



PTZOptics VISCA API

Developer Documentation

VISCA API

Welcome to the **VISCA API documentation**. This guide provides all the necessary information to programmatically control your camera using the VISCA protocol. Our API is designed for seamless and efficient integration, offering a comprehensive solution for controlling camera functions.

API Information

- **API Version:** 1.0
- **Date:** August 28, 2026

Communication Protocols

The VISCA protocol is a command-based communication protocol used to control professional video cameras. It supports two primary communication methods:

- **Serial VISCA:** A physical RS-232 serial connection for direct, local control.
- **IP VISCA:** TCP/IP-encapsulated VISCA for remote, networked camera control.



RESPONSES



EXPOSURE



FOCUS



IMAGE



MOVEMENT



NETWORK



OSD



QUERIES



STREAMING

Responses

Camera Issued Commands

ACK / Completion Messages

The command is ACK or Completion Message.

 NOTE

VISCA over IP control: z = 9 Serial VISCA control: z = Camera Address + 8

Socket Number: y (Inquiry command: 0)

Function	Command Packet	Comments
ACK	z0 4y FF	Returned when the command is accepted.
Completion	z0 5y FF	Returned when the command has been executed.

Error Messages

The command Error Messages

Function	Command Packet	Comments
Syntax Error	z0 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is a
Command Buffer Full	z0 60 03 FF	Indicates that two sockets are already being used (executing two commands) and the command could not b
Command Canceled	z0 6y 04 FF	Returned when a command which is being executed in a socket specified by the cancel command is cancel
No Socket	z0 6y 05 FF	Returned when no command is executed in a socket specified by the cancel command, or when an invalid S
Command Not Executable	z0 6y 41 FF	Returned when a command cannot be executed due to current conditions. For example: when commands c

Exposure

Command	Function	Command Packet	Comments
CAM_WB	Auto	81 01 04 35 00 FF	Normal Auto Mode
*	Indoor	81 01 04 35 01 FF	Indoor Mode
*	Outdoor	81 01 04 35 02 FF	Outdoor Mode
*	OnePush	81 01 04 35 03 FF	One Push White Balance Mode
*	Manual	81 01 04 35 05 FF	Manual Control Mode
*	ColorTemperature (VAR)	81 01 04 35 20 FF	Color Temperature Mode
*	OnePush Trigger	81 01 04 10 05 FF	One Push White Balance Trigger
CAM_RGain	Reset	81 01 04 03 00 FF	Default Bright Position
*	Up	81 01 04 03 02 FF	Default Bright Position
*	Down	81 01 04 03 03 FF	Default Bright Position

Command	Function	Command Packet	Comments
*	Direct	81 01 04 43 00 00 0p 0q FF	pq: Red Gain
CAM_BGain	Reset	81 01 04 04 00 FF	Manual control of blue gain
*	Up	81 01 04 04 02 FF	Manual control of blue gain
*	Down	81 01 04 04 03 FF	Manual control of blue gain
*	Direct	81 01 04 44 00 00 0p 0q FF	pq: Blue Gain
CAM_ColorTemp	Reset	81 01 04 20 00 FF	Default ColorTemperature Settings
*	Up	81 01 04 20 02 FF	Default ColorTemperature Settings
*	Down	81 01 04 20 03 FF	Default ColorTemperature Settings
*	Direct	81 01 04 20 0p 0q FF	pq: ColorTemperature position: 0x00: 2500K ~ 0x37: 8000K
CAM_RTuning	Direct	81 0A 01 12 pq FF	pq: Red / Blue Tuning position 0x00 (-10) ~ 0x14 (+10)
CAM_BTuning	Direct	81 0A 01 13 pq FF	pq: Red / Blue Tuning position 0x00 (-10) ~ 0x14 (+10)

Command	Function	Command Packet	Comments
CAM_AE	Full Auto	81 01 04 39 00 FF	Automatic Exposure mode
*	Manual	81 01 04 39 03 FF	Manual exposure mode
*	Shutter Priority	81 01 04 39 0A FF	Shutter priority auto exposure mode
*	Iris Priority	81 01 04 39 0B FF	Iris priority auto exposure mode
*	Bright	81 01 04 39 0D FF	Bright manual exposure mode
CAM_Iris	Reset	81 01 04 0B 00 FF	Default Iris Position
*	Up	81 01 04 0B 02 FF	Iris Setting
*	Down	81 01 04 0B 03 FF	Iris Setting
*	Direct	81 01 04 4B 00 00 0p 0q FF	pq: Iris Position
CAM_DRC	Direct	81 01 06 01 0E 0E 03 02 FF	p: 0(low) - 8(high)
CAM_Shutter	Reset	81 01 04 0A 00 FF	Default shutter Position
*	Up	81 01 04 0B 02 FF	Shutter Setting
*	Down	81 01 04 0B 03 FF	Shutter Setting

Command	Function	Command Packet	Comments
*	Direct	81 01 04 4B 00 00 0p 0q FF	pq: Shutter Position
CAM_Gain	Reset	81 01 04 0C 00 FF	Gain Setting
*	Up	81 01 04 0C 02 FF	Gain Setting
*	Down	81 01 04 0C 03 FF	Gain Setting
*	Direct	81 01 04 0C 00 00 0p 0q FF	pq: Gain Position
*	Gain Limit	81 01 04 2C 0p FF	p: Gain Position
CAM_Bright	Reset	81 01 04 0D 00 FF	Default Bright position
*	Up	81 01 04 0D 02 FF	Bright Setting
*	Down	81 01 04 0D 03 FF	Bright Setting
*	Direct	81 01 04 0D 00 00 0p 0q FF	pq: Bright position
CAM_ExpComp	On	81 01 04 3E 02 FF	Exposure Compensation On
*	Off	81 01 04 3E 03 FF	Exposure Compensation Off
*	Reset	81 01 04 0E 00 FF	Default ExpComp Position

Command	Function	Command Packet	Comments
*	Up	81 01 04 0E 02 FF	ExpComp Setting
*	Down	81 01 04 0E 03 FF	ExpComp Setting
*	Direct	81 01 04 4E 00 00 0p 0q FF	pq: ExpComp position
CAM_NR(2D)Mode	Auto	81 01 04 50 02 FF	ND2D Auto
*	Manual	81 01 04 50 03 FF	ND2D Manual
CAM_NR(2D)Level	Direct	81 01 04 53 0p FF	p: NR Setting (0: Off, level 1 to 5)
CAM_NR(3D)Level	Direct	81 01 04 54 0p FF	p: NR Setting (0: Off, level 1 to 8)
CAM_WDRStrength	Reset	81 01 04 21 00 FF	WDRStrength Setting
*	Up	81 01 04 21 02 FF	WDRStrength Setting
*	Down	81 01 04 21 03 FF	WDRStrength Setting
*	Direct	81 01 04 51 00 00 0p 0q FF	pq: WDR Level Positon
CAM_Backlight	On	81 01 04 33 02 FF	Backlight Compensation On
*	Off	81 01 04 33 03 FF	Backlight Compensation Off

Command	Function	Command Packet	Comments
CAM_Flicker	-	81 01 04 23 0p FF	p: Flicker settings - (0: Off, 1: 50Hz, 2: 60Hz)
CAM_ApertureMode (Sharpness)	Auto	81 01 04 05 02 FF	ApertureMode Auto
*	Manual	81 01 04 05 03 FF	ApertureMode Manual
CAM_Aperture (Sharpness)**	Reset	81 01 04 02 00 FF	Aperture Control
*	Up	81 01 04 02 02 FF	Aperture Control
*	Down	81 01 04 02 03 FF	Aperture Control
*	Direct	81 01 04 42 00 00 0p 0q FF	pq: Aperture Gain

Focus

Command	Function	Command Packet	Comments
CAM_Focus	Stop	81 01 04 08 00 FF	
*	Far (Standard)	81 01 04 08 02 FF	
*	Near (Standard)	81 01 04 08 03 FF	
*	Far (Variable)	81 01 04 08 2p FF	
*	Near (Variable)	81 01 04 08 3p FF	
*	Direct	81 01 04 48 0p 0q 0r 0s FF	pqrs: Zoom Position (0x04 0x00 0x00 0x00 = Full Zoom in. 0x00 0x00 0x00 0x00 = Full Zoom out.)
*	Auto Focus	81 01 04 38 02 FF	Auto Focus On / Off
*	Manual Focus	81 01 04 38 03 FF	Auto Focus On / Off
*	Auto / Manual	81 01 04 38 10 FF	Auto Focus On / Off
*	Snap Focus	81 01 04 38 04 FF	Focus image while maintaining manual focus mode

Command	Function	Command Packet	Comments
*	Focus Lock	81 0a 04 68 02 FF	Prevents any other operation or command from adjusting the current focus state
*	Focus Unlock	81 0a 04 68 03 FF	Prevents any other operation or command from adjusting the current focus state
*	Direct	0s 0t 0u 0v 0w FF	tuvw: Focus Position
CAM_AFSensitivity	High	81 01 04 58 01 FF	AF Sensitivity High / Normal / Low
CAM_AFSensitivity	Normal	81 01 04 58 02 FF	AF Sensitivity High / Normal / Low
CAM_AFSensitivity	Low	81 01 04 58 03 FF	AF Sensitivity High / Normal / Low
CAM_FocusRange	Focus Range	81 0A 11 42 0p rs tv FF	p=0: Off p=1: On, rs: furthest position(0x00 ~ 0x0B), tv: nearest position(0x00 ~ 0x0B)
CAM_AFZone	Top	81 01 04 AA 00 FF	AF Zone weight select
*	Center	81 01 04 AA 01 FF	AF Zone weight select
*	Bottom	81 01 04 AA 02 FF	AF Zone weight select
CAM_LensType	Type 1	81 0A 01 04 1B 00 FF	Corrects Camera Focus Capabilities

Command	Function	Command Packet	Comments
*	Type 2	81 0A 01 04 1B 01 FF	p=1: Flashing, p=2: Light Always On, p=3: Normal
CAM_AFCalibration	Re-Calibrates Focus	81 0A 01 03 12 FF	

Image

Command	Function	Command Packet	Comments
CAM_Picture Effect	Off	81 01 04 63 00 FF	Picture Effect Setting
*	B&W	81 01 04 63 04 FF	Picture Effect Setting
CAM_ImageFreeze	Freeze Image	81 01 04 62 0p FF	p: 2 ON; p: 3 OFF
CAM_LR_Reverse	On	81 01 04 61 02 FF	Image Flip Horizontal On
*	Off	81 01 04 61 03 FF	Image Flip Horizontal Off
CAM_PictureFlip	On	81 01 04 66 02 FF	Image Flip Vertical On
*	Off	81 01 04 66 03 FF	Image Flip Vertical Off
CAM_ColorGain	Direct	81 01 04 49 00 00 00 0p FF	P: Color Gain setting 0h (60%) to Eh(200%)
CAM_Brightness**	Direct	81 01 04 A1 00 00 0p 0q FF	pq: Brightness position
CAM_Contrast	Direct	81 01 04 A2 00 00 0p 0q FF	pq: Contrast position
CAM_Flip	Off	81 01 04 A4 00 FF	Single Command for video flip

Command	Function	Command Packet	Comments
*	Flip-H	81 01 04 A4 01 FF	Single Command for video flip
*	Flip-V	81 01 04 A4 02 FF	Single Command for video flip
*	Flip-HV	81 01 04 A4 03 FF	Single Command for video flip
CAM_SettingSave	Save	81 01 04 A5 10 FF	Save Current Setting
CAM_AWB Sensitivity	High	81 01 04 A9 00 FF	Single Command for video flip
*	Normal	81 01 04 A9 01 FF	Single Command for video flip
*	Low	81 01 04 A9 02 FF	Single Command for video flip
CAM_ColorHue	Direct	81 01 04 4F 00 00 00 0p FF	P: Color Hue setting 0h (-14°) to Eh (+14°)

Movement

Pan/Tilt

Command	Function	Command Packet	Comments
Pan_TiltDrive	Up	81 01 06 01 VV WW 03 01 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)
*	Down	81 01 06 01 VV WW 03 02 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)
*	Left	81 01 06 01 VV WW 01 03 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)
*	Right	81 01 06 01 VV WW 02 03 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)
*	UpLeft	81 01 06 01 VV WW 01 01 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)
*	UpRight	81 01 06 01 VV WW 02 01 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)

Command	Function	Command Packet	Comments
*	DownLeft	81 01 06 01 VV WW 01 02 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)
*	DownRight	81 01 06 01 VV WW 02 02 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)
*	Stop	81 01 06 01 VV WW 03 03 FF	VV: Pan Speed 0x01 (low) to 0x18 (high) WW: Tilt Speed 0x01 (low) to 0x14 (high)
*	AbsolutePosition	81 01 06 02 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	YYYY: Pan position, ZZZZ: Tilt position
*	RelativePosition	81 01 06 03 VV WW 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	YYYY: Pan position, ZZZZ: Tilt position
*	Home	81 01 06 04 FF	Position Home
*	Reset	81 01 06 05 FF	Position Reset
Pan_TiltLimitSet	LimitSet	81 01 06 07 00 0W 0Y 0Y 0Y 0Y 0Z 0Z 0Z 0Z FF	W: 1 (UpRight), 0: DownLeft YYYY: Pan position, ZZZZ: Tilt position
*	LimitClear	81 01 06 07 01 0W 07 0F 0F 0F 07 0F 0F 0F FF	W: 1 (UpRight), 0: DownLeft YYYY: Pan position, ZZZZ: Tilt position

Focus

Command	Function	Command Packet	Comments
CAM_Focus	Stop	81 01 04 08 00 FF	
*	Far (Standard)	81 01 04 08 02 FF	
*	Near (Standard)	81 01 04 08 03 FF	
*	Far (Variable)	81 01 04 08 2p FF	
*	Near (Variable)	81 01 04 08 3p FF	
*	Direct	81 01 04 48 0p 0q 0r 0s FF	pqrs: Zoom Position (0x04 0x00 0x00 0x00 = Full Zoom in. 0x00 0x00 0x00 0x00 = Full Zoom out.)
*	Auto Focus	81 01 04 38 02 FF	Auto Focus On / Off
*	Manual Focus	81 01 04 38 03 FF	Auto Focus On / Off
*	Auto / Manual	81 01 04 38 10 FF	Auto Focus On / Off
*	Snap Focus	81 01 04 38 04 FF	Focus image while maintaining manual focus mode
*	Focus Lock	81 0a 04 68 02 FF	Prevents any other operation or command from adjusting the current focus state

Command	Function	Command Packet	Comments
*	Focus Unlock	81 0a 04 68 03 FF	Prevents any other operation or command from adjusting the current focus state
*	Direct	0s 0t 0u 0v 0w FF	tuvw: Focus Position
CAM_AFSensitivity	High	81 01 04 58 01 FF	AF Sensitivity High / Normal / Low
CAM_AFSensitivity	Normal	81 01 04 58 02 FF	AF Sensitivity High / Normal / Low
CAM_AFSensitivity	Low	81 01 04 58 03 FF	AF Sensitivity High / Normal / Low
CAM_FocusRange	Focus Range	81 0A 11 42 0p rs tv FF	p=0: Off p=1: On, rs: furthest position(0x00 ~ 0x0B), tv: nearest position(0x00 ~ 0x0B)
CAM_AFZone	Top	81 01 04 AA 00 FF	AF Zone weight select
*	Center	81 01 04 AA 01 FF	AF Zone weight select
*	Bottom	81 01 04 AA 02 FF	AF Zone weight select
CAM_LensType	Type 1	81 0A 01 04 1B 00 FF	Corrects Camera Focus Capabilities
*	Type 2	81 0A 01 04 1B 01 FF	p=1: Flashing, p=2: Light Always On, p=3: Normal

Command	Function	Command Packet	Comments
CAM_AFCalibration	Re-Calibrates Focus	81 0A 01 03 12 FF	

Zoom

Command	Function	Command Packet	Comments
CAM_Zoom	Stop	81 01 04 07 00 FF	
*	Tele (Standard)	81 01 04 07 02 FF	
*	Wide (Standard)	81 01 04 07 03 FF	
*	Tele (Variable)	81 01 04 07 2p FF	p = 0 (low) – 7 (high)
*	Wide (Variable)	81 01 04 07 3p FF	p = 0 (low) – 7 (high)
*	Direct	81 01 04 47 p q r s FF	
CAM_ZoomFocus	Direct	81 01 04 47 0p 0q	pqrs: Zoom Position

Network

Command	Function	Command Packet	Comments
CAM_NDIMODE	High	81 0B 01 01 FF	
*	Medium	81 0B 01 02 FF	
*	Low	81 0B 01 03 FF	
*	Off	81 0B 01 04 FF	
CAM_Multicast Mode	Multicast Mode	81 0B 01 23 0p FF	p=1: On, p=2: Off

OSD

Command	Function	Command Packet	Comments
OSD_Control	Open / Close	81 01 04 3F 02 5F FF	
*	Close	81 01 06 06 03 FF	
*	Navigate Up	81 01 06 01 0E 0E 03 01 FF	
*	Navigate Down	81 01 06 01 0E 0E 03 02 FF	
*	Navigate Left	81 01 06 01 0E 0E 01 03 FF	
*	Navigate Right	81 01 06 01 0E 0E 02 03 FF	
*	Enter	81 01 06 06 05 FF	
*	Return	81 01 06 06 04 FF	

Queries

Use these commands when you want to query the current status or settings of the camera.

Command	Function	Command Packet	Comments
CAM_PowerInq	81 09 04 00 FF	y0 50 02 FF	On
*	*	y0 50 03 FF	Off(Standby)
*	*	y0 50 04 FF	Internal Power Circuit Error
CAM_ZoomPosInq	81 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom position
CAM_FocusAFModelInq	81 09 04 48 FF	y0 50 02 FF	AutoFocus
*		y0 50 03 FF	Manual Focus
CAM_FocusPosInq	81 09 04 35 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus Position
CAM_WBModelInq	81 09 04 35 FF	y0 50 00 FF	Auto
*	*	y0 50 01 FF	Indoor
*	*	y0 50 02 FF	Outdoor

Command	Function	Command Packet	Comments
*	*	y0 50 03 FF	OnePush
*	*	y0 50 05 FF	Manual
*	*		Color Temperature
CAM_RGainInq	81 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: Red Gain
CAM_BGainInq	81 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: Blue Gain
CAM_ColorTemplnq		y0 50 pq FF	pq: Color Temperature Position
CAM_RTuningInq	81 09 04 12 FF	90 50 00 00 0p 0q FF	pq: 0x00 ~ 0x14
CAM_BTuningInq	81 09 04 13 FF	90 50 00 00 0p 0q FF	pq: 0x00 ~ 0x14
CAM_AEModeInq	81 09 04 39 FF	y0 50 00 FF	Full Auto
*	*	y0 50 03 FF	Manual
*	*	y0 50 0A FF	Shutter Priority (SAE)
*	*	y0 50 0B FF	Iris Priority (AAE)
*	*	y0 50 0D FF	Bright

Command	Function	Command Packet	Comments
CAM_ShutterPosInq	81 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter Position
CAM_IrisPosInq	81 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris Position
CAM_BrightPositionInq	81 09 04 4D FF	y0 50 00 00 0p 0q FF	pq: Bright Position
CAM_ExpCompModelInq	81 09 04 3E FF	y0 50 02 FF	On
*	81 09 04 3E FF	y0 50 03 FF	Off
CAM_ExpCompPosInq	81 09 04 4E FF	y0 50 00 00 0p 0q FF	pq: ExpComp Position
CAM_BacklightModelInq	81 09 04 33 FF	y0 50 02 FF	On
*	81 09 04 33 FF	y0 50 03 FF	Off
CAM_Noise2DModeModelInq	81 09 04 50 FF	y0 50 02 FF	Auto Noise 2D
*	81 09 04 50 FF	y0 50 03 FF	Manual Noise 2D
CAM_Noise2DLevel	81 09 04 53 FF	y0 50 0p FF	Noise Reduction (2D) p: 0 to 5
CAM_Noise3DLevel	81 09 04 54 FF	y0 50 0p FF	Noise Reduction (3D) p: 0 to 5
CAM_FlickerModelInq	81 09 04 55 FF	y0 50 0p FF	p=0: Off, 1: 50Hz, 2: 60Hz

Command	Function	Command Packet	Comments
CAM_ApertureModelInq (Sharpness)	81 09 04 05 FF	y0 50 02 FF	Auto Sharpness
*	81 09 04 55 FF	y0 50 03 FF	Manual Sharpness
CAM_MenuModelInq	81 09 06 06 FF	y0 50 02 FF	On
*	81 09 06 06 FF	y0 50 03 FF	Off
CAM_PictureEffectModelInq	81 09 04 63 FF	y0 50 02 FF	Off
*	81 09 04 63 FF	y0 50 04 FF	B&W

Streaming

Command	Function	Command Packet	Comments
CAM_RTMPSet	Toggle RTMP	81 0A 11 A8 pq FF	p: 1 Stream 1; p: 2 stream 2; q: 2 ON, q: 3 OFF