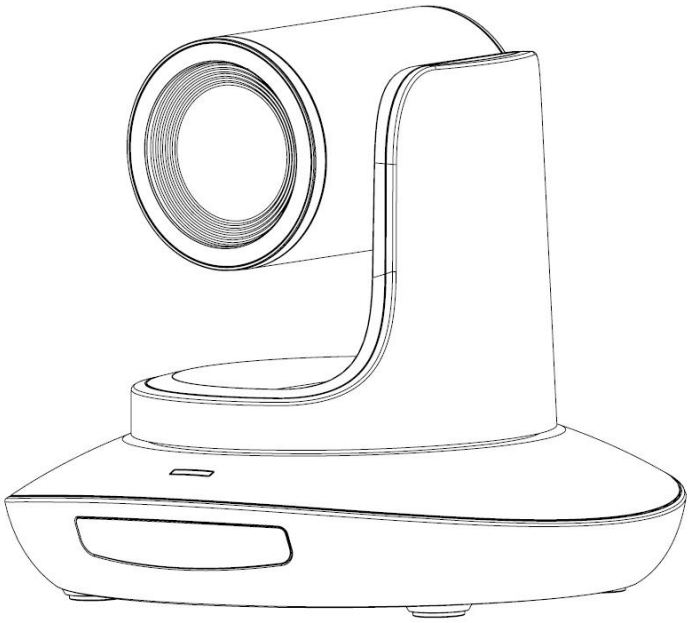
4K USB3.0 UHD PTZ Video Camera

User Manual



Version V2.1

(English)

J.BC.0205.0146

CONTENT

SAFETY GUIDES

1. Before operation, please fully read and follow all instructions in the manual. For your safety, always keep this manual with the camera.

2. The camera power input range is 100-240VAC(50-60Hz),ensure the power supply input within this rate before powering on.

3. The camera power voltage is 12VDC, rated currency is 2A. We suggest you use it with the original power supply adapter supplied by the factory.

4. Please keep the power cable, video cable and control cable in a safe place. Protect all cables especially the connectors.

5. Operational environment: 0℃-50℃, humidity less than 90%.To avoid any danger, do not put anything inside the camera, and keep away from the corrosive liquid.

6. Avoid stress, vibration and damp during transportation, storage and installation.

7. Do not detect the camera housing and cover. For any service, please contact authorized technicians.

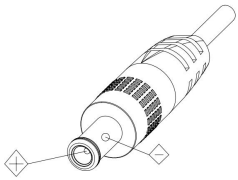
8. Video cable and control cable should be individually shielded, and cannot be substituted with other cables. Do not direct the camera lens towards strong light, such as the sun or the intensive light.

9. Use a dry and soft cloth to clean the camera housing. Applied with neutral cleaning agent when there is need to clean. To avoid damage on the camera lens, never use strong or abrasive cleaning agents on the camera housing.

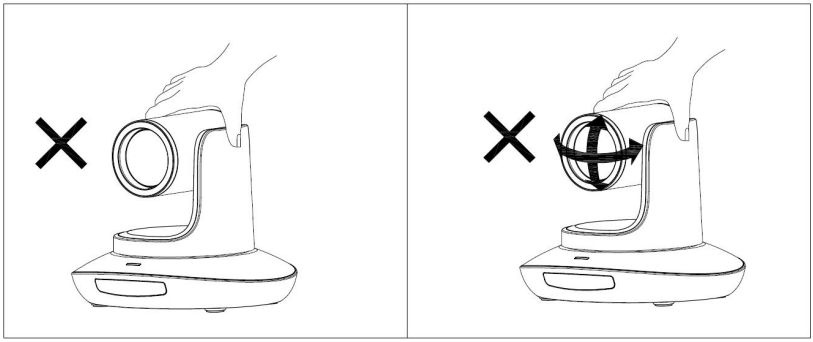
10. Do not move the camera by holding the camera head. To avoid mechanical trouble, do not rotate the camera head by hand.
NEVER MOVE THE CAMERA MANUALLY WHEN IT IS WORKING.

11. Put the camera on fixed and smooth desk or platform, avoid leaned installation.

12. Power Supply Polarity (Drawing)



Note:
The video quality may be affected by the specific frequencies of electromagnetic field.
Never grasp the head of the camera, and never move the camera by hand when it is working, otherwise, mechanism maybe destroyed.

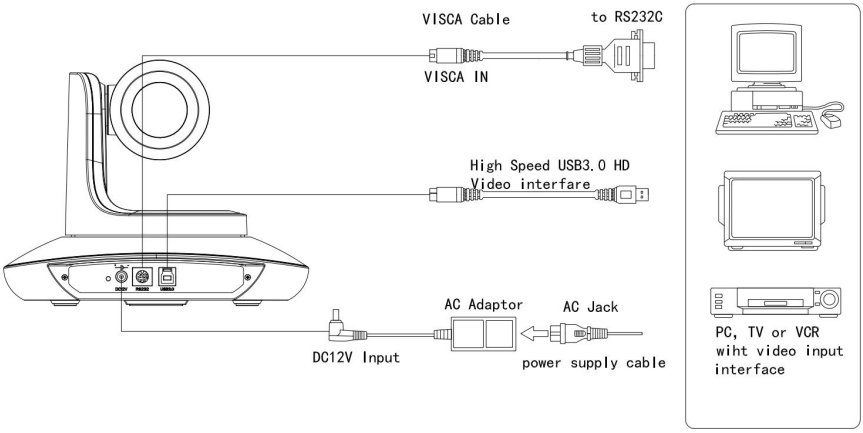


PACKING LIST

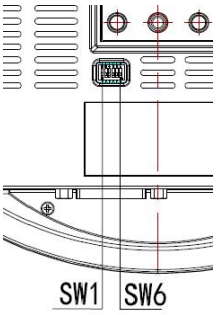
Check all bellow items when open the package:
Camera……1
Power Adapter…… 1
Power Cable……1
RS232 Control Cable…… 1
USB3.0 Cable……1
Remote Controller……1
User Manual…… 1
Double-sided Adhesive……1
QC certification……1

QUICK START

1. Check all cable connections before power on.



2. Dial Switch Setting (at the bottom of the camera):



Dial Switch(ARM)			
	SW-1	SW-2	Instruction
1	OFF	OFF	Updating mode
2	ON	OFF	Debugging mode
3	OFF	ON	Undefined
4	ON	ON	Undefined

Dial Switch			
	SW-3	SW-4	Instruction
1	OFF	OFF	Undefined
2	ON	OFF	Undefined
3	OFF	ON	Undefined
4	ON	ON	Undefined

Dial Switch			
	SW-5	SW-6	Instruction
1	OFF	OFF	Undefined
2	ON	OFF	Undefined
3	OFF	ON	Undefined
4	ON	ON	Undefined

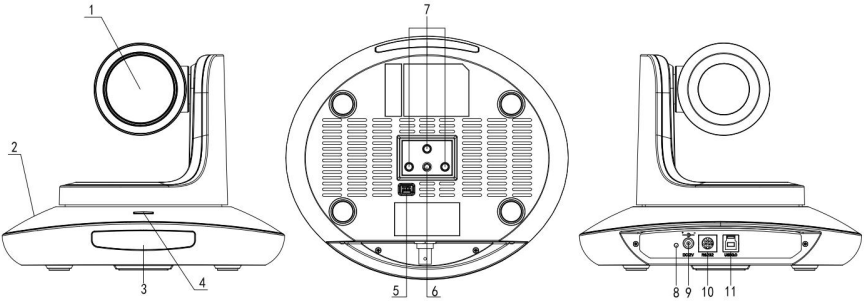
PRODUCT HIGHLIGHTS

- Adopts most advanced DSP, 1/2.5 inch 8.51MP sensor, providing full 4K UHD video resolution and crystal clear image.
- High end 5x optical zoom, 3x digital zoom lens, with 85 degree field of view.
- Fast video format switch: only need 1 second.
- White Balance, Exposure, Focus, Iris can be adjusted automatically or manually.
- Special Focusing Algorithm: fast and precise focusing performance when zooming or moving.
- Smooth PTZ mechanical design, accurate pan tilt motor control.
- 128 presets supported.
- Standard Sony VISCA control protocol.
- Image flip function, support upside-down installation.
- Supplied with functional IR remote controller.
- Supported field upgrade for ISP and ARM.
- USB3.0 port compatible with USB2.0 output, while USB2.0 port support ultra-low resolution output.
- Support RS232/RS485/UVC control.
- Standard UVC1.5 protocol, seamlessly compatible with major video conferencing software and platform.
- OSD menu in English and Chinese supported.

TECHNICAL SPEC

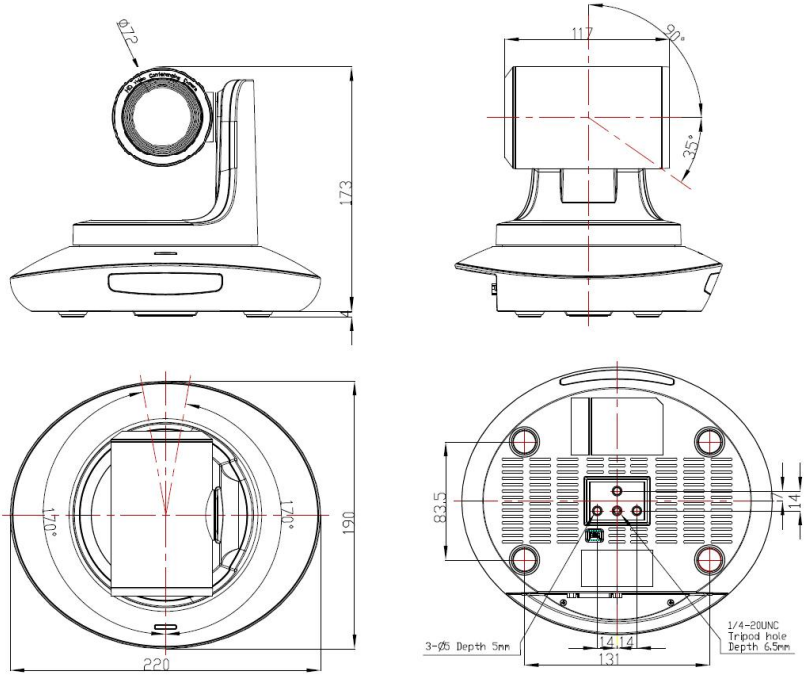
	MJPG	YUY2	H.264	H.265
Video Format (USB3.0/USB2.0)	3840*2160P30 2592*1944P30 2048*1536P30 1920*1080P30 1600*1200P30 1280*1024P30 1280*960P30 1280*720P30 1024*768P30 800*600P30 720*576P30 704*576P30 640*480P30 640*360P30 352*288P30 320*240P30 320*180P30	3840*2160P30 2592*1944P30 2048*1536P30 1920*1080P30 1600*1200P30 1280*1024P30 1280*960P30 1280*720P30 1024*768P30 800*600P30 720*576P30 704*576P30 640*480P30 640*360P30 352*288P30 320*240P30 320*180P30	3840*2160P30 2592*1944P30 2048*1536P30 1920*1080P30 1600*1200P30 1280*1024P30 1280*960P30 1280*720P30 1024*768P30 800*600P30 720*576P30 704*576P30 640*480P30 640*360P30 352*288P30 320*240P30 320*180P30	3840*2160P30 2592*1944P30 2048*1536P30 1920*1080P30 1600*1200P30 1280*1024P30 1280*960P30 1280*720P30 1024*768P30 800*600P30 720*576P30 704*576P30 640*480P30 640*360P30 352*288P30 320*240P30 320*180P30
Video Interface	USB3.0, USB2.0			
Sensor	1/2.5inch, 8.51megapixel Ultra HD CMOS sensor			
Lens	f = 2.8(Near)~14mm(Far), F2 – 2.8, FOV:85°(Wide)-26.5°(Tele)			
Rotation Angle	Pan: ±170°; Tilt:-30°~+90°; support upside-down installation			
Rotation Speed	Pan: 0.1°-120°/s; Tilt: 0.1°-80°/s			
Preset	Remote controller:10; RS232: 128; Accuracy: 0.1°			
Control Port	RS232, RS485(optional), USB3.0(UVC1.5), USB2.0(UVC1.1)			
Daisy Chain	Not Supported			
Minimum Lux	0.1lux			
White Balance	AUTO/IDR./ODR./PUSH/ATW/MANU/SON./FL.			
Exposure	AUTO/MANU/IRIS/SHUT/BRI.			
Focus	AUTO/MANU/PUSH			
Iris	AUTO/MANU			
Electric Shutter	AUTO/MANU			
Gamma	Supported			
WDR	Supported			
BLC	Supported			
2D Noise Reduction	Supported			
3D Noise Reduction	Supported			
Anti-Flicker	OFF/50Hz/60Hz			
Pan Tilt Flip	Supported			
Input Voltage	DC12V/5V(power by USB)			
Dimension	220mm×190mm×173mm			
Net Weight	1.3kg(2.9lb)			

CAMERA INTERFACE

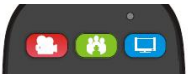


1.Camera Lens
2.Camera Base
3.IR Receiver Panel
4.Power Indicator Light
5.Dial Switch
6. Tripod Screw Hole
7. Installation Hole
8. Power Indicator Light
9. DC12V plug
10. RS232 control port input
11. USB3.0 port

CAMERA DIMENSION(MM)



IR REMOTE CONTROLLER



LED Function Instruction

Press any button and shows in red color: Current selection is to control the camera.
Press any button and shows in green color: Current selection is to control the codec.
Press any button and shows in blue color: Current selection is to control the TV.

Power button

Red button: In normal work mode, short press one time, camera will enter standby mode; short press again, the camera will start self-configuration and go to HOME position; it will go to No.0 preset position if that was set.
Green button: Codec power button(need to learn the button coding).
Blue button: TV power button(need to learn the button coding).

Focus (Left): +/-
Manual focus, only valid under manual focus model.
Zoom (Right): +/-
Control the lens zoom rate.
Navigate : Up/Down/Left/Right
In normal working mode, use navigate key to control pan/tilt.
Confirm/Home button:
In normal working mode, short press to let the camera go back to Home position.

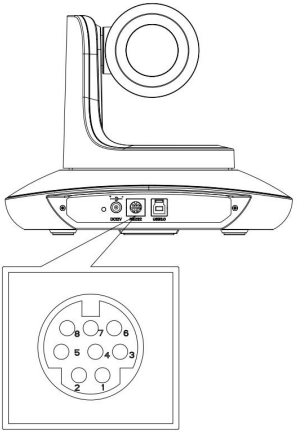
Menu button:
Enter the OSD menu

Number buttons
Set Preset: Long press(3seconds) the number button to save preset.

Clear Preset:  +number button to clear the relative preset;
Long press(3seconds) the Clear button to clear all preset.

Run Preset: Short press the number button to run the relative preset.

VISCA IN （RS232 PORT）PORT



No.	V_IN	V_OUT
1	DTR	DTR
2	DSR	DSR
3	TXD	TXD
4	GND	GND
5	RXD	RXD
6	A	
7	IR OUT	
8	B	

VISCA IN	RS485
1	
2	
3	
4	
5	
6	A(+)
7	IR OUT
8	B(-)

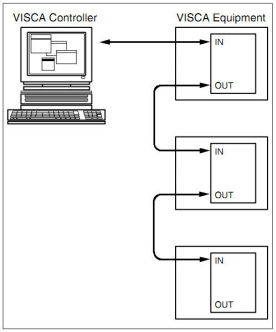
VISCA IN &Mini DIN Connection

Camera VISCA IN		Mini DIN	
1	DTR	1	DSR
2	DSR	2	DTR
3	TXD	5	RXD
4	GND	4	GND
5	RXD	3	TXD
6	A(+)	6	NC
7	IR OUT	7	NC
8	B(-)	8	NC

VISCA IN & DB9 Connection

Camera VISCA IN		Windows DB-9	
1	DTR	6	DSR
2	DSR	4	DTR
3	TXD	2	RXD
4	GND	5	GND
5	RXD	3	TXD
6	A(+)		
7	IR OUT		
8	B(-)		

VISCA Network Construction:



SERIAL PORT CONFIGURATION

Parameter	Value	Parameter	Value
Baud rate	2400/4800/9600/115200	Stop Bit	1bit
Start Bit	1 bit	Check Bit	None
Date Bit	8 bit		

VISCA PROTOCOL

Part1 Camera Return Command

Ack/Completion Message		
	Command Packet	**Note**
ACK	z0 41 FF	Returned when the command is accepted.
Completion	z0 51 FF	Returned when the command has been executed.

z = camera address+8

Error Messages		
	Command Packet	**Note**
Syntax Error	z0 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is accepted
Command Not Executable	z0 61 41 FF	Returned when a command cannot be executed due to current conditions. For example, when commands controlling the focus manually are received during auto focus.

Part 2 Camera Control Command

Command type	function	command	
Address Set	Broadcast	88 30 01 FF	Address setting
IF_Clear	Broadcast	88 01 00 01 FF	I/F Clear
Command Cancel		8x 21 FF	
CAM_Power	On	8x 01 04 00 02 FF	Power ON/OFF
	Off	8x 01 04 00 03 FF	
CAM_Zoom	Stop	8x 01 04 07 00 FF	
	Tele(Standard)	8x 01 04 07 02 FF	
	Wide(Standard)	8x 01 04 07 03 FF	
	Tele(Variable)	8x 01 04 07 2p FF	p = 0(low)~7(high)
	Wide(Variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	pqrs: Zoom Position (0(wide) ~0x4000(tele))
	Direct with speed	8x 0A 04 47 0t 0p 0q 0r 0s FF	t: spd 0~7 pqrs: Zoom Position (0(wide) ~0x4000(tele))
CAM_DZoom	ON	8x 01 04 06 02 FF	
	OFF	8x 01 04 06 03 FF	
	Combine Mode	8x 01 04 36 00 FF	Combine with optical zoom control
	Separate Mode	8x 01 04 36 01 FF	Separate with optical zoom control
	Stop	8x 01 04 06 00 FF	Enable In separate mode
	Tele (Variable)	8x 01 04 06 2p FF	Enable In separate mode
	Wide (Variable)	8x 01 04 06 3p FF	Enable In separate mode

Command type	function	command	
	Direct	8x 01 04 46 0p 0q 0r 0s FF	Enable In separate mode
CAM_Focus	Stop	8x 01 04 08 00 FF	
	Far(Standard)	8x 01 04 08 02 FF	
	Near(Standard)	8x 01 04 08 03 FF	
	Far (Variable)	8x 01 04 08 2p FF	p=0 (Low) to 7 (High)
	Near (Variable)	8x 01 04 08 3p FF	p=0 (Low) to 7 (High)
	Direct	8x 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position
	Auto Focus	8x 01 04 38 02 FF	
	Manual Focus	8x 01 04 38 03 FF	
	One Push AF	8x 01 04 18 01 FF	
CAM_Zoom Focus	Direct	8x 01 04 47 0p 0q 0r 0s 0t 0u 0v 0w FF	pqrs: Zoom Position (0(wide)~ 0x4000(tele)) tuvw: Focus Position
CAM_WB	Auto	8x 01 04 35 00 FF	
	Indoor	8x 01 04 35 01 FF	
	Outdoor	8x 01 04 35 02 FF	
	One Push	8x 01 04 35 03 FF	
	ATW	8x 01 04 35 04 FF	
	Manual	8x 01 04 35 05 FF	
	Sodium lamp	8x 01 04 35 08 FF	
	fluorescent	8x 01 04 35 09 FF	
	One Push Trigger	8x 01 04 10 05 FF	
CAM_R Gain	Reset	8x 01 04 03 00 FF	
	Up	8x 01 04 03 02 FF	Manual Control of R Gain
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	pq: R Gain (0~0xFF)
CAM_B gain	Reset	8x 01 04 04 00 FF	
	Up	8x 01 04 04 02 FF	Manual Control of B Gain
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	pq: B Gain (0-0xFF)
CAM_AE	Full Auto	8x01 04 39 00 FF	Automatic Exposure mode
	Manual	8x 01 04 39 03 FF	Manual Control mode
	Shutter Priority	8x 01 04 39 0A FF	Shutter Priority Automatic Exposure mode
	Iris Priority	8x 01 04 39 0B FF	Iris Priority Automatic Exposure mode

Command type	function	command	
	Bright	8x 01 04 39 0D FF	Bright Mode (Manual control)
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter Setting
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03 FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	pq: Shutter Position (0~0x15)
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris Setting(0~0xD)
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	pq: Iris Position (0~ 0x11)
CAM_Gain	Reset	8x 01 04 0C 00 FF	Gain Setting (0~0x0F)
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Direct	8x 01 04 0C 00 00 0p 0q FF	pq: Gain Positon (0~0x0E)
CAM_Bright	Reset	8x 01 04 0D 00 FF	Bright Setting
	Up	8x 01 04 0D 02 FF	
	Down	8x 01 04 0D 03 FF	
	Direct	8x 01 04 4D 00 00 0p 0q FF	pq: Bright l Positon (0~0x1B)
CAM_WDR	On	8x 01 04 3D 02 FF	Exposure Compensation ON/OFF
	Off	8x 01 04 3D 03 FF	
	Direct	8x 01 04 D3 pq FF	pq: ExpComp Position (0~0x6)
CAM_Back Light(BLC)	On	8x 01 04 33 02 FF	BackLight On
	Off	8x 01 04 33 03 FF	BackLight Off
CAM_Sharpness	Reset	8x 01 04 02 00 FF	Aperture Control
	Up	8x 01 04 02 02 FF	
	Down	8x 01 04 02 03 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	pq: Aperture Gain (0~0x0F)
CAM_Memory(preset)	Reset	8x 01 04 3F 00 pp FF	pp: Preset Number(=0 to 127) Corresponds to 0 to 9 on the Remote Commander
	Set	8x 01 04 3F 01 pp FF	
	Recall	8x 01 04 3F 02 pp FF	
CAM_LR_Reverse	On	8x 01 04 61 02 FF	Image Flip Horizontal ON/OFF
	Off	8x 01 04 61 03 FF	
CAM_Picture Flip	On	8x 01 04 66 02 FF	Image Flip Vertical ON/OFF
	Off	8x 01 04 66 03 FF	
CAM_RS485Ctl	On	8x 01 06 A5 02 FF	

Command type	function	command	
	Off	8x 01 06 A5 03 FF	
CAM_Saturation	Saturation	8x 01 04 A1 00 00 0p 0q FF	pq:saturation level 0x00~0x0f
CAM_Contrast	Contrast	8x 01 04 A2 00 00 0p 0q FF	pq:Contrast level 0x00~0x0f
CAM_Speed By Zoom	On	8x 01 06 A0 02 FF	
	Off	8x 01 06 A0 03 FF	
CAM_PT Speed	PT Speed	8x 01 04 C1 00 00 0p 0q FF	pq:PT speed 0x05~0x18
CAM_Zoom Speed	Zoom Speed	8x 01 04 D1 00 00 0p 0q FF	pq:Zoom speed 0x01~0x07
CAM_Zoom Display	On	8x 01 06 C2 02 FF	
	Off	8x 01 06 C2 03 FF	
CAM_Preset Speed Set	Preset Speed Set	8x 01 7E 01 0B pp qq FF	PP:Preset NO. qq:Preset Speed 1~24 default:15
CAM_IR address	IR address	8x 01 06 D8 0p FF	p:IR address 1~4
CAM_Gamma	Gamma set	8x 01 04 5B 0p FF	P:Gamma NO. (0~4)
CAM_2D Noise Reduction	Direct	8x 01 04 A5 0p FF	(0~0x01)
CAM_3D Noise Reduction	Direct	8x 01 04 53 0p FF	(0~0x05)
FLICK	50HZ	8x 01 04 23 01 FF	
	60HZ	8x 01 04 23 02 FF	
	OFF	8x 01 04 23 00 FF	
Video System Set(Factory)		8x 01 06 35 00 pp FF	pp: Video format 1080P30 0x04 1080P25 0x05 720P60 0x06 720P50 0x07 720P30 0x08 720P25 0x09 4K@30 0x15 4K@25 0x16
Video System Set(Sony)		8x 01 04 24 72 0p 0q FF	pq: Video format 1080P30 0x06 1080P25 0x08 720P60 0x09 720P50 0x0c 720P30 0x0e 720P25 0x11 4K@30 0x1D 4K@25 0x1E
CAM_ID Write		8x 01 04 22 0p 0q 0r 0s FF	pqrs: Camera ID (=0000 to FFFF)

Command type	function	command	
Color adjust	Color adjust OFF	8x 01 04 B6 00 FF	Color adjust off
	Color adjust ON	8x 01 04 B6 01 FF	Color adjust on
	brightness balance OFF	8x 01 04 B7 00 FF	Keep Brightness
	brightness balance ON	8x 01 04 B7 01 FF	No keep Brightness
	Flare red	8x 01 04 B8 dat FF	Flare mode red value Default is 32
	Flare green	8x 01 04 B9 dat FF	Flare mode green value Default is 32
	Flare green	8x 01 04 BA dat FF	Flare mode blue value Default is 32
SYS_Menu	Menu On	8x 01 06 06 02 FF	Turn on the menu
	Menu Off	8x 01 06 06 03 FF	Turn off the menu
	Menu Back	8x 01 06 06 10 FF	Menu step back
	Menu OK	8x 01 7E 01 02 00 01 FF	Menu ok
IR_Receive	On	8x 01 06 08 02 FF	IR(remote commander)receive ON/OFF
	Off	8x 01 06 08 03 FF	
	On/Off	8x 01 06 08 10 FF	
Pan_tilt Drive	Up	8x 01 06 01 VV WW 03 01 FF	VV: Pan speed 0x01 (low speed) to 0x18 (high speed) WW: Tilt speed 0x01 (low speed) to 0x14 (high speed) YYYY: Pan Position(TBD) ZZZZ: Tilt Position(TBD)
	Down	8x 01 06 01 VV WW 03 02 FF	
	Left	8x 01 06 01 VV WW 01 03 FF	
	Right	8x 01 06 01 VV WW 02 03 FF	
	Up left	8x 01 06 01 VV WW 01 01 FF	
	Up right	8x 01 06 01 VV WW 02 01 FF	
	Down Left	8x 01 06 01 VV WW 01 02 FF	
	Down Right	8x 01 06 01 VV WW 02 02 FF	
	Stop	8x 01 06 01 VV WW 03 03 FF	
	Absolute Position	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Relative Position	8x 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	
	Home	8x 01 06 04 FF	
	Reset	8x 01 06 05 FF	
Pan-tilt Limit Set	Set	8x 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W:1 Up Right 0:Down Left YYYY: Pan Limit Position(TBD) ZZZZ: Tilt Limit Position(TBD)
	Clear	8x 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	

Part 3 Camera Lnquiry Command

Command type	command	return	note
CAM_Power Inq	8x 09 04 00 FF	y0 50 02 FF	On
		y0 50 03 FF	Off(Standby)
CAM_Zoom Pos Inq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_DZoom On Off Inq	8x 09 04 06 FF	y0 50 0p FF	p 2: ON 3: OFF
CAM_DZoom Mode Inq	8x 09 04 36 FF	y0 50 0p FF	p 0:combination mode 1:separate mode
CAM_DZoom Posi Inq	8x 09 04 46 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom Position
CAM_Speed By Zoom Inq	8x 09 06 A0 FF	y0 50 0p FF	p 2: ON 3: OFF
CAM_PT Speed Inq(IR)	8x 09 04 C1 FF	y0 50 pp FF	pp: 0x05~0x18
CAM_Zoom Speed Inq(IR)	8x 09 04 D1 FF	y0 50 0p FF	p:0x00~0x07
CAM_Focus Mode Inq	8x 09 04 38 FF	y0 50 02 FF	Auto Focus
		y0 50 03 FF	Manual Focus
CAM_Focus Pos Inq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_2D_Inq	8x 09 04 A5 FF	y0 50 03 FF	(0~0x01) p: 0: off 1: on
CAM_3D_Inq	8x 09 04 53 FF	y0 50 03 FF	(0~0x05) p:0:off 1: auto 2~5: noise level
CAM_WB Mode Inq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 01 FF	Indoor mode
		y0 50 02 FF	Outdoor mode
		y0 50 03 FF	One Push mode
		y0 50 04 FF	ATW
		y0 50 05 FF	Manual
CAM_R Gain Inq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: R Gain
CAM_B Gain Inq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: B Gain
CAM_Saturation Inq	8x 09 04 A1 FF	y0 50 00 00 0p 0q FF	pq: saturation
CAM_Contrast Inq	8x 09 04 A2 FF	y0 50 00 00 0p 0q FF	pq: contrast
CAM_AE Mode Inq	8x 09 04 39 FF	y0 50 00 FF	Full Auto
		y0 50 03 FF	Manual
		y0 50 0A FF	Shutter priority
		y0 50 0B FF	Iris priority
		y0 50 0D FF	Bright
CAM_Flicker Mode Inq	8x 09 04 AA FF	y0 50 0p FF	p: 0: OFF 1: 50HZ 2: 60HZ
CAM_Shutter Pos Inq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_Iris Pos Inq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_Gain Posi Inq	8x 09 04 4C FF	y0 50 00 00 0p 0q FF	pq: Gain Position
CAM_ Bright Posi Inq	8x 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_WDR Mode Inq	8x 09 04 3D FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_WDR Pos Inq	8x 09 04 D3 FF	y0 50 0p FF	p: WDR Position

CAM_Aperture Inq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture Gain
CAM_Preset Exist Inq	8x 09 04 3F pp FF	y0 50 0q FF	pp: Memory number q: 1=preset exist 0=preset not saved
SYS_Menu Mode Inq	8x 09 06 06 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_LR_Reverse Inq	8x 09 04 61 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_Picture Flip Inq	8x 09 04 66 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ID Inq	8x 09 04 22 FF	y0 50 0p 0q 0r 0s FF	pqrs: Camera ID
CAM_DHCP Inq	8x 09 04 AE FF	y0 50 pp FF	
CAM_IP Inq	8x 09 04 AB FF	y0 50 0p 0p 0q 0q 0r 0r 0s 0s FF	
CAM_MASK Inq	8x 09 04 AC FF	y0 50 0p 0p 0q 0q 0r 0r 0s 0s FF	
CAM_GATEWAY Inq	8x 09 04 AD FF	y0 50 0p 0p 0q 0q 0r 0r 0s 0s FF	
CAM_Flare Mode Inq	8x 09 04 B6 FF	y0 50 pp FF	
CAM_Flare Bright Mode Inq	8x 09 04 B7 FF	y0 50 pp FF	
CAM_Flare Red	8x 09 04 B8 FF	y0 50 pp FF	
CAM_Flare Green	8x 09 04 B9 FF	y0 50 pp FF	
CAM_Flare Blue	8x 09 04 BA FF	y0 50 pp FF	
CAM_Version Inq	8x 09 00 02 FF	y0 50 ab cd mn pq rs tu vw FF	
Video System Inq(Factory)	8x 09 06 23 FF	y0 50 pp FF	pp: Video format
Video System Inq(Sony)	8x 09 04 24 72 FF	y0 50 0p 0p FF	pp: Video format
IR_Transfer	8x 09 06 1A FF	y0 50 02 FF	On
		y0 50 03 FF	Off
IR_Receive	8x 09 06 08 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
Pan-tilt Max Speed Inq	8x 09 06 11 FF	y0 50 ww zz FF	ww: Pan Max Speed zz: Tilt Max Speed
Pan-tilt Pos Inq	8x 09 06 12 FF	y0 50 0w 0w 0w 0w 0z 0z 0z 0z FF	wwww: Pan Position zzzz: Tilt Position

Note:【x】 means the camera address ;【y】=【x + 8】.

VISCA PAN TILT ABSOLUTE POSITION VALUE

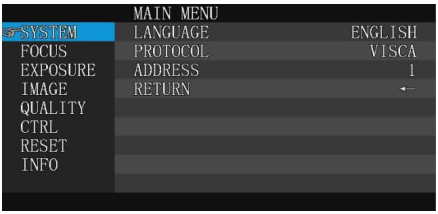
Pan Angle	VISCA Value	Tilt Angle	VISCA Value
-170	0xF670	-30	0xFE50
-135	0xF868	0	0x0000
-90	0xFAF0	30	0x01B0
-45	0xFD78	60	0x0360
0	0x0000	90	0x510
45	0x0288		
90	0x0510		
135	0x0798		
170	0x0990		

VISCA PAN TILT SPEED VALUE

Pan(Degree/Second)		Pan(Degree/Second))	
0	0.3	0	0.3
1	1	1	1
2	1.5	2	1.5
3	2.2	3	2.2
4	2.4	4	3.6
5	2.6	5	4.7
6	2.8	6	6
7	3.0	7	8
8	3.2	8	10
9	3.4	9	12
10	3.8	10	15
11	4.5	11	18
12	6	12	23
13	9	13	30
14	15	14	39
15	19	15	48
16	25	16	59
17	32	17	69
18	38	18	80
19	45		
20	58		
21	75		
22	88		
23	105		
24	120		

OSD MENU

1. Under working mode, press the MENU key on the IR remote controller, to enter the OSD menu as bellow:



2. After enter the main menu, use the navigate UP/DOWN key to select the main menu. Once been selected, the main menu will change to blue background, and the right side will show all sub menu options.

3. Press the navigate RIGHT key to enter sub menu; use UP/DONW key to select the sub menu; use LEFT/RIGHT key to select parameter.

4. Press the MENU key again to return to previous menu. Press the MENU key continuously to exit the OSD menu.

5. OSD Menu Setting List

SYSTEM	LANGUAGE	Optional Item: Chinese/English	Default: English
	PROTOCOL	Only VISCA	Default: VISCA
	ADDRESS	VISCA: 1~7	Default: 1
	RETURN	Return to previous menu	

FOCUS	FOCUS MODE	AUTO/MANUAL/PUSH	Default: AUTO
	FOCUS LIMIT	1.5~10M Reference distance: 1.5/ 2/ 3/ 6/ 10M	Default: 1.5M
	DZOOM	Turn on/off digital zoom (3x digital zoom)	Default: ON
	RATIO DIS	ON/OFF	Default: OFF
	RETURN	Return to previous menu	

EXPOSURE	EXPOSURE MODE	AUTO/MANU/IRIS/SHUT/BRI.	Default: AUTO
	SHUTTER	Shutter speed:1/8~1/10000, only valid under manual mode	Default: AUTO
	IRIS	Iris setting: 0~13, only valid under manual mode	Default: AUTO
	GAIN	Gain setting: 0~15, only valid under manual mode	Default: AUTO
	BRIGHT	Bright setting: 0~27, only valid under bright priority mode.	Default: AUTO
	FLICK	Anti-Flicker setting: 50/60HZ/OFF, to reduce the video flicker	Default: 50HZ
	BACK LIGHT	ON/OFF	Default: OFF
	GAMMA	Gamma curve selection	Default: 0
	RETURN	Return to previous menu	

IMAGE	WB MODE	Optional: AUTO/IDR./ODR./PUSH/ATW/MANU/SON./FL.	Default: ATW
	R GAIN	Red gain level: 0~255, only valid under manual white balance mode.	Default: AUTO
	B GAIN	Blue gain level:0~255, only valid under manual white balance mode	Default: AUTO
	DEFOG	OFF, 1~15	Default: OFF
	RETURN	Return to previous menu	

QUALITY	2D NR	2D noise reduction: the bigger value, the less noise on image, the lower resolution	Default: OFF
	3D NR	3D noise reduction:OFF/AUTO/0~4, the bigger value, the less motion noise on image, high value will cause image smear.	Default: AUTO
	SHARPNESS	Sharpness setting: 0~15, the higher value, the higher sharpness of the edge of the image	Default: 6
	CONSTRAST	Set contrast level	Default: 8
	SATURATION	Set saturation.	Default: 8
	BRIGHT	Whole image bright	Default: 8
	D_WDR	Set wide dynamic range: OFF, 1-6	Default: OFF
	RETURN	Return to previous menu	

CTRL	MIRROR	Default: OFF
	FLIP	Default: OFF
	D/N MODE	Default: DAY
	GAIN LIMIT	Default: 128
	RETURN	Return to previous menu

RESET	CAM RESET	Reset camera parameter to default
	PTZ RESET	Reset pan/tilt parameter to default
	ALL RESET	Reset all parameter to default
	RETURN	Return to the previous menu

INFO	CTRL VER	Camera control firmware version
	CTRL DATE	Camera control firmware releasing date
	RETURN	Return to the previous menu

UVC CONTROL

1. Only run the client software after the USB3.0 camera has completed self-configuration (the IR indicator in blue color and will not flash); otherwise may cause black video issue.

2. Make sure the USB3.0 camera is recognized by the PC Device Manager.

3. Make sure the interval of video format switching more than 3 seconds, otherwise black video maybe caused.

4. Make sure the interval of control command sending from the server (via USB) to the camera no less than 250ms.

5. Support standard UVC interface.

PU_BRIGHTNESS_CONTROL	81 01 04 4d 00 00 0p 0q FF
PU_CONTRAST_CONTROL	81 01 04 A2 00 00 0p 0q FF
PU_SATURATION_CONTROL	81 01 04 A1 00 00 0p 0q FF
PU_SHARPNESS_CONTROL	8x 01 04 42 00 00 0p 0q FF
PU_GAMMA_CONTROL	8x 01 04 5B 0p FF
PU_WHITE_BALANCE_TEMPERATURE_CONTROL	8x 01 04 35 0X FF
PU_BACKLIGHT_COMPENSATION_CONTROL	81 01 04 33 02/03 FF
PU_POWER_LINE_FREQUENCY_CONTROL	8x 01 04 AA 00/01/02 FF
CT_ZOOM_ABSOLUTE_CONTROL	8x 01 04 47 0p 0q 0r 0s FF
CT_PANTILT_ABSOLUTE_CONTROL	8x 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z F
CT_PANTILT_RELATIVE_CONTROL	8x 01 06 01 pp qq rr ss FF
CT_ZOOM_RELATIVE_CONTROL	8x 01 04 07 pp FF