

# PTZOptics G2 VISCA over IP Commands

Older model PTZOptics cameras may not be compatible with all commands. For best compatibility, see <https://ptzoptics.com/latest-firmware-files/>

Camera Responses					
Command Set	Command	Command Package	Note		
Camera Responses	ACK/Completion	ACK	90 4y FF	Return when the command is accepted	
		Completion	90 5f FF	Return when the command has been executed	
	Error Messages	Syntax Error	90 60 02 FF	Returned when the command format is different or when a command with illegal command parameters is accepted	
		Command Buffer Full	90 60 03 FF	Indicates that two sockets are already being used(executing two commands) and the command could not be accepted when received	
		Command Canceled	90 6y 04 FF	Returned when a command which is being executed in a socket specified by the cancel command is canceled. The completion message for the command is not returned	
		No Socket	90 6y 05 FF	Returned when no command is executed in a socket specified by the cancel command, or when an invalid socket number is specified	
Command Not Executable	90 6y 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			
Camera Commands					
Command Set	Command	Command Package	Note		
Image	Luminance	Direct	81 01 04 A1 00 00 00 0p FF	p: Luminance Position (0x0=0 ~ E=14)	
	Contrast	Direct	81 01 04 A2 00 00 00 0p FF	p: Contrast Position (0x0=0 ~ E=14)	
	Sharpness	Mode	81 01 04 05 0p FF	p: 0x2=Auto, 0x3=Manual	
		Reset	81 01 04 02 00 FF	Resets to default position 0x03 (3) value	
		Aperture Control	81 01 04 02 02 FF	Aperture Control	
	Horizontal Flip	Down	81 01 04 02 03 FF	Aperture Control	
		Direct	81 01 04 02 00 0p 0q FF	pq: Aperture Gain (0x00=0 ~ 0x0B=11)	
	Vertical Flip	On	81 01 04 61 0p FF	p: 0x2=On, 0x3=Off	
	Image Flip	On	81 01 04 66 0p FF	p: 0x2=On, 0x3=Off	
	Black & White	Off	81 01 04 A4 0p FF	p: 0x0=Off, 0x1=Horizontal Flip, 0x2=Vertical Flip, 0x3=Flip Both	
Black & White	Direct	81 01 04 63 0p FF	p: 0x0=Off, 0x4=On		
Exposure	Exposure Mode	Mode	81 01 04 39 0p FF	p: 0x0=Auto, 0x3=Manual, 0xA=Shutter, 0xB=Iris, 0xD=Bright	
	Exposure Compensation	On / Off	81 01 04 3E 0p FF	p: 0x2=On, 0x3=Off	
		Reset	81 01 04 0E 00 FF	Resets to 0x7 (0) value	
		Up	81 01 04 0E 02 FF	ExpComp Setting	
	Dynamic Range Control	Down	81 01 04 0E 03 FF	ExpComp Setting	
		Direct	81 01 04 4E 00 0p 0q FF	pq: ExpComp Position (0x0=-7 ~ 0x7=0 ~ 0xE=+7)	
	Backlight	Direct	81 01 04 25 00 00 0p FF	p: 0x0=0 ~ 0x8=8	
	Iris	On / Off	81 01 04 33 0p FF	p: 0x2=On, 0x3=Off	
		Reset	81 01 04 08 00 FF	Resets to 0xC (F1.8) value	
		Up	81 01 04 0B 02 FF	Iris Setting	
	Shutter	Down	81 01 04 0B 03 FF	Iris Setting	
		Direct	81 01 04 4B 00 00 0p FF	p: Iris Position (0x0=Close ~ 0xC=F1.8)	
		Reset	81 01 04 0A 00 FF	Resets to 0x5 (1/125) value	
	Bright	Up	81 01 04 0A 02 FF	Shutter Setting	
		Down	81 01 04 0A 03 FF	Shutter Setting	
		Direct	81 01 04 4A 00 0p 0q FF	pq: Shutter Position (0x01=1/30 ~ 0x11=1/10000)	
	Wide Dynamic Range <sup>1</sup>	Reset	81 01 04 0D 00 FF	Resets to 0x7 (7) value	
		Up	81 01 04 0D 02 FF	Bright Setting	
		Down	81 01 04 0D 03 FF	Bright Setting	
		Direct	81 01 04 0D 00 0p 0q FF	pq: Bright Position (0x00=0 ~ 0x11=17)	
Reset		81 01 04 21 00 FF	Resets to 0x6 (6) value		
Color	Gain	Up	81 01 04 21 02 FF	WDR Setting	
		Down	81 01 04 21 03 FF	WDR Setting	
	Gain Limit	Direct	81 01 04 51 00 0p 0q FF	pq: WDR Position (0x00=0 ~ 0x6=6)	
		Reset	81 01 04 0C 00 FF	Resets to 0x2 (2) value	
		Up	81 01 04 0C 02 FF	Gain Setting	
	Anti-Flicker	Down	81 01 04 0C 03 FF	Gain Setting	
		Direct	81 01 04 0C 00 0p 0q FF	pq: Gain Position (0x00=0 ~ 0x07=7)	
	Color	White Balance Mode	Direct	81 01 04 2C 0p FF	p: Gain Limit Position (0x0=0 ~ 0xF=15)
		OnePush Trigger	Direct	81 01 04 35 pq FF	p: Flicker Settings - (0x0=Off, 0x1=50Hz, 0x2=60Hz)
		Red Tuning	Mode	81 01 04 10 05 FF	pq: 0x00=Auto, 0x01=Indoor, 0x02=Outdoor, 0x03=OnePush, 0x05=Manual, 0x20=ColorTemperature
Blue Tuning		Action	81 0A 01 12 pq FF	One Push WB Trigger	
Saturation		Direct	81 0A 01 13 pq FF	pq: Red Tuning position (0x00=-10 ~ 0x0A=0 ~ 0x14=+10)	
Hue		Direct	81 01 04 49 00 00 0p FF	pq: Blue Tuning position (0x00=-10 ~ 0x0A=0 ~ 0x14=+10)	
Red Gain		Direct	81 01 04 4F 00 00 0p FF	p: Saturation setting (0x0=60% ~ 0xE=200%)	
		Reset	81 01 04 03 00 FF	p: Color Hue Setting (0x0=0 ~ 0xE=14)	
		Up	81 01 04 03 02 FF	Reset to 0xE2 (226) value	
Blue Gain		Down	81 01 04 03 03 FF	Red Gain Setting	
	Direct	81 01 04 43 00 0p 0q FF	Red Gain Setting		
	Reset	81 01 04 04 00 FF	pq: R Gain (0x00=0 ~ 0xFF=255)		
Color Temperature	Up	81 01 04 04 02 FF	Reset to 0xBC (188) value		
	Down	81 01 04 04 03 FF	Blue Gain Settings		
	Direct	81 01 04 44 00 0p 0q FF	Blue Gain Settings		
Auto White Balance Sensitivity	Reset	81 01 04 20 00 FF	pq: B Gain (0x00=0 ~ 0xFF=255)		
	Up	81 01 04 20 02 FF	Reset to 0x28 (6500K) value		
	Down	81 01 04 20 03 FF	ColorTemperature Setting		
Pan Tilt	Pan Tilt Drive	Direct	81 01 04 20 0p 0q FF	ColorTemperature Setting	
		High	81 01 04 A9 0p FF	pq: Color Temperature position (0x00=2500K ~ 0x37=8000K)	
		Up	81 01 06 01 vv ww 03 01 FF	p: 0x0=High, 0x1=Normal, 0x2=Low	
		Down	81 01 06 01 vv ww 03 02 FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed)	
		Left	81 01 06 01 vv ww 01 03 FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed)	
		Right	81 01 06 01 vv ww 02 03 FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed)	
		UpLeft	81 01 06 01 vv ww 01 01 FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed)	
		UpRight	81 01 06 01 vv ww 02 01 FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed)	
		DownLeft	81 01 06 01 vv ww 01 02 FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed)	
		DownRight	81 01 06 01 vv ww 02 02 FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed)	
	Pan Tilt Limit	Stop	81 01 06 01 vv ww 03 03 FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed)	
		AbsolutePosition	81 01 06 02 vv ww 0y 0y 0z 0z 0z 0z FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed), yyyy: Pan Position zzzz: Tilt Position	
		RelativePosition	81 01 06 03 vv ww 0y 0y 0z 0z 0z 0z FF	vv: Pan speed 0x01 (low speed) ~ 0x18 (high speed), ww: Tilt speed 0x01 (low speed) ~ 0x14 (high speed), yyyy: Pan Position zzzz: Tilt Position	
		Home	81 01 06 04 FF		
		Reset	81 01 06 05 FF		
Pan Tilt Limit	LimitSet	81 01 06 07 00 0w 0y 0y 0z 0z 0z 0z FF	w: 0x1=UpRight, 0x0=DownLeft, yyyy: Pan Limit Position, zzzz: Tilt Limit Position		
	LimitClear	81 01 06 07 01 0w 07 0f 0f 0f 0f 0f FF	w: 0x1=UpRight, 0x0=DownLeft		

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Zoom	Stop	Direct	81 01 04 07 00 FF	
	Tele	Standard	81 01 04 07 02 FF	
	Wide	Standard	81 01 04 07 03 FF	
	Tele	Adjustable Speed	81 01 04 07 2p FF	p: 0x0(low) ~ 0x7(high)
Focus	Wide	Adjustable Speed	81 01 04 07 3p FF	p: 0x0(low) ~ 0x7(high)
	Direct	Direct	81 01 04 47 0p 0q 0r 0s FF	pqrs: 0x4000 (Full Tele), 0x0000 (Full Wide)
	Mode	Auto / Manual	81 01 04 38 0p FF	p: 0x2=Auto, 0x3=Manual
		Toggle	81 01 04 38 10 FF	
	Stop	Direct	81 01 04 08 00 FF	
	Far	Standard Speed	81 01 04 08 02 FF	
	Near	Standard Speed	81 01 04 08 03 FF	
	Far	Adjustable Speed	81 01 04 08 2p FF	p: 0x0(low) ~ 0x7(high)
	Near	Adjustable Speed	81 01 04 08 3p FF	p: 0x0(low) ~ 0x7(high)
	Direct	Direct	81 01 04 48 0p 0q 0r 0s FF	pqrs: Focus Position 0x0000 is focused all the way out. Maximum range is dependant on camera model)
	OnePush Auto Focus	Action	81 01 04 38 04 FF	Focus image while maintaining manual focus mode
	Focus Lock	Direct	81 0a 04 68 0p FF	p: 0x2=Lock, 0x3=Unlock
	Focus Zone	Direct	81 01 04 AA 0p FF	p: 0x0=Top, 0x1=Center, 0x2=Bottom
	Focus Range	Direct	81 0A 11 42 0p rs tv FF	p: 0x0=Off, 0x1=On, rs: furthest position 0x00 (1m) ~ 0x0B (INF), tv: nearest position 0x00 (1m) ~ 0x0B (INF)
Recalibrates Camera Focus	Action	81 0A 01 03 12 FF	Advanced command. Improper use of this command could result in the camera's focus failing.	
Preset	Preset	Reset	81 01 04 3F 00 pp FF	pp: 0x00=0 ~ 0xFE=254
		Set	81 01 04 3F 01 pp FF	pp: 0x00=0 ~ 0xFE=254
		Recall	81 01 04 3F 02 pp FF	pp: 0x00=0 ~ 0xFE=254
	Preset Speed	Direct	81 01 06 01 pp FF	pp: 0x01 (low speed) ~ 0x18 (high speed)
	Motion Sync	PTZ Motion Sync On	81 0A 11 13 02 FF	p: 0x2=On, 0x3=Off
		PTZ MS Max Speed Limit	81 0A 11 14 0p FF	p: speed stage (0x0=185 ~ 0x9=230)
Camera Menu	Open / Close	Action	81 01 04 3F 02 5F FF	
	Close	Action	81 01 06 06 03 FF	
	Navigate Up	Action	81 01 06 01 0E 0E 03 01 FF	
	Navigate Down	Action	81 01 06 01 0E 0E 03 02 FF	
	Navigate Left	Action	81 01 06 01 0E 0E 01 03 FF	
	Navigate Right	Action	81 01 06 01 0E 0E 02 03 FF	
	Enter	Action	81 01 06 06 05 FF	
	Return	Action	81 01 06 06 04 FF	
System	Power	Action	81 01 04 00 0p FF	p: 0x2=On, 0x3=Standby
	I/F Clear	Direct	81 01 00 01 FF	I/F Clear
	Video Template	Direct	81 0B 01 0p FF	p: 0x1=High, 0x2=Medium, 0x3=Low, 0x4=Off
	Lens Type	Mode	81 0A 01 04 1B 0p FF	p: 0x0=Type1, 0x1=Type2
	Multicast	On / Off	81 0B 01 23 0p FF	p: 0x1=Off, 0x2=On
	RTMP	Stream 1	81 0A 11 A8 1p FF	p: 0x2=On, 0x3=Off
		Stream 2	81 0A 11 A8 2p FF	p: 0x2=On, 0x3=Off
	Standby Light	Direct	81 0A 02 02 0p FF	p: 0x1=Flashing, 0x2=Light always on, 0x3=Normal
	USB Audio	USB Audio On	81 2a 02 a0 04 0p FF	p: 0x2=On, 0x3=Off
	Pause Video	Freeze Image	81 01 04 62 0p FF	p: 0x2=On, 0x3=Off
Save	Action	81 01 04 A5 10 FF	Save Current Setting	

Camera Inquiry Commands				
Command Set	Command Package	Return Package		Note
Image Inquiry	Luminance	81 09 04 A1 FF	90 50 00 00 0p 0q FF	p: Luminance Position (0x00=0 ~ 0x0E=14)
	Contrast	81 09 04 A2 FF	90 50 00 00 0p 0q FF	p: Contrast Position (0x00=0 ~ 0x0E=14)
	Sharpness Mode	81 09 04 05 FF	90 50 0p FF	p: 0x2=Auto, 0x3=Manual
	Sharpness Position	81 09 04 42 FF	90 50 00 00 0p 0q FF	pq: Saturation (0x00=0 ~ 0x0B=11)
	Horizontal Flip	81 09 04 61 FF	90 50 0p FF	p: 0x2=On, 0x3=Off
	Vertical Flip	81 09 04 66 FF	90 50 0p FF	p: 0x2=On, 0x3=Off
	Image Flip	81 09 04 A4 FF	90 50 0p FF	p: 0x0=Off, 0x1=Horizontal Flip, 0x2=Vertical Flip, 0x3=Flip Both
Exposure Inquiry	Black & White	81 09 04 63 FF	90 50 02 FF	p: 0x2=Off, 0x4=On
	Mode	81 09 04 39 FF	90 50 0p FF	p: 0x0=Auto, 0x3=Manual, 0xA=Shutter, 0xB=Iris, 0xD=Bright
	Exposure Compensation Mode	81 09 04 3E FF	90 50 0p FF	p: 0x2=On, 0x3=Off
	Exposure Compensation Position	81 09 04 4E FF	90 50 00 00 0p 0q FF	pq: ExpComp Position (0x0=-7 ~ 0x7=0 ~ 0xE=+7)
	Backlight	81 09 04 33 FF	90 50 0p FF	p: 0x2=On, 0x3=Off
	Iris	81 09 04 4B FF	90 50 0p 0q FF	p: Iris Position (0x0=Close ~ 0xC=F1.8)
	Shutter	81 09 04 4A FF	90 50 0p 0q FF	pq: Shutter Position (0x01=1/30 ~ 0x11=1/10000)
	Gain Limit	81 09 04 2C FF	90 50 0q FF	p: Gain Limit Position (0x0=0 ~ 0xF=15)
	Anti-Flicker	81 09 04 55 FF	90 50 0p FF	p: 0x0=Off, 0x1=50Hz, 0x2=60Hz
	Color Inquiry	White Balance Mode	81 09 04 35 FF	90 50 pq FF
Red Tuning		81 09 04 12 FF	90 50 00 00 0p 0q FF	pq: Red Tuning position (0x00=-10 ~ 0xA=0 ~ 0x14=+10)
Blue Tuning		81 09 04 13 FF	90 50 00 00 0p 0q FF	pq: Blue Tuning position (0x00=-10 ~ 0xA=0 ~ 0x14=+10)
Saturation		81 09 04 49 FF	90 50 00 00 0p 0q FF	p: Saturation setting (0x0=60% ~ 0xE=200%)
Hue		81 09 04 4F FF	90 50 00 00 0p 0q FF	p: Color Hue Setting (0x0=0 ~ 0xE=14)
Red Gain		81 09 04 43 FF	90 50 00 00 0p 0q FF	pq: R Gain (0x00=0 ~ 0xFF=255)
Blue Gain		81 09 04 44 FF	90 50 00 00 0p 0q FF	pq: B Gain (0x00=0 ~ 0xFF=255)
Color Temperature		81 09 04 20 FF	90 50 pq FF	pq: Color Temperature position (0x00=2500K ~ 0x37=8000K)
Auto White Balance Sensitivity	81 09 04 A9 FF	90 50 0p FF	p: 0x0=High, 0x1=Normal, 0x2=Low	
Noise Reduction Inquiry	3D Noise Reduction	81 09 04 54 FF	90 50 0p FF	p: Noise Reduction (0x0=0 ~ 0x8=8)
	2D Noise Reduction	81 09 04 53 FF	90 50 0p FF	p: Noise Reduction (0x0=0 ~ 0x5=5)
Pan Tilt Inquiry	Pan & Tilt Position	81 09 06 12 FF	90 50 0w 0w 0w 0z 0z 0z 0z FF	www: Pan Position, zzzz: Tilt Position
Zoom Inquiry	Zoom Position	81 09 04 47 FF	90 50 0p 0q 0r 0s FF	pqrs: Zoom Position
Motion Sync Inquiry	Mode	81 09 11 13 FF	90 50 0p FF	p: 0x0=Off, 0x1=On
	MotionSync Speed	81 09 11 14 FF	90 50 pq FF	pq: Max MotionSync speed 0x00 (185) ~ 0x09 (230)
Focus Inquiry	Mode	81 09 04 38 FF	90 50 02 FF	p: 0x2=Auto, 0x3=Manual
	Focus Position	81 09 04 48 FF	90 50 0p 0q 0r 0s FF	pqrs: Focus Position
	Focus Zone	81 09 04 AA FF	90 50 0p FF	p: 0x0=Top, 0x1=Center, 0x2=Bottom
	Auto Focus Sensitivity	81 09 04 58 FF	90 50 0p FF	p: 0x1=High, 0x2=Normal, 0x3=Low
	Focus Range	81 09 06 69 FF	90 50 0p rs tv FF	p: 0x0=Off, 0x1=On, rs: furthest position 0x00 (1m) ~ 0x0B (INF), tv: nearest position 0x00 (1m) ~ 0x0B (INF)
System Inquiry	Menu Open / Close	81 09 06 06 FF	90 50 0p FF	p: 0x2=Open, 0x3=Closed
	USB Audio	81 2A 02 A0 04 FF	90 50 0p FF	p: 0x2=On, 0x3=Off
	RTMP	81 09 11 53 FF	90 50 0p FF	p: 0x0=Both Streams Off, 0x1=Stream 1 On, 0x2=Stream 2 On, 0x3=Both Streams On

# PTZOptics G2 VISCA over IP Commands

Block Inquiry Commands			
Command Set	Command Package	Return Package	Note
Block Lens Inquiry	81 09 7E 7E 00 FF	90 50 0u 0u 0u 0u 00 00 0v 0v 0v 0v 00 0w 00 FF	uuuu: Zoom position vvvv: Focus position w.bit0: Focus mode 1: Auto, 0: Manual
Block Color & Exposure Inquiry	81 09 7E 7E 01 FF	90 50 0p 0p 0q 0q 0r 0s 0t 0u 0v 0w 0x 0z FF	pp: R Gain (00=0 ~ FF=255) qq: B Gain (00=0 ~ FF=255) r: WB Mode (0=Auto, 1=Indoor, 2=Outdoor, 3=OnePush, 5=Manual) s: Saturation (0=0 ~ B=11) tt: AE Mode (0=Auto, 3=Manual, A=Shutter, B=Iris) u.bit2: Backlight u.bit1: Exposure Comp vv: Shutter Position (01=1/30 ~ 11=1/10000) ww: Iris Position (0=Close ~ C=F1.8) xx: Luminance Position (0=0 ~ E=14) z: Exposure Compensation Position (0=-7 ~ 7=0 ~ E=+7)
Block Power & Image Effect Inquiry	81 09 7E 7E 02 FF	90 50 0p 0q 00 0r 00 00 00 00 00 00 00 00 FF	p.bit0: Power 1: On, 0: Off q.bit2: LR Reverse 1: On, 0: Off r.bit3-0: Picture Effect Mode
Block Image Inquiry	81 09 7E 7E 03 FF	90 50 00 00 00 00 00 00 0p 0q rr 0s 0t 0u FF	p: AF sensitivity q.bit0: Picture flip 1: On, 0: Off rr.bit6-3: Color Gain (0h (60%) to Eh (200%)) s: Flip 0: Off, 1: Flip-H, 2: FlipV, 3: FlipHV t.bit2-0: NR2D Level u: Gain limit