Red Line Product

BOLIN

R9 Series
Indoor PTZ Line Flagship

R9-420F

Redefining The Indoor PTZ Camera Experience

4K60 Pan Tilt Zoom Camera

The R9-420F indoor PTZ camera is equipped with Sony 4K sensor with 20x zoom range to provide 4K60 high-quality Ultra High-Definition image to output HDMI, 12G-SDI, Optical SDI, and 4K IP video streaming for ProAV and broadcast application.

KEY FEATURES

R9-420F

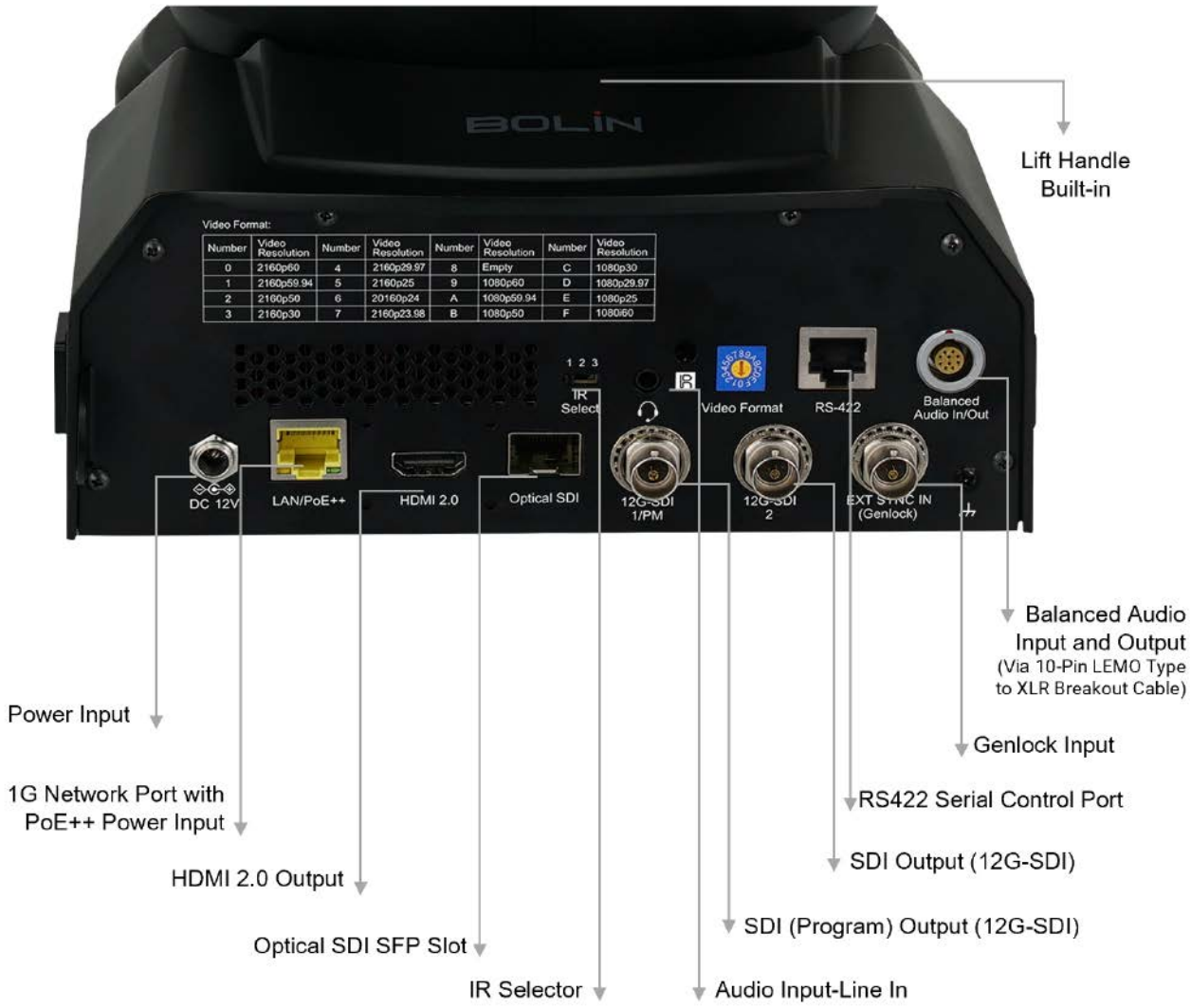
- Sony 4K image sensor
- 20X zoom range
- Resolution 4K60, 1080i59.94, 1080p60
- IP Video Resolution: Up to 2160p60, 1080p60
- Video Output: Simultaneous 12G-SDI, HDMI2.0, IP
- FPGA FAST HEVC Ultra Low Lantency
- SFP Optical SDI video output
- RTSP. RTMP, SRT Supported
- Visca Over IP, Onvif, FreeD, Serial Control Supported

4K 60fps | ZOOM 20X | HDMI 2.0 | 12G-SDI | OPTICAL | IP H.265 HEVC | ULTRA LOW LATENCY | VISCA over IP | RTSP RTMP | FreeD | SRT READY | ONVIF | NDAA Compliant

IMAGE MODULE

- R9-420F 4K60 PTZ Camera is equipped with Sony image sensor IMX715, and 8M ultra high resolution 20X optical lens, integrated with AI based algorithm ISP this image module delivers high quality and clean noiseless high speed 60fps UHD color image.
- The camera produces brilliant broadcast-quality color images in 4K60 and Full HD with excellent low-light sensitivity.
- 1/2.8 Inch CMX715 High Class Sensor
- Cristal 20X High Resolution optical zooms
- AI Face Detection Auto Focus/Exposure
- Super WDR
- Gamma Level

OUTPUT



R9-420F Output Interface

Dual 12G-SDI	**HDMI 2.0**	**SFP Optical SDI**	**Genlock**
4K60 IP Streaming(HEVC)	**RTSP, RTMP, RTMPS, SRT**	**True Dual-Output**	**FreeD**
All Video with Audio Embedded	**XLR Broadcast Audio Input**	**On-screen Character Generator**	**Serial/IP Control**
High-Quality	**Low Latency**	**Low Bandwidth**	**Power Output**

CODEC - IP STREAMING

FAST HEVC

High Quality
Low Bandwidth
Low Latency

- Up to 4K60
- Dual stream, Multicast Support
- RTSP, RTMP, RTMPS, SRT, ONVIF
- IP Control protocol: Visca Over IP, Onvif
- Compatible With Standard AVC/HEVC
- Software Decode and Hardware Decode
- H.264/265 open platform, codec from AMD MPSoC

FAST AVC/HEVC, FPGA Hardware Codec,
Utilizing AMD MPSoC to Deliver

*Only **45Mbps** bandwidth that streaming **4K60** at 4:2:2 12bit*
*in Less Than **2 frame/s** Latency*

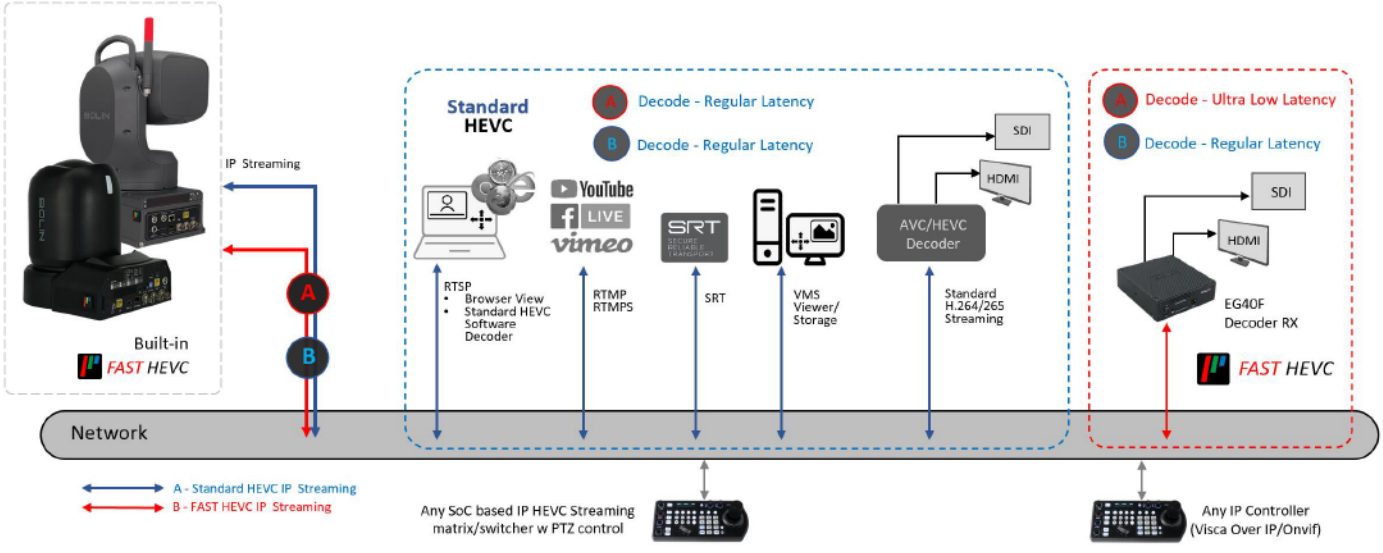
Comparison-The Facts of FAST HEVC Performance*

Fundation	Platform	Codec	1080p59.94/60			2160p59.94/60		
			Quality (Up To)	Latency (Point-to Point)	Bandwidth	Quality (Up To)	Latency (Point-to Point)	Bandwidth
H.264/265 AVC/HEVC	Software SOC	Stand HEVC	420SP(NV12)	4 frame/70ms	8Mbps	420SP(NV12)	25 frame/430ms	16Mbps
	Hardware SOC	Stand HEVC	4:2:2/12bit	2 frame/30ms	8Mbps	NA		
	Hardware FPGA	FAST HEVC	4:2:2/12bit(NV16)	2 frame/25ms	8-30Mbps	4:2:2/12bit(NV16)	2 frame/30ms	16-65Mbps
NDI	Hardware FPGA	Full NDI	4:2:2/10bit	3 frame/50ms	150Mbps	4:2:2/10bit	4 frame/70ms	300Mbps
Dante AV-Ultra	Hardware FPGA	JPEG 2K	4:2:2/12bit	1 frame/6ms	250Mbps	4:2:2/12bit	1 frame/8ms	550Mbps

*Results may vary depending on network configuration and management settings.

Open Platform

FAST HEVC Codec



Bolin FAST HEVC codec camera can be decoded by standard HEVC decoder but will not have Ultra Low Latency

HEVC codec camera/device can be decoded by Bolin FAST HEVC decoder but will not have Ultra Low Latency

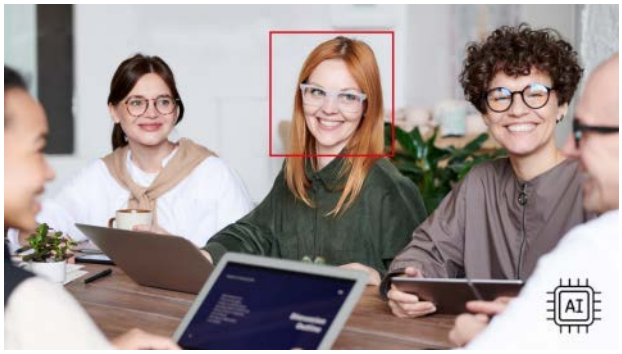
FEATURES

FreeD Protocol Integrated for VR/AR Video Production

FreeD helps provide all the axis data needed for a Bolin PTZ camera to intelligently and smoothly pan, tilt, and zoom while following designated objects and people. Broadcasters can combine Bolin's FreeD-enabled PTZ cameras with available, sophisticated software to automate complex camera operations with spectacular results. It is especially useful for virtual live video productions with baseband video feeds and, with Bolin PTZ cameras, with ultra-low latency AV Over IP streaming

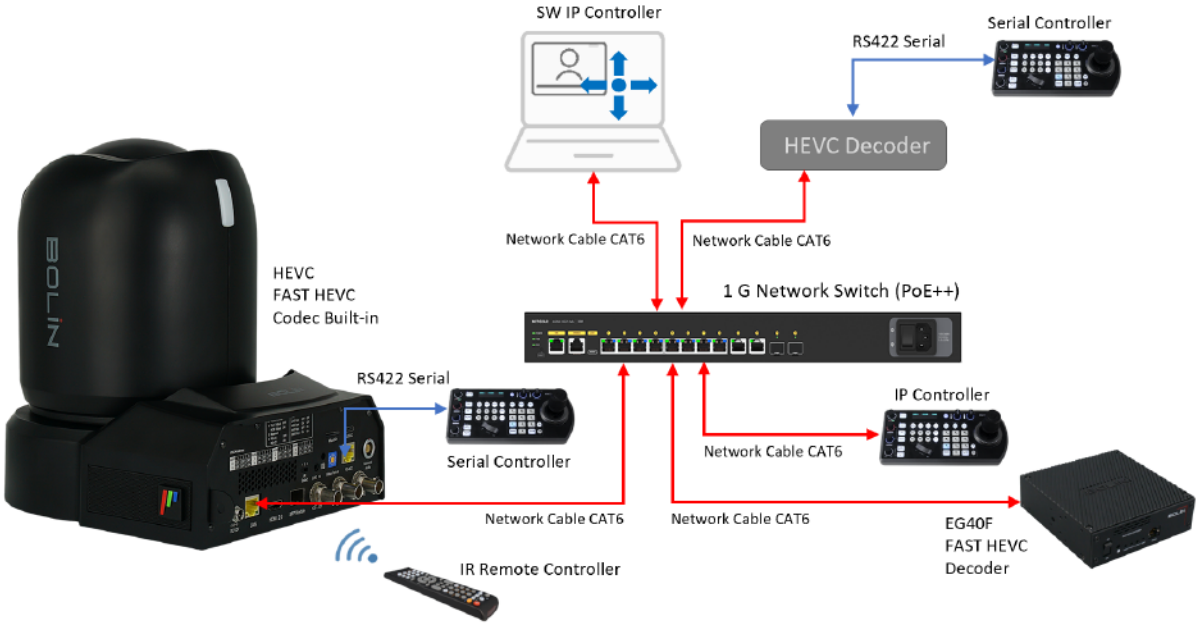
AI Powered Auto Focus and Auto Exposure

Built with Bolin's latest AI-powered facial analytics engine, which enables smart focus and smart exposure to provide faster, more precise focusing and improved auto exposure on faces in complex lighting environments.



Various Control Methods

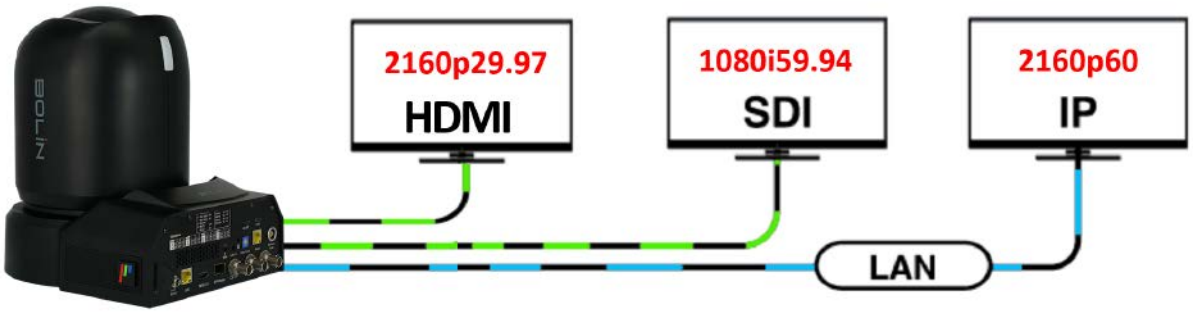
- IP Control, Serial Control, IR Remote Control, Bolin API-Software Control
- Protocol Supported: VISCA Over IP, ONVIF, VISCA, PELCO P/D, FreeD, API



FEATURES

True Tri-Output

Simultaneously output SDI, HDMI, and IP, which can be set to independent formats for different application use. (The image shows video format model specific)



Full Format and Standard

HDMI, SDI, IP Full Format
3840x2160P 60/59.94/50/30/29.97/25/24/23.98
1920x1080P 60/59.94/50/30/29.97/25/24/23.98
1920x1080i 60/59.94/50
1280x720P 60/59.94/50

SDI Standard
SMPTE 292M
SMPTE 296M (1.5Gb/s)
SMPTE 424M
SMPTE 274M
SMPTE 425-A (3Gb/s)
SMPTE 2081(6Gb/s)
SMPTE 2082-1(12Gb/s)
With SMPTE352 SDI Metadata Supported

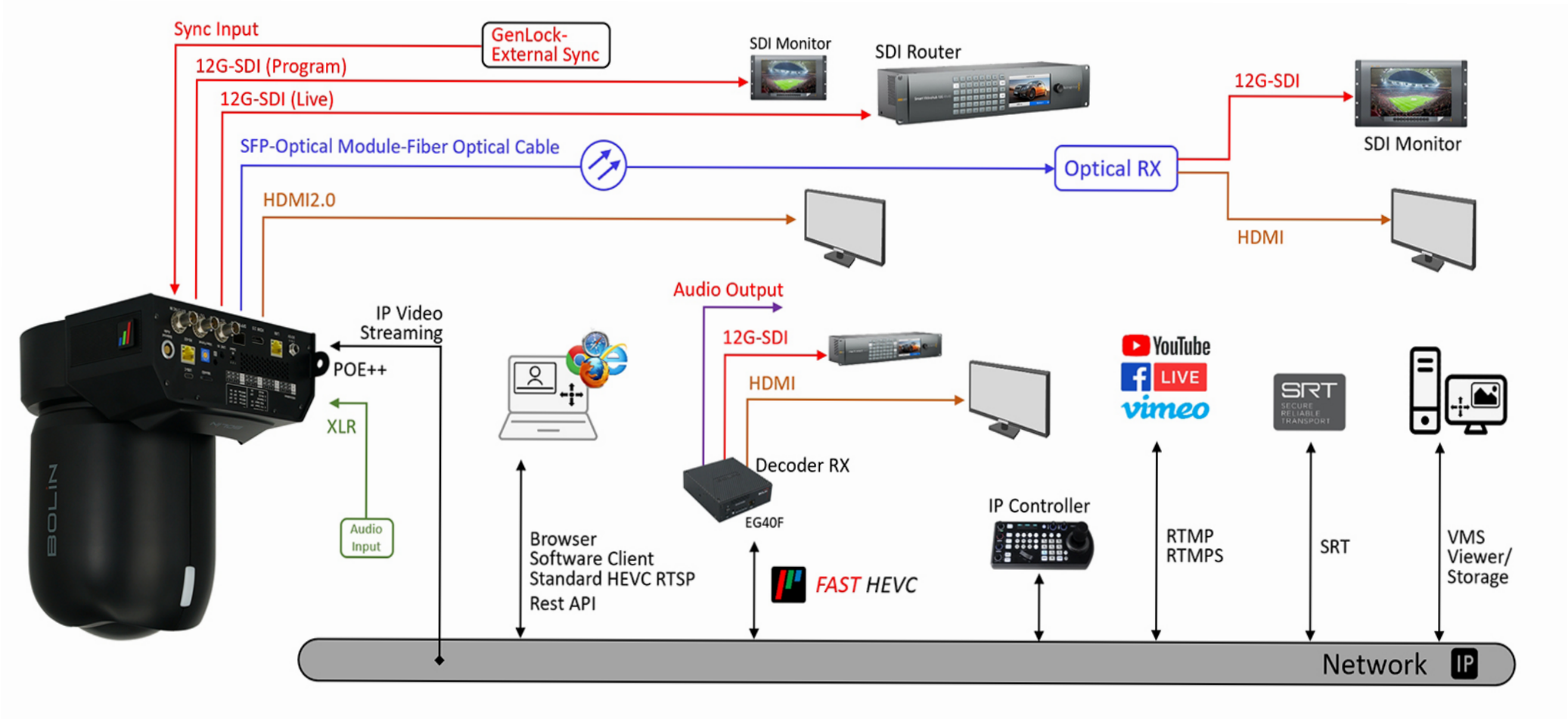
- Dual 12G-SDI
- HDMI 2.0
- 4K IP Streaming - AVC/HEVC
- SFP Optical SDI
- FreeD
- NDAA Compliant
- External Synchronization Genlock
- Audio embedded with all video output
- XLR broadcast audio input/output
- On-screen character generator
- Lifting Handle built-in

NDAA COMPLIANT

BOLIN NDAA Compliant the National Defense Authorization Act

NDAA Section 889 Statement of Compliance: Bolin certifies it does not and will not provide “covered telecommunications equipment or services” or products containing “covered telecommunications equipment or services” complying with Section 889(a)(1)(B) of the National Defense Authorization Act (NDAA) for the Fiscal Year 2019 as a part of its offered products or services to customers.

WORKFLOW



*Genlock Input On Decoder is model specific

MOVEMENT

Smooth and Accurate Movement

- PAN: 340° (-170° to +170°); Fully proportional speed 0.01° to 70°/s
- TILT: 120° (-30° to +90°); Fully proportional speed 0.01° to 60°/s
- Preset: 255 positions, Speed 70°/s,
  0~5 Level Adjustable, Accuracy: 0.1°
- Picture Profile Preset
- Motionless Preset
- PTZ Trace Memory
- Quiet - Less than NC35

FEATURES

- On-screen character generator
- All firmware upgrade via IP
- Front and Rear Tally Light
- POE++ and 12VDC/AC
- Built-in handle
- Genlock
- HDMI cable secure mount
- Available Color: Black, White

Move, with you

- Industry-First unique portable body design
- Facilitates your video production installation.

Move • With You

SPECIFICATIONS

Model	R9-420F
Camera Image	**20X 4K60**
Image Maker	Bolin
Image Sensor	IMX715, CMOS image sensor 1/2.8 type
Number of effective pixels	8.29MP, 8.29 MP
Picture elements	3840x2160
Lens	20X
Digital Zoom	16X
Horizontal Angle of View	78.59° (W)~4.92° (T)
Vertical Angle of View	48.39° (W)~2.79° (T)
Focal Length	f= 3.55 mm (WIDE) to 71 mm (TELE)
Min. object distance	10cm
Aperture	F2.0 (Wide) to F3.8 (Tele)
Min. Illumination	0.5lux（color），0.1lux（black）
Shutter Speed	1/60-1/100k sec (21steps)
Focus	Auto, Push, Manual
White Balance	Auto, Indoor, Outdoor, OPW, ATW, Manual, USER, SVL
Exposure	Auto, Manual, Shutter, Iris priority
Features	Backlight Compensation, E-FLIP, Mirror, Day/Night, Flicker ,Contrast, Effect, SHARPNESS
WDR	120db
Color Gain	Yes
Color Hue	Yes
Gamma	Yes
Gamma Level	0-4
Color Matrix	-
Noise Reduction	2D / 3D (level 0 to 100)
S/N Ratio	≥50db
E-Flip	Yes
Defog	Yes
Day/Night	Yes
Backlight Compensation	Yes
AI Face Detection Focus	Yes
AI Face Auto Exposure	Yes
Scene Style	Standard, Bright, Clarity, Soft
Focus Zone	Face Priority, All Area, Top/Central/Bottom
Mechanical	
Pan Movement	PAN: 340° (-170° to +170°); Fully proportional 0.05° to 70°/s
Tilt Movement	TILT: 120° (-30° to +90°); Fully proportional 0.05° to 60°/s
Speed Proportional	Pan/Tilt Speed proportional to zoom range
Preset Position	255 positions, Speed 70°/s, 0~5 Level Adjustable, Accuracy: 0.1°
Preset Memory	Picture Profile Preset-Preset Memory for image parameters: Backlight Compensation, White Balance, Auto Exposure, Bright, Iris, Shutter, Gain, Aperture, Effect, Noise Reduction, Mirror, Gamma, Ex-COMP, Color Hue, Contrast etc.)
Motionless Preset	YES, ON/OFF
PTZ Trace Memory	YES, 4
Cruise	YES, 12
Quietness	NC35 Compliant
Home Position	Yes
FreeD	Yes, FreeD protocol for AR/VR camera tracking, via IP
Environmental	Indoor
Interface	
HDMI Video Output	HDMI 1.4 Type A
SDI Video Output	12G-SDI, 75Ω BNC x 2，SDI Clean / SDI PM for output having OSD display
SDI Optical Fiber Output	Optical SDI SFP module support up to 12G-SDI (Module Excluded). Detachable slot, Connector: Duplex LC (optional via ST, LC or SMPTE)
	Laser Unit: Single-mode 1,310nm DFB-LD transmitter and PIN receiver Complaint with MSA SFP+ Specification SFF-8402.
Network LAN Port	RJ45X1, Standard 10M/100M/1000M Base-TX Ethernet, LAN connector for IP control/video output/audio output/System FW
Synchronization System	Internal/External synchronization (BBS/Tri-level sync)
External Sync Input	Genlock, BNC connector, BBS (Black Burst Sync), tri-level sync supported
Audio Input	Balanced XLR (Hirose Connectorvia Atomos 10-Pin LEMO Type to XLR Breakout Cable) with 48V Phantom power
	3.5mm TRRS for bidirection audio intercom (Preserve)
Audio Output	Balanced XLR (via 10-Pin LEMO Type to XLR Breakout Cable), embedded with HDMI, SDI, and IP (Input Only)
	3.5mm TRRS for bidirection audio intercom (Preserve)
Tally Light	Red, Green Color/Front and Rear
Dip Switch	Video Resolution Dip Switch x1
System Firmware Upgrade	Upgrade via IP for camera system MCU, FPGA and Encoder
Power Connector Type	INPUT: DC12V, connect with screw secure (Type - 5.5mm×2.1mm Male DC Power Plug Connector & Screw Lock Female Panel
	INPUT: RJ45, PoE++ (IEEE802.3bt)
Control Interface	RJ45X1-RS422, RJ45X1-IP Control, IR Remote Control
Control Protocol	Serial: VISCA, PELCO P/D; IP: VISCA Over IP, ONVIF; FreeD, API

SPECIFICATIONS

Model	R9-420F
Codec	Hardware FPGA Based FAST HEVC
HDMI Video Signal System	
HDMI Video Format	3840x2160P 60/59.94/50/30/29.97/25/24/23.98 1920x1080P 60/59.94/50/30/29.97/25/24/23.98 1920x1080i 60/59.94/50 1280x720P 60/59.94/50
Color Precision	12bit(HDMI), YUV4:2:2
Color Space	YUV、RGB
OSD Menu Display	Yes
On-Screen Title	Yes, video embedded On-Screen title character generator; Image/Logo Insert Screen Display with IP Image Stream
SDI Signal Format	
SDI Video Output	12G-SDI
SDI Video Format	3840x2160P 60/59.94/50/29.97/30/25/24/23.98 1920x1080P 60/59.94/50/30/29.97/25/24/23.98 1920x1080i 60/59.94/50 1280x720P 60/59.94/50
Color Precision	10bit(SDI), YUV 4:2:2
Color Space	YUV
Standard	SMPTE 292M, SMPTE 296M (1.5Gb/s), SMPTE 424M, SMPTE 274M, SMPTE 425-A(3Gb/s) SMPTE 2081(6Gb/s), SMPTE 2082 1(12Gb/s) with SMPTE352 SDI Metadata Supported
True Dual Output	HDMI and SDI signal can be output with different format
OSD Menu Display	Yes
On-Screen Title	Yes, video embedded On-Screen title character generator
Network	
Video Compression	AVC-H.264/HEVC-H.265/MJPEG by FPGA
IP Resolution/Frame Rate	3840x2160P 60/59.94/50/29.97/30/25/24/23.98 1920x1080P 60/59.94/50/30/29.97/25/24/23.98 1920x1080i 60/59.94/50 1280x720P 60/59.94/50
True Dual Output	IP, HDMI, and SDI signal can be set with different format
IP Protocols	TCP/IP, IGMP, ICMP, ARP, QoS, SNMP, UDP, HTTP, DNS, DHCP, FTP, NTP, UPNP, SRT
Application Protocols	RTMP(S), RTSP, RTSP Encryption, RTP Streaming (Unicast, Multicast), SRT, MPEG-TS over UDP, MPEG-TS over RTP
Color Format	YUV4:2:0 8bit、YUV4:2:2 8bit、YUV4:2:2 10bit
Multi-stream	2 stream
Audio Compression	32-128Kbps(AAC-LC) Selectable
OSD	Customized OSD
Compatible Integration	ONVIF2.4 (Profile S), VISCA Over IP
Bandwidth (results may vary depending on network configuration and management settings.)	128Kbps-60Mbps, 4kp60 12 bit 4:2:2
	10-20Mbps, 1080p60 12 bit 4:2:2
Latency (Overall latency may increase depending on network configurations)	2-3 frame (e.g. 2160p60 latency is < 120ms glass to glass
Browser Support	Cross Browser Compatibility - HTML5 support for Microsoft Edge, Google Chrome, Firefox, and Safari
General	
Operating Temperature	–10 °C to 50 °C（14°F to 122°F)
Operating Humidity	≤80% Suitable for Use (no condensation)
Power Input	DC12V, POE++ (IEEE802.3 bt Type 4 Calss 7)
Power Consumption	Min: 51W (Static state with no movement) Max: 57W（Fully loaded operation）
Installation Method	Stand-alone (Upright) or suspended (Pendent) or Tripod
Mount	Ceiling mount, Wall mount, Tripod
Handle	Built-in for portable use application
Size of Tripod Screw Hole	1 x 1/4" safety bond point
Body Color	Black, White
Dimension-Camera	201*253*249mm(W*D*H), 201*253*256(with feet mats)
Net Weight	3.8kg (8.36lb)
Accessories Included	IR Remote controller x1, Power adapter and power cord (US, EU, UK), Mounting screws x3, RJ45 to RS422 Extension cable
Certificate	CE, FCC, IC, UKCA, ROHS, WEEE

ACCESSORIES

Items marked * are optional to purchase

VCC-RC-2
IR Remote Controller

P12-4L
12VDC 4A Power Adapter

EG40N
*NDI Decoder

C-PMSB
*Pendant Mount for Drop Ceiling
/Hard Surface Ceiling

C-WM3B
*Wall Mount Bracket-Size 3

C-WM3B-CV
*Wall Mount Cover-Size 3

C-WPLB
*Wall Mount Plate

BL-CM-01
*Ceiling Mount Bracket

BL-PP97
*97W POE POWER INJECTOR

BLA-10
*LEMO connector
10Pin Mini to XLR L/R In/Out

B-OSM-12
*Optical SFP Module Transceiver
12G-SDI

ORDER INFORMATION

- Visit Bolin Technology Website

DIMENSIONS

Unit: mm