

Red Line Product

BOLiN

EX-ULTRA
Outdoor PTZ Camera



EXU420F

Redefining The Outdoor PTZ Camera Experience

4K60 Outdoor Pan Tilt Zoom Camera

The EXU420F outdoor 4K60 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 POV, broadcast, operational awareness, sport application in outdoor environment and even in extreme weather conditions.

KEY FEATURES

EXU420F



- 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 Latency
- SFP Optical SDI video output
- RTSP, RTMP, SRT Supported
- Visca Over IP, Onvif, FreeD, Serial Control Supported
- Weatherproof IP67 rated

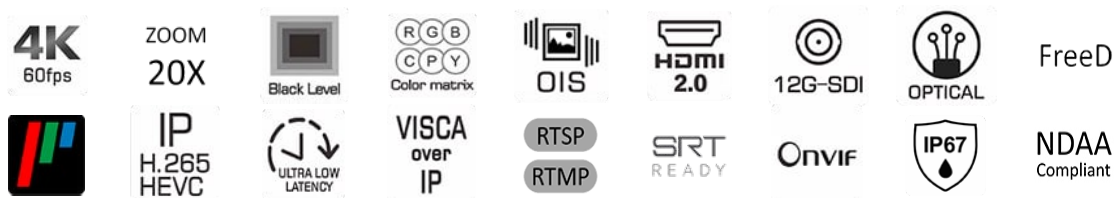


IMAGE MODULE

- EXU420F 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



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*

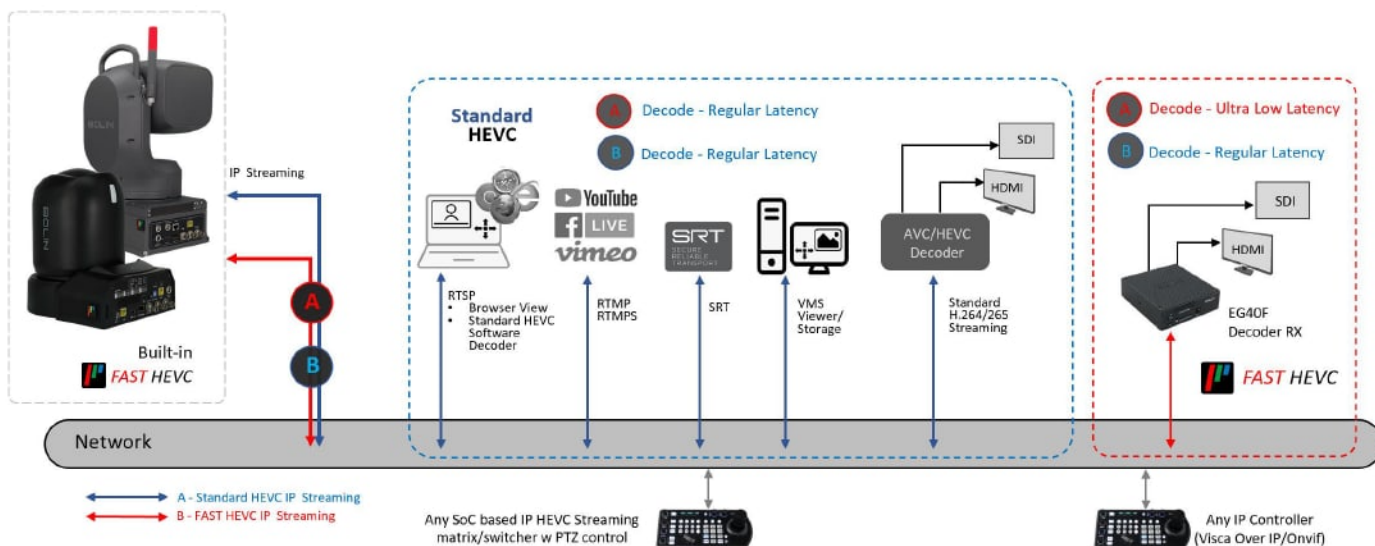
Comparison-The Facts of FAST HEVC Performance*

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

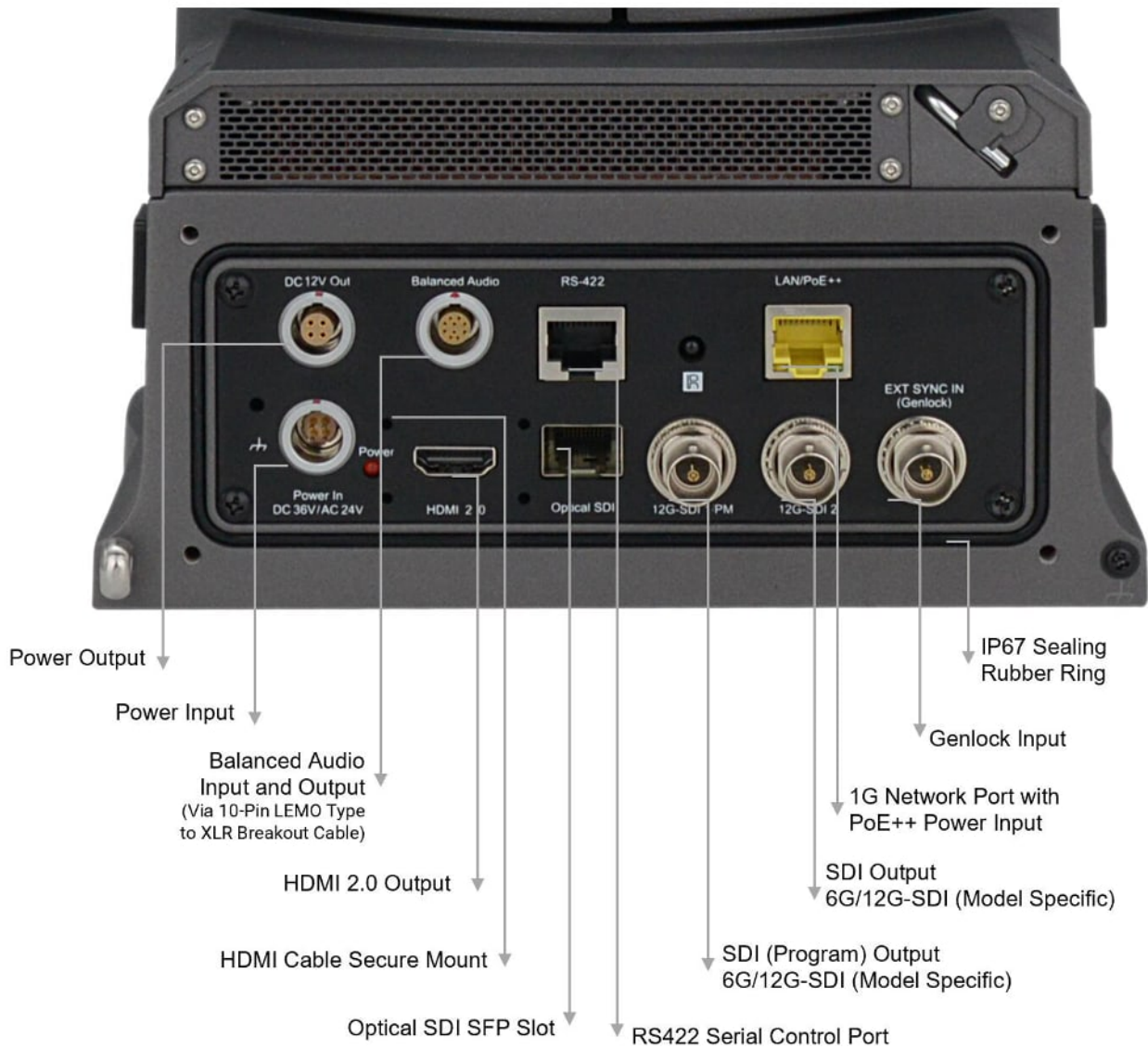
FAST HEVC Codec



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

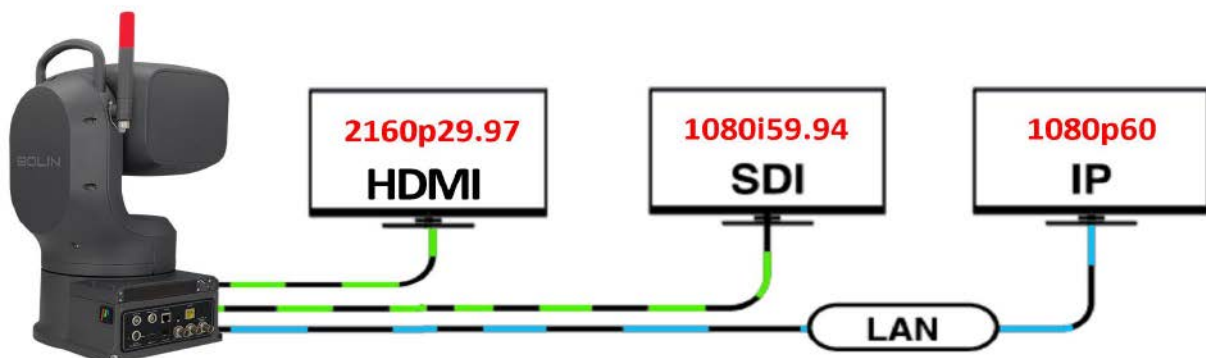
HEVC codec camera/device can be decoded by Bolin FAST HEVC decoder but will not have Ultra Low Latency

OUTPUT



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)



FEATURES

EXU420F Output Interface

Dual 12G-SDI	HDMI 2.0	SFP Optical SDI	Genlock
4K60 IP Streaming (FAST 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 Image	Low Latency	Low Bandwidth	12VDC Power Output

Full Broadcast SDI 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

FreeD Protocol Integrated for VR/AR Video Production

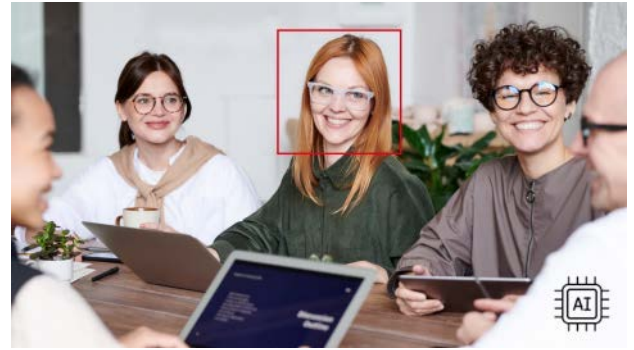
FreeD helps provide all the axis data needed for a Bolin PTZ camera to intelligently and smoothly pan, tilt, and zoom while following targeted objects and people. Broadcasters can combine Bolin's FreeD-enabled PTZ cameras with available, sophisticated software to automate complex camera operations with 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



FEATURES

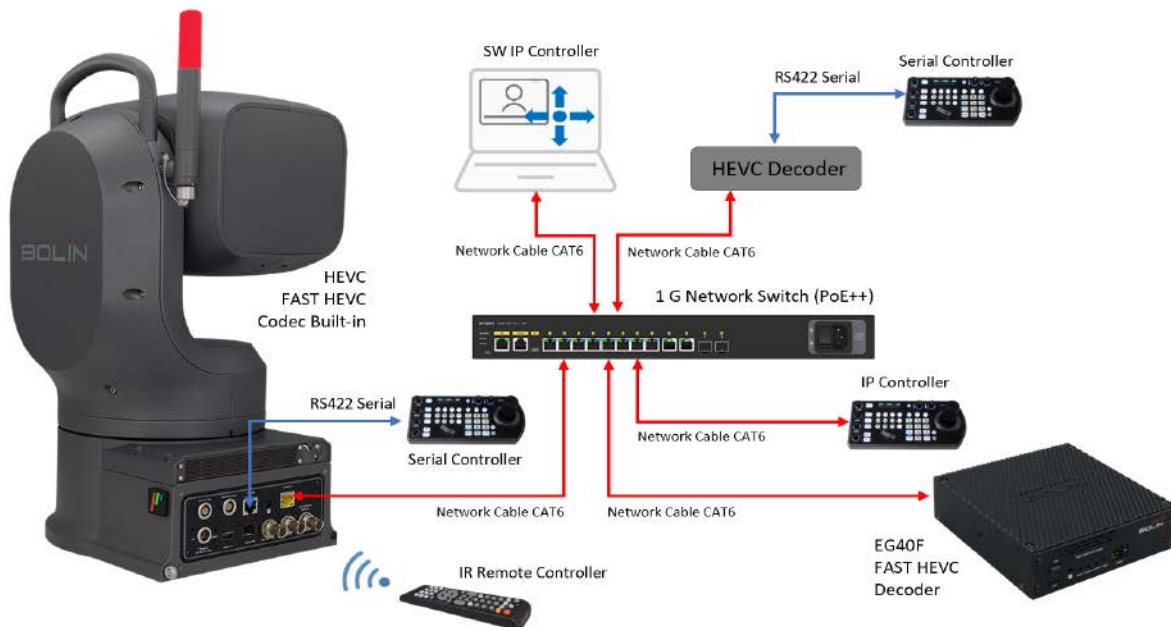
AI Powered Auto Focus and Auto Exposure

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.



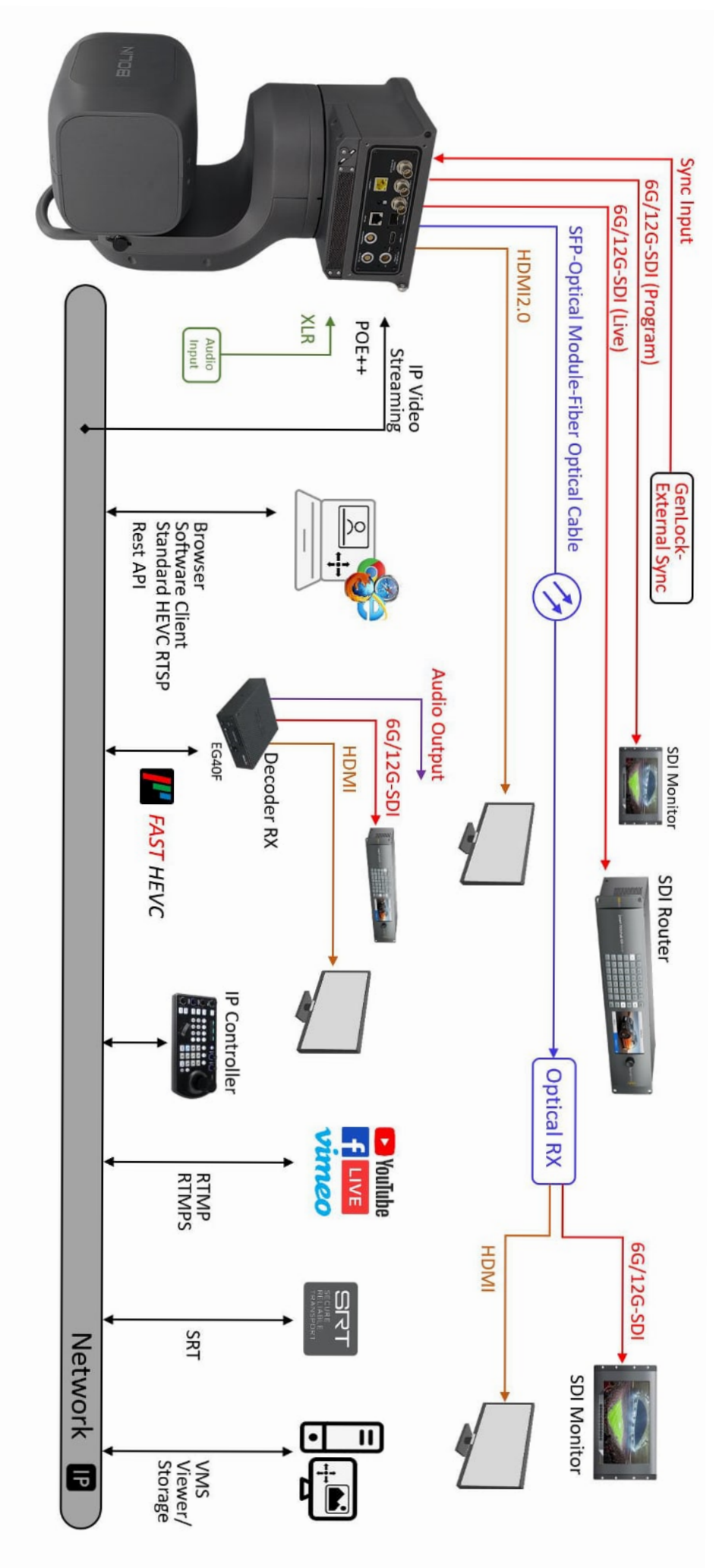
Various Control Methods

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



- External Synchronization Genlock
- Audio embedded with all video output
- XLR broadcast audio input
- On-screen character generator
- All firmware upgrade via IP
- Tally Light
- FreeD Supported
- NDAA Compliant
- Power Output for 3rd device
- POE++ and DC36V/AC24V
- Rain Wiper built-in
- Weatherproof IP67 rated with tail cable cover for permanent mount
- Rainwater protection cover with cable support for tripod mount use

WORKFLOW

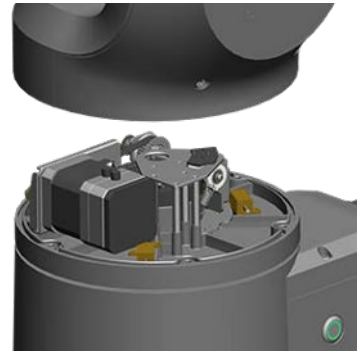


*Genlock Input On Decoder is model specific

RUGGED and DURABLE



Sun Shield and
Hidden-Type Rain Wiper



All stainless Steel/brass/metal
interior mechanical parts



Rainwater protection cover
with cable support
for tripod mount use



Weatherproof IP67 rated
with tail cable cover
for permanent mount use

-
- Wind Load Durability, steady operational and Non-destructive at up to 30-60 m/s
 - Heater, Defroster built-in
 - -40°C to 60°C (-40°F to 140°F) operational



Smooth and Accurate Movement

- PAN: 340° (-170° to +170°); Fully proportional speed 0.08° to 60°/s
- TILT: 205° (-35° to +170°); Fully proportional speed 0.08° to 60°/s
- Preset: 255 positions, Speed 60°/s, 0~5 Level Adjustable, Accuracy: 0.1°
- Picture Profile Preset
- Motionless Preset
- PTZ Trace Memory
- Noise Criterion less than NC55
- ZDP (Zero Deviation Positioning), Position Deviation Self-Correction



Tally Light

- 360 degree viewable tally light
- Removable when tally light is not needed



NDAA COMPLIANT



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.

INSTALLATION

Permanent Installation

- IP67 wall mount bracket (ES-WM)
- Quick release docking system
- Wiring conduit/pipe interface
- Upright/Pendant Mount
- Waterproof compartment for accessories
- Ceiling pendent mount (C-PMBA)



Base Mount (QR-BM)

- For flat surface upright mount
- Quick release docking system



- **Live Production**
- Tripod mount
- Tripod mount rain water-proof rear panel cover
- Cable support
- 1/4", 3/8" tripod threads



SPECIFICATIONS

Model	EXU420F
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 0.08° to 60°/s
Tilt Movement	TILT: 205° (-35° to +170°); Fully proportional 0.08° to 60°/s
Speed Proportional	Pan/Tilt Speed proportional to zoom range
Preset Position	255 positions, Speed 60°/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	NC55(45/35) or less when operating speed is 60°/30°/15°/sec or less
Home Position	Yes
FreeD	Yes, FreeD protocol for AR/VR camera tracking, via IP
Position Deviation Correction	Optical
Turning Radius	PAN: Φ 400 mm TILT: Φ 480 mm
Environmental	Outdoor, IP67 compliant for Waterproof and Dust Proof
Body Finishing	C5 Corrosion Resistant Power Coating
Wind Load Durability	0-15m/s Operation Normal 15-30m/s Pan/Tilt Operational Non-Destructive and steady operation at 60m/s or less
Wiper	Yes
Heater	Yes
Defroster	Yes
Interface	
HDMI Video Output	HDMI 2.0 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, IP video output, IP audio output, System FW Upgrade
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	• 2 channels, XLR balanced input (Mini XLR - Hirose Connector) • Input signal level: 0 dBu, • Volume variable range: -40 dB to +12 dB (can be changed in 1 dB steps in the menu)
Audio Output*	2 channels, XLR balanced output (Mini XLR - Hirose Connector) (preserve); Embedded with main HDMI, 24bit Stereo, Embedded with SDI, 24bit Stereo superimposed over SDI & HDMI output, Sampling frequency: 48 kHz (synchronized to video) • Quantization bit rate: 24-bit (LPCM) • Audio compression format (IP): AAC-LC (High quality)
Tally Light	Red, Green Color, Front
System Firmware Upgrade	Upgrade via IP for camera system MCU, FPGA and Encoder
Power Connector Type	INPUT: DC36V/AC24A, Pin connector INPUT: RJ45, PoE++ (IEEE802.3bt) OUTPUT: 12VDC, Pin connector
Control Interface	RJ45X1-RS422, RJ45X1-IP Control, IR Remote Control
Control Protocol	Serial: VISCA, PELCO P/D, FreeD; IP: VISCA Over IP, ONVIF

SPECIFICATIONS

Model	EXU420F
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	-40 °C to 60 °C (-40°F to 140°F), (PoE is not suggested to be used and camera preheating automatically will be processed when is at environment -10°C (-14°F) or less)
Operating Humidity	100% Suitable for Use (no condensation)
Power Input	DC 36V / AC24V, PoE++(Compatible with IEEE802.3bt, Type 4 Class8) Suggest that not to use POE when environment temperature is -0°C or lower
Power Consumption	Min: 35W(Static state with no movement); Max: 85W (Fully loaded operation with heater on, PoE power is not suggested)
Installation Method	Stand-alone (Upright) or suspended (Pendent), • To ensure safety, the unit must be secured using the mount bracket supplied.
Mount	Ceiling Mount, Wall Mount, Heavy duty tripod
Handle	Built-in for portable use application
Wiper	Yes, hidden type
Size of Tripod Screw Hole	1 x 3/8", 1 x 1/4" + secure lock point
Body Color	Dark Gray
Dimension-Camera	PAN: Φ 400 mm TILT: Φ 480 mm
Weight	10kg (22lb)
Accessories Included	IR Controllerx1, Secure Chain Lock and screwx1, Power Adaptor x1, Seal ringx12, Quick install panel bolt x4, IP67 Tail Cover x1, Rainwater Cover x1
Certificate	CE, FCC, IC, UKCA, ROHS, WEEE

ORDER INFORMATION

- Visit Bolin Technology Website

ACCESSORIES

Items marked * are optional to purchase



VCC-RC-2
IR Remote Controller



P36-4L
36VDC 4A Power Adapter



EG40F
*FAST HEVC Decoder



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



ES-WM
*Wall Mount Bracket



C-PMBA
*Pendant Mount Base Mount Adaptor



QR-BM
*Base Mount



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



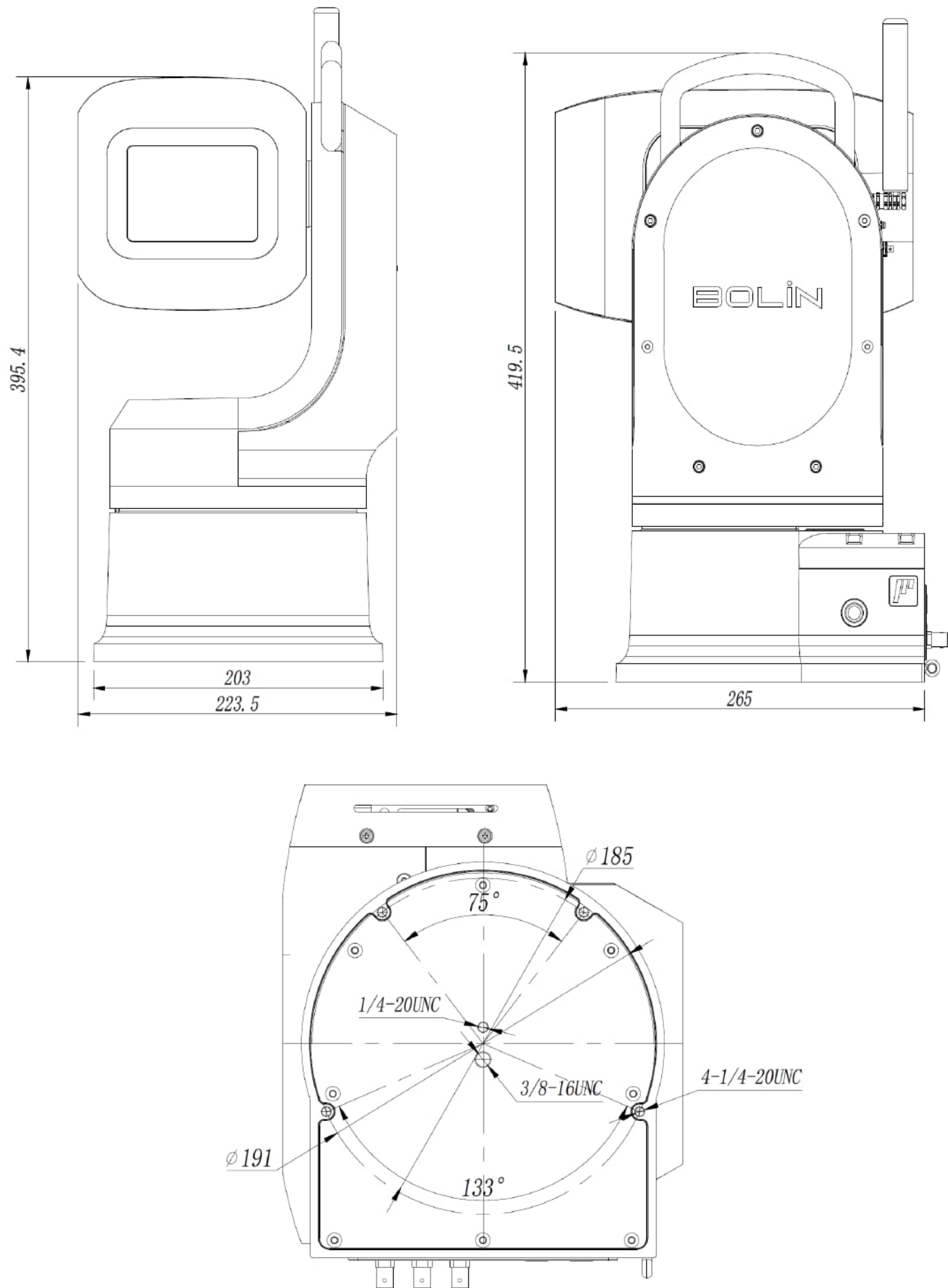
BL-PP97
*97W POE POWER INJECTOR



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

DIMENSIONS

Unit: mm



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