
			00 42 02 03 0A	Text
			00 42 02 03 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
List of SFK functions	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture
Preset Height	00 4E 01 01	Preset1	00 4E 02 01 00	Disabled
			00 4E 02 01 01	Default
			00 4E 02 01 02	Set
	00 4E 01 02	Preset2	00 4E 02 02 00	Disabled
			00 4E 02 02 01	Default
			00 4E 02 02 02	Set
	00 4E 01 03	Preset3	00 4E 02 03 00	Disabled
			00 4E 02 03 01	Default
			00 4E 02 03 02	Set

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Power Control</b>				
Power	00 30 00		00 30 01 00	Off
			00 30 01 01	On
Power On Preset	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time	00 37 00		00 37 01 FF	Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off
Power Down Mode	00 39 00		00 39 01 00	Normal
			00 39 01 01	Deep
<b>Light Control</b>				
Light	00 A0 00		00 A0 01 00	Off
			00 A0 01 01	Light On, LB Off
Lamp 1 Hours	00 A3 00		00 A3 02 d0 d1	in hours (0x0000..0xFFFF)
<b>ImageTurn Command</b>				
Image Turn	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°
			00 83 01 03	90°
ImageTurn Rotation	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°
			00 84 01 03	90°
<b>Misc. Command</b>				
Fading	00 8A 00		00 8A 01 00	Off
			00 8A 01 02	Slow
			00 8A 01 04	Standard
			00 8A 01 08	Fast
Keylock	00 80 00		00 80 01 00	Off
			00 80 01 01	On
IR Code	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
Text Enhancer	00 85 00		00 85 01 00	Off
			00 85 01 01	On
Image	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On
Baudrate	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Noise Suppression	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu
			00 98 01 03	View Menu
Menu Standard Unlock	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock	00 9B 00		00 9B 01 00	Off
			00 9B 01 01	On
Command Check	00 9C 00		00 9C 01 00	Ok
			00 9C 01 01	Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Resolution RGB / Preview	00 50 00		00 50 01 FF	Off
			00 50 01 00	Auto
			00 50 01 01	SVGA/60 (800x600)
			00 50 01 04	XGA/60 (1024x768)
			00 50 01 08	SXGA-/60 (1280x960)
			00 50 01 0A	SXGA/60
			00 50 01 0D	UXGA/60 (1600x1200)
			00 50 01 12	SXGA+/60 (1400x1050)
			00 50 01 14	VGA/60 (640x480)
			00 50 01 15	720p/50 (1280x720)
			00 50 01 16	720p/60
			00 50 01 17	1080p/50 (1920x1050)
			00 50 01 18	1080p/60
			00 50 01 1A	WSXGA/60 (1680x1050)
			00 50 01 1B	WXGA/60 (1366x768)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
			00 50 01 1C	WUXGA/60 (1920x1200)
			00 50 01 1D	WXGA+/60 (1440x900)
			00 50 01 1E	WXGA*/60 (1280x800)
			00 50 01 20	1080p/30
Resolution DVI / RGB	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 08	SXGA-/60 (1280x960)
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0D	UXGA/60 (1600x1200)
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1C	WUXGA/60 (1920x1200)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)
			00 51 01 20	1080p/30
Detail	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High
Pos/Neg/Blue	00 54 00		00 54 01 00	Pos
			00 54 01 01	Neg
			00 54 01 02	Blue
Freeze	00 56 00		00 56 01 00	Off
			00 56 01 01	On
Ext/Int	00 57 00		00 57 01 00	Intern
			00 57 01 01	Extern
Keystone	00 5C 00		00 5C 01 00	Off
			00 5C 01 01	On
Autosense Ext/Int	00 58 00		00 58 01 00	Off (Stays on extern)
			00 58 01 01	On (Switch to intern if no external signal)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
Extern/Freeze Output	00 59 00		00 59 07 d0 d1 d2 d3 d4 d5 d6	d0: Freeze RGB / Preview 00=No, 01=Yes, 02=N/A d1: Freeze DVI / RGB 00=No, 01=Yes, 02=N/A d2: Freeze ETH / USB 00=No, 01=Yes, 02=N/A d3: Freeze LCD 00=No, 01=Yes, 02=N/A d4: Ext In RGB / Preview 00=No, 01=Yes, 02=N/A d5: Ext In DVI / RGB 00=No, 01=Yes, 02=N/A d6: Ext In LCD 00=No, 01=Yes, 02=N/A
Preview Output	00 5A 00		00 5A 01 00	Preview
			00 5A 01 01	Regular
Image Mirror	00 5B 00		00 5B 01 00	Off
			00 5B 01 01	Horizontal
			00 5B 01 02	Vertical
			00 5B 01 03	H+V
Picture in Picture	00 5D 00		00 5D 01 00	PiP Off
			00 5D 01 01	Pip On
<b>Image Storing Cmd</b>				
ShowAll	00 93 00		00 93 01 00	Off
			00 93 01 01	On
			00 93 01 02	ViewModeSingle (Single Picture Selected While in ViewMode)
Erase Memory	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby
<b>Exposure</b>				
Gain	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB
			00 60 01 13	19dB
			00 60 01 14	20dB
			00 60 01 15	21dB
			00 60 01 16	22dB
			00 60 01 17	23dB
			00 60 01 18	24dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)	00 63 00		00 63 02 d0 d1	d0 d1 ... Exposure time in lines (0x0000..0x0FFF)
Image Brightness	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High
<b>Color</b>				
White Balance AUTO	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)	00 66 00		00 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)
B Gain (WB=Manual)	00 67 00		00 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F)
Gamma Normal Mode	00 68 00		00 68 01 d0	0x00..0x03
Color Mode	00 6D 00		00 6D 01 00	Black/White
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Saturation	00 6E 00		00 6E 01 d0	0 %...150% (0x00..0x96)
<b>Ethernet</b>				
DHCP	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address	00 71 00		00 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each packet)
Subnet Mask	00 72 00		00 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP	00 73 00		00 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each packet)
Ethernet Mode	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
Streaming Mode	00 75 00		00 75 01 00	Off
			00 75 01 01	Auto
			00 75 01 02	Continuous
Multicast IP Address	00 77 00		00 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each packet) Valid range: 224.0.1.0..239.255.255.255
Multicast Port	00 78 00		00 78 02 d0 d1	Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Format	00 79 00		00 79 01 00	SXGA- / 720p / WXGA*
			00 79 01 01	XGA / 576p / XGA*
			00 79 01 03	VGA / 288p / VGA*
Streaming Framerate	00 7A 00		00 7A 01 00	Low
			00 7A 01 01	Medium
			00 7A 01 02	High
Multicast Resolution Table	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data 16*14Byte: Name (8Bytes), Width (2Bytes), Height (2Bytes), Id (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Unit</b>				
Model	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String "VZ9P","VZ9P-3","VZ-C12-II","VZ-C12-3", "VZ-C32","EYE-12","SCB-12","VZ-C32-3"
Serialnumber	00 12 00		00 12 04 d0 d1 d2 d3	0x00000000..0xFFFFFFFF
Version	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: String Example: "V1.10a"
Adjuster	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String Example: "MSc"
Production Date	00 15 00		00 15 02 d0 d1	d0: week d1: year
Features	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control d0: Byte0
				Bit7:Zoom
				Bit6:Iris
				Bit4:Focus
				Bit2:Power
				Bit1:Light
				Bit0:ExtIn
				d1: Byte1
				Bit7:Text
				Bit6:WB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
				Bit4:Image
				Bit3:ImageTurn
				Bit2:Freeze
				d2: Byte2
				Bit7:Preset1
				Bit6:Preset2
				Bit5:Preset3
				d3: Byte3
				Bit6:Memory1
				Bit5:Memory2
				Bit4:Memory3
				Bit3:Memory4
				Bit2:Memory5
				Bit1:Memory6
				Bit0:Memory7
				d4: Byte4
				Bit7:Memory8
				Bit6:Memory9
				Bit5:ShowAll
				Bit3:OnePushAF
				Bit2:Snapshot
				d5: Byte5
				Bit7:FWUpdate
				Bit6:PT_dZoom
				Bit5:PT_ImageTurn
				Bit3:PT_dem_Odeg
Resolution Table	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn: 16*14Byte: Name (8Bytes), Width (2Bytes), Height (2Bytes), Id (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Firmware Update</b>				
Firmware Upload Erase Flash	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased (0x64..0x00) State of firmware erasing, counts from 100 down to 0 0% = Flash erased

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				
Picture Header	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not Id), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9,1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated:Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3,1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00 d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)
Get Picture Block (USB only)	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed
Get Picture Block2 (ETH only)	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				
OSD Level	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position	00 C2 00		00 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position	00 C3 00		00 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64)
Status Position	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color	00 C5 00		00 C5 01 00	Black
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan
			00 C6 01 3F	White
Menu Text Color	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White
<b>USB Settings</b>				
Picture Folder	00 D0 00		00 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String
Picture Number	00 D1 00		00 D1 04 d0 d1 d2 d3	(0x00000000..0xFFFFFFFF)
Picture Format	00 D2 00		00 D2 01 00	Bmp
			00 D2 01 01	Jpg
Load Settings	00 D6 00		00 D6 01 00	Off
			00 D6 01 01	Auto
			00 D6 01 02	Confirm

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				
Date/Time	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
Timeserver IP	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Time Source	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Date Format	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
<b>Authentication</b>				
SessionID (ETH only)	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber (0x00000000..0xFFFFFFFF)
<b>Block Inquiry</b>				
Positions (deprecated)	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply  d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
Flags and Unit Information (deprecated)	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply  d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
Flags and Unit Information	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	d12,13: Mirror Y Position d14,15: Light Focus Position 0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version d19: Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved
Menu Ethernet	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port

## **4.8. Protocol of VZ-C32<sup>3</sup> with firmware v1.20e**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors				
	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom				
	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
		d0, d1: 0x00 .. 0x0f		
<b>Digital Zoom</b>				
Set Digital Zoom				
	01 28 02 d0 d1	Set digital zoom position absolutely	01 28 00	
		d0 d1: 0x0002..0x0FFF		
	01 28 03 ab d0 d1	Memory Zoom Navigation ab: Direction (0x01 Up-Left, 0x02 Up, 0x03 Up-Right, 0x04 Left, 0x06 Right, 0x07 Down-Left, 0x08 Down, 0x09 Down-Right) d0,d1: Speed (0x0001 .. 0x0014, 0x0000 Stop)		
		d0,d1: 0x0000 .. 0x0014		
<b>Focus Control</b>				
Focus				
	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x0001 .. 0x000F, 0x0000 Stop)		
		d0, d1: 0x0000 .. 0x000F		
	01 31 01 10	One-Push-AF		
<b>Iris Control</b>				
Iris				
	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b>				<i>continued</i>
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF) d0 d1: 0x0000..0x0FFF		
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x0001 normal spd, 0x0002 full Spd, 0x0000 d0, d1: 0x0000..0x0002		
Auto Iris				
	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
<b>Preset Control</b>				
Preset Special Function Key		Preset 1		
	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 07	Onepush_AF		
	01 42 02 01 08	Light_On_Off		
	01 42 02 01 0A	Text		
	01 42 02 01 0C	Image Turn		
	01 42 02 01 0D	Picture in Picture		
Preset Special Function Key		Preset 2		
	01 42 02 02 00	Preset		
	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		
	01 42 02 02 06	Image		
	01 42 02 02 07	Onepush_AF		
	01 42 02 02 08	Light_On_Off		
	01 42 02 02 0A	Text		
	01 42 02 02 0C	Image Turn		
	01 42 02 02 0D	Picture in Picture		
Preset Special Function Key		Preset 3		
	01 42 02 03 00	Preset		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 07	Onepush_AF		
	01 42 02 03 08	Light_On_Off		
	01 42 02 03 0A	Text		
	01 42 02 03 0C	Image Turn		
	01 42 02 03 0D	Picture in Picture		
Recall Preset				
	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
<b>Power Control</b>				
PowerOn Preset				
	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Store Preset				
	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
Display Logo				
	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On				
	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Power Control</b>				<i>continued</i>
	01 37 01 FF	Off	01 37 00	
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power Down Mode				
	01 39 01 00	Normal	01 39 00	
	01 39 01 01	Deep		
	01 39 01 02	Toggle		
Power On/Off				
	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
<b>Light Control</b>				
Light, Lightbox On/Off				
	01 A0 01 00	Light Off, LB Off	01 A0 00	
	01 A0 01 01	Light On, LB Off		
Reset Lamp 1 Hours				
	01 A3 01 81		01 A3 00	
<b>ImageTurn Command</b>				
Image Turn On/Off				
	01 83 01 00	Image Turn Off	01 83 00	
	01 83 01 02	Image Turn Toggle		
<b>Misc. Command</b>				
Fading				
	01 8A 01 00	Fading Off	01 8A 00	
	01 8A 01 02	Fading Slow		
	01 8A 01 04	Fading Standard		
	01 8A 01 08	Fading Fast		
IR Code				
	01 81 01 1C	Code A	01 81 00	
	01 81 01 1D	Code B		
	01 81 01 1E	Code C		
	01 81 01 1F	Code D		
Erase Memory Behaviour				
	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
AutoSense ExternIn On/Off				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
	01 58 01 00	AutoSense ExternIn Off	01 58 00	
	01 58 01 01	AutoSense ExternIn On		
	01 58 01 02	AutoSense ExternIn Toggle		
ImageTurn Rotation				
	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (clockwise)		
	01 84 01 02	180°		
	01 84 01 03	+90° (counter clockwise)		
Digital Zoom				
	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning				
	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
Keylock On/Off				
	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
Image On/Off				
	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off				
	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Recall Factory Settings				
	01 8F 01 00		01 8F 00	
<b>Extra Menu</b>				
Baudrate				
	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		
	01 89 01 04	115200 Baud		
Noise Suppression				
	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Device Menu Control</b>				<i>continued</i>
	01 98 01 00	Menu Off	01 98 00	
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu				
	01 9A 01 00		01 9A 00	
Unlock Extra Menu				
	01 9B 01 00		01 9B 00	
Menu Control				
	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		
	01 99 01 01	Backward		
	01 99 01 03	Forward		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		
<b>Output Control</b>				
Detail				
	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		
	01 53 01 03	High		
Resolution RGB / Preview				
	01 50 01 FF	Off	01 50 00	
	01 50 01 00	Auto		
	01 50 01 01	SVGA/60 (800x600)		
	01 50 01 04	XGA/60 (1024x768)		
	01 50 01 08	SXGA-/60 (1280x960)		
	01 50 01 0A	SXGA/60 (1280x1024)		
	01 50 01 0D	UXGA/60 (1600x1200)		
	01 50 01 12	SXGA+/60 (1400x1050)		
	01 50 01 14	VGA/60 (640x480)		
	01 50 01 15	720p/50 (1280x720)		
	01 50 01 16	720p/60		
	01 50 01 17	1080p/50 (1920x1050)		
	01 50 01 18	1080p/60		
	01 50 01 1A	WSXGA/60 (1680x1050)		
	01 50 01 1B	WXGA/60 (1366x768)		
	01 50 01 1C	WUXGA/60 (1920x1200)		
	01 50 01 1D	WXGA+/60 (1440x900)		
	01 50 01 1E	WXGA*/60 (1280x800)		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 50 01 20	1080p/30		
Resolution DVI / RGB				
	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0D	UXGA/60 (1600x1200)		
	01 51 01 12	SXGA+/60 (1400x1050)		
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1C	WUXGA/60 (1920x1200)		
	01 51 01 1D	WXGA+/60 (1440x900)		
	01 51 01 1E	WXGA*/60 (1280x800)		
	01 51 01 20	1080p/30		
Preview Ouput Control				
	01 5A 01 00	Preview Ouput is Preview	01 5A 00	
	01 5A 01 01	Preview Ouput is Regular		
	01 5A 01 02	Preview Output Toggle		
Keystone				
	01 5C 01 00	Off	01 5C 00	
	01 5C 01 01	On		
Freeze On/Off				
	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
Intern/Extern				
	01 57 01 00	Intern On	01 57 00	
	01 57 01 01	Extern On		
	01 57 01 02	Intern/Extern Toggle		
Image Mirror				
	01 5B 01 00	Off	01 5B 00	
	01 5B 01 01	Horizontal		
	01 5B 01 02	Vertical		
	01 5B 01 03	H+V		
	01 5B 01 04	H Toggle		
	01 5B 01 08	V Toggle		
	01 5B 01 10	H Off		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b> <span style="float: right;"><i>continued</i></span>				
	01 5B 01 20	V Off		
Picture in Picture				
	01 5D 01 00	PiP Off	01 5D 00	
	01 5D 01 01	PiP On		
	01 5D 01 02	PiP Toggle		
<b>Extern/Freeze Settings</b>				
Extern/Freeze Output				
	01 59 02 00 00	No, Freeze RGB / Preview	01 59 00	
	01 59 02 00 01	Yes, Freeze RGB / Preview		
	01 59 02 01 00	No, Freeze DVI / RGB		
	01 59 02 01 01	Yes, Freeze DVI / RGB		
	01 59 02 02 00	No, Freeze ETH / USB		
	01 59 02 02 01	Yes, Freeze ETH / USB		
	01 59 02 04 00	No, Extin RGB / Preview		
	01 59 02 04 01	Yes, Extin RGB / Preview		
	01 59 02 05 00	No, Extin DVI / RGB		
	01 59 02 05 01	Yes, Extin DVI / RGB		
<b>Image Storing Cmd</b>				
Memory Off				
	01 90 01 00		01 90 00	
Memory Recall				
	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store				
	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Image Storing Cmd</b>				<i>continued</i>
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off				
	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
Snapshot				
	01 95 01 00	Store Picture	01 95 00	
	01 95 01 01	Overwrite		
<b>Exposure</b>				
Gain				
	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		
	01 60 01 13	19dB		
	01 60 01 14	20dB		
	01 60 01 15	21dB		
	01 60 01 16	22dB		
	01 60 01 17	23dB		
	01 60 01 18	24dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
	01 60 01 C0	Auto High		
Shutter				
	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
Speed (Shutter=step)				
	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
Speed (Shutter=variable)				
	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	d0 d1: Min: 0x0000 Max: 0x0000
Iris Priority				
	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
Image Brightness				
	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		
	01 64 01 07	+7		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b> <span style="float: right;"><i>continued</i></span>				
	01 64 01 08	+8		
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation				
	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance				
	01 65 01 00	White Balance AUTO	01 65 00	
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)				
	01 66 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F) d0: -191..-64..+63 (0x81..0x00..0x7F)	01 66 00	
B Gain (WB=Manual)				
	01 67 01 d0	-64..+63 (0x00..0x7F), -191..-64..+63 (0x81..0x00..0x7F) d0: -191..-64..+63 (0x81..0x00..0x7F)	01 67 00	
Text Enhancer On/Off				
	01 85 01 00	Text Enhancer Off	01 85 00	
	01 85 01 01	Text Enhancer On		
	01 85 01 02	Text Enhancer Toggle		
Color Mode				
	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Gamma Normal Mode				
	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03) d0: 0x00..0x03	01 68 00	
Saturation				
	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL d0: 0 %...150% (0x00..0x96)	01 6E 00	
Pos/Neg/Blue				
	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				
DHCP On/Off				
	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		
IP Address				
	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 71 00	
Subnet Mask				
	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 72 00	
Gateway IP				
	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 73 00	
<b>Streaming</b>				
Multicast IP Address				
	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 225.0.0.0..238.255.255.255 d0 d1 d2 d3: 0xE1000000..EEFFFFFF	01 77 00	
Multicast Port				
	01 78 02 d0 d1	Port 8800 to 9000 in hex d0 d1: 0x2260..0x2328	01 78 00	
Streaming Mode				
	01 75 01 00	Off	01 75 00	
	01 75 01 01	Auto		
	01 75 01 02	Continuous		
Streaming Format				
	01 79 01 00	SXGA- / 720p / WXGA*	01 79 00	
	01 79 01 01	XGA / 576p / XGA*		
	01 79 01 03	VGA / 288p / VGA*		
Streaming Framerate				
	01 7A 01 00	Low	01 7A 00	
	01 7A 01 01	Medium		
	01 7A 01 02	High		
<b>Security</b>				
Ethernet Mode		(RS232 and USB only)		
	01 74 01 00	Off	01 74 00	
	01 74 01 01	Image Only		
	01 74 01 02	Control Only		
	01 74 01 03	Image and Control		
	01 74 01 04	FW Update Only		
	01 74 01 05	Image and FW Update		
	01 74 01 06	Control and FW Update		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Security</b> <span style="float: right;"><i>continued</i></span>				
	01 74 01 07	Image, Control and FW Update		
	01 74 01 08	Auth		
<b>Firmware Update</b>				
Firmware Upload Erase Flash				
	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start				
	01 B1 04 d0 d1 d2 d3	Length of firmware data	01 B1 00	
		d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 B1 00	
Firmware Upload Data				
	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data	01 B2 00	
Firmware Upload Data Stop				
	01 B3 01 00		01 B3 00	
Firmware Downgrade				
	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level				
	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency				
	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		
Size				
	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position				
	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position				
	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position				
	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		
	01 C5 01 3C	Cyan		
	01 C5 01 3F	White		
Selected Text Color				
	01 C6 01 00	Black	01 C6 00	
	01 C6 01 03	Red		
	01 C6 01 0B	Orange		
	01 C6 01 0C	Green		
	01 C6 01 15	Darkgrey		
	01 C6 01 28	Mint		
	01 C6 01 2A	Grey		
	01 C6 01 2F	Yellow		
	01 C6 01 30	Blue		
	01 C6 01 33	Magenta		
	01 C6 01 3C	Cyan		
	01 C6 01 3F	White		
Menu Text Color				
	01 C7 01 00	Black	01 C7 00	
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
Menu Headline Color				
	01 C8 01 00	Black	01 C8 00	
	01 C8 01 03	Red		
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color				
	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		
<b>USB Settings</b>				
Picture Folder				
	01 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String	01 D0 00	
Picture Number				
	01 D1 04 d0 d1 d2 d3	Index for pictures: Format WV# d0 .. d3: Number d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 D1 00	
			01 D1 00	
Load Settings				
	01 D6 01 00	Off	01 D6 00	
	01 D6 01 01	Auto		
	01 D6 01 02	Confirm		
Store Settings				
	01 D7 01 00		01 D7 00	
<b>Date/Time</b>				
Time Source				
	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Timeserver IP				
	01 7C 04 d0 d1 d2 d3	d0 d1 d2 d3: Timeserver IP Address in hex (0x00 to 0xFF for each octet)	01 7C 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
		d0 d1 d2 d3: 0x00000000..0xFFFFFFFF		
Timezone				
	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los_Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
	01 7D 01 0D	America/Caracas		
	01 7D 01 0E	America/Halifax		
	01 7D 01 0F	America/Santiago		
	01 7D 01 10	America/La_Paz		
	01 7D 01 11	America/St_Johns		
	01 7D 01 12	America/Sao_Paulo		
	01 7D 01 13	America/Buenos_Aires		
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
<b>Date Format</b>				
	01 45 01 00	DDMMYYYY/24H	01 45 00	
	01 45 01 01	MMDDYYYY/12H		
<b>Date/Time</b>				
	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B) d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B	01 7E 00	
<b>Authentication</b>				
<b>Login</b>				
	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes>Password=10Bytes,I P=4Bytes	01 D4 00	
<b>Logout</b>				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Authentication</b> <span style="float: right;"><i>continued</i></span>				
	01 D5 01 00		01 D5 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Zoom Position				
	00 20 00		00 20 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Digital Zoom</b>				
Digital Zoom Position				
	00 28 00		00 28 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Focus Control</b>				
Focus Position				
	00 21 00		00 21 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
AF				
	00 31 00		00 31 01 00	Off
<b>Iris Control</b>				
Iris Position				
	00 22 00		00 22 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
Auto Iris				
	00 32 00		00 32 01 00	Off
			00 32 01 01	On
<b>Preset Control</b>				
Preset Special Function Key		Preset1		
	00 42 01 01		00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 07	Onepush_AF
			00 42 02 01 08	Light_On_Off
			00 42 02 01 0A	Text
			00 42 02 01 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
		Preset2		
	00 42 01 02		00 42 02 02 00	Preset
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze
			00 42 02 02 06	Image
			00 42 02 02 07	Onepush_AF
			00 42 02 02 08	Light_On_Off
			00 42 02 02 0A	Text
			00 42 02 02 0C	Image Turn
			00 42 02 02 0D	Picture in Picture
		Preset3		
	00 42 01 03		00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 07	Onepush_AF
			00 42 02 03 08	Light_On_Off
			00 42 02 03 0A	Text
			00 42 02 03 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
List of SFK functions				
	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture
Preset Height				
	00 4E 01 01	Preset1	00 4E 02 01 00	Disabled
			00 4E 02 01 01	Default
			00 4E 02 01 02	Set
	00 4E 01 02	Preset2	00 4E 02 02 00	Disabled

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 4E 02 02 01	Default
			00 4E 02 02 02	Set
	00 4E 01 03	Preset3	00 4E 02 03 00	Disabled
			00 4E 02 03 01	Default
			00 4E 02 03 02	Set
<b>Power Control</b>				
Power On Preset				
	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo				
	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On				
	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time				
	00 37 00		00 37 01 FF	Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off
Power Down Mode				
	00 39 00		00 39 01 00	Normal
			00 39 01 01	Deep
Power				
	00 30 00		00 30 01 00	Off
			00 30 01 01	On
<b>Light Control</b>				
Light				
	00 A0 00		00 A0 01 00	Off
			00 A0 01 01	Light On, LB Off
Lamp 1 Hours				
	00 A3 00		00 A3 02 d0 d1	d0 d1: in hours (hex)
				d0 d1: 0x0000..0xFFFF
<b>ImageTurn Command</b>				
Image Turn				
	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>ImageTurn Command</b>				<i>continued</i>
			00 83 01 03	90°
<b>Misc. Command</b>				
IR Code				
	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D
Erase Memory				
	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby
Autosense Ext/Int				
	00 58 00		00 58 01 00	Off (Stays on extern)
			00 58 01 01	On (Switch to intern if no external signal)
ImageTurn Rotation				
	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°
			00 84 01 03	90°
Digital Zoom Mode				
	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning				
	00 2A 00		00 2A 01 00	Stop
			00 2A 01 01	Message
			00 2A 01 02	None
Fading				
	00 8A 00		00 8A 01 00	Off
			00 8A 01 02	Slow
			00 8A 01 04	Standard
			00 8A 01 08	Fast
Keylock				
	00 80 00		00 80 01 00	Off
			00 80 01 01	On
Image				
	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug				
	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Extra Menu</b>				
Baudrate	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Noise Suppression	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu
			00 98 01 03	View Menu
Menu Standard Unlock	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock	00 9B 00		00 9B 01 00	Off
			00 9B 01 01	On
Command Check	00 9C 00		00 9C 01 00	Ok
			00 9C 01 01	Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Detail	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High
Resolution RGB / Preview	00 50 00		00 50 01 FF	Off
			00 50 01 00	Auto
			00 50 01 01	SVGA/60 (800x600)
			00 50 01 04	XGA/60 (1024x768)
			00 50 01 08	SXGA-/60 (1280x960)
			00 50 01 0A	SXGA/60
			00 50 01 0D	UXGA/60 (1600x1200)
			00 50 01 12	SXGA+/60 (1400x1050)
			00 50 01 14	VGA/60 (640x480)
			00 50 01 15	720p/50 (1280x720)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
			00 50 01 16	720p/60
			00 50 01 17	1080p/50 (1920x1050)
			00 50 01 18	1080p/60
			00 50 01 1A	WSXGA/60 (1680x1050)
			00 50 01 1B	WXGA/60 (1366x768)
			00 50 01 1C	WUXGA/60 (1920x1200)
			00 50 01 1D	WXGA+/60 (1440x900)
			00 50 01 1E	WXGA*/60 (1280x800)
			00 50 01 20	1080p/30
Resolution DVI / RGB				
	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 08	SXGA-/60 (1280x960)
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0D	UXGA/60 (1600x1200)
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1C	WUXGA/60 (1920x1200)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)
			00 51 01 20	1080p/30
Preview Output				
	00 5A 00		00 5A 01 00	Preview
			00 5A 01 01	Regular
Keystone				
	00 5C 00		00 5C 01 00	Off
			00 5C 01 01	On
Freeze				
	00 56 00		00 56 01 00	Off
			00 56 01 01	On
Ext/Int				
	00 57 00		00 57 01 00	Intern
			00 57 01 01	Extern
Extern/Freeze Output				



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	00 59 00		00 59 07 d0 d1 d2 d3 d4 d5 d6	d0: Freeze RGB / Preview 00=No, 01=Yes, 02=N/A d1: Freeze DVI / RGB 00=No, 01=Yes, 02=N/A d2: Freeze ETH / USB 00=No, 01=Yes, 02=N/A d3: Freeze LCD 00=No, 01=Yes, 02=N/A d4: Ext In RGB / Preview 00=No, 01=Yes, 02=N/A d5: Ext In DVI / RGB 00=No, 01=Yes, 02=N/A d6: Ext In LCD 00=No, 01=Yes, 02=N/A
Image Mirror				
	00 5B 00		00 5B 01 00	Off
			00 5B 01 01	Horizontal
			00 5B 01 02	Vertical
			00 5B 01 03	H+V
Picture in Picture				
	00 5D 00		00 5D 01 00	PiP Off
			00 5D 01 01	Pip On
<b>Image Storing Cmd</b>				
ShowAll				
	00 93 00		00 93 01 00	Off
			00 93 01 01	On
			00 93 01 02	ViewModeSingle (Single Picture Selected While in ViewMode)
<b>Exposure</b>				
Gain				
	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 60 01 13	19dB
			00 60 01 14	20dB
			00 60 01 15	21dB
			00 60 01 16	22dB
			00 60 01 17	23dB
			00 60 01 18	24dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter				
	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)				
	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)				
	00 63 00		00 63 02 d0 d1	d0 d1: Exposure time in lines d0 d1: Min: 0x0000 Max: 0x0000
Iris Priority				
	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
Image Brightness				
	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation				
	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High
<b>Color</b>				
White Balance				
	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)				
	00 66 00		00 66 01 d0	
				d0: -191...-64..+63 (0x81..0x00..0x7F)
B Gain (WB=Manual)				
	00 67 00		00 67 01 d0	
				d0: -191...-64..+63 (0x81..0x00..0x7F)
Text Enhancer				
	00 85 00		00 85 01 00	Off
			00 85 01 01	On
Color Mode				
	00 6D 00		00 6D 01 00	Black/White
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Gamma Normal Mode				
	00 68 00		00 68 01 d0	d0: Gamma Curves
				d0: 0x00..0x03
Saturation				
	00 6E 00		00 6E 01 d0	d0: Saturation in percent
				d0: 0 %...150% (0x00..0x96)
Pos/Neg/Blue				
	00 54 00		00 54 01 00	Pos

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Color</b> <span style="float: right;"><i>continued</i></span>				
			00 54 01 01	Neg
			00 54 01 02	Blue
<b>Ethernet</b>				
DHCP				
	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address				
	00 71 00		00 71 04 d0 d1 d2 d3	
				d0 d1 d2 d3: IP Address in hex (0x00 to 0xFF for each packet)
Subnet Mask				
	00 72 00		00 72 04 d0 d1 d2 d3	
				d0 d1 d2 d3: Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP				
	00 73 00		00 73 04 d0 d1 d2 d3	
				d0 d1 d2 d3: Gateway IP Address in hex (0x00 to 0xFF for each packet)
<b>Streaming</b>				
Multicast IP Address				
	00 77 00		00 77 04 d0 d1 d2 d3	
				d0 d1 d2 d3: Multicast IP Address in hex (0x00 to 0xFF for each packet)Valid range: 225.0.0.0..238.255.255.255
Multicast Port				
	00 78 00		00 78 02 d0 d1	
				d0 d1: Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Mode				
	00 75 00		00 75 01 00	Off
			00 75 01 01	Auto
			00 75 01 02	Continuous
Streaming Format				
	00 79 00		00 79 01 00	SXGA- / 720p / WXGA*
			00 79 01 01	XGA / 576p / XGA*
			00 79 01 03	VGA / 288p / VGA*
Streaming Framerate				
	00 7A 00		00 7A 01 00	Low
			00 7A 01 01	Medium
			00 7A 01 02	High
Multicast Resolution Table				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Streaming</b>				<i>continued</i>
	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Security</b>				
Ethernet Mode				
	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On
<b>Unit</b>				
Model				
	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String"VZ9P","VZ9P-3","VZ-C12-II","VZ-C12-3","VZ-C32","EYE-12","SCB-12","VZ-C32-3","VZ-P18","VZ-P38"
Serialnumber				
	00 12 00		00 12 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Version				
	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: StringExample: "V1.10a"
Adjuster				
	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: StringExample: "MSc"
Production Date				
	00 15 00		00 15 02 d0 d1	d0: week d1: year
Features				
	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control d0: Byte0 Bit7:Zoom Bit6:Iris Bit4:Focus Bit2:Power Bit1:Light Bit0:ExtIn d1: Byte1 Bit7:Text Bit6:WB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
				Bit4:Image
				Bit3:ImageTurn
				Bit2:Freeze
				d2: Byte2
				Bit7:Preset1
				Bit6:Preset2
				Bit5:Preset3
				d3: Byte3
				Bit6:Memory1
				Bit5:Memory2
				Bit4:Memory3
				Bit3:Memory4
				Bit2:Memory5
				Bit1:Memory6
				Bit0:Memory7
				d4: Byte4
				Bit7:Memory8
				Bit6:Memory9
				Bit5:ShowAll
				Bit3:OnePushAF
				Bit2:Snapshot
				d5: Byte5
				Bit7:FWUpdate
				Bit6:PT_dZoom
				Bit5:PT_ImageTurn
				Bit3:PT_dem_0deg
Resolution Table				
	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn:16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
Description				
<b>Firmware Update</b>				
Firmware Upload Erase Flash				
	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased. State of firmware erasing, counts from 100 down to 00% = Flash erased d0: 0x64..0x00
<b>Picture Transfer</b>				
Picture Header				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				<i>continued</i>
	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not ID), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9, 1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated: Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3, 1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)
Get Picture Block (USB only)				
	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed
Get Picture Block2 (ETH only)				
	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				
OSD Level				
	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency				
	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size				
	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position				
	00 C2 00		00 C2 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position				
	00 C3 00		00 C3 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Status Position				
	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color				
	00 C5 00		00 C5 01 00	Black
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color				
	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
			00 C6 01 3F	White
Menu Text Color				
	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color				
	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color				
	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White
<b>USB Settings</b>				
Picture Folder				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>USB Settings</b>				<i>continued</i>
	00 D0 00		00 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String
Picture Number				
	00 D1 00		00 D1 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Picture Format				
	00 D2 00		00 D2 01 00	Bmp
			00 D2 01 01	Jpg
Load Settings				
	00 D6 00		00 D6 01 00	Off
			00 D6 01 01	Auto
			00 D6 01 02	Confirm
<b>Date/Time</b>				
Time Source				
	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Timeserver IP				
	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone				
	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Date Format				
	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
Date/Time				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
				d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B
<b>Authentication</b>				
SessionID (ETH only)				
	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber
				d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
<b>Block Inquiry</b>				
Positions(deprecated)				
	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information(deprecated)				
	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions				
	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information				
	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b> <span style="float: right;"><i>continued</i></span>				
				Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view) Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
Menu Ethernet	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port

## **4.9. Protocol of VZ-P18 with firmware v1.20f**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors				
	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom				
	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
		d0, d1: 0x00 .. 0x0f		
<b>Digital Zoom</b>				
Set Digital Zoom				
	01 28 02 d0 d1	Set digital zoom position absolutely	01 28 00	
		d0 d1: 0x0002..0x0FFF		
	01 28 03 ab d0 d1	Memory Zoom Navigation ab: Direction (0x01 Up-Left, 0x02 Up, 0x03 Up-Right, 0x04 Left, 0x06 Right, 0x07 Down-Left, 0x08 Down, 0x09 Down-Right) d0,d1: Speed (0x0001 .. 0x0014, 0x0000 Stop)		
		d0,d1: 0x0000 .. 0x0014		
<b>Focus Control</b>				
Focus				
	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x0001 .. 0x000F, 0x0000 Stop)		
		d0, d1: 0x0000 .. 0x000F		
	01 31 01 10	One-Push-AF		
<b>Iris Control</b>				
Iris				
	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b>				<i>continued</i>
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF) d0 d1: 0x0000..0x0FFF		
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x0001 normal spd, 0x0002 full Spd, 0x0000 d0, d1: 0x0000..0x0002		
Auto Iris				
	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
<b>Arm and Mirror Control</b>				
Arm				
	01 23 01 00	Arm Up	01 23 00	
	01 23 01 01	Arm Down		
	01 23 01 02	Arm Toggle		
Mirror				
	01 24 01 01	Mirror Up (Step)	01 24 00	
	01 24 01 02	Mirror Down (Step)		
	01 24 01 11	Start Mirror Up		
	01 24 01 12	Start Mirror Down		
Set Mirror Position				
	01 24 02 d0 d1	Set Mirror Position Absolutely d0 d1: 0x0000..0x0FFF		
<b>Preset Control</b>				
Preset Special Function Key		Preset 1		
	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 07	Onepush_AF		
	01 42 02 01 08	Light_On_Off		
	01 42 02 01 0A	Text		
	01 42 02 01 0B	Light_LB_Off		
	01 42 02 01 0C	Image Turn		
	01 42 02 01 0D	Picture in Picture		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b> <span style="float: right;"><i>continued</i></span>				
Preset Special Function Key		Preset 2		
	01 42 02 02 00	Preset		
	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		
	01 42 02 02 06	Image		
	01 42 02 02 07	Onepush_AF		
	01 42 02 02 08	Light_On_Off		
	01 42 02 02 0A	Text		
	01 42 02 02 0B	Light_LB_Off		
	01 42 02 02 0C	Image Turn		
	01 42 02 02 0D	Picture in Picture		
Preset Special Function Key		Preset 3		
	01 42 02 03 00	Preset		
	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 07	Onepush_AF		
	01 42 02 03 08	Light_On_Off		
	01 42 02 03 0A	Text		
	01 42 02 03 0B	Light_LB_Off		
	01 42 02 03 0C	Image Turn		
	01 42 02 03 0D	Picture in Picture		
Store Mirror-Pos				
	01 4D 01 00	Store Mirror-Pos Off	01 4D 00	
	01 4D 01 01	Store Mirror-Pos On		
Recall Preset				
	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
	01 40 01 ED	Preset X-Ray, DINA4-Lightbox		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	01 40 01 EE	Preset X-Ray, DIN A5-Lightbox		
<b>Power Control</b>				
PowerOn Preset				
	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Store Preset				
	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
Display Logo				
	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On				
	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time				
	01 37 01 FF	Off	01 37 00	
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power Down Mode				
	01 39 01 00	Normal	01 39 00	
	01 39 01 01	Deep		
	01 39 01 02	Toggle		
Power On/Off				
	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
<b>Light Control</b>				
Light, Lightbox On/Off				
	01 A0 01 00	Light Off, LB Off	01 A0 00	
	01 A0 01 01	Light On, LB Off		
	01 A0 01 02	Light Off, LB On		
	01 A0 01 10	Light Toggle (Light->LB->Off)		
Reset Lamp 1 Hours				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Light Control</b>				<i>continued</i>
	01 A3 01 81		01 A3 00	
<b>ImageTurn Command</b>				
Image Turn On/Off				
	01 83 01 00	Image Turn Off	01 83 00	
	01 83 01 02	Image Turn Toggle		
<b>Misc. Command</b>				
Fading				
	01 8A 01 00	Fading Off	01 8A 00	
	01 8A 01 02	Fading Slow		
	01 8A 01 04	Fading Standard		
	01 8A 01 08	Fading Fast		
Erase Memory Behaviour				
	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
AutoSense ExternIn On/Off				
	01 58 01 00	AutoSense ExternIn Off	01 58 00	
	01 58 01 01	AutoSense ExternIn On		
	01 58 01 02	AutoSense ExternIn Toggle		
ImageTurn Rotation				
	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (clockwise)		
	01 84 01 02	180°		
	01 84 01 03	+90° (counter clockwise)		
Digital Zoom				
	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning				
	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
Keylock On/Off				
	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
Image On/Off				
	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Recall Factory Settings				
	01 8F 01 00		01 8F 00	
Annotation				
	01 D8 03 d0 d1 d2	d0: x d1: y d2: Flags Bit7..4: Color Bit3: 1=Start, 0=Stop Bit2: 1=Draw, 0=Point Bit1: 1=Clear, 0=No Action Bit0: Not Used	01 D8 00	
<b>Extra Menu</b>				
Baudrate				
	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		
	01 89 01 04	115200 Baud		
Number of IR Codes				
	01 18 01 00	Number of IR Codes 4	01 18 00	
	01 18 01 01	Number of IR Codes 9		
Noise Suppression				
	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off				
	01 98 01 00	Menu Off	01 98 00	
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu				
	01 9A 01 00		01 9A 00	
Unlock Extra Menu				
	01 9B 01 00		01 9B 00	
Menu Control				
	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Device Menu Control</b>				<i>continued</i>
	01 99 01 01	Backward		
	01 99 01 03	Forward		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		
<b>Output Control</b>				
Detail				
	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		
	01 53 01 03	High		
Resolution RGB / Preview				
	01 50 01 FF	Off	01 50 00	
	01 50 01 00	Auto		
	01 50 01 01	SVGA/60 (800x600)		
	01 50 01 04	XGA/60 (1024x768)		
	01 50 01 08	SXGA-/60 (1280x960)		
	01 50 01 0A	SXGA/60 (1280x1024)		
	01 50 01 0D	UXGA/60 (1600x1200)		
	01 50 01 12	SXGA+/60 (1400x1050)		
	01 50 01 14	VGA/60 (640x480)		
	01 50 01 15	720p/50 (1280x720)		
	01 50 01 16	720p/60		
	01 50 01 17	1080p/50 (1920x1050)		
	01 50 01 18	1080p/60		
	01 50 01 1A	WSXGA/60 (1680x1050)		
	01 50 01 1B	WXGA/60 (1366x768)		
	01 50 01 1C	WUXGA/60 (1920x1200)		
	01 50 01 1D	WXGA+/60 (1440x900)		
	01 50 01 1E	WXGA*/60 (1280x800)		
	01 50 01 20	1080p/30		
Resolution DVI / RGB				
	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0D	UXGA/60 (1600x1200)		
	01 51 01 12	SXGA+/60 (1400x1050)		
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1C	WUXGA/60 (1920x1200)		
	01 51 01 1D	WXGA+/60 (1440x900)		
	01 51 01 1E	WXGA*/60 (1280x800)		
	01 51 01 20	1080p/30		
Preview Ouput Control				
	01 5A 01 00	Preview Ouput is Preview	01 5A 00	
	01 5A 01 01	Preview Ouput is Regular		
	01 5A 01 02	Preview Output Toggle		
Keystone				
	01 5C 01 00	Off	01 5C 00	
	01 5C 01 01	On		
Freeze On/Off				
	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
Intern/Extern				
	01 57 01 00	Intern On	01 57 00	
	01 57 01 01	Extern On		
	01 57 01 02	Intern/Extern Toggle		
Image Mirror				
	01 5B 01 00	Off	01 5B 00	
	01 5B 01 01	Horizontal		
	01 5B 01 02	Vertical		
	01 5B 01 03	H+V		
	01 5B 01 04	H Toggle		
	01 5B 01 08	V Toggle		
	01 5B 01 10	H Off		
	01 5B 01 20	V Off		
Picture in Picture				
	01 5D 01 00	PiP Off	01 5D 00	
	01 5D 01 01	PiP On		
	01 5D 01 02	PiP Toggle		
<b>Extern/Freeze Settings</b>				
Extern/Freeze Output				
	01 59 02 00 00	No, Freeze RGB / Preview	01 59 00	
	01 59 02 00 01	Yes, Freeze RGB / Preview		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Extern/Freeze Settings</b>				<i>continued</i>
	01 59 02 01 00	No, Freeze DVI / RGB		
	01 59 02 01 01	Yes, Freeze DVI / RGB		
	01 59 02 02 00	No, Freeze ETH / USB		
	01 59 02 02 01	Yes, Freeze ETH / USB		
	01 59 02 04 00	No, Extin RGB / Preview		
	01 59 02 04 01	Yes, Extin RGB / Preview		
	01 59 02 05 00	No, Extin DVI / RGB		
	01 59 02 05 01	Yes, Extin DVI / RGB		
<b>Image Storing Cmd</b>				
Memory Off	01 90 01 00		01 90 00	
Memory Recall	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
Snapshot	01 95 01 00	Store Picture	01 95 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Image Storing Cmd</b>				<i>continued</i>
	01 95 01 01	Overwrite		
<b>Exposure</b>				
Gain				
	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		
	01 60 01 13	19dB		
	01 60 01 14	20dB		
	01 60 01 15	21dB		
	01 60 01 16	22dB		
	01 60 01 17	23dB		
	01 60 01 18	24dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		
	01 60 01 C0	Auto High		
Shutter				
	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
Speed (Shutter=step)				
	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b> <span style="float: right;"><i>continued</i></span>				
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
Speed (Shutter=variable)				
	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	d0 d1: Min: 0x0000 Max: 0x0000
Iris Priority				
	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
Image Brightness				
	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		
	01 64 01 07	+7		
	01 64 01 08	+8		
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation				
	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance				
	01 65 01 00	White Balance AUTO	01 65 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Color</b> <span style="float: right;"><i>continued</i></span>				
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)				
	01 66 01 d0	-64...+63 (0x00..0x7F), -191...-64...+63 (0x81..0x00..0x7F) d0: -191...-64...+63 (0x81..0x00..0x7F)	01 66 00	
B Gain (WB=Manual)				
	01 67 01 d0	-64...+63 (0x00..0x7F), -191...-64...+63 (0x81..0x00..0x7F) d0: -191...-64...+63 (0x81..0x00..0x7F)	01 67 00	
Text Enhancer On/Off				
	01 85 01 00	Text Enhancer Off	01 85 00	
	01 85 01 01	Text Enhancer On		
	01 85 01 02	Text Enhancer Toggle		
Color Mode				
	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Gamma Normal Mode				
	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03) d0: 0x00..0x03	01 68 00	
Saturation				
	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL d0: 0 %...150% (0x00..0x96)	01 6E 00	
Pos/Neg/Blue				
	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		
<b>Ethernet</b>				
DHCP On/Off				
	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		
IP Address				
	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 71 00	
Subnet Mask				
	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 72 00	
Gateway IP				
	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet)	01 73 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b> <span style="float: right;"><i>continued</i></span>				
		d0 d1 d2 d3: 0x00000000..0xFFFFFFFF		
<b>Streaming</b>				
Multicast IP Address				
	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 225.0.0.0..238.255.255.255 d0 d1 d2 d3: 0xE1000000..EEFFFFFF	01 77 00	
Multicast Port				
	01 78 02 d0 d1	Port 8800 to 9000 in hex d0 d1: 0x2260..0x2328	01 78 00	
Streaming Mode				
	01 75 01 00	Off	01 75 00	
	01 75 01 01	Auto		
	01 75 01 02	Continuous		
Streaming Format				
	01 79 01 00	SXGA- / 720p / WXGA*	01 79 00	
	01 79 01 01	XGA / 576p / XGA*		
	01 79 01 03	VGA / 288p / VGA*		
Streaming Framerate				
	01 7A 01 00	Low	01 7A 00	
	01 7A 01 01	Medium		
	01 7A 01 02	High		
<b>Security</b>				
Ethernet Mode		(RS232 and USB only)		
	01 74 01 00	Off	01 74 00	
	01 74 01 01	Image Only		
	01 74 01 02	Control Only		
	01 74 01 03	Image and Control		
	01 74 01 04	FW Update Only		
	01 74 01 05	Image and FW Update		
	01 74 01 06	Control and FW Update		
	01 74 01 07	Image, Control and FW Update		
	01 74 01 08	Auth		
<b>Firmware Update</b>				
Firmware Upload Erase Flash				
	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start				
	01 B1 04 d0 d1 d2 d3	Length of firmware data d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 B1 00	
Firmware Upload Data			01 B1 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Firmware Update</b>				<i>continued</i>
	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data	01 B2 00	
Firmware Upload Data Stop				
	01 B3 01 00		01 B3 00	
Firmware Downgrade				
	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level				
	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency				
	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		
Size				
	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position				
	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position				
	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position				
	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color				
	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C5 01 3C	Cyan		
	01 C5 01 3F	White		
Selected Text Color				
	01 C6 01 00	Black	01 C6 00	
	01 C6 01 03	Red		
	01 C6 01 0B	Orange		
	01 C6 01 0C	Green		
	01 C6 01 15	Darkgrey		
	01 C6 01 28	Mint		
	01 C6 01 2A	Grey		
	01 C6 01 2F	Yellow		
	01 C6 01 30	Blue		
	01 C6 01 33	Magenta		
	01 C6 01 3C	Cyan		
	01 C6 01 3F	White		
Menu Text Color				
	01 C7 01 00	Black	01 C7 00	
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
Menu Headline Color				
	01 C8 01 00	Black	01 C8 00	
	01 C8 01 03	Red		
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color				
	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		
<b>USB Settings</b>				
Picture Folder				
	01 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String	01 D0 00	
Picture Number				
	01 D1 04 d0 d1 d2 d3	Index for pictures: Format WV# d0 .. d3: Number d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 D1 00 01 D1 00	
Load Settings				
	01 D6 01 00	Off	01 D6 00	
	01 D6 01 01	Auto		
	01 D6 01 02	Confirm		
Store Settings				
	01 D7 01 00		01 D7 00	
<b>Date/Time</b>				
Time Source				
	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Timeserver IP				
	01 7C 04 d0 d1 d2 d3	d0 d1 d2 d3: Timeserver IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 7C 00	
Timezone				
	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
	01 7D 01 0D	America/Caracas		
	01 7D 01 0E	America/Halifax		
	01 7D 01 0F	America/Santiago		
	01 7D 01 10	America/La_Paz		
	01 7D 01 11	America/St_Johns		
	01 7D 01 12	America/Sao_Paulo		
	01 7D 01 13	America/Buenos_Aires		
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
<b>Date Format</b>				
	01 45 01 00	DDMMYYYY/24H	01 45 00	
	01 45 01 01	MMDDYYYY/12H		
<b>Date/Time</b>				
	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B) d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B	01 7E 00	
<b>Authentication</b>				
<b>Login</b>				
	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes>Password=10Bytes,I P=4Bytes	01 D4 00	
<b>Logout</b>				
	01 D5 01 00		01 D5 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Zoom Position				
	00 20 00		00 20 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Digital Zoom</b>				
Digital Zoom Position				
	00 28 00		00 28 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Focus Control</b>				
Focus Position				
	00 21 00		00 21 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
AF				
	00 31 00		00 31 01 00	Off
<b>Iris Control</b>				
Iris Position				
	00 22 00		00 22 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
Auto Iris				
	00 32 00		00 32 01 00	Off
			00 32 01 01	On
<b>Arm and Mirror Control</b>				
Arm				
	00 23 00		00 23 01 00	Opened
			00 23 01 01	Closed
			00 23 01 02	Opening
			00 23 01 03	Closing
			00 23 01 04	Unknown
Mirror Position				
	00 24 00		00 24 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0xFFFF
<b>Preset Control</b>				
Preset Special Function Key		Preset1		
	00 42 01 01		00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 07	Onepush_AF
			00 42 02 01 08	Light_On_Off
			00 42 02 01 0A	Text
			00 42 02 01 0B	Light_LB_Off
			00 42 02 01 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
		Preset2		
	00 42 01 02		00 42 02 02 00	Preset
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze
			00 42 02 02 06	Image
			00 42 02 02 07	Onepush_AF
			00 42 02 02 08	Light_On_Off
			00 42 02 02 0A	Text
			00 42 02 02 0B	Light_LB_Off
			00 42 02 02 0C	Image Turn
			00 42 02 02 0D	Picture in Picture
		Preset3		
	00 42 01 03		00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 07	Onepush_AF
			00 42 02 03 08	Light_On_Off
			00 42 02 03 0A	Text
			00 42 02 03 0B	Light_LB_Off
			00 42 02 03 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
List of SFK functions				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture
Store Mirror-Pos				
	00 4D 00		00 4D 01 00	Off
			00 4D 01 01	On
<b>Power Control</b>				
Power On Preset				
	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo				
	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On				
	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time				
	00 37 00		00 37 01 FF	Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off
Power Down Mode				
	00 39 00		00 39 01 00	Normal
			00 39 01 01	Deep
Power				
	00 30 00		00 30 01 00	Off
			00 30 01 01	On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Light Control</b>				
Light	00 A0 00		00 A0 01 00	Off
			00 A0 01 01	Light On, LB Off
			00 A0 01 02	LB On, Light Off
Lightbox	00 A6 00		00 A6 01 00	No Lightbox
			00 A6 01 01	Lightbox
Lamp 1 Hours	00 A3 00		00 A3 02 d0 d1	d0 d1: in hours (hex) d0 d1: 0x0000..0xFFFF
<b>ImageTurn Command</b>				
Image Turn	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°
			00 83 01 03	90°
<b>Misc. Command</b>				
IR Code	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D
			00 81 01 96	Code 1
			00 81 01 98	Code 2
			00 81 01 99	Code 3
			00 81 01 9A	Code 4
			00 81 01 9B	Code 5
			00 81 01 9C	Code 6
			00 81 01 9D	Code 7
			00 81 01 9E	Code 8
			00 81 01 9F	Code 9
Erase Memory	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby
Autosense Ext/Int	00 58 00		00 58 01 00	Off (Stays on extern)
			00 58 01 01	On (Switch to intern if no external signal)
ImageTurn Rotation	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
			00 84 01 03	90°
Digital Zoom Mode				
	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning				
	00 2A 00		00 2A 01 00	Stop
			00 2A 01 01	Message
			00 2A 01 02	None
Fading				
	00 8A 00		00 8A 01 00	Off
			00 8A 01 02	Slow
			00 8A 01 04	Standard
			00 8A 01 08	Fast
Keylock				
	00 80 00		00 80 01 00	Off
			00 80 01 01	On
Image				
	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug				
	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On
<b>Extra Menu</b>				
Baudrate				
	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Number IR Codes				
	00 18 00		00 18 01 00	Number of IR Codes 4
			00 18 01 01	Number of IR Codes 9
Noise Suppression				
	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu				
	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>VZ Menu Control</b>				<i>continued</i>
			00 98 01 03	View Menu
Menu Standard Unlock				
	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock				
	00 9B 00		00 9B 01 00	Off
			00 9B 01 01	On
Command Check				
	00 9C 00		00 9C 01 00	Ok
			00 9C 01 01	Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Detail				
	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High
Resolution RGB / Preview				
	00 50 00		00 50 01 FF	Off
			00 50 01 00	Auto
			00 50 01 01	SVGA/60 (800x600)
			00 50 01 04	XGA/60 (1024x768)
			00 50 01 08	SXGA-/60 (1280x960)
			00 50 01 0A	SXGA/60
			00 50 01 0D	UXGA/60 (1600x1200)
			00 50 01 12	SXGA+/60 (1400x1050)
			00 50 01 14	VGA/60 (640x480)
			00 50 01 15	720p/50 (1280x720)
			00 50 01 16	720p/60
			00 50 01 17	1080p/50 (1920x1050)
			00 50 01 18	1080p/60
			00 50 01 1A	WSXGA/60 (1680x1050)
			00 50 01 1B	WXGA/60 (1366x768)
			00 50 01 1C	WUXGA/60 (1920x1200)
			00 50 01 1D	WXGA+/60 (1440x900)
			00 50 01 1E	WXGA*/60 (1280x800)
			00 50 01 20	1080p/30
Resolution DVI / RGB				
	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 08	SXGA-/60 (1280x960)



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0D	UXGA/60 (1600x1200)
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1C	WUXGA/60 (1920x1200)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)
			00 51 01 20	1080p/30
Preview Output				
	00 5A 00		00 5A 01 00	Preview
			00 5A 01 01	Regular
Keystone				
	00 5C 00		00 5C 01 00	Off
			00 5C 01 01	On
Freeze				
	00 56 00		00 56 01 00	Off
			00 56 01 01	On
Ext/Int				
	00 57 00		00 57 01 00	Intern
			00 57 01 01	Extern
Extern/Freeze Output				
	00 59 00		00 59 07 d0 d1 d2 d3 d4 d5 d6	d0: Freeze RGB / Preview 00=No, 01=Yes, 02=N/A d1: Freeze DVI / RGB 00=No, 01=Yes, 02=N/A d2: Freeze ETH / USB 00=No, 01=Yes, 02=N/A d3: Freeze LCD 00=No, 01=Yes, 02=N/A d4: Ext In RGB / Preview 00=No, 01=Yes, 02=N/A d5: Ext In DVI / RGB 00=No, 01=Yes, 02=N/A d6: Ext In LCD 00=No, 01=Yes, 02=N/A
Image Mirror				
	00 5B 00		00 5B 01 00	Off
			00 5B 01 01	Horizontal
			00 5B 01 02	Vertical
			00 5B 01 03	H+V
Picture in Picture				
	00 5D 00		00 5D 01 00	PiP Off
			00 5D 01 01	PiP On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Image Storing Cmd</b>				
ShowAll	00 93 00		00 93 01 00	Off
			00 93 01 01	On
			00 93 01 02	ViewModeSingle (Single Picture Selected While in ViewMode)
<b>Exposure</b>				
Gain	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB
			00 60 01 13	19dB
			00 60 01 14	20dB
			00 60 01 15	21dB
			00 60 01 16	22dB
			00 60 01 17	23dB
			00 60 01 18	24dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)				
	00 63 00		00 63 02 d0 d1	d0 d1: Exposure time in lines d0 d1: Min: 0x0000 Max: 0x0000
Iris Priority				
	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
Image Brightness				
	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation				
	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Color</b>				
White Balance	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)	00 66 00		00 66 01 d0	d0: -191..-64..+63 (0x81..0x00..0x7F)
B Gain (WB=Manual)	00 67 00		00 67 01 d0	d0: -191..-64..+63 (0x81..0x00..0x7F)
Text Enhancer	00 85 00		00 85 01 00	Off
			00 85 01 01	On
Color Mode	00 6D 00		00 6D 01 00	Black/White
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Gamma Normal Mode	00 68 00		00 68 01 d0	d0: Gamma Curves d0: 0x00..0x03
Saturation	00 6E 00		00 6E 01 d0	d0: Saturation in percent d0: 0 %...150% (0x00..0x96)
Pos/Neg/Blue	00 54 00		00 54 01 00	Pos
			00 54 01 01	Neg
			00 54 01 02	Blue
<b>Ethernet</b>				
DHCP	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address	00 71 00		00 71 04 d0 d1 d2 d3	d0 d1 d2 d3: IP Address in hex (0x00 to 0xFF for each packet)
Subnet Mask	00 72 00		00 72 04 d0 d1 d2 d3	d0 d1 d2 d3: Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP	00 73 00		00 73 04 d0 d1 d2 d3	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
				d0 d1 d2 d3: Gateway IP Address in hex (0x00 to 0xFF for each packet)
<b>Streaming</b>				
Multicast IP Address	00 77 00		00 77 04 d0 d1 d2 d3	d0 d1 d2 d3: Multicast IP Address in hex (0x00 to 0xFF for each packet)Valid range: 225.0.0.0..238.255.255.255
Multicast Port	00 78 00		00 78 02 d0 d1	d0 d1: Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Mode	00 75 00		00 75 01 00 00 75 01 01 00 75 01 02	Off Auto Continuous
Streaming Format	00 79 00		00 79 01 00 00 79 01 01 00 79 01 03	SXGA- / 720p / WXGA* XGA / 576p / XGA* VGA / 288p / VGA*
Streaming Framerate	00 7A 00		00 7A 01 00 00 7A 01 01 00 7A 01 02	Low Medium High
Multicast Resolution Table	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Security</b>				
Ethernet Mode	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On
<b>Unit</b>				
Model	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String"VZ9P","VZ9P-3","VZ-C12-II","VZ-C12-3","VZ-C32","EYE-12","SCB-12","VZ-C32-3","VZ-P18","VZ-P38"

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
Serialnumber	00 12 00		00 12 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Version	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: StringExample: "V1.10a"
Adjuster	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: StringExample: "MSc"
Production Date	00 15 00		00 15 02 d0 d1	d0: week d1: year
Features	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control
				d0: Byte0
				Bit7:Zoom
				Bit6:Iris
				Bit5:Mirror
				Bit4:Focus
				Bit2:Power
				Bit1:Light
				Bit0:ExtIn
				d1: Byte1
				Bit7:Text
				Bit6:WB
				Bit4:Image
				Bit3:ImageTurn
				Bit2:Freeze
				Bit1:Arm
				d2: Byte2
				Bit7:Preset1
				Bit6:Preset2
				Bit5:Preset3
				d3: Byte3
				Bit6:Memory1
				Bit5:Memory2
				Bit4:Memory3
				Bit3:Memory4
				Bit2:Memory5
				Bit1:Memory6
				Bit0:Memory7
				d4: Byte4
				Bit7:Memory8
				Bit6:Memory9

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				
				Bit5:ShowAll
				Bit3:OnePushAF
				Bit2:Snapshot
				d5: Byte5
				Bit7:FWUpdate
				Bit6:PT_dZoom
				Bit5:PT_ImageTurn
				Bit3:PT_dem_0deg
Resolution Table				
	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn:16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
Description				
<b>Firmware Update</b>				
Firmware Upload Erase Flash				
	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased. State of firmware erasing, counts from 100 down to 00% = Flash erased d0: 0x64..0x00
<b>Picture Transfer</b>				
Picture Header				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				<i>continued</i>
	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not ID), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9,1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated:Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3,1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)
Get Picture Block (USB only)				
	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed
Get Picture Block2 (ETH only)				
	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				
OSD Level				
	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency				
	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size				
	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position				
	00 C2 00		00 C2 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position				
	00 C3 00		00 C3 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Status Position				
	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color				
	00 C5 00		00 C5 01 00	Black
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color				
	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
			00 C6 01 3F	White
Menu Text Color				
	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color				
	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color				
	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White
<b>USB Settings</b>				
Picture Folder				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>USB Settings</b>				<i>continued</i>
	00 D0 00		00 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String
Picture Number				
	00 D1 00		00 D1 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Picture Format				
	00 D2 00		00 D2 01 00	Bmp
			00 D2 01 01	Jpg
Load Settings				
	00 D6 00		00 D6 01 00	Off
			00 D6 01 01	Auto
			00 D6 01 02	Confirm
<b>Date/Time</b>				
Time Source				
	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Timeserver IP				
	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone				
	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Date Format				
	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
Date/Time				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
				d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B
<b>Authentication</b>				
SessionID (ETH only)				
	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber
				d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
<b>Block Inquiry</b>				
Positions(deprecated)				
	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information(deprecated)				
	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions				
	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information				
	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b> <span style="float: right;"><i>continued</i></span>				
				Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d12,13,14,15,16,17,18: Version d19: Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view) Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
Menu Ethernet	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port



## **4.10. Protocol of VZ-P38 with firmware v1.20f**

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In the future (with higher firmware-versions) further commands may be added which are not supported yet.

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Motor Control</b>				
Stop all motors				
	01 2F 01 00	Iris, Focus, Zoom	01 2F 00	
<b>Zoom Control</b>				
Zoom				
	01 20 01 01	Zoom Wide (Step)(RS232 only)	01 20 00	
	01 20 01 02	Zoom Tele (Step)(RS232 only)		
	01 20 01 11	Start Zoom Wide		
	01 20 01 12	Start Zoom Tele		
	01 20 02 d0 d1	Set zoom position absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 20 03 ab d0 d1	ab: Direction (0x01 Zoom Wide, 0x02 Zoom Tele) d0, d1: Speed (0x01 .. 0x0f, 0x00 Stop)		
		d0, d1: 0x00 .. 0x0f		
<b>Digital Zoom</b>				
Set Digital Zoom				
	01 28 02 d0 d1	Set digital zoom position absolutely	01 28 00	
		d0 d1: 0x0002..0x0FFF		
	01 28 03 ab d0 d1	Memory Zoom Navigation ab: Direction (0x01 Up-Left, 0x02 Up, 0x03 Up-Right, 0x04 Left, 0x06 Right, 0x07 Down-Left, 0x08 Down, 0x09 Down-Right) d0,d1: Speed (0x0001 .. 0x0014, 0x0000 Stop)		
		d0,d1: 0x0000 .. 0x0014		
<b>Focus Control</b>				
Focus				
	01 21 01 01	Focus Far (Step)(RS232 only)	01 21 00	
	01 21 01 02	Focus Near (Step)(RS232 only)		
	01 21 01 11	Start Focus Far		
	01 21 01 12	Start Focus Near		
	01 21 02 d0 d1	Set Focus Position Absolutely		
		d0 d1: 0x0000..0x0FFF		
	01 21 03 ab d0 d1	ab: Direction (0x01 Focus Far, 0x02 Focus Near) d0, d1: Speed (0x0001 .. 0x000F, 0x0000 Stop)		
		d0, d1: 0x0000 .. 0x000F		
	01 31 01 10	One-Push-AF		
<b>Iris Control</b>				
Iris				
	01 22 01 01	Iris Open (Step)(RS232 only)	01 22 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Iris Control</b>				<i>continued</i>
	01 22 01 02	Iris Close (Step)(RS232 only)		
	01 22 01 11	Start Iris Open		
	01 22 01 12	Start Iris Close		
	01 22 02 d0 d1	Set Iris Position Absolutely (0x0000..0x0FFF) d0 d1: 0x0000..0x0FFF		
	01 22 03 ab d0 d1	ab: Direction (0x01 Iris Open, 0x02 Iris Close) d0, d1: Speed (0x0001 normal spd, 0x0002 full Spd, 0x0000 d0, d1: 0x0000..0x0002		
Auto Iris				
	01 32 01 00	Auto Iris Off	01 32 00	
	01 32 01 01	Auto Iris On		
	01 32 01 02	Auto Iris Toggle		
<b>Arm and Mirror Control</b>				
Arm				
	01 23 01 00	Arm Up	01 23 00	
	01 23 01 01	Arm Down		
	01 23 01 02	Arm Toggle		
Mirror				
	01 24 01 01	Mirror Up (Step)	01 24 00	
	01 24 01 02	Mirror Down (Step)		
	01 24 01 11	Start Mirror Up		
	01 24 01 12	Start Mirror Down		
Set Mirror Position				
	01 24 02 d0 d1	Set Mirror Position Absolutely d0 d1: 0x0000..0x0FFF		
<b>Preset Control</b>				
Preset Special Function Key		Preset 1		
	01 42 02 01 00	Preset	01 42 00	
	01 42 02 01 01	Pos_Neg		
	01 42 02 01 02	Pos_Blue		
	01 42 02 01 03	Black_White		
	01 42 02 01 04	WB		
	01 42 02 01 05	Freeze		
	01 42 02 01 06	Image		
	01 42 02 01 07	Onepush_AF		
	01 42 02 01 08	Light_On_Off		
	01 42 02 01 0A	Text		
	01 42 02 01 0B	Light_LB_Off		
	01 42 02 01 0C	Image Turn		
	01 42 02 01 0D	Picture in Picture		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
Preset Special Function Key		Preset 2		
	01 42 02 02 00	Preset		
	01 42 02 02 01	Pos_Neg		
	01 42 02 02 02	Pos_Blue		
	01 42 02 02 03	Black_White		
	01 42 02 02 04	WB		
	01 42 02 02 05	Freeze		
	01 42 02 02 06	Image		
	01 42 02 02 07	Onepush_AF		
	01 42 02 02 08	Light_On_Off		
	01 42 02 02 0A	Text		
	01 42 02 02 0B	Light_LB_Off		
	01 42 02 02 0C	Image Turn		
	01 42 02 02 0D	Picture in Picture		
Preset Special Function Key		Preset 3		
	01 42 02 03 00	Preset		
	01 42 02 03 01	Pos_Neg		
	01 42 02 03 02	Pos_Blue		
	01 42 02 03 03	Black_White		
	01 42 02 03 04	WB		
	01 42 02 03 05	Freeze		
	01 42 02 03 06	Image		
	01 42 02 03 07	Onepush_AF		
	01 42 02 03 08	Light_On_Off		
	01 42 02 03 0A	Text		
	01 42 02 03 0B	Light_LB_Off		
	01 42 02 03 0C	Image Turn		
	01 42 02 03 0D	Picture in Picture		
Store Mirror-Pos				
	01 4D 01 00	Store Mirror-Pos Off	01 4D 00	
	01 4D 01 01	Store Mirror-Pos On		
Recall Preset				
	01 40 01 00	Power On Preset	01 40 00	
	01 40 01 01	Preset1		
	01 40 01 02	Preset2		
	01 40 01 03	Preset3		
	01 40 01 E5	Preset Max Wide		
	01 40 01 E6	Preset DIN A4 (ceiling: depending on mounting height)		
	01 40 01 E7	Preset DIN A5 (ceiling: depending on mounting height)		
	01 40 01 E8	Preset DIN A6 (ceiling: depending on mounting height)		
	01 40 01 E9	Preset DIN A7 (ceiling: depending on mounting height)		
	01 40 01 EA	Preset DIN A8 (ceiling: depending on mounting height)		
	01 40 01 EB	Preset Max Tele (No dig Zoom)		
	01 40 01 ED	Preset X-Ray, DINA4-Lightbox		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	01 40 01 EE	Preset X-Ray, DIN A5-Lightbox		
<b>Power Control</b>				
PowerOn Preset				
	01 34 01 00	PowerOn Preset Off	01 34 00	
	01 34 01 01	PowerOn Preset On		
	01 34 01 02	PowerOn Preset Toggle		
Store Preset				
	01 41 01 00	Power On Preset	01 41 00	
	01 41 01 01	Preset1		
	01 41 01 02	Preset2		
	01 41 01 03	Preset3		
Display Logo				
	01 35 01 00	Display Logo Off	01 35 00	
	01 35 01 01	Display Logo On		
	01 35 01 02	Display Logo Toggle		
Mains-On				
	01 36 01 00	Mains-On Standby	01 36 00	
	01 36 01 01	Mains-On Power-On		
	01 36 01 02	Mains-On Toggle		
Auto-Power-Off Time				
	01 37 01 FF	Off	01 37 00	
	01 37 01 1E	30min until Auto-Power-Off		
	01 37 01 3C	1h until Auto-Power-Off		
	01 37 01 78	2h until Auto-Power-Off		
	01 37 01 B4	3h until Auto-Power-Off		
	01 37 01 F0	4h until Auto-Power-Off		
Power Down Mode				
	01 39 01 00	Normal	01 39 00	
	01 39 01 01	Deep		
	01 39 01 02	Toggle		
Power On/Off				
	01 30 01 00	Power Off	01 30 00	
	01 30 01 01	Power On (PowerOn Preset)		
	01 30 01 02	Power Toggle		
<b>Light Control</b>				
Light, Lightbox On/Off				
	01 A0 01 00	Light Off, LB Off	01 A0 00	
	01 A0 01 01	Light On, LB Off		
	01 A0 01 02	Light Off, LB On		
	01 A0 01 10	Light Toggle (Light->LB->Off)		
Reset Lamp 1 Hours				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Light Control</b> <span style="float: right;"><i>continued</i></span>				
	01 A3 01 81		01 A3 00	
<b>ImageTurn Command</b>				
Image Turn On/Off				
	01 83 01 00	Image Turn Off	01 83 00	
	01 83 01 02	Image Turn Toggle		
<b>Misc. Command</b>				
Fading				
	01 8A 01 00	Fading Off	01 8A 00	
	01 8A 01 02	Fading Slow		
	01 8A 01 04	Fading Standard		
	01 8A 01 08	Fading Fast		
Erase Memory Behaviour				
	01 94 01 00	Erase Mem. Manual	01 94 00	
	01 94 01 01	Erase Mem. Standby		
	01 94 01 02	Erase Mem. Toggle		
AutoSense ExternIn On/Off				
	01 58 01 00	AutoSense ExternIn Off	01 58 00	
	01 58 01 01	AutoSense ExternIn On		
	01 58 01 02	AutoSense ExternIn Toggle		
ImageTurn Rotation				
	01 84 01 00	Cycle	01 84 00	
	01 84 01 01	-90° (clockwise)		
	01 84 01 02	180°		
	01 84 01 03	+90° (counter clockwise)		
Digital Zoom				
	01 29 01 00	Digital Zoom Off	01 29 00	
	01 29 01 01	Digital Zoom 2x		
	01 29 01 02	Digital Zoom 4x		
Digital Zoom Warning				
	01 2A 01 00	Digital Zoom Warning Stop	01 2A 00	
	01 2A 01 01	Digital Zoom Warning Message		
	01 2A 01 02	Digital Zoom Warning None		
Keylock On/Off				
	01 80 01 00	Keylock Off	01 80 00	
	01 80 01 01	Keylock On		
	01 80 01 02	Keylock Toggle		
Image On/Off				
	01 86 01 00	Image Off	01 86 00	
	01 86 01 01	Image On		
	01 86 01 02	Image Toggle		
Debug On/Off				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
	01 88 01 00	Debug Off	01 88 00	
	01 88 01 01	Debug On		
Recall Factory Settings				
	01 8F 01 00		01 8F 00	
Annotation				
	01 D8 03 d0 d1 d2	d0: x d1: y d2: Flags Bit7..4: Color Bit3: 1=Start, 0=Stop Bit2: 1=Draw, 0=Point Bit1: 1=Clear, 0=No Action Bit0: Not Used	01 D8 00	
<b>Extra Menu</b>				
Baudrate				
	01 89 01 00	9600 Baud	01 89 00	
	01 89 01 01	19200 Baud		
	01 89 01 02	38400 Baud		
	01 89 01 03	57600 Baud		
	01 89 01 04	115200 Baud		
Number of IR Codes				
	01 18 01 00	Number of IR Codes 4	01 18 00	
	01 18 01 01	Number of IR Codes 9		
Noise Suppression				
	01 87 01 00	Off	01 87 00	
	01 87 01 01	On		
<b>Device Menu Control</b>				
Menu On/Off				
	01 98 01 00	Menu Off	01 98 00	
	01 98 01 01	Menu On (Unlock menu first)		
	01 98 01 02	Menu Toggle		
Unlock Menu				
	01 9A 01 00		01 9A 00	
Unlock Extra Menu				
	01 9B 01 00		01 9B 00	
Menu Control				
	01 99 01 02	Function Up	01 99 00	
	01 99 01 08	Function Down		
	01 99 01 04	Data Left		
	01 99 01 06	Data Right		
	01 99 01 05	Enter		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Device Menu Control</b>				<i>continued</i>
	01 99 01 01	Backward		
	01 99 01 03	Forward		
	01 99 01 10	Help		
	01 99 01 80	Factory Reset		
	01 99 01 90	Menu Item Reset		
<b>Output Control</b>				
Detail				
	01 53 01 00	Off	01 53 00	
	01 53 01 02	Medium		
	01 53 01 03	High		
Resolution RGB / Preview				
	01 50 01 FF	Off	01 50 00	
	01 50 01 00	Auto		
	01 50 01 01	SVGA/60 (800x600)		
	01 50 01 04	XGA/60 (1024x768)		
	01 50 01 08	SXGA-/60 (1280x960)		
	01 50 01 0A	SXGA/60 (1280x1024)		
	01 50 01 0D	UXGA/60 (1600x1200)		
	01 50 01 12	SXGA+/60 (1400x1050)		
	01 50 01 14	VGA/60 (640x480)		
	01 50 01 15	720p/50 (1280x720)		
	01 50 01 16	720p/60		
	01 50 01 17	1080p/50 (1920x1050)		
	01 50 01 18	1080p/60		
	01 50 01 1A	WSXGA/60 (1680x1050)		
	01 50 01 1B	WXGA/60 (1366x768)		
	01 50 01 1C	WUXGA/60 (1920x1200)		
	01 50 01 1D	WXGA+/60 (1440x900)		
	01 50 01 1E	WXGA*/60 (1280x800)		
	01 50 01 20	1080p/30		
Resolution DVI / RGB				
	01 51 01 FF	Off	01 51 00	
	01 51 01 00	Auto		
	01 51 01 01	SVGA/60 (800x600)		
	01 51 01 04	XGA/60 (1024x768)		
	01 51 01 08	SXGA-/60 (1280x960)		
	01 51 01 0A	SXGA/60 (1280x1024)		
	01 51 01 0D	UXGA/60 (1600x1200)		
	01 51 01 12	SXGA+/60 (1400x1050)		
	01 51 01 14	VGA/60 (640x480)		
	01 51 01 15	720p/50 (1280x720)		
	01 51 01 16	720p/60		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
	01 51 01 17	1080p/50 (1920x1050)		
	01 51 01 18	1080p/60		
	01 51 01 1A	WSXGA/60 (1680x1050)		
	01 51 01 1B	WXGA/60 (1366x768)		
	01 51 01 1C	WUXGA/60 (1920x1200)		
	01 51 01 1D	WXGA+/60 (1440x900)		
	01 51 01 1E	WXGA*/60 (1280x800)		
	01 51 01 20	1080p/30		
Preview Ouput Control				
	01 5A 01 00	Preview Ouput is Preview	01 5A 00	
	01 5A 01 01	Preview Ouput is Regular		
	01 5A 01 02	Preview Output Toggle		
Keystone				
	01 5C 01 00	Off	01 5C 00	
	01 5C 01 01	On		
Freeze On/Off				
	01 56 01 00	Freeze Off	01 56 00	
	01 56 01 01	Freeze On		
	01 56 01 02	Freeze Toggle		
Intern/Extern				
	01 57 01 00	Intern On	01 57 00	
	01 57 01 01	Extern On		
	01 57 01 02	Intern/Extern Toggle		
Image Mirror				
	01 5B 01 00	Off	01 5B 00	
	01 5B 01 01	Horizontal		
	01 5B 01 02	Vertical		
	01 5B 01 03	H+V		
	01 5B 01 04	H Toggle		
	01 5B 01 08	V Toggle		
	01 5B 01 10	H Off		
	01 5B 01 20	V Off		
Picture in Picture				
	01 5D 01 00	PiP Off	01 5D 00	
	01 5D 01 01	PiP On		
	01 5D 01 02	PiP Toggle		
<b>Extern/Freeze Settings</b>				
Extern/Freeze Output				
	01 59 02 00 00	No, Freeze RGB / Preview	01 59 00	
	01 59 02 00 01	Yes, Freeze RGB / Preview		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Extern/Freeze Settings</b>				<i>continued</i>
	01 59 02 01 00	No, Freeze DVI / RGB		
	01 59 02 01 01	Yes, Freeze DVI / RGB		
	01 59 02 02 00	No, Freeze ETH / USB		
	01 59 02 02 01	Yes, Freeze ETH / USB		
	01 59 02 04 00	No, Extin RGB / Preview		
	01 59 02 04 01	Yes, Extin RGB / Preview		
	01 59 02 05 00	No, Extin DVI / RGB		
	01 59 02 05 01	Yes, Extin DVI / RGB		
<b>Image Storing Cmd</b>				
Memory Off	01 90 01 00		01 90 00	
Memory Recall	01 91 01 01	Recall Memory1	01 91 00	
	01 91 01 02	Recall Memory2		
	01 91 01 03	Recall Memory3		
	01 91 01 04	Recall Memory4		
	01 91 01 05	Recall Memory5		
	01 91 01 06	Recall Memory6		
	01 91 01 07	Recall Memory7		
	01 91 01 08	Recall Memory8		
	01 91 01 09	Recall Memory9		
Memory Store	01 92 01 01	Store Memory1	01 92 00	
	01 92 01 02	Store Memory2		
	01 92 01 03	Store Memory3		
	01 92 01 04	Store Memory4		
	01 92 01 05	Store Memory5		
	01 92 01 06	Store Memory6		
	01 92 01 07	Store Memory7		
	01 92 01 08	Store Memory8		
	01 92 01 09	Store Memory9		
	01 92 01 10	Auto Snapshot		
	01 92 01 20	Erase Memory		
View/ShowAll On/Off	01 93 01 00	ShowAll Off	01 93 00	
	01 93 01 01	ShowAll On		
	01 93 01 02	ShowAll Toggle		
Snapshot	01 95 01 00	Store Picture	01 95 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Image Storing Cmd</b>				<i>continued</i>
	01 95 01 01	Overwrite		
<b>Exposure</b>				
Gain				
	01 60 01 00	0dB	01 60 00	
	01 60 01 01	1dB		
	01 60 01 02	2dB		
	01 60 01 03	3dB		
	01 60 01 04	4dB		
	01 60 01 05	5dB		
	01 60 01 06	6dB		
	01 60 01 07	7dB		
	01 60 01 08	8dB		
	01 60 01 09	9dB		
	01 60 01 0A	10dB		
	01 60 01 0B	11dB		
	01 60 01 0C	12dB		
	01 60 01 0D	13dB		
	01 60 01 0E	14dB		
	01 60 01 0F	15dB		
	01 60 01 10	16dB		
	01 60 01 11	17dB		
	01 60 01 12	18dB		
	01 60 01 13	19dB		
	01 60 01 14	20dB		
	01 60 01 15	21dB		
	01 60 01 16	22dB		
	01 60 01 17	23dB		
	01 60 01 18	24dB		
	01 60 01 40	Auto Low		
	01 60 01 80	Auto Med		
	01 60 01 C0	Auto High		
Shutter				
	01 61 01 00	Step	01 61 00	
	01 61 01 01	Variable see Speed (Shutter=variable)		
	01 61 01 02	Auto		
	01 61 01 03	Off		
Speed (Shutter=step)				
	01 62 01 00	1/30s	01 62 00	
	01 62 01 01	Flickerless		
	01 62 01 02	1/50s		
	01 62 01 03	1/60s		
	01 62 01 04	1/100s		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b> <span style="float: right;"><i>continued</i></span>				
	01 62 01 05	1/120s		
	01 62 01 06	1/250s		
	01 62 01 07	1/500s		
	01 62 01 08	1/1000s		
	01 62 01 09	1/2000s		
	01 62 01 0A	1/3000s		
Speed (Shutter=variable)				
	01 63 02 d0 d1	Exposure Time in lines (0x0000..0x0FFF)	01 63 00	d0 d1: Min: 0x0000 Max: 0x0000
Iris Priority				
	01 33 01 00	Iris Priority Auto	01 33 00	
	01 33 01 01	Iris Priority Manual		
	01 33 01 02	Iris Priority Toggle		
Image Brightness				
	01 64 01 F6	-10	01 64 00	
	01 64 01 F7	-9		
	01 64 01 F8	-8		
	01 64 01 F9	-7		
	01 64 01 FA	-6		
	01 64 01 FB	-5		
	01 64 01 FC	-4		
	01 64 01 FD	-3		
	01 64 01 FE	-2		
	01 64 01 FF	-1		
	01 64 01 00	0		
	01 64 01 01	+1		
	01 64 01 02	+2		
	01 64 01 03	+3		
	01 64 01 04	+4		
	01 64 01 05	+5		
	01 64 01 06	+6		
	01 64 01 07	+7		
	01 64 01 08	+8		
	01 64 01 09	+9		
	01 64 01 0A	+10		
Back Light Compensation				
	01 6C 01 00	Off	01 6C 00	
	01 6C 01 01	Medium		
	01 6C 01 02	High		
<b>Color</b>				
White Balance				
	01 65 01 00	White Balance AUTO	01 65 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Color</b>				<i>continued</i>
	01 65 01 01	White Balance One-Push		
	01 65 01 02	White Balance Manual		
	01 65 01 10	Perform WB		
R Gain (WB=Manual)				
	01 66 01 d0	-64...+63 (0x00..0x7F), -191...-64...+63 (0x81..0x00..0x7F) d0: -191...-64...+63 (0x81..0x00..0x7F)	01 66 00	
B Gain (WB=Manual)				
	01 67 01 d0	-64...+63 (0x00..0x7F), -191...-64...+63 (0x81..0x00..0x7F) d0: -191...-64...+63 (0x81..0x00..0x7F)	01 67 00	
Text Enhancer On/Off				
	01 85 01 00	Text Enhancer Off	01 85 00	
	01 85 01 01	Text Enhancer On		
	01 85 01 02	Text Enhancer Toggle		
Color Mode				
	01 6D 01 00	Black/White	01 6D 00	
	01 6D 01 01	Presentation		
	01 6D 01 02	Natural		
	01 6D 01 03	Video Conference		
	01 6D 01 04	Manual		
	01 6D 01 05	Black/White Toggle		
Gamma Normal Mode				
	01 68 01 d0	Gamma Level for Normal Mode (0x00..0x03) d0: 0x00..0x03	01 68 00	
Saturation				
	01 6E 01 d0	0% to 150% in steps of 1% (0x00..0x96) in MANUAL d0: 0 %...150% (0x00..0x96)	01 6E 00	
Pos/Neg/Blue				
	01 54 01 00	Positiv On	01 54 00	
	01 54 01 01	Negativ On		
	01 54 01 02	Blue On		
<b>Ethernet</b>				
DHCP On/Off				
	01 70 01 00	DHCP off	01 70 00	
	01 70 01 01	DHCP on		
IP Address				
	01 71 04 d0 d1 d2 d3	IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 71 00	
Subnet Mask				
	01 72 04 d0 d1 d2 d3	Subnet Mask in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 72 00	
Gateway IP				
	01 73 04 d0 d1 d2 d3	Gateway IP Address in hex (0x00 to 0xFF for each octet)	01 73 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b> <span style="float: right;"><i>continued</i></span>				
		d0 d1 d2 d3: 0x00000000..0xFFFFFFFF		
<b>Streaming</b>				
Multicast IP Address				
	01 77 04 d0 d1 d2 d3	Multicast IP Address in hex (0x00 to 0xFF for each octet) Valid range: 225.0.0.0..238.255.255.255 d0 d1 d2 d3: 0xE1000000..EEFFFFFF	01 77 00	
Multicast Port				
	01 78 02 d0 d1	Port 8800 to 9000 in hex d0 d1: 0x2260..0x2328	01 78 00	
Streaming Mode				
	01 75 01 00	Off	01 75 00	
	01 75 01 01	Auto		
	01 75 01 02	Continuous		
Streaming Format				
	01 79 01 00	SXGA- / 720p / WXGA*	01 79 00	
	01 79 01 01	XGA / 576p / XGA*		
	01 79 01 03	VGA / 288p / VGA*		
Streaming Framerate				
	01 7A 01 00	Low	01 7A 00	
	01 7A 01 01	Medium		
	01 7A 01 02	High		
<b>Security</b>				
Ethernet Mode		(RS232 and USB only)		
	01 74 01 00	Off	01 74 00	
	01 74 01 01	Image Only		
	01 74 01 02	Control Only		
	01 74 01 03	Image and Control		
	01 74 01 04	FW Update Only		
	01 74 01 05	Image and FW Update		
	01 74 01 06	Control and FW Update		
	01 74 01 07	Image, Control and FW Update		
	01 74 01 08	Auth		
<b>Firmware Update</b>				
Firmware Upload Erase Flash				
	01 B0 01 00	Flash1 (uC,FPGA,NIOS)	01 B0 00	
Firmware Upload Data Start				
	01 B1 04 d0 d1 d2 d3	Length of firmware data d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 B1 00	
Firmware Upload Data			01 B1 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Firmware Update</b>				<i>continued</i>
	05 B2 ab cd d0 .. dn	ab cd: Length of bytes of long data block in hex USB max Length = 508 (512-4) ETH max Length = 1440 d0 .. dn: Data	01 B2 00	
	01 B2 ab d0 .. dn	ab: Length of bytes of long data block in hex RS232 max Length = 253 (256-3) d0 .. dn: Data	01 B2 00	
Firmware Upload Data Stop				
	01 B3 01 00		01 B3 00	
Firmware Downgrade				
	01 B4 01 00	Command must be issued before uploading old firmware	01 B4 00	
<b>OSD</b>				
OSD Level				
	01 82 01 00	Quiet	01 82 00	
	01 82 01 01	Talk		
	01 82 01 02	Verbose		
Transparency				
	01 C0 01 00	Transparency Off	01 C0 00	
	01 C0 01 01	Transparency On		
Size				
	01 C1 01 00	Size Small	01 C1 00	
	01 C1 01 01	Size Large		
Menu Horizontal Position				
	01 C2 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C2 00	
Menu Vertikal Position				
	01 C3 01 d0	0 to 100% in steps of 1% (0x00..0x64) d0: 0 to 100% in steps of 1% (0x00..0x64)	01 C3 00	
Status Position				
	01 C4 01 00	Status Position Top	01 C4 00	
	01 C4 01 01	Status Position Bottom		
Selection Bar Color				
	01 C5 01 00	Black	01 C5 00	
	01 C5 01 03	Red		
	01 C5 01 0B	Orange		
	01 C5 01 0C	Green		
	01 C5 01 15	Darkgrey		
	01 C5 01 28	Mint		
	01 C5 01 2A	Grey		
	01 C5 01 2F	Yellow		
	01 C5 01 30	Blue		
	01 C5 01 33	Magenta		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C5 01 3C	Cyan		
	01 C5 01 3F	White		
Selected Text Color				
	01 C6 01 00	Black	01 C6 00	
	01 C6 01 03	Red		
	01 C6 01 0B	Orange		
	01 C6 01 0C	Green		
	01 C6 01 15	Darkgrey		
	01 C6 01 28	Mint		
	01 C6 01 2A	Grey		
	01 C6 01 2F	Yellow		
	01 C6 01 30	Blue		
	01 C6 01 33	Magenta		
	01 C6 01 3C	Cyan		
	01 C6 01 3F	White		
Menu Text Color				
	01 C7 01 00	Black	01 C7 00	
	01 C7 01 03	Red		
	01 C7 01 0B	Orange		
	01 C7 01 0C	Green		
	01 C7 01 15	Darkgrey		
	01 C7 01 28	Mint		
	01 C7 01 2A	Grey		
	01 C7 01 2F	Yellow		
	01 C7 01 30	Blue		
	01 C7 01 33	Magenta		
	01 C7 01 3C	Cyan		
	01 C7 01 3F	White		
Menu Headline Color				
	01 C8 01 00	Black	01 C8 00	
	01 C8 01 03	Red		
	01 C8 01 0B	Orange		
	01 C8 01 0C	Green		
	01 C8 01 15	Darkgrey		
	01 C8 01 28	Mint		
	01 C8 01 2A	Grey		
	01 C8 01 2F	Yellow		
	01 C8 01 30	Blue		
	01 C8 01 33	Magenta		
	01 C8 01 3C	Cyan		
	01 C8 01 3F	White		
Menu Status Text Color				
	01 C9 01 00	Black	01 C9 00	
	01 C9 01 03	Red		



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b> <span style="float: right;"><i>continued</i></span>				
	01 C9 01 0B	Orange		
	01 C9 01 0C	Green		
	01 C9 01 15	Darkgrey		
	01 C9 01 28	Mint		
	01 C9 01 2A	Grey		
	01 C9 01 2F	Yellow		
	01 C9 01 30	Blue		
	01 C9 01 33	Magenta		
	01 C9 01 3C	Cyan		
	01 C9 01 3F	White		
<b>USB Settings</b>				
Picture Folder				
	01 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String	01 D0 00	
Picture Number				
	01 D1 04 d0 d1 d2 d3	Index for pictures: Format WV# d0 .. d3: Number d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 D1 00 01 D1 00	
Load Settings				
	01 D6 01 00	Off	01 D6 00	
	01 D6 01 01	Auto		
	01 D6 01 02	Confirm		
Store Settings				
	01 D7 01 00		01 D7 00	
<b>Date/Time</b>				
Time Source				
	01 44 01 00	Internal	01 44 00	
	01 44 01 01	External		
Timeserver IP				
	01 7C 04 d0 d1 d2 d3	d0 d1 d2 d3: Timeserver IP Address in hex (0x00 to 0xFF for each octet) d0 d1 d2 d3: 0x00000000..0xFFFFFFFF	01 7C 00	
Timezone				
	01 7D 01 00	Pacific/Apia	01 7D 00	
	01 7D 01 01	Pacific/Honolulu		
	01 7D 01 02	America/Anchorage		
	01 7D 01 03	America/Los Angeles		
	01 7D 01 04	America/Tijuana		
	01 7D 01 05	America/Phoenix		
	01 7D 01 06	America/Denver		
	01 7D 01 07	America/Mazatlan		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
	01 7D 01 08	America/Chicago		
	01 7D 01 09	America/Regina		
	01 7D 01 0A	America/Mexico_City		
	01 7D 01 0B	America/Bogota		
	01 7D 01 0C	America/New_York		
	01 7D 01 0D	America/Caracas		
	01 7D 01 0E	America/Halifax		
	01 7D 01 0F	America/Santiago		
	01 7D 01 10	America/La_Paz		
	01 7D 01 11	America/St_Johns		
	01 7D 01 12	America/Sao_Paulo		
	01 7D 01 13	America/Buenos_Aires		
	01 7D 01 14	America/Montevideo		
	01 7D 01 15	Atlantic/South_Georgia		
	01 7D 01 16	Atlantic/Azores		
	01 7D 01 17	Atlantic/Cape_Verde		
	01 7D 01 18	Africa/Casablanca		
	01 7D 01 19	UTC		
	01 7D 01 1A	Europe/London		
	01 7D 01 1B	Europe/Berlin		
	01 7D 01 1C	Africa/Kinshasa		
	01 7D 01 1D	Europe/Istanbul		
	01 7D 01 1E	Africa/Cairo		
	01 7D 01 1F	Asia/Jerusalem		
	01 7D 01 20	Africa/Johannesburg		
	01 7D 01 21	Europe/Moscow		
	01 7D 01 22	Africa/Nairobi		
	01 7D 01 23	Asia/Baghdad		
	01 7D 01 24	Asia/Tehran		
	01 7D 01 25	Asia/Muscat		
	01 7D 01 26	Asia/Baku		
	01 7D 01 27	Asia/Kabul		
	01 7D 01 28	Asia/Karachi		
	01 7D 01 29	Asia/Kolkata		
	01 7D 01 2A	Asia/Katmandu		
	01 7D 01 2B	Asia/Almaty		
	01 7D 01 2C	Asia/Dhaka		
	01 7D 01 2D	Asia/Rangoon		
	01 7D 01 2E	Asia/Bangkok		
	01 7D 01 2F	Asia/Hong_Kong		
	01 7D 01 30	Asia/Singapore		
	01 7D 01 31	Australia/Perth		
	01 7D 01 32	Asia/Taipei		
	01 7D 01 33	Asia/Tokyo		

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	01 7D 01 34	Asia/Seoul		
	01 7D 01 35	Australia/Adeleide		
	01 7D 01 36	Australia/Darwin		
	01 7D 01 37	Australia/Sydney		
	01 7D 01 38	Australia/Brisbane		
	01 7D 01 39	Pacific/Noumea		
	01 7D 01 3A	Pacific/Auckland		
	01 7D 01 3B	Pacific/Kwajalein		
<b>Date Format</b>				
	01 45 01 00	DDMMYYYY/24H	01 45 00	
	01 45 01 01	MMDDYYYY/12H		
<b>Date/Time</b>				
	01 7E 05 d0 .. dn	d0: Year (0..99)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..0x1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..0x3B) d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B	01 7E 00	
<b>Authentication</b>				
<b>Login</b>				
	01 D4 24 d0 .. dn	MD5 (SessionID, Username, Password, IP) + Username + IP Strings are padded with 0's MD5=16Bytes,Username=16Bytes,IP=4Bytes Padding for calculateing MD5: SessionID=4Bytes,Username=16Bytes,Password=10Bytes,I P=4Bytes	01 D4 00	
<b>Logout</b>				
	01 D5 01 00		01 D5 00	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Zoom Control</b>				
Zoom Position				
	00 20 00		00 20 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Digital Zoom</b>				
Digital Zoom Position				
	00 28 00		00 28 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
<b>Focus Control</b>				
Focus Position				
	00 21 00		00 21 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
AF				
	00 31 00		00 31 01 00	Off
<b>Iris Control</b>				
Iris Position				
	00 22 00		00 22 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0x0FFF
Auto Iris				
	00 32 00		00 32 01 00	Off
			00 32 01 01	On
<b>Arm and Mirror Control</b>				
Arm				
	00 23 00		00 23 01 00	Opened
			00 23 01 01	Closed
			00 23 01 02	Opening
			00 23 01 03	Closing
			00 23 01 04	Unknown
Mirror Position				
	00 24 00		00 24 02 d0 d1	d0 d1: Position
				d0 d1: 0x0000..0xFFFF
<b>Preset Control</b>				
Preset Special Function Key		Preset1		
	00 42 01 01		00 42 02 01 00	Preset
			00 42 02 01 01	Pos_Neg
			00 42 02 01 02	Pos_Blue
			00 42 02 01 03	Black_White
			00 42 02 01 04	WB

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
			00 42 02 01 05	Freeze
			00 42 02 01 06	Image
			00 42 02 01 07	Onepush_AF
			00 42 02 01 08	Light_On_Off
			00 42 02 01 0A	Text
			00 42 02 01 0B	Light_LB_Off
			00 42 02 01 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
		Preset2		
	00 42 01 02		00 42 02 02 00	Preset
			00 42 02 02 01	Pos_Neg
			00 42 02 02 02	Pos_Blue
			00 42 02 02 03	Black_White
			00 42 02 02 04	WB
			00 42 02 02 05	Freeze
			00 42 02 02 06	Image
			00 42 02 02 07	Onepush_AF
			00 42 02 02 08	Light_On_Off
			00 42 02 02 0A	Text
			00 42 02 02 0B	Light_LB_Off
			00 42 02 02 0C	Image Turn
			00 42 02 02 0D	Picture in Picture
		Preset3		
	00 42 01 03		00 42 02 03 00	Preset
			00 42 02 03 01	Pos_Neg
			00 42 02 03 02	Pos_Blue
			00 42 02 03 03	Black_White
			00 42 02 03 04	WB
			00 42 02 03 05	Freeze
			00 42 02 03 06	Image
			00 42 02 03 07	Onepush_AF
			00 42 02 03 08	Light_On_Off
			00 42 02 03 0A	Text
			00 42 02 03 0B	Light_LB_Off
			00 42 02 03 0C	Image Turn
			00 42 02 01 0D	Picture in Picture
List of SFK functions				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Preset Control</b>				<i>continued</i>
	00 43 00		00 43 ab d0 .. dn	ab: Length of variable list of supported functions. d0 .. dn: List Preset is excluded , because always present. 01=Pos_Neg 02=Pos_Blue 03=Black_White 04=Whitebalance 05=Freeze 06=Image 07=Onepush_AF 08=Light_On_Off 09=Slide_On_Off 0A=Text 0B=Light_LB_Off 0C=Image Turn 0D=Picture in Picture
Store Mirror-Pos				
	00 4D 00		00 4D 01 00	Off
			00 4D 01 01	On
<b>Power Control</b>				
Power On Preset				
	00 34 00		00 34 01 00	Off
			00 34 01 01	On
Display Logo				
	00 35 00		00 35 01 00	Off
			00 35 01 01	On
Mains-On				
	00 36 00		00 36 01 00	Standby
			00 36 01 01	Power-On
Auto-Power-Off Time				
	00 37 00		00 37 01 FF	Off
			00 37 01 1E	30min until Auto-Power-Off
			00 37 01 3C	1h until Auto-Power-Off
			00 37 01 78	2h until Auto-Power-Off
			00 37 01 B4	3h until Auto-Power-Off
			00 37 01 F0	4h until Auto-Power-Off
Power Down Mode				
	00 39 00		00 39 01 00	Normal
			00 39 01 01	Deep
Power				
	00 30 00		00 30 01 00	Off
			00 30 01 01	On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Light Control</b>				
Light	00 A0 00		00 A0 01 00	Off
			00 A0 01 01	Light On, LB Off
			00 A0 01 02	LB On, Light Off
Lightbox	00 A6 00		00 A6 01 00	No Lightbox
			00 A6 01 01	Lightbox
Lamp 1 Hours	00 A3 00		00 A3 02 d0 d1	d0 d1: in hours (hex) d0 d1: 0x0000..0xFFFF
<b>ImageTurn Command</b>				
Image Turn	00 83 00		00 83 01 00	0°
			00 83 01 01	-90°
			00 83 01 02	180°
			00 83 01 03	90°
<b>Misc. Command</b>				
IR Code	00 81 00		00 81 01 1C	Code A
			00 81 01 1D	Code B
			00 81 01 1E	Code C
			00 81 01 1F	Code D
			00 81 01 96	Code 1
			00 81 01 98	Code 2
			00 81 01 99	Code 3
			00 81 01 9A	Code 4
			00 81 01 9B	Code 5
			00 81 01 9C	Code 6
			00 81 01 9D	Code 7
			00 81 01 9E	Code 8
			00 81 01 9F	Code 9
Erase Memory	00 94 00		00 94 01 00	Manually
			00 94 01 01	Standby
Autosense Ext/Int	00 58 00		00 58 01 00	Off (Stays on extern)
			00 58 01 01	On (Switch to intern if no external signal)
ImageTurn Rotation	00 84 00		00 84 01 00	Cycle
			00 84 01 01	-90°
			00 84 01 02	180°

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Misc. Command</b>				<i>continued</i>
			00 84 01 03	90°
Digital Zoom Mode				
	00 29 00		00 29 01 00	Off
			00 29 01 01	2x
			00 29 01 02	4x
Digital Zoom Warning				
	00 2A 00		00 2A 01 00	Stop
			00 2A 01 01	Message
			00 2A 01 02	None
Fading				
	00 8A 00		00 8A 01 00	Off
			00 8A 01 02	Slow
			00 8A 01 04	Standard
			00 8A 01 08	Fast
Keylock				
	00 80 00		00 80 01 00	Off
			00 80 01 01	On
Image				
	00 86 00		00 86 01 00	Off
			00 86 01 01	On
Debug				
	00 88 00		00 88 01 00	Debug Off
			00 88 01 01	Debug On
<b>Extra Menu</b>				
Baudrate				
	00 89 00		00 89 01 00	9600 Baud
			00 89 01 01	19200 Baud
			00 89 01 02	38400 Baud
			00 89 01 03	57600 Baud
			00 89 01 04	115200 Baud
Number IR Codes				
	00 18 00		00 18 01 00	Number of IR Codes 4
			00 18 01 01	Number of IR Codes 9
Noise Suppression				
	00 87 00		00 87 01 00	Off
			00 87 01 01	On
<b>VZ Menu Control</b>				
Menu				
	00 98 00		00 98 01 00	Off
			00 98 01 01	Standard Menu
			00 98 01 02	Extra Menu



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>VZ Menu Control</b>				<i>continued</i>
			00 98 01 03	View Menu
Menu Standard Unlock				
	00 9A 00		00 9A 01 00	Off
			00 9A 01 01	On
Menu Extra Unlock				
	00 9B 00		00 9B 01 00	Off
			00 9B 01 01	On
Command Check				
	00 9C 00		00 9C 01 00	Ok
			00 9C 01 01	Invalid Operation (a command in the past was ignored due to an invalid state, see key_and_function matrix)
<b>Output Control</b>				
Detail				
	00 53 00		00 53 01 00	Off
			00 53 01 02	Medium
			00 53 01 03	High
Resolution RGB / Preview				
	00 50 00		00 50 01 FF	Off
			00 50 01 00	Auto
			00 50 01 01	SVGA/60 (800x600)
			00 50 01 04	XGA/60 (1024x768)
			00 50 01 08	SXGA-/60 (1280x960)
			00 50 01 0A	SXGA/60
			00 50 01 0D	UXGA/60 (1600x1200)
			00 50 01 12	SXGA+/60 (1400x1050)
			00 50 01 14	VGA/60 (640x480)
			00 50 01 15	720p/50 (1280x720)
			00 50 01 16	720p/60
			00 50 01 17	1080p/50 (1920x1050)
			00 50 01 18	1080p/60
			00 50 01 1A	WSXGA/60 (1680x1050)
			00 50 01 1B	WXGA/60 (1366x768)
			00 50 01 1C	WUXGA/60 (1920x1200)
			00 50 01 1D	WXGA+/60 (1440x900)
			00 50 01 1E	WXGA*/60 (1280x800)
			00 50 01 20	1080p/30
Resolution DVI / RGB				
	00 51 00		00 51 01 FF	Off
			00 51 01 00	Auto
			00 51 01 01	SVGA/60 (800x600)
			00 51 01 04	XGA/60 (1024x768)
			00 51 01 08	SXGA-/60 (1280x960)

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Output Control</b>				<i>continued</i>
			00 51 01 0A	SXGA/60 (1280x1024)
			00 51 01 0D	UXGA/60 (1600x1200)
			00 51 01 12	SXGA+/60 (1400x1050)
			00 51 01 14	VGA/60 (640x480)
			00 51 01 15	720p/50 (1280x720)
			00 51 01 16	720p/60
			00 51 01 17	1080p/50 (1920x1050)
			00 51 01 18	1080p/60
			00 51 01 1A	WSXGA/60 (1680x1050)
			00 51 01 1B	WXGA/60 (1366x768)
			00 51 01 1C	WUXGA/60 (1920x1200)
			00 51 01 1D	WXGA+/60 (1440x900)
			00 51 01 1E	WXGA*/60 (1280x800)
			00 51 01 20	1080p/30
Preview Output				
	00 5A 00		00 5A 01 00	Preview
			00 5A 01 01	Regular
Keystone				
	00 5C 00		00 5C 01 00	Off
			00 5C 01 01	On
Freeze				
	00 56 00		00 56 01 00	Off
			00 56 01 01	On
Ext/Int				
	00 57 00		00 57 01 00	Intern
			00 57 01 01	Extern
Extern/Freeze Output				
	00 59 00		00 59 07 d0 d1 d2 d3 d4 d5 d6	d0: Freeze RGB / Preview 00=No, 01=Yes, 02=N/A d1: Freeze DVI / RGB 00=No, 01=Yes, 02=N/A d2: Freeze ETH / USB 00=No, 01=Yes, 02=N/A d3: Freeze LCD 00=No, 01=Yes, 02=N/A d4: Ext In RGB / Preview 00=No, 01=Yes, 02=N/A d5: Ext In DVI / RGB 00=No, 01=Yes, 02=N/A d6: Ext In LCD 00=No, 01=Yes, 02=N/A
Image Mirror				
	00 5B 00		00 5B 01 00	Off
			00 5B 01 01	Horizontal
			00 5B 01 02	Vertical
			00 5B 01 03	H+V
Picture in Picture				
	00 5D 00		00 5D 01 00	PiP Off
			00 5D 01 01	PiP On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Image Storing Cmd</b>				
ShowAll	00 93 00		00 93 01 00	Off
			00 93 01 01	On
			00 93 01 02	ViewModeSingle (Single Picture Selected While in ViewMode)
<b>Exposure</b>				
Gain	00 60 00		00 60 01 00	0dB
			00 60 01 01	1dB
			00 60 01 02	2dB
			00 60 01 03	3dB
			00 60 01 04	4dB
			00 60 01 05	5dB
			00 60 01 06	6dB
			00 60 01 07	7dB
			00 60 01 08	8dB
			00 60 01 09	9dB
			00 60 01 0A	10dB
			00 60 01 0B	11dB
			00 60 01 0C	12dB
			00 60 01 0D	13dB
			00 60 01 0E	14dB
			00 60 01 0F	15dB
			00 60 01 10	16dB
			00 60 01 11	17dB
			00 60 01 12	18dB
			00 60 01 13	19dB
			00 60 01 14	20dB
			00 60 01 15	21dB
			00 60 01 16	22dB
			00 60 01 17	23dB
			00 60 01 18	24dB
			00 60 01 40	Auto Low
			00 60 01 80	Auto Med
			00 60 01 C0	Auto High
Shutter	00 61 00		00 61 01 00	Step
			00 61 01 01	Variable see Speed (Shutter=variable)
			00 61 01 02	Auto
			00 61 01 03	Off
Speed (Shutter=step)	00 62 00		00 62 01 00	1/30s
			00 62 01 01	Flickerless

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Exposure</b>				<i>continued</i>
			00 62 01 02	1/50s
			00 62 01 03	1/60s
			00 62 01 04	1/100s
			00 62 01 05	1/120s
			00 62 01 06	1/250s
			00 62 01 07	1/500s
			00 62 01 08	1/1000s
			00 62 01 09	1/2000s
			00 62 01 0A	1/3000s
Speed (Shutter=variable)				
	00 63 00		00 63 02 d0 d1	d0 d1: Exposure time in lines d0 d1: Min: 0x0000 Max: 0x0000
Iris Priority				
	00 33 00		00 33 01 00	Auto
			00 33 01 01	Manual
Image Brightness				
	00 64 00		00 64 01 F6	-10
			00 64 01 F7	-9
			00 64 01 F8	-8
			00 64 01 F9	-7
			00 64 01 FA	-6
			00 64 01 FB	-5
			00 64 01 FC	-4
			00 64 01 FD	-3
			00 64 01 FE	-2
			00 64 01 FF	-1
			00 64 01 00	0
			00 64 01 01	+1
			00 64 01 02	+2
			00 64 01 03	+3
			00 64 01 04	+4
			00 64 01 05	+5
			00 64 01 06	+6
			00 64 01 07	+7
			00 64 01 08	+8
			00 64 01 09	+9
			00 64 01 0A	+10
Back Light Compensation				
	00 6C 00		00 6C 01 00	Off
			00 6C 01 01	Medium
			00 6C 01 02	High

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Color</b>				
White Balance	00 65 00		00 65 01 00	Auto
			00 65 01 01	OPWB
			00 65 01 02	Manual
R Gain (WB=Manual)	00 66 00		00 66 01 d0	d0: -191..-64..+63 (0x81..0x00..0x7F)
B Gain (WB=Manual)	00 67 00		00 67 01 d0	d0: -191..-64..+63 (0x81..0x00..0x7F)
Text Enhancer	00 85 00		00 85 01 00	Off
			00 85 01 01	On
Color Mode	00 6D 00		00 6D 01 00	Black/White
			00 6D 01 01	Presentation
			00 6D 01 02	Natural
			00 6D 01 03	Video Conference
			00 6D 01 04	Manual
Gamma Normal Mode	00 68 00		00 68 01 d0	d0: Gamma Curves d0: 0x00..0x03
Saturation	00 6E 00		00 6E 01 d0	d0: Saturation in percent d0: 0 %...150% (0x00..0x96)
Pos/Neg/Blue	00 54 00		00 54 01 00	Pos
			00 54 01 01	Neg
			00 54 01 02	Blue
<b>Ethernet</b>				
DHCP	00 70 00		00 70 01 00	Off
			00 70 01 01	On
IP Address	00 71 00		00 71 04 d0 d1 d2 d3	d0 d1 d2 d3: IP Address in hex (0x00 to 0xFF for each packet)
Subnet Mask	00 72 00		00 72 04 d0 d1 d2 d3	d0 d1 d2 d3: Subnet Mask in hex (0x00 to 0xFF for each packet)
Gateway IP	00 73 00		00 73 04 d0 d1 d2 d3	

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Ethernet</b>				<i>continued</i>
				d0 d1 d2 d3: Gateway IP Address in hex (0x00 to 0xFF for each packet)
<b>Streaming</b>				
Multicast IP Address	00 77 00		00 77 04 d0 d1 d2 d3	d0 d1 d2 d3: Multicast IP Address in hex (0x00 to 0xFF for each packet)Valid range: 225.0.0.0..238.255.255.255
Multicast Port	00 78 00		00 78 02 d0 d1	d0 d1: Port 8800 to 9000 in hex (0x2260..0x2328)
Streaming Mode	00 75 00		00 75 01 00 00 75 01 01 00 75 01 02	Off Auto Continuous
Streaming Format	00 79 00		00 79 01 00 00 79 01 01 00 79 01 03	SXGA- / 720p / WXGA* XGA / 576p / XGA* VGA / 288p / VGA*
Streaming Framerate	00 7A 00		00 7A 01 00 00 7A 01 01 00 7A 01 02	Low Medium High
Multicast Resolution Table	00 7B 00		00 7B ab d0 .. dn	ab: Length, max 224 Bytes d0..dn: Data16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
<b>Security</b>				
Ethernet Mode	00 74 00		00 74 01 d0	d0: Data Bit0: IMG 0=Image Blocked,1=Image Allowed Bit1: CTRL 0=Control Blocked,1=Control Allowed Bit2: FW 0=Firmware Update Blocked,1=Firmware Upload Allowed Bit3: AUTH 0=Authentication Off,1=Authentication On
<b>Unit</b>				
Model	00 11 00		00 11 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: String"VZ9P","VZ9P-3","VZ-C12-II","VZ-C12-3","VZ-C32","EYE-12","SCB-12","VZ-C32-3","VZ-P18","VZ-P38"

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				<i>continued</i>
Serialnumber	00 12 00		00 12 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Version	00 13 00		00 13 ab d0 .. dn	ab: Length d0 .. dn: StringExample: "V1.10a"
Adjuster	00 14 00		00 14 ab d0 .. dn	ab: Length, max 255 Bytes d0 .. dn: StringExample: "MSc"
Production Date	00 15 00		00 15 02 d0 d1	d0: week d1: year
Features	00 16 00		00 16 08 d0 d1 d2 d3 d4 d5 d6 d7	8 Bytes: to specify the available functions on the remote control
				d0: Byte0
				Bit7:Zoom
				Bit6:Iris
				Bit5:Mirror
				Bit4:Focus
				Bit2:Power
				Bit1:Light
				Bit0:ExtIn
				d1: Byte1
				Bit7:Text
				Bit6:WB
				Bit4:Image
				Bit3:ImageTurn
				Bit2:Freeze
				Bit1:Arm
				d2: Byte2
				Bit7:Preset1
				Bit6:Preset2
				Bit5:Preset3
				d3: Byte3
				Bit6:Memory1
				Bit5:Memory2
				Bit4:Memory3
				Bit3:Memory4
				Bit2:Memory5
				Bit1:Memory6
				Bit0:Memory7
				d4: Byte4
				Bit7:Memory8
				Bit6:Memory9

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Unit</b>				
				Bit5:ShowAll
				Bit3:OnePushAF
				Bit2:Snapshot
				d5: Byte5
				Bit7:FWUpdate
				Bit6:PT_dZoom
				Bit5:PT_ImageTurn
				Bit3:PT_dem_0deg
Resolution Table				
	00 17 00		00 17 ab d0 .. dn	ab: Length, max 224 Bytes d0 .. dn:16*14Byte:Name (8Bytes), Width (2Bytes), Height (2Bytes), ID (2Bytes) Example: "SXGA- ", 0x0500, 0x03C0, 0x0000
Description				
<b>Firmware Update</b>				
Firmware Upload Erase Flash				
	00 B0 00		00 B0 01 d0	100% to 0% firmware to be erased. State of firmware erasing, counts from 100 down to 00% = Flash erased d0: 0x64..0x00
<b>Picture Transfer</b>				
Picture Header				



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Picture Transfer</b>				<i>continued</i>
	00 B8 01 d0	d0: Byte0 Bit7: Motion, 0=Still Image, 1=Continuous Bit6: Format, 0=BMP, 1=JPG Bit5,4: Quality, 0=Best, 1=Good, 2=Average, 3=Low Bit3..0: Index, Index of Restable (Note: not ID), 0 indexed Position of the 14 byte field within the 16 entries. The ModeByte supports automatic aspect ratio switching. In the request only the index for 4:3 aspect ratio needs to be sent, the Modebyte in the reply contains the index of the selected aspect ratio.	00 B8 14 d0 .. dn	d0 .. dn: Data d0,1: Width d2,3: Height d4: Flags d5: ModeByte d6,7,8,9: Maximum Blocklength d10: Extended Byte Bit7: 0=4:3 or 16:9,1=16:10 Bit6: 0=No light supported or light off; 1=Light on Bit5: 0=Not triggered images in trigger mode, 1=Triggered image in trigger mode Bit4: 0=Normal (live) mode, 1=Extern trigger mode Bit3: 0=Reserved (deprecated:Digital zoom off, 1=Digital zoom on) Bit2: 0=4:3,1=16:9 or 16:10 Bit1..0: Detail (00=Off, 01=Low, 10=Medium, 11=High) d11: 0x00d12,13,14,15: DMA Size (JPG: Size of image including header, BMP: Size of image excluding header) d16,17: Memory Page d18,19: Out Offset (Line Offset for BMP 16:9)(1Line=image width * 3/96)
Get Picture Block (USB only)				
	00 B9 0A d0 d1 d2 d3 d4 d5 d6 d7 d8 d9	d0: Flags of Picture Header d1: Mode Byte of Picture Header d2 d3 d4 d5: Offset from image start (BMP: in lines; JPG: in Bytes) d6 d7 d8 d9: Block length	00 B9 01 00	Ok
			00 B9 01 01	Failed
Get Picture Block2 (ETH only)				
	00 BA 16 d0 .. dn	d0: Flags (from Picture Header) d1: Mode Byte (from Picture Header) d2 d3 d4 d5: Offset from image start d6 d7 d8 d9: Block length d10 d11: Width (from Picture Header) d12 d13: Height (from Picture Header) d14 d15 d16 d17: Total Size (DMA Size from Picture Header) d18 d19: Memory Page d20 d21: Out Offset	02 01 BA ab cd ef gh d0 .. dn	ab cd ef gh: Length d0 .. dn: Data

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				
OSD Level				
	00 82 00		00 82 01 00	Quiet
			00 82 01 01	Talk
			00 82 01 02	Verbose
Transparency				
	00 C0 00		00 C0 01 00	Transparency Off
			00 C0 01 01	Transparency On
Size				
	00 C1 00		00 C1 01 00	Size Small
			00 C1 01 01	Size Large
Menu Horizontal Position				
	00 C2 00		00 C2 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Menu Vertical Position				
	00 C3 00		00 C3 01 d0	
				d0: 0 to 100% in steps of 1% (0x00..0x64)
Status Position				
	00 C4 00		00 C4 01 00	Status Position Top
			00 C4 01 01	Status Position Bottom
Selection Bar Color				
	00 C5 00		00 C5 01 00	Black
			00 C5 01 03	Red
			00 C5 01 0B	Orange
			00 C5 01 0C	Green
			00 C5 01 15	Darkgrey
			00 C5 01 28	Mint
			00 C5 01 2A	Grey
			00 C5 01 2F	Yellow
			00 C5 01 30	Blue
			00 C5 01 33	Magenta
			00 C5 01 3C	Cyan
			00 C5 01 3F	White
Selected Text Color				
	00 C6 00		00 C6 01 00	Black
			00 C6 01 03	Red
			00 C6 01 0B	Orange
			00 C6 01 0C	Green
			00 C6 01 15	Darkgrey
			00 C6 01 28	Mint
			00 C6 01 2A	Grey
			00 C6 01 2F	Yellow
			00 C6 01 30	Blue
			00 C6 01 33	Magenta
			00 C6 01 3C	Cyan

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>OSD</b>				<i>continued</i>
			00 C6 01 3F	White
Menu Text Color				
	00 C7 00		00 C7 01 00	Black
			00 C7 01 03	Red
			00 C7 01 0B	Orange
			00 C7 01 0C	Green
			00 C7 01 15	Darkgrey
			00 C7 01 28	Mint
			00 C7 01 2A	Grey
			00 C7 01 2F	Yellow
			00 C7 01 30	Blue
			00 C7 01 33	Magenta
			00 C7 01 3C	Cyan
			00 C7 01 3F	White
Menu Headline Color				
	00 C8 00		00 C8 01 00	Black
			00 C8 01 03	Red
			00 C8 01 0B	Orange
			00 C8 01 0C	Green
			00 C8 01 15	Darkgrey
			00 C8 01 28	Mint
			00 C8 01 2A	Grey
			00 C8 01 2F	Yellow
			00 C8 01 30	Blue
			00 C8 01 33	Magenta
			00 C8 01 3C	Cyan
			00 C8 01 3F	White
Menu Status Text Color				
	00 C9 00		00 C9 01 00	Black
			00 C9 01 03	Red
			00 C9 01 0B	Orange
			00 C9 01 0C	Green
			00 C9 01 15	Darkgrey
			00 C9 01 28	Mint
			00 C9 01 2A	Grey
			00 C9 01 2F	Yellow
			00 C9 01 30	Blue
			00 C9 01 33	Magenta
			00 C9 01 3C	Cyan
			00 C9 01 3F	White
<b>USB Settings</b>				
Picture Folder				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>USB Settings</b>				<i>continued</i>
	00 D0 00		00 D0 ab d0 .. dn	ab: Length, max 10 Bytes d0 .. dn: String
Picture Number				
	00 D1 00		00 D1 04 d0 d1 d2 d3	d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
Picture Format				
	00 D2 00		00 D2 01 00	Bmp
			00 D2 01 01	Jpg
Load Settings				
	00 D6 00		00 D6 01 00	Off
			00 D6 01 01	Auto
			00 D6 01 02	Confirm
<b>Date/Time</b>				
Time Source				
	00 44 00		00 44 01 00	Internal
			00 44 01 01	External
Timeserver IP				
	00 7C 00		00 7C 04 d0 d1 d2 d3	Timeserver IP Address in hex (0x00 to 0xFF for each octet)
Timezone				
	00 7D 00		00 7D 01 00	Pacific/Apia
			00 7D 01 01	Pacific/Honolulu
			00 7D 01 02	America/Anchorage
			00 7D 01 03	America/Los_Angeles
			00 7D 01 04	America/Tijuana
			00 7D 01 05	America/Phoenix
			00 7D 01 06	America/Denver
			00 7D 01 07	America/Mazatlan
			00 7D 01 08	America/Chicago
			00 7D 01 09	America/Regina
			00 7D 01 0A	America/Mexico_City
			00 7D 01 0B	America/Bogota
			00 7D 01 0C	America/New_York
			00 7D 01 0D	America/Caracas
			00 7D 01 0E	America/Halifax
			00 7D 01 0F	America/Santiago
			00 7D 01 10	America/La_Paz
			00 7D 01 11	America/St_Johns
			00 7D 01 12	America/Sao_Paulo
			00 7D 01 13	America/Buenos_Aires
			00 7D 01 14	America/Montevideo
			00 7D 01 15	Atlantic/South_Georgia

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b>				<i>continued</i>
			00 7D 01 16	Atlantic/Azores
			00 7D 01 17	Atlantic/Cape_Verde
			00 7D 01 18	Africa/Casablanca
			00 7D 01 19	UTC
			00 7D 01 1A	Europe/London
			00 7D 01 1B	Europe/Berlin
			00 7D 01 1C	Africa/Kinshasa
			00 7D 01 1D	Europe/Istanbul
			00 7D 01 1E	Africa/Cairo
			00 7D 01 1F	Asia/Jerusalem
			00 7D 01 20	Africa/Johannesburg
			00 7D 01 21	Europe/Moscow
			00 7D 01 22	Africa/Nairobi
			00 7D 01 23	Asia/Baghdad
			00 7D 01 24	Asia/Tehran
			00 7D 01 25	Asia/Muscat
			00 7D 01 26	Asia/Baku
			00 7D 01 27	Asia/Kabul
			00 7D 01 28	Asia/Karachi
			00 7D 01 29	Asia/Kolkata
			00 7D 01 2A	Asia/Katmandu
			00 7D 01 2B	Asia/Almaty
			00 7D 01 2C	Asia/Dhaka
			00 7D 01 2D	Asia/Rangoon
			00 7D 01 2E	Asia/Bangkok
			00 7D 01 2F	Asia/Hong_Kong
			00 7D 01 30	Asia/Singapore
			00 7D 01 31	Australia/Perth
			00 7D 01 32	Asia/Taipei
			00 7D 01 33	Asia/Tokyo
			00 7D 01 34	Asia/Seoul
			00 7D 01 35	Australia/Adeleide
			00 7D 01 36	Australia/Darwin
			00 7D 01 37	Australia/Sydney
			00 7D 01 38	Australia/Brisbane
			00 7D 01 39	Pacific/Noumea
			00 7D 01 3A	Pacific/Auckland
			00 7D 01 3B	Pacific/Kwajalein
Date Format				
	00 45 00		00 45 01 00	DDMMYYYY/24H
			00 45 01 01	MMDDYYYY/12H
Date/Time				

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Date/Time</b> <span style="float: right;"><i>continued</i></span>				
	00 7E 00		00 7E 05 d0 .. dn	d0: Year (0..99 without century)(0x00..0x63) d1: Month (1..12)(0x01..0x0C) d2: Day (1..31)(0x01..1F) d3: Hour (0..23)(0x00..0x17) d4: Minute (0..59)(0x00..3B)
				d0: 0x00..0x63 d1: 0x01..0x0C d2: 0x01..1F d3: 0x00..0x17 d4: 0x00..3B
<b>Authentication</b>				
SessionID (ETH only)				
	00 D3 00		00 D3 04 d0 d1 d2 d3	Session ID Randomnumber
				d0 d1 d2 d3: 0x00000000..0xFFFFFFFF
<b>Block Inquiry</b>				
Positions(deprecated)				
	00 10 01 00	Byte3=Blocknumber	00 10 10 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information(deprecated)				
	00 10 01 01	Byte3=Blocknumber	00 10 13 d0 .. dn	Deprecated because blocknumber is missing in reply d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
				Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d8,9,10,11: Serialnumber d12,13,14,15,16,17,18: Version
Positions				
	00 10 01 02	Byte3=Blocknumber	00 10 11 02 d0 .. dn	0x02: Blocknumber d0..dn: Data d0,1: Zoom Position d2,3: Digital Zoom Position d4,5: Focus Position d6,7: Iris position d8,9: Mirror Position d10,11: Mirror X Position d12,13: Mirror Y Position d14,15: Light Focus Position
Flags and Unit Information				
	00 10 01 03	Byte3=Blocknumber	00 10 18 03 d0 .. dn	0x03: Blocknumber d0..dn: Data d0: Bit7: Power, 0=Off,1=On Bit6: Top Light, 0=Off,1=On Bit5: Light Box, 0=Disabled,1=Enabled Bit4: Slide Box, 0=Disabled,1=Enabled Bit3: Auto Focus, 0=Off,1=On Bit2: Auto Iris, 0=Off,1=On Bit1: Text Enhancer, 0=Off,1=On

Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b> <span style="float: right;"><i>continued</i></span>				
				Bit0: Extern/Intern 0=Extern,1=Intern d1: Bit7: Freeze, 0=Off,1=On Bit6: Image, 0=Off,1=On Bit5: Show All/View, 0=Off,1=On Bit4: Keylock, 0=Off,1=On Bit3: Lamp Blown, 0=Ok,1=Blown Bit2: Lamp2 Blown, 0=Ok,1=Blown Bit1: Lamp1 Blown, 0=Ok,1=Blown Bit0: OSD Menu, 0=Off,1=On d2: Bit7,6,5,4: Color Mode, 0=Black/White,1=Presentation,2=Natural,3=Manual Bit3,2: Pos/Neg/Blue, 0=Positive,1=Negative,2=Blue Bit1,0: Image Turn, 0=Off,1=-90,2=180,3=+90 d3: Bit7,6: Macro Bit5,4,3,2: Arm Bit1,0: Reserved d4: Reserved d5: Ethernet Mode d6: Resolution DVI d7: Resolution RGB d12,13,14,15,16,17,18: Version d19: Bit7: Memory Page Bit3 Bit6: Memory Page Bit2 Bit5: Memory Page Bit1 Bit4: Memory Page Bit0 (0=Live, 1..9=Memory 1..9) Bit3: Memory Zoom Bit2: Picture in Picture Bit1: MenuMode Bit1 (00=off, 01=standard, 10=extra, 11=view) Bit0: MenuMode Bit0 d20: Bit7: not used Bit6: not used Bit5: Standby Mode (0=Normal,1=Deep) Bit4: 1=ViewModeShowSingle Bit3: 1=ViewMode Bit2: Presentation Bit1: Aspectratio Bit1 (00=4:3,01=16:9,10=16:10) Bit0: Aspectratio Bit0 d21: HDTV Mask Position d22: Reserved



Function / Command Description	Command Packet	Comment	Reply Packet	Comment
<b>Block Inquiry</b>				<i>continued</i>
Menu Ethernet	00 10 01 06	Byte3=Blocknumber	00 10 17 06 d0 .. dn	0x06: Blocknumber d0..dn: Data d0: Bit7..5: Reserved Bit4..1: Ethernet Mode Bit0: DHCP d1: Streaming Format d2: Bit7..4: Streaming Framerate Bit3..0: Streaming Mode d3: Reserved d4..7: IP Address d8..10: Subnet IP Address d11..15: Gateway IP Address d16..19: Multicast IP Address d20,21: Multicast Port

## 5. Glossary

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### A

*AUTH*: abbreviation of Authentication

### B

*Big Endian*: Networks generally use big-endian order, and thus it is called network order when sending information over a network in a common format. The telephone network, historically and presently, uses a big-endian order; doing so allows routing while a telephone number is being composed. In fact, the Internet Protocol defines a standard big-endian network byte order. This byte order is used for all numeric values in the packet headers and by many higher level protocols and file formats that are designed for use over IP. Big-Endian stores the most significant byte (MSB) at the lowest memory address. The lowest memory address of multi-byte data is considered the starting address of the data.

### C

*Cmd*: abbreviation of Command

*crumb*: term for two computer bits

### N

*nibble*: term for a half Byte (4 Bits)