



*The Security of **Everything***

**Complete Product Catalog**  
February 2015



Through the most advanced technologies and cutting edge designs, m\_PAC brings you The Security of Everything. m\_PAC’s standard is securing perfection, and we have poised ourselves as industry leaders in quality, functionality and design. The m\_PAC product line proudly stems from over 20 years of renowned German engineering and meets or exceeds the highest technical specifications available in the market at a competitive price. Our team is comprised of carefully selected specialists from all areas including development, engineering, and management to build not only a strong team, but to provide our customers with strong products. We cooperate closely with each of our specialists in order to incorporate the latest technologies and offer a holistic, interdisciplinary approach to our security solutions. We promise to deliver premium surveillance products and to provide our customers with the best service possible.

Our product portfolio features high-tech indoor and outdoor security and surveillance systems with a modular concept that embodies our philosophy of security through design. Our completely modular format puts our customers in control, giving them the power to build a completely customized surveillance and protection solution – module by module. Several camera model options offer traditional indoor and outdoor visual surveillance including available HD, EMCCD and thermal imaging cores. For more advanced security and surveillance applications, our REKKS Systems for Smart Protection And Control offer pole mounted, vehicle mounted and/or wearable solutions with integrated smart technology. Like never before, customers have the ability to gather valuable information about their environment, infrastructures, equipment and staff in any setting, from anywhere in the world. Our modular approach also extends to power and housing options. Many of our systems are compatible with off-grid, renewable energy sources and are available in aluminum or carbon fiber housings with optional pixelated camouflage for complete environment integration.

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## *Securing Perfection*

*in design. Our new carbon fiber products are ultra-light, fiercely protective, and extend the life of motorized components*

## Standard Series



■ Model 1

■ Model 3

Protected in sleek, durable and optimally functional housing, we offer several indoor cameras to complement our outdoor security systems. The indoor cameras incorporate network surveillance solutions designed for subject recognition where variable and low light conditions exist, feature an integrated SD card dome, digital noise reduction and are equipped with a new ISP and a Super HAD II sensor. In addition, high resolution ensures that every detail in the image is captured, without any compromise in frame rate, providing an ideal solution for indoor surveillance.

## Available Models:

■ Standard Definition Models  
1-SD

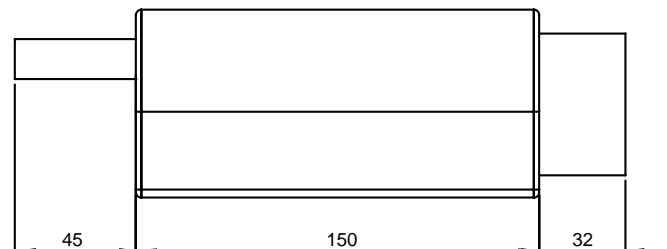
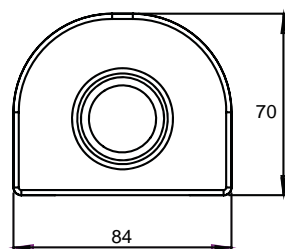
■ High Definition Models  
1-HD



Indoor

mm

Dimensions  
are in  
millimeters





## Highlighted Features



Standard & High Definition



Day & Night Function



Frame Rate

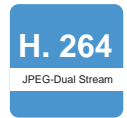


Image Format



Wide Dynamic Range



PoE Connection



Local Storage



Two-way Audio

## Description

m\_PAC's wide selection of indoor IP cameras rounds out our product portfolio to provide our customers with complete security solutions. The Model 1 showcases network surveillance cameras designed for subject recognition under variable and low light conditions and features a small and compact design for quick and easy wall or ceiling mount installation.

The Model 1 implements H.264 encoding, offering the benefits of broadcast quality video with up to 80% less bandwidth and storage space required in relation to MPEG2. Every detail in the image is captured without any compromise in frame rate - an indispensable feature for clear subject recognition. The availability of WiFi and 3G remote surveillance can remove the need for Ethernet cables and telecom infrastructure requirements, allowing our customers to save on installation costs. The setup process is also quick and can be customized through a client web portal or from an NVR.

## Housing and Mounts



Indoor



In-Vehicle Mount



Wall Mount

## Materials and Finish



Mixed Media



Housing Color

## Suggested Applications

- Commercial Real Estate
- Educational and Research Facilities
- Home Surveillance
- Hypermarkets
- Manufacturing and Storage Facilities
- Retail and Show Room Security

## Certifications



ONVIF



CE Certified



FCC Certified

	1-SD	1-HD
<b>Lens</b>		
<b>Image sensor</b>	1/3" SONY 138+FH8520	1/3" progressive scan CMOS
<b>Resolution</b>	1200TVL	1920 (H) x 1080 (V)
<b>Minimum illumination</b>	0.1 lux / f1.2	color mode: 0.1 lux at f1.2 AGC on ; B/W mode: 0.005 lux at f1.2 AGC on
<b>S/N ratio</b>	>46dB	more than 50dB (AGC off)
<b>Electronic shutter</b>	1/50 s~1/100,000 s for PAL, 1/60~1/100000 s for NTSC	auto 1/25 s ~ 1/100,000 s, slow shutter: 1/2, 1/4, 1/8, 1/12
<b>Image enhancement</b>	AGC / BLC / HPLC / ATR / WB / 2D / 3D NR	AGC / BLC / WDR 180X / WB
<b>Day &amp; Night</b>	auto / external trigger / color / black and white	auto ICR
<b>Lens</b>	CS / mega pixel lens	CS/C auto Iris (DC drive)
<b>Video</b>		
<b>Compression</b>	H.264 / M-JPEG dual stream	H.264 / M-JPEG dual stream
<b>Bit rate</b>	32k to 16Mbps controllable	32k to 16Mbps controllable / variable BR
<b>Frame rate</b>	1 ~ 25 full D1 704x576 at PAL, 1 ~ 30 full D1 704x480 at NTSC	(1 ~ 25) 1920 (H) x 1080 (V) at PAL / (1 ~ 30) 1920 (H) x 1080 (V) at NTSC
<b>Video output</b>	composite 1.0 Vp-p 75 ohms	one channel composite video output
<b>Audio</b>		
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>		
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>		
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB
<b>Operating Conditions</b>		
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>		
<b>Input voltage</b>	12 VDC	12 VDC
<b>Power consumption</b>	7W	6W
<b>Dimensions (cm)</b>	84 x 150 x 70 ( L x W X H)	84 x 150 x 70 ( L x W X H)
<b>Weight</b>	0.60 Kg	0.60 Kg
<b>Colors</b>	anodized aluminum and plastic in black, white, red, blue or silver	anodized aluminum and plastic in black, white, red, blue or silver

## Available Models:

■ Standard Definition Models  
3-SD

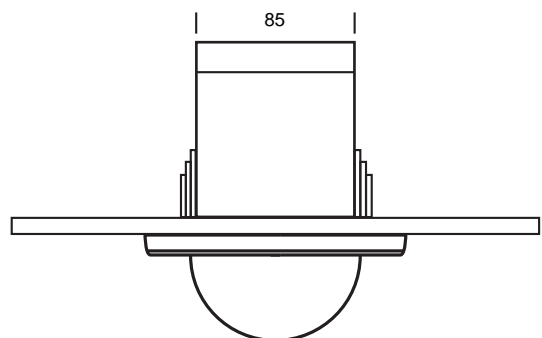
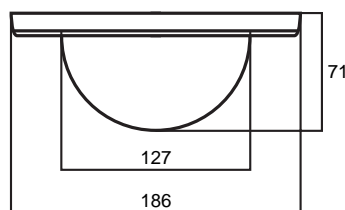
■ High Definition Models  
3-HD



Indoor

mm

Dimensions  
are in  
millimeters







## Description

The Model 3 offers compact wall or ceiling mounted fixed indoor cameras. Both the standard and high definition cores produce a clear and highly detailed image. Advanced 2D/3D digital noise reduction helps reduce the amount of low luminance noise as well as the signal to noise (S/N) ratio, resulting in a dramatically improved horizontal resolution and a clearer and sharper image display even in dark conditions. Network digital video streaming over IP and advanced H.264/M-JPEG dual stream image compression make it possible to integrate the Model 3 cameras into any existing TCP/IP network. The Model 3 is offered in a protective dome housing, and can be customized with exterior and/or dome glass colors.

## Suggested Applications

- Commercial Real Estate
- Educational and Research Facilities
- Home Surveillance
- Hypermarkets
- Manufacturing and Storage Facilities
- Retail and Show Room Security

## Highlighted Features

 Standard & High Definition	 Day & Night Function	 Frame Rate	 Image Format
 Wide Dynamic Range	 Dual Output	 PoE Connection	 Two-way Audio
 WiFi Connectivity			

## Housing and Mounts

 Indoor	 In-Vehicle Mount	 Ceiling Mount
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## Materials and Finish

 Aluminum	 Housing Color	 Glass Color
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## Certifications

 ONVIF	 CE Certified	 FCC Certified
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# Model 3



## 3-SD

## 3-HD

### Lens

<b>Image sensor</b>	1/3" SONY 138+FH8520	1/3" progressive scan CMOS
<b>Resolution</b>	1200TVL	1920 (H) x 1080 (V)
<b>Minimum illumination</b>	0.1 lux / f1.2	color mode: 0.1 lux at f1.2 AGC on ; B/W mode: 0.005 lux at f1.2 AGC on
<b>S/N ratio</b>	>46dB	more than 50dB (AGC off)
<b>Electronic shutter</b>	1/50 s~1/100,000 s for PAL, 1/60~1/100000 s for NTSC	auto 1/25 s ~ 1/100,000 s, slow shutter: 1/2, 1/4, 1/8, 1/12
<b>Image enhancement</b>	AGC / BLC / HPLC / ATR / WB / 2D / 3D NR	AGC / BLC / WDR 180X / WB
<b>Day &amp; Night</b>	auto / external trigger / color / black and white	auto ICR
<b>Lens</b>	optional	2.8 ~ 12mm manual zoom

### Video

<b>Compression</b>	H.264 / M-JPEG dual stream	H.264 / M-JPEG dual stream
<b>Bit rate</b>	16k to 1Mbps controllable	32k to 16Mbps controllable
<b>Frame rate</b>	1 ~ 25 full D1 704x576 at PAL, 1 ~ 30 full D1 704x480 at NTSC	(1 ~ 25) 1920 (H) x 1080 (V) at PAL / (1 ~ 30) 1920 (H) x 1080 (V) at NTSC
<b>Video output</b>	1.0 Vp-p 75 ohms	one channel composite video output

### Audio

<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM

### Alarm System Integration

<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule

### Network and Storage

<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)

### Operating Conditions

<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%

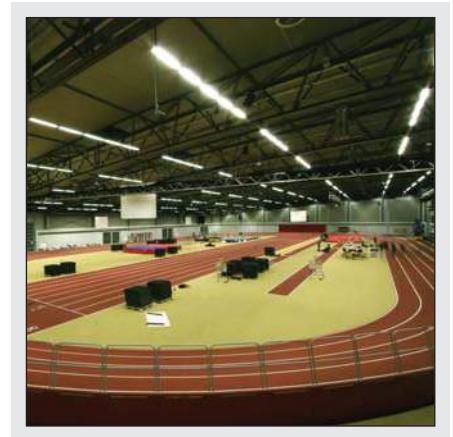
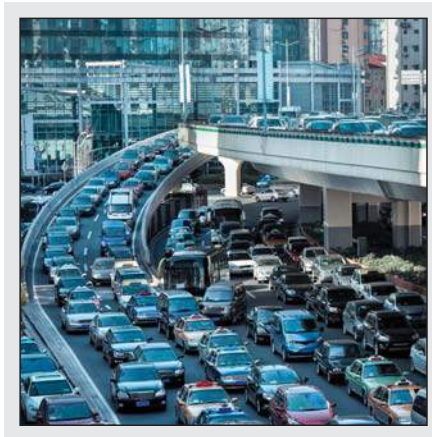
### Weight and Dimensions

<b>Input voltage</b>	12 VDC	12 VDC
<b>Power consumption</b>	4W	6W
<b>Dimensions (cm)</b>	Ø 186 x 71 (R x H)	Ø 186 x 71 (R x H)
<b>Weight</b>	0.6 Kg	0.6 Kg
<b>Colors</b>	white, black, silver, blue	white, black, silver, blue
<b>Glass color</b>	transperant, smoked	transperant, smoked

## *Securing Perfection*

*through renowned German engineering standards, the latest technology and the most innovative designs*

## Professional Series



■ Model 5

■ Model 7

■ Model 9

The Model 5, Model 7, and Model 9 cameras of our Professional Series offer customers versatile indoor and outdoor solutions for complete surveillance, no matter the application or project requirements. The Professional Series provides ideal solutions for corporate security needs.

The Model 5 offers several standard and high definition core options, and features our mixed media indoor housing. Our outdoor PTZ housing is a valuable pair for the Model 5, providing complete PTZ capabilities and added protection against harsh weather and outdoor conditions.

The Model 7 and Model 9 offer two dome mounting options – in-ceiling and dome respectively - for superior 360° surveillance. For discrete indoor applications, the Model 7 in-ceiling mount uses the latest technology and tamper resistant housing to deliver high quality images. The Model 9 dome camera, available in either a pendant or wall mount, is ideally suited for outdoor and maritime use and is available with stainless steel corrosion resistant housing.

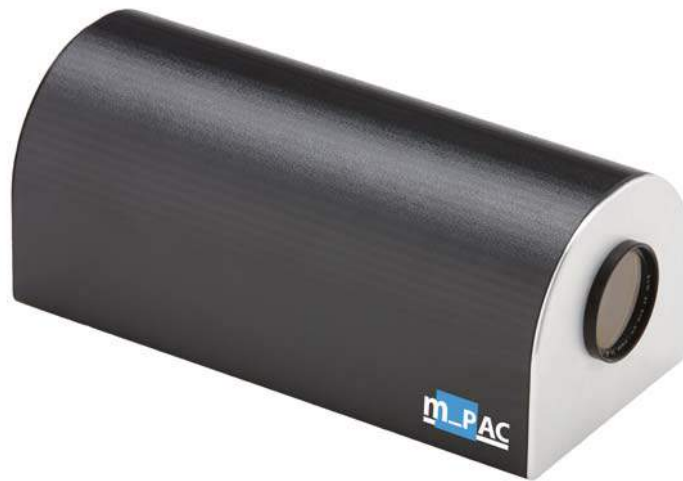
## Available Models:

### ■ Standard Definition Models

- 5-SD10
- 5-SD18
- 5-SD36

### ■ High Definition Models

- 5-HD12
- 5-HD20
- 5-HD30



Wall Mount



Indoor

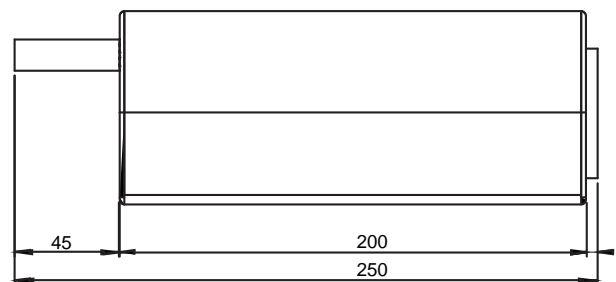
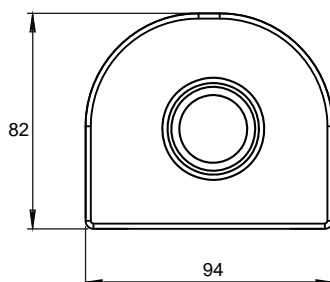


Outdoor



mm

Dimensions are in millimeters





## Highlighted Features



Standard & High Definition



DIS



Wide Dynamic Range



External Optics Compatible



IP Output



PoE Connection



Local Storage



Two-way Audio

## Description

The high resolution capabilities of the Model 5 IP cameras are designed for indoor use as well as outdoor area and perimeter security. The highly sensitive HAD CCD sensors and Day & Night ICR functions make it ideal for extremely low light applications. The Model 5 also offers integrated motion detection and privacy zone masking for superior surveillance capabilities.

The Model 5 comes standard in our unique anodized aluminum mixed media indoor housing, available in white, black, silver, red or blue. For advanced outdoor applications, the Model 5 can be paired with our outdoor PTZ housing and external lenses to increase optical zoom capabilities.

## Housing and Mounts



Indoor



Outdoor



Wall Mount



IP 67 External Fixed Housing



IP 67 External PT Housing



Maritime Mount

## Suggested Applications

- Air and Sea Port Facilities
- Banking and Treasuries
- Commercial Real Estate
- Educational and Research Facilities
- Energy Infrastructures
- Governmental Facilities
- High Security Facilities
- Stadiums, Arenas and Public Venues
- Towers and Large Buildings
- Traffic and Transportation Infrastructures

## Materials and Finish



Mixed Media



Housing Color



Corrosion Resistant Materials

## Certifications



ONVIF



CE Certified



FCC Certified

	5-SD10	5-SD18	5-SD36
<b>Lens</b>			
<b>Image sensor</b>	1/3 Super HAD CCD II	1/4 Ex-view HAD CCD progressive scan	1/4 Ex-view HAD CCD progressive scan
<b>Angle view</b>	52° wide to 5.4° tele	48° wide to 2.8° tele	57.8° wide to 1.7° tele
<b>Lens</b>	10x optical zoom f=5.1mm wide to 51.0mm tele, f1.8 to f2.1	18x optical zoom f=4.1mm wide to 73.8mm tele, f1.4 to f3.0	36x optical zoom f=3.4mm wide to 122.4mm tele, f1.6 to f4.5
<b>Minimum illumination</b>	0.25 lux at 1/50 s (f1.8, 50 IRE) 0.0004 lux at 1/4 s ICR - on	0.7 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on	1.4 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on
<b>Digital zoom</b>	12x (120x with optical zoom)	12x (216x with optical zoom)	12x (432x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps
<b>TV lines</b>	530 TVL	550 TVL	550 TVL
<b>Video</b>			
<b>Compression</b>	H.264 dual stream	H.264 dual stream	H.264 dual stream
<b>Bit rate</b>	16k to 1Mbps controllable	16k to 1Mbps controllable	16k to 1Mbps controllable
<b>Video resolution</b>	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)
<b>Frame rate</b>	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR, digital image stabilizer
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPoE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPoE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPoE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	12 VDC	12 VDC	12 VDC
<b>Power consumption</b>	6W	6W	6W
<b>Dimensions (cm)</b>	94 x 200 x 82 ( L x W X H)	94 x 200 x 82 (L x W X H)	94 x 200 x 82 (L x W X H)
<b>Weight</b>	0.9 Kg	0.9 Kg	0.9 Kg
<b>Colors</b>	anodized aluminum and plastic in black, white, red, blue or silver	anodized aluminum and plastic in black, white, red, blue or silver	anodized aluminum and plastic in black, white, red, blue or silver

	5-HD12	5-HD20	5-HD30
<b>Lens</b>			
<b>Image sensor</b>	1/4-Type CMOS	1/2.8" Exmor CMOS	1/2.8" Exmor CMOS
<b>Angle view</b>	53.4° (wide end) to 2.9° (tele end)	55.4° (wide end) to 2.9° (tele end)	54.1° (wide end) to 2.9° (tele end)
<b>Lens</b>	12x optical zoom f=3.7mm wide to 44.4mm tele, f1.6 to f2.5	20x optical zoom f=4.7mm wide to 94.0mm tele, f1.6 to f3.5	30x optical zoom f=4.6 mm wide to 138.0mm tele, f1.8 to f4.7
<b>Minimum illumination</b>	0.3 lux (f1.6, ICR off) / 0.06 lux (f1.6, ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6 ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6, ICR – on)
<b>Digital zoom</b>	12x (144x with optical zoom)	12x (240x with optical zoom)	12x (360x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/2 s ~ 1/10,000 s, 21 steps
<b>Effective pixels</b>	1.43 megapixels	3 megapixels	3 megapixels

	5-HD12	5-HD20	5-HD30
<b>Video</b>			
<b>Compression</b>	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<b>Bit rate</b>	32Kbps to 8Mbps	32Kbps to 8Mbps	32Kbps to 8Mbps
<b>Video resolution</b>	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 480 (V) / 720 (H) x 576 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)
<b>Signal system</b>	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25
<b>Frame rate</b>	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display

	5-HD12	5-HD20	5-HD30
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM

	5-HD12	5-HD20	5-HD30
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule

	5-HD12	5-HD20	5-HD30
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB

	5-HD12	5-HD20	5-HD30
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%

	5-HD12	5-HD20	5-HD30
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	12 VDC	12 VDC	12 VDC
<b>Power consumption</b>	5W	5W	5W
<b>Dimensions (cm)</b>	94 x 200 x 82 ( L x W X H)	94 x 200 x 82 ( L x W X H)	94 x 200 x 82 ( L x W X H)
<b>Weight</b>	0.9 Kg	0.9 Kg	0.9 Kg
<b>Colors</b>	anodized aluminum and plastic in black, white, red, blue or silver	anodized aluminum and plastic in black, white, red, blue or silver	anodized aluminum and plastic in black, white, red, blue or silver



## Available Models:

### ■ Standard Definition Models

- 7-SD10
- 7-SD18
- 7-SD36

### ■ High Definition Models

- 7-HD12
- 7-HD20
- 7-HD30



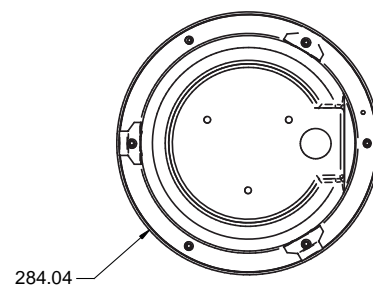
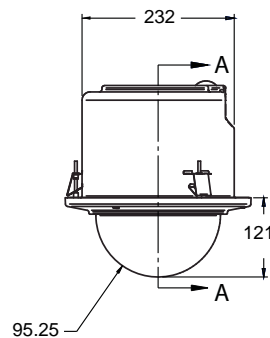
Indoor



Outdoor

mm

Dimensions  
are in  
millimeters





## Highlighted Features



Standard & High Definition



DIS



Wide Dynamic Range



PTZ Capability



IP Output



PoE Connection



Local Storage



Two-way Audio

## Description

The Model 7 is offered as an indoor/outdoor in-ceiling camera designed for a variety of surveillance and monitoring applications. The camera is mounted discretely in-ceiling inside a vandal resistant, plenum rated aluminum housing and an impact-resistant polycarbonate dome. During cold weather an internal heater unit enables the camera to continue operating in low temperatures.

The highly sensitive HAD CCD sensors and Day & Night ICR function make the Model 7 suitable for daytime as well as low light applications. Advanced DSP technology, combined with an H.264 compression stream delivers crystal clear images and provides improved picture quality in nearly all lighting conditions

## Suggested Applications

- Air and Sea Port Facilities
- Banking and Treasuries
- Commercial Real Estate
- Educational and Research Facilities
- Energy Infrastructures
- Governmental Facilities
- High Security Facilities
- Stadiums, Arenas and Public Venues
- Towers and Large Buildings
- Traffic and Transportation Infrastructures

## Housing and Mounts



Indoor



Outdoor



In-Ceiling Mount



High Speed PTZ

## Materials and Finish



Aluminum



Tamper Protection



Housing Color



Glass Color

## Certifications



ONVIF



CE Certified



FCC Certified



IP Rating

	7-SD10	7-SD18	7-SD36
<b>Lens</b>			
<b>Image sensor</b>	1/3 Super HAD CCD II	1/4 Ex-view HAD CCD progressive scan	1/4 Ex-view HAD CCD progressive scan
<b>Angle view</b>	52° wide to 5.4° tele	48° wide to 2.8° tele	57.8° wide to 1.7° tele
<b>Lens</b>	10x optical zoom f=5.1mm wide to 51.0mm tele, f1.8 to f2.1	18x optical zoom f=4.1mm wide to 73.8mm tele, f1.4 to f3.0	36x optical zoom f=3.4mm wide to 122.4mm tele, f1.6 to f4.5
<b>Minimum illumination</b>	0.25 lux at 1/50 s (f1.8, 50 IRE) 0.0004 lux at 1/4 s ICR - on	0.7 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on	1.4 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on
<b>Digital zoom</b>	12x (120x with optical zoom)	12x (216x with optical zoom)	12x (432x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps
<b>TV lines</b>	530 TVL	550 TVL	550 TVL
<b>Video</b>			
<b>Compression</b>	H.264 dual stream	H.264 dual stream	H.264 dual stream
<b>Bit rate</b>	16k to 1Mbps controllable	16k to 1Mbps controllable	16k to 1Mbps controllable
<b>Video resolution</b>	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)
<b>Frame rate</b>	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR, digital image stabilizer
<b>Preset points</b>	128	128	128
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	24 VAC	24 VAC	24 VAC
<b>Power consumption</b>	20W	20W	20W
<b>Dimensions</b>	Ø 284.04 x 121 (R x H)	Ø 284.04 x 121 (R x H)	Ø 284.04 x 121 (R x H)
<b>Weight</b>	4.6 Kg	4.6 Kg	4.6 Kg
<b>Colors</b>	white, black, silver, blue	white, black, silver, blue	white, black, silver, blue
<b>Glass color</b>	transperant, smoked	transperant, smoked	transperant, smoked

	7-HD12	7-HD20	7-HD30
<b>Lens</b>			
<b>Image sensor</b>	1/4-Type CMOS	1/2.8" Exmor CMOS	1/2.8" Exmor CMOS
<b>Angle view</b>	53.4° (wide end) to 2.9° (tele end)	55.4° (wide end) to 2.9° (tele end)	54.1° (wide end) to 2.9° (tele end)
<b>Lens</b>	12x optical zoom f=3.7mm wide to 44.4mm tele, f1.6 to f2.5	20x optical zoom f=4.7mm wide to 94.0mm tele, f1.6 to f3.5	30x optical zoom f=4.6 mm wide to 138.0mm tele, f1.8 to f4.7
<b>Minimum illumination</b>	0.3 lux (f1.6, ICR off) / 0.06 lux (f1.6, ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6 ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6, ICR – on)
<b>Digital zoom</b>	12x (144x with optical zoom)	12x (240x with optical zoom)	12x (360x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/2 s ~ 1/10,000 s, 21 steps
<b>Effective pixels</b>	1.43 megapixels	3 megapixels	3 megapixels

	7-HD12	7-HD20	7-HD30
<b>Video</b>			
<b>Compression</b>	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<b>Bit rate</b>	32Kbps to 8Mbps	32Kbps to 8Mbps	32Kbps to 8Mbps
<b>Video resolution</b>	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 480 (V) / 720 (H) x 576 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)
<b>Signal system</b>	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25
<b>Frame rate</b>	25 fps at full D1 (PAL) 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure, WDR, Tour Recording, Guard tour, Auto track, Iris Control, On-Screen Display	auto white balance, AGC, backlight compensation, auto exposure, WDR, Tour Recording, Guard tour, Auto track, Iris Control, On-Screen Display	auto white balance, AGC, backlight compensation, auto exposure, WDR, Tour Recording, Guard tour, Auto track, Iris Control, On-Screen Display
<b>Preset points</b>	128	128	128

	7-HD12	7-HD20	7-HD30
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM

	7-HD12	7-HD20	7-HD30
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule

	7-HD12	7-HD20	7-HD30
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB

	7-HD12	7-HD20	7-HD30
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%

	7-HD12	7-HD20	7-HD30
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	24 VAC	24 VAC	24 VAC
<b>Power consumption</b>	20W	20W	20W
<b>Dimensions</b>	Ø 284.04 x 121 (R x H)	Ø 284.04 x 121 (R x H)	Ø 284.04 x 121 (R x H)
<b>Weight</b>	4.6 Kg	4.6 Kg	4.6 Kg
<b>Colors</b>	white, black, silver, blue	white, black, silver, blue	white, black, silver, blue
<b>Glass color</b>	transperant, smoked	transperant, smoked	transperant, smoked

## Available Models:

### Standard Definition Models

- 9-SD10
- 9-SD18
- 9-SD36
- 9E-SD10
- 9E-SD18
- 9E-SD36

### High Definition Models

- 9-HD12
- 9-HD20
- 9-HD30
- 9E-HD12
- 9E-HD20
- 9E-HD30



Maritime  
Mount



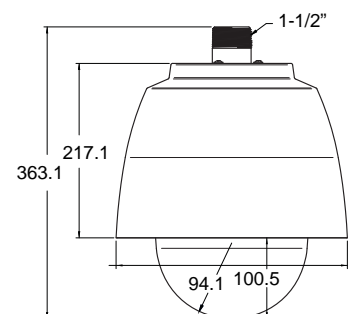
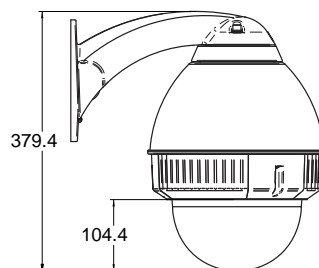
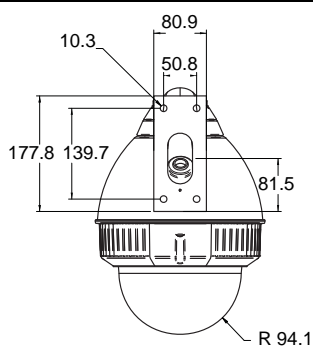
Indoor



Outdoor



Dimensions  
are in  
millimeters





## Highlighted Features

SD HD Standard & High Definition	DIS Dynamic Image Stabilization	WDR Wide Dynamic Range	PTZ Capability
IP Output	PoE Connection	Local Storage	Two-way Audio

## Description

Designed primarily for outdoor area surveillance, the Model 9 is a 360 degree PTZ dome camera. The Model 9 provides superior surveillance with one of our Standard Definition or High Definition camera cores in durable IP66 housing. The Model 9 also offers a ruggedized option, the Model 9 Heavy Duty, which features an IP67 and IK10 rated stainless steel corrosion resistant housing.

All Model 9 cameras feature an easy-install exterior design as well as local storage, PoE, internal temperature control, optional smoked glass. Both the Model 9 and Model 9 Heavy Duty are available with either a pendant or wall mount.

## Housing and Mounts

Indoor	Outdoor	Ceiling Mount	Wall Mount
High Speed PTZ	Maritime Mount		

## Suggested Applications

- Air and Sea Port Facilities
- Banking and Treasuries
- Commercial Real Estate
- Educational and Research Facilities
- Energy Infrastructures
- Governmental Facilities
- High Security Facilities
- Stadiums, Arenas and Public Venues
- Towers and Large Buildings
- Traffic and Transportation Infrastructures

## Materials and Finish

Aluminum	Housing Color	Glass Color	Corrosion Resistant Materials
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## Certifications

ONVIF Conformant	CE Certified	FCC Certified	IP 67+ IP Rating
IK 10 IK Rating			

	9-SD10	9-SD18	9-SD36
<b>Lens</b>			
<b>Image sensor</b>	1/3 Super HAD CCD II	1/4 Ex-view HAD CCD progressive scan	1/4 Ex-view HAD CCD progressive scan
<b>Angle view</b>	52° wide to 5.4° tele	48° wide to 2.8° tele	57.8° wide to 1.7° tele
<b>Lens</b>	10x optical zoom f=5.1mm wide to 51.0mm tele, f1.8 to f2.1	18x optical zoom f=4.1mm wide to 73.8mm tele, f1.4 to f3.0	36x optical zoom f=3.4mm wide to 122.4mm tele, f1.6 to f4.5
<b>Minimum illumination</b>	0.25 lux at 1/50 s (f1.8, 50 IRE) 0.0004 lux at 1/4 s ICR - on	0.7 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on	1.4 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on
<b>Digital zoom</b>	12x (120x with optical zoom)	12x (216x with optical zoom)	12x (432x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps
<b>TV lines</b>	530 TVL	550 TVL	550 TVL
<b>Video</b>			
<b>Compression</b>	H.264 dual stream	H.264 dual stream	H.264 dual stream
<b>Bit rate</b>	16k to 1Mbps controllable	16k to 1Mbps controllable	16k to 1Mbps controllable
<b>Video resolution</b>	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)
<b>Frame rate</b>	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR, digital image stabilizer
<b>Preset points</b>	128	128	128
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	24 VAC	24 VAC	24 VAC
<b>Power consumption</b>	20W	20W	20W
<b>Dimensions</b>	Model 9: 260.9 x 373.3 x 379.4 (L x W X H) Model 9E: 287.9 x 363.1 (R x H)	Model 9: 260.9 x 373.3 x 379.4 (L x W X H) Model 9E: 287.9 x 363.1 (R x H)	Model 9: 260.9 x 373.3 x 379.4 (L x W X H) Model 9E: 287.9 x 363.1 (R x H)
<b>Weight</b>	Model 9: 5.0 Kg Model 9E: 6.5 Kg	Model 9: 5.0 Kg Model 9E: 6.5 Kg	Model 9: 5.0 Kg Model 9E: 6.5 Kg
<b>Colors</b>	white, black, silver, blue	white, black, silver, blue	white, black, silver, blue
<b>Glass color</b>	transperant, smoked	transperant, smoked	transperant, smoked
<b>Housing</b>	standard, extreme environment	standard, extreme environment	standard, extreme environment

	9-HD12	9-HD20	9-HD30
<b>Lens</b>			
<b>Image sensor</b>	1/4-Type CMOS	1/2.8" Exmor CMOS	1/2.8" Exmor CMOS
<b>Angle view</b>	53.4° (wide end) to 2.9° (tele end)	55.4° (wide end) to 2.9° (tele end)	54.1° (wide end) to 2.9° (tele end)
<b>Lens</b>	12x optical zoom f=3.7mm wide to 44.4mm tele, f1.6 to f2.5	20x optical zoom f=4.7mm wide to 94.0mm tele, f1.6 to f3.5	30x optical zoom f=4.6 mm wide to 138.0mm tele, f1.8 to f4.7
<b>Minimum illumination</b>	0.3 lux (f1.6, ICR off) / 0.06 lux (f1.6, ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6 ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6, ICR – on)
<b>Digital zoom</b>	12x (144x with optical zoom)	12x (240x with optical zoom)	12x (360x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/2 s ~ 1/10,000 s, 21 steps
<b>Effective pixels</b>	1.43 megapixels	3 megapixels	3 megapixels
<b>Video</b>			
<b>Compression</b>	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<b>Bit rate</b>	32Kbps to 8Mbps	32Kbps to 8Mbps	32Kbps to 8Mbps
<b>Video resolution</b>	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 480 (V) / 720 (H) x 576 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)
<b>Signal system</b>	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25
<b>Frame rate</b>	25 fps at full D1 (PAL) 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure, WDR, Tour Recording, Guard tour, Auto track, Iris Control, On-Screen Display	auto white balance, AGC, backlight compensation, auto exposure, WDR, Tour Recording, Guard tour, Auto track, Iris Control, On-Screen Display	auto white balance, AGC, backlight compensation, auto exposure, WDR, Tour Recording, Guard tour, Auto track, Iris Control, On-Screen Display
<b>Preset points</b>	128	128	128
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	24 VAC	24 VAC	24 VAC
<b>Power consumption</b>	20W	20W	20W
<b>Dimensions</b>	Model 9: 260.9 x 373.3 x 379.4 (L x W X H) Model 9E: 287.9 x 363.1 (R x H)	Model 9: 260.9 x 373.3 x 379.4 (L x W X H) Model 9E: 287.9 x 363.1 (R x H)	Model 9: 260.9 x 373.3 x 379.4 (L x W X H) Model 9E: 287.9 x 363.1 (R x H)
<b>Weight</b>	Model 9: 5.0 Kg Model 9E: 6.5 Kg	Model 9: 5.0 Kg Model 9E: 6.5 Kg	Model 9: 5.0 Kg Model 9E: 6.5 Kg
<b>Colors</b>	white, black, silver, blue	white, black, silver, blue	white, black, silver, blue
<b>Glass color</b>	transperant, smoked	transperant, smoked	transperant, smoked
<b>Housing</b>	standard, extreme environment	standard, extreme environment	standard, extreme environment



## *Securing Perfection*

*in power sourcing. We offer a range of alternative energy and off-grid power options for complete solutions in any environment*

## Signature Series



### ■ The BUMA

### ■ The BUMA Heavy Duty

### ■ The BUMA Modular

The BUMA, BUMA Heavy Duty, and BUMA Modular make up our Signature Series cameras, our most advanced outdoor surveillance cameras. Each of these camera systems features highly durable, protective aluminum housing, built to withstand the toughest environments. Inside, several advanced surveillance options are available, including standard, high definition, and all new ultra high definition camera cores with up to 40x SD zoom, 30x HD zoom, 4K resolution, EMCCD, thermal imaging, speakers, spotlights, Infrared Illumination, and a laser illuminator.

Each of our Signature Series cameras comes standard with the camera head module inside our unique and protective housing, a combined pan and communication module, and a ground surface base. For a complete solution when more advanced capabilities are required, the Signature Series cameras are designed for seamless integration into our revolutionary REKKS Smart Perimeter System (SPS). When included as part of the SPS, the BUMA, BUMA Heavy Duty or BUMA Modular camera head is selected to top the pole system. The system's superior design and durability make the Signature Series cameras the perfect solution for remote, off-grid applications and suitable for even the most extreme environments.

## Available Models:

- Standard Definition Models  
BUMA-SD18  
BUMA-SD26  
BUMA-SD40
- High Definition Models  
BUMA-HD12  
BUMA-HD20  
BUMA-HD30
- Ultra High Definition Models  
BUMA-UHD
- Low Light Models  
BUMA-LL  
BUMA-EMCCD



Maritime Mount



External Vehicle Mount



Smart Perimeter System Mount



Portable

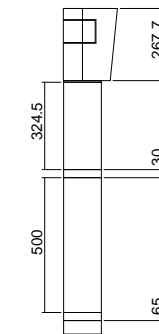
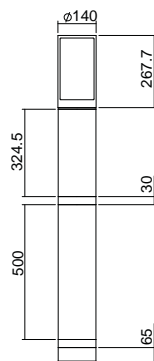


Outdoor

### Head Module

### Pan and Communication Module

### Base Module



mm

Dimensions are in millimeters



## Highlighted Features

SD HD Standard & High Definition	ULTRA HD Ultra High Definition	EMCCD EMCCD	Image Stabilization	PTZ Capability
Optical Fiber Integrated Optical Fiber	Renewable Energy Compatible	Ruggedized	Customizable Height	

## Description

The patent pending BUMA is a uniquely designed stand-alone camera, now featuring our all new Ultra High Definition camera core capable of delivering full 4k resolution of 3840 x 2160 pixels. Internal components are protected by vandal and weatherproof anodized aluminum housing and can easily be paired with our REKKS Smart Perimeter System for advanced capabilities and off-grid power solutions. An H.264 compression stream and advanced DSP technology secure 24 hour monitoring in remote areas and provide crystal clear images in nearly all lighting conditions. An optional DIS feature makes this camera ideal for tactical and heavy duty vehicle mounting.

## Suggested Applications

- Bases, Outposts and Checkpoints
- Border and Port Facilities
- Construction Sites and Pipelines
- Educational and Research Facilities
- Energy Infrastructures and Drill Sites
- Governmental Facilities
- Nighttime Surveillance
- Parks and Recreational Facilities
- Remote and Undeveloped Areas
- Traffic and Transportation Infrastructures

## Housing and Mounts

Outdoor	Portable	Smart Perimeter System Mount	External Vehicle Mount	Maritime Mount
Wall Mount	Pole Height Extension			

## Materials and Finish

Aluminum	Camouflage	Housing Color	Glass Color
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## Certifications

ONVIF Comformant	CE Certified	FCC Certified	IP Rating	IK Rating
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	BUMA-SD18	BUMA-SD26	BUMA-SD40
<b>Lens</b>			
<b>Image sensor</b>	1/4 Ex-view HAD CCD progressive scan	1/4-type Ex-view HAD CCD	1/4-type super HAD CCD II
<b>Angle view</b>	48° wide to 2.8° tele	54.2° wide to 2.2° tele	60.0° wide to 1.6° tele
<b>Lens</b>	18x optical zoom f=4.1mm wide to 73.8mm tele, f1.4 to f3.0	26x optical zoom f = 3.5 to 91mm (F1.6 to F3.8)	40x optical zoom f=3.06mm wide to 122.4mm tele, F1.6 to F4.6
<b>Minimum illumination</b>	0.7 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on	0.7 lux (typical)	0.6 lux at 1/60 s 0.1 lux at 1/4 s ICR - on
<b>Digital zoom</b>	12x (216x with optical zoom)	12x (312x with optical zoom)	12x (480x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps
<b>TV lines</b>	550 TVL	530 TVL	670 TVL
<b>Video</b>			
<b>Compression</b>	H.264 dual stream	H.264 dual stream	H.264 dual stream
<b>Bit rate</b>	16k to 1Mbps controllable	16k to 1Mbps controllable	16k to 1Mbps controllable
<b>Video resolution</b>	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)
<b>Frame rate</b>	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR, digital image stabilizer
<b>Preset points</b>	128	128	128
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	12 VDC	12 VDC	12 VDC
<b>Power consumption</b>	15W	15W	15W
<b>Dimensions (cm)</b>	20 x 14.1 x 26.7 (W x L x H)	20 x 14.1 x 26.7 (W x L x H)	20 x 14.1 x 26.7 (W x L x H)
<b>Weight</b>	11.5 Kg	11.5 Kg	11.5 Kg
<b>Colors</b>	white, black, camouflage wrap	white, black, camouflage wrap	white, black, camouflage wrap

	BUMA-HD12	BUMA-HD20	BUMA-HD30
<b>Lens</b>			
<b>Image sensor</b>	1/4-Type CMOS	1/2.8" Exmor CMOS	1/2.8" Exmor CMOS
<b>Angle view</b>	53.4° (wide end) to 2.9° (tele end)	55.4° (wide end) to 2.9° (tele end)	54.1° (wide end) to 2.9° (tele end)
<b>Lens</b>	12x optical zoom f=3.7mm wide to 44.4mm tele, f1.6 to f2.5	20x optical zoom f=4.7mm wide to 94.0mm tele, f1.6 to f3.5	30x optical zoom f=4.6 mm wide to 138.0mm tele, f1.8 to f4.7
<b>Minimum illumination</b>	0.3 lux (f1.6, ICR off) / 0.06 lux (f1.6, ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6 ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6, ICR – on)
<b>Digital zoom</b>	12x (144x with optical zoom)	12x (240x with optical zoom)	12x (360x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/2 s ~ 1/10,000 s, 21 steps
<b>Effective pixels</b>	1.43 megapixels	3 megapixels	3 megapixels
<b>Video</b>			
<b>Compression</b>	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<b>Bit rate</b>	32Kbps to 8Mbps	32Kbps to 8Mbps	32Kbps to 8Mbps
<b>Video resolution</b>	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 480 (V) / 720 (H) x 576 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)
<b>Signal system</b>	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25
<b>Frame rate</b>	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display
<b>Preset points</b>	128	128	128
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	12 VDC / 6W, PoE (optional)	12 VDC / 6W, PoE (optional)	12 VDC / 6W, PoE (optional)
<b>Power consumption</b>	15W	15W	15W
<b>Dimensions (cm)</b>	20 x 14.1 x 26.7 (W x L x H)	20 x 14.1 x 26.7 (W x L x H)	20 x 14.1 x 26.7 (W x L x H)
<b>Weight</b>	11.5 Kg	11.5 Kg	11.5 Kg
<b>Colors</b>	white, black, camouflage wrappe	white, black, camouflage wrappe	white, black, camouflage wrappe

## Lens

<b>Image sensor</b>	Global Shutter CMOS
<b>Sensor Size</b>	Super 35 (22.53 x 11.88mm)
<b>Resolution</b>	4096x2160 or 3840x2160 (4x full HD)
<b>Dynamic Range</b>	12 stops
<b>Minimum illumination</b>	0,3 lux

## Video

<b>Compression</b>	H.264 / M_JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<b>Bit rate</b>	32Kbps to 8Mbps
<b>Video output</b>	4x 3G/HD-SDI (4x BNC)
<b>Quad Link Output Formats</b>	10-bit 4:4:4 quad link (UHD and 4K:23.98, 24, 25, 29.97, 30) 10-bit 4:2:2 or RAW quad link (UHD: 23.98, 24, 25, 29.97, 30, 50, 59.94, 60), (4K: UHD and 4K:23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60) progressive scan
<b>Frame rate</b>	NTSC / PAL
<b>Image enhancement</b>	manual and auto white balance, 1-Shot auto, matrix adjustment and saturation correction, backlight compensation, auto exposure, WDR, integrated IR-cut filter and OLPF, iris control, on-screen display
<b>Preset points</b>	128
<b>Sensitivity Adjustment</b>	ISO control; up to 4x digital gain

## Audio

<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM

## Alarm System Integration

<b>Alarm input</b>	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule

## Network and Storage

<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB

## Operating Conditions

<b>Operating temp.</b>	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%

## Weight and Dimensions

<b>Input voltage</b>	12 VDC
<b>Power consumption</b>	15W
<b>Dimensions (cm)</b>	20 x 14.1 x 26.7 (W x L x H)
<b>Weight</b>	5 Kg
<b>Colors</b>	white, black, camouflage wrap

# BUMA-Low Light



## BUMA-LL

## BUMA-EMCCD

### Core

<b>Sensor type</b>	1/2" Exview HAD CCD II	1/2" Frame Interline Transfer (FIT) impactron
<b>Active pixel</b>	752 x 582	658 x 496
<b>Pixel size</b>	8.6µm x 8.3µm	10µm x 10µm
<b>Active area</b>	6.47mm x 6.83mm	6.58mm x 4.96mm
<b>Dynamic range</b>	>60dB	55dB
<b>Spectral response</b>	350-1100nm	350-1100nm
<b>Minimum illumination</b>	< 1µlux	< 200µlux
<b>Resolution</b>	480 TV lines	450 TV lines
<b>Cooling</b>	active, no fan	active, no fan
<b>Antiblooming protection</b>	-	yes (>500:1)
<b>Exposure time</b>	-	500µs to 1/50s (CCIR) or 1/60 (EIA)
<b>Frame rate</b>	25Hz (CCIR), 30Hz (EIA/NTSC)	25Hz (CCIR), 30Hz (EIA)
<b>Readout mode</b>	progressive scan	progressive scan

### Alarm System Integration

<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	manual or schedule	manual or schedule

### Network and Storage

<b>Ethernet port</b>	10/100M Base-t self- adapting Ethernet port	10/100M Base-t self- adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)

### Operating Conditions

<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%

### Weight and Dimensions

<b>Input voltage</b>	12 VDC	12 VDC
<b>Power consumption</b>	14W	15W
<b>Dimensions (cm)</b>	20 x 14.1 x 26.7 (W x L x H)	20 x 14.1 x 26.7 (W x L x H)
<b>Weight</b>	11.5 Kg	11.5 Kg
<b>Colors</b>	white, black, camouflage wrap	white, black, camouflage wrap



# The BUMA Heavy Duty



## Available Models:

- Standard Definition Models  
BH-SD18  
BH-SD26  
BH-SD40

- High Definition Models  
BH-HD12  
BH-HD20  
BH-HD30

- Ultra High Definition Models  
BH-UHD - Coming Soon

- Low Light Models  
BH-LL  
BH-EMCCD



Maritime Mount



External Vehicle Mount



Smart Perimeter System Mount



Smart Technology

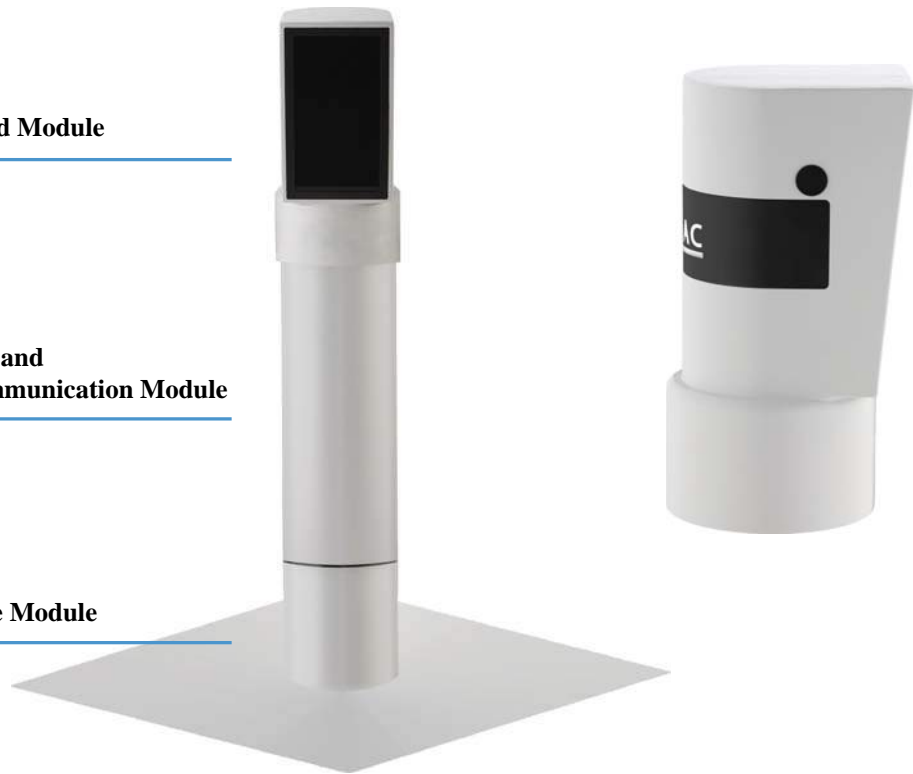


Outdoor

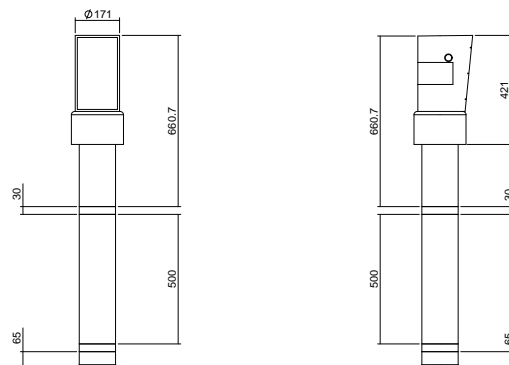
### Head Module

### Pan and Communication Module

### Base Module



Dimensions are in millimeters



# The BUMA Heavy Duty



## Description






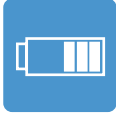


We are proud to offer the BUMA Heavy Duty to further enhance the capabilities of our original BUMA. The BUMA Heavy Duty offers all of the BUMA's core features, including SD, HD and our all new UHD camera cores, H.264 compression stream, advanced DSP technology, WDR, and its distinct tube shaped design.

What truly set the BUMA Heavy Duty apart are its uniquely rugged capabilities. The heavy-duty aluminum housing is approximately twice the size of the standard BUMA, which allows for additional protection and enhanced features to be incorporated directly into the camera head. The heavy-duty head has a built-in rechargeable battery for up to 12 hours of local power independent from additional power system options, a minimum of 512GB internal solid state storage, WiFi hotspot capabilities, and two separate video streams - one that is stored locally and one that transmits to command center encoders. As an added layer of protection in areas of conflict and/or civil unrest, the heavy duty head features composite inlays and specialized glass for a ballistic resistant and explosion proof system. We make it possible to secure the most sensitive targets and the most remote, inhospitable environments.


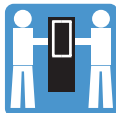






## Suggested Applications

- Bases, Outposts and Checkpoints
- Border and Port Facilities
- Conflict Zones
- Construction Sites and Pipelines
- Critical Infrastructures and Sensitive Targets
- Energy Infrastructures and Drill Sites
- Governmental Facilities
- Remote and Undeveloped Areas





## Highlighted Features

 Standard & High Definition	 Ultra High Definition	 EMCCD	 WiFi Connectivity
 WiFi Hotspot	 Internal Battery	 GB Local Storage	 Dual Decoder

## Housing and Mounts

 Outdoor	 Portable	 Smart Perimeter System Mount	 Eternal Vehicle Mount
 Maritime Mount	 Wall Mount	 Adjustable Height Extension	 Ballistic Resistant

## Materials and Finish

 Aluminum	 Camouflage	 Housing Color	 Glass Color
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## Certifications

 ONVIF	 CE Certified	 FCC Certified	 WiFi Certified
 IP Rating	 IK Rating		

## BH-SD18

## BH-SD26

## BH-SD40

### Lens

<b>Image sensor</b>	1/4 Ex-view HAD CCD progressive scan	1/4-type Ex-view HAD CCD	1/4-type super HAD CCD II
<b>Angle view</b>	48° wide to 2.8° tele	54.2° wide to 2.2° tele	60.0° wide to 1.6° tele
<b>Lens</b>	18x optical zoom f=4.1mm wide to 73.8mm tele, f1.4 to f3.0	26x optical zoom f = 3.5 to 91mm (F1.6 to F3.8)	40x optical zoom f=3.06mm wide to 122.4mm tele, F1.6 to F4.6
<b>Minimum illumination</b>	0.7 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on	0.7 lux (typical)	0.6 lux at 1/60 s 0.1 lux at 1/4 s ICR - on
<b>Digital zoom</b>	12x (216x with optical zoom)	12x (312x with optical zoom)	12x (480x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps
<b>TV lines</b>	550 TVL	530 TVL	670 TVL

### Video

<b>Compression</b>	H.264 dual stream	H.264 dual stream	H.264 dual stream
<b>Bit rate</b>	16k to 1Mbps controllable	16k to 1Mbps controllable	16k to 1Mbps controllable
<b>Video resolution</b>	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)
<b>Frame rate</b>	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR, digital image stabilizer
<b>Preset points</b>	128	128	128

### Audio

<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM

### Alarm System Integration

<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule

### Network and Storage

<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>HD storage</b>	Min. 512 GB	Min. 512 GB	Min. 512 GB
<b>Battery</b>	Rechargeable, Independant, 12 hours minimum	Rechargeable, Independant, 12 hours minimum	Rechargeable, Independant, 12 hours minimum

### Operating Conditions

<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%

### Weight and Dimensions

<b>Input voltage</b>	12 VDC	12 VDC	12 VDC
<b>Power consumption</b>	15W	15W	15W
<b>Dimensions (cm)</b>	17.1 x 20 x 42.1 ( W x L x H)	17.1 x 20 x 42.1 ( W x L x H)	17.1 x 20 x 42.1 ( W x L x H)
<b>Weight</b>	16 Kg	16 Kg	16 Kg

	BH-HD12	BH-HD20	BH-HD30
<b>Lens</b>			
<b>Image sensor</b>	1/4-Type CMOS	1/2.8" Exmor CMOS	1/2.8" Exmor CMOS
<b>Angle view</b>	53.4° (wide end) to 2.9° (tele end)	55.4° (wide end) to 2.9° (tele end)	54.1° (wide end) to 2.9° (tele end)
<b>Lens</b>	12x optical zoom f=3.7mm wide to 44.4mm tele, f1.6 to f2.5	20x optical zoom f=4.7mm wide to 94.0mm tele, f1.6 to f3.5	30x optical zoom f=4.6 mm wide to 138.0mm tele, f1.8 to f4.7
<b>Minimum illumination</b>	0.3 lux (f1.6, ICR off) / 0.06 lux (f1.6, ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6 ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6, ICR – on)
<b>Digital zoom</b>	12x (144x with optical zoom)	12x (240x with optical zoom)	12x (360x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/2 s ~ 1/10,000 s, 21 steps
<b>Effective pixels</b>	1.43 megapixels	3 megapixels	3 megapixels
<b>Video</b>			
<b>Compression</b>	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<b>Bit rate</b>	32Kbps to 8Mbps	32Kbps to 8Mbps	32Kbps to 8Mbps
<b>Video resolution</b>	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 480 (V) / 720 (H) x 576 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)
<b>Signal system</b>	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25
<b>Frame rate</b>	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display
<b>Preset points</b>	128	128	128
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>HD storage</b>	Min. 512 GB	Min. 512 GB	Min. 512 GB
<b>Battery</b>	Rechargeable, Independant, 12 hours minimum	Rechargeable, Independant, 12 hours minimum	Rechargeable, Independant, 12 hours minimum
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	12 VDC	12 VDC	12 VDC
<b>Power consumption</b>	15W	15W	15W
<b>Dimensions (cm)</b>	17.1 x 20 x 42.1 ( W x L x H)	17.1 x 20 x 42.1 ( W x L x H)	17.1 x 20 x 42.1 ( W x L x H)
<b>Weight</b>	16 Kg	16 Kg	16 Kg

## Lens

<b>Image sensor</b>	Global Shutter CMOS
<b>Sensor Size</b>	Super 35 (22.53 x 11.88mm)
<b>Resolution</b>	4096x2160 or 3840x2160 (4x full HD)
<b>Dynamic Range</b>	12 stops
<b>Minimum illumination</b>	0,3 lux

## Video

<b>Compression</b>	H.264 / M_JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<b>Bit rate</b>	32Kbps to 8Mbps
<b>Video output</b>	4x 3G/HD-SDI (4x BNC)
<b>Quad Link Output Formats</b>	10-bit 4:4:4 quad link (UHD and 4K:23.98, 24, 25, 29.97, 30) 10-bit 4:2:2 or RAW quad link (UHD: 23.98, 24, 25, 29.97, 30, 50, 59.94, 60), (4K: UHD and 4K:23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60) progressive scan
<b>Frame rate</b>	NTSC / PAL
<b>Image enhancement</b>	manual and auto white balance, 1-Shot auto, matrix adjustment and saturation correction, backlight compensation, auto exposure, WDR, integrated IR-cut filter and OLPF, iris control, on-screen display
<b>Preset points</b>	128
<b>Sensitivity Adjustment</b>	ISO control; up to 4x digital gain

## Audio

<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM

## Alarm System Integration

<b>Alarm input</b>	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule

## Network and Storage

<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB

## Operating Conditions

<b>Operating temp.</b>	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%

## Weight and Dimensions

<b>Input voltage</b>	12 VDC
<b>Power consumption</b>	15W
<b>Dimensions (cm)</b>	20 x 14.1 x 26.7 (W x L x H)
<b>Weight</b>	5 Kg
<b>Colors</b>	white, black, camouflage wrap

## BUMA-LL

## BUMA-EMCCD

### Core

<b>Sensor type</b>	1/2" Exview HAD CCD II	1/2" Frame Interline Transfer (FIT) impactron
<b>Active pixel</b>	752 x 582	658 x 496
<b>Pixel size</b>	8.6µm x 8.3µm	10µm x 10µm
<b>Active area</b>	6.47mm x 6.83mm	6.58mm x 4.96mm
<b>Dynamic range</b>	>60dB	55dB
<b>Spectral response</b>	350-1100nm	350-1100nm
<b>Minimum illumination</b>	< 1µlux	< 200µlux
<b>Resolution</b>	480 TV lines	450 TV lines
<b>Cooling</b>	active, no fan	active, no fan
<b>Antiblooming protection</b>	-	yes (>500:1)
<b>Exposure time</b>	-	500µs to 1/50s (CCIR) or 1/60 (EIA)
<b>Frame rate</b>	25Hz (CCIR), 30Hz (EIA/NTSC)	25Hz (CCIR), 30Hz (EIA)
<b>Readout mode</b>	progressive scan	progressive scan

### Alarm System Integration

<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	manual or schedule	manual or schedule

### Network and Storage

<b>Ethernet port</b>	10/100M Base-t self- adapting Ethernet port	10/100M Base-t self- adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)

### Operating Conditions








<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%

### Weight and Dimensions

<b>Input voltage</b>	12 VDC	12 VDC
<b>Power consumption</b>	14W	15W
<b>Dimensions (cm)</b>	17.1 x 20 x 42.1 ( W x L x H)	17.1 x 20 x 42.1 ( W x L x H)
<b>Weight</b>	16 Kg	16 Kg
<b>Colors</b>	white, black, camouflage wrap	white, black, camouflage wrap

# The BUMA Modular



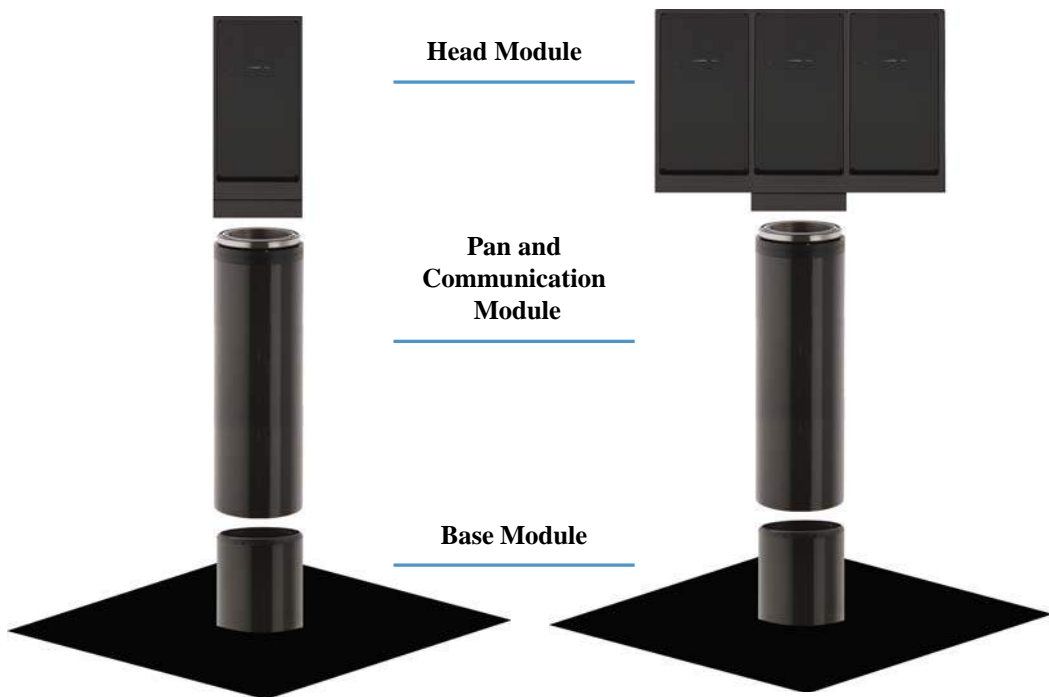
-   
 Maritime Mount
-   
 Smart Technology
-   
 External Vehicle Mount
-   
 Insert Compatible
-   
 Smart Perimeter System Mount
-   
 Portable
-   
 Outdoor

## Available Housing Models:

- BM-Single Frame Housing
- BM-Triple Frame Housing

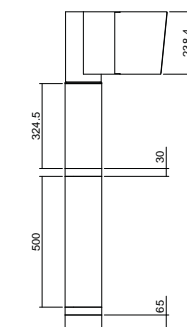
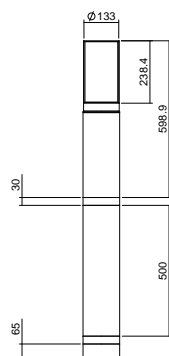
## Available Frame Inserts:

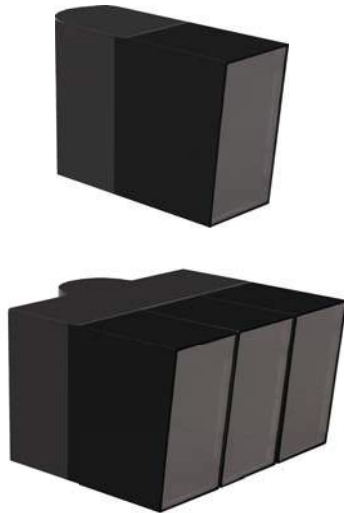
- SD Camera
- HD Camera
- UHD Camera
- Low Light Camera
- EMCCD Camera
- Thermal Imaging
- Audio Broadcast
- Short Range Night Vision
- Long Range Night Vision
- Area Illuminator



mm

Dimensions are in millimeters





## Description

To offer our customers a truly customized surveillance solution we present the BUMA Modular series. The patent pending, multiple core design features a single (BM-1) or triple (BM-3) frame housing that optimally attaches to our REKKS Smart Perimeter System for a sturdy and independently powered pole mount. Customers are then able to choose insert modules, depending on the capacity of the selected model, to connect to the housing bracket. In the event a customer wishes to modify or add to the system's capabilities, the insert modules can easily be exchanged without having to replace an entire surveillance system.

## Suggested Applications

- Bases, Outposts and Checkpoints
- Border and Port Facilities
- Construction Sites and Pipelines
- Educational and Research Facilities
- Energy Infrastructures and Drill Sites
- Governmental Facilities
- Long Range Surveillance
- Nighttime Surveillance
- Remote and Undeveloped Areas
- Traffic and Transportation Infrastructures

## System Features



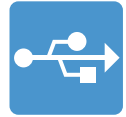
Continuous  
360° Pan



Renewable  
Energy  
Compatible



Quick  
Install



Plug and  
Play



Modular  
Freedom



Future  
Proof

## Compatible Housing and Mounts



Outdoor



Portable



Smart  
Perimeter  
System Mount



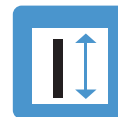
External  
Vehicle  
Mount



Maritime  
Mount



Wall  
Mount



Pole Height  
Extension

## Materials and Finish



Mixed  
Media



Camouflage



Housing  
Color



Glass  
Color

## Certifications



ONVIF



CE  
Certified



FCC  
Certified

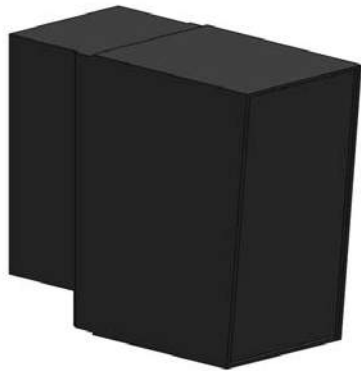


IP Rating



IK Rating





## Description

Several camera inserts are available for both the single and triple frame housing, including all of our BUMA SD and HD cores, our all new UHD core, an EMCCD camera, and a thermal imaging camera.

The BUMA Modular SD offers a cost effective, yet impressively capable outdoor surveillance solution, ideal for large area and long-range surveillance, and is complete with day & night functions for continued operation in most lighting conditions. For projects requiring advanced imaging capabilities, our BUMA HD camera delivers full HD resolution of 1920x1080p at 30 frames per second. Our most advanced camera and latest addition, our UHD camera, provides true 4k surveillance imaging with a resolution of 3840x2160 and is best suited applications requiring precise imaging. Even at high zoom levels the BUMA camera maintains image integrity and delivers crisp images at all light levels. The BUMA HD and UHD are best suited for large surveillance fields where a high, level of detail is required and are easily paired with our off-grid power pole system.

For low light or nighttime applications, our Low Light, EMCCD and thermal imaging cameras are valuable tools. EMCCD technology delivers monochrome video with exceptional image quality, including outstanding target recognition and identification capabilities. Thermal imaging cameras offer image penetration through smoke, dust, and water vapor in addition to providing clear images at near or mid-range distances in full darkness. Our thermal camera has a 384 x 288 pixel uncooled detector and uses an image detail enhancement (IDE) algorithm to enhance low contrast targets in high dynamic range scenes. Please refer to the BUMA Modular Housing page for all complete housing and mount options.

## Insert Features



Standard & High Definition



Ultra High Definition



EMCCD



Thermal Imaging Camera



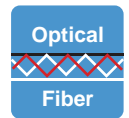
Image Stabilization



External Optics



PTZ Capability



Integrated Optical Fiber

## Compatible Housing and Mounts



BM Housing

## Materials and Finish



Mixed Media



Camouflage



Housing Color



Glass Color

## Certifications



ONVIF



CE Certified



FCC Certified



IP Rating



IK Rating

# BM-SD Insert



	BM-SD18	BM-SD26	BM-SD40
<b>Lens</b>			
<b>Image sensor</b>	1/4 Ex-view HAD CCD progressive scan	1/4-type Ex-view HAD CCD	1/4-type super HAD CCD II
<b>Angle view</b>	48° wide to 2.8° tele	54.2° wide to 2.2° tele	60.0° wide to 1.6° tele
<b>Lens</b>	18x optical zoom f=4.1mm wide to 73.8mm tele, f1.4 to f3.0	26x optical zoom f = 3.5 to 91mm (F1.6 to F3.8)	40x optical zoom f=3.06mm wide to 122.4mm tele, F1.6 to F4.6
<b>Minimum illumination</b>	0.7 lux at 1/50 s (f1.4, 50 IRE) 0.01 lux at 1/4 s ICR - on	0.7 lux (typical)	0.6 lux at 1/60 s 0.1 lux at 1/4 s ICR - on
<b>Digital zoom</b>	12x (216x with optical zoom)	12x (312x with optical zoom)	12x (480x with optical zoom)
<b>Shutter</b>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps
<b>TV lines</b>	550 TVL	530 TVL	670 TVL
<b>Video</b>			
<b>Compression</b>	H.264 dual stream	H.264 dual stream	H.264 dual stream
<b>Bit rate</b>	16k to 1Mbps controllable	16k to 1Mbps controllable	16k to 1Mbps controllable
<b>Video resolution</b>	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)	NTSC CIF (352x240), QCIF (176x120), full D1 (720x480) PAL CIF (352x288), QCIF (176x144), full D1 (720x576)
<b>Frame rate</b>	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL) , 30 fps at full D1 (NTSC)
<b>Image enhancement</b>	auto white balance, AGC, backlight compensation, auto exposure	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR	auto white balance, AGC, backlight compensation, auto exposure, 2D/3D noise reduction, auto WDR, digital image stabilizer
<b>Preset points</b>	128	128	128
<b>Audio</b>			
<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB	up to 32GB	up to 32GB
<b>Operating Conditions</b>			
<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<b>Input voltage</b>	12 VDC	12 VDC	12 VDC
<b>Power consumption</b>	15W	15W	15W
<b>Dimensions (cm)</b>	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)
<b>Weight</b>	BM-1: 8 Kg BM-3: 17 Kg	BM-1: 8 Kg BM-3: 17 Kg	BM-1: 8 Kg BM-3: 17 Kg

# BM-HD Insert



	BM-HD12	BM-HD20	BM-HD30
<b>Lens</b>			
<i>Image sensor</i>	1/4-Type CMOS	1/2.8" Exmor CMOS	1/2.8" Exmor CMOS
<i>Angle view</i>	53.4° (wide end) to 2.9° (tele end)	55.4° (wide end) to 2.9° (tele end)	54.1° (wide end) to 2.9° (tele end)
<i>Lens</i>	12x optical zoom f=3.7mm wide to 44.4mm tele, f1.6 to f2.5	20x optical zoom f=4.7mm wide to 94.0mm tele, f1.6 to f3.5	30x optical zoom f=4.6 mm wide to 138.0mm tele, f1.8 to f4.7
<i>Minimum illumination</i>	0.3 lux (f1.6, ICR off) / 0.06 lux (f1.6, ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6 ICR on)	0.5 lux (f1.6, ICR off) / 0.095 lux (f1.6, ICR – on)
<i>Digital zoom</i>	12x (144x with optical zoom)	12x (240x with optical zoom)	12x (360x with optical zoom)
<i>Shutter</i>	1/1 s ~ 1/10,000 s, 22 steps	1/1 s ~ 1/10,000 s, 22 steps	1/2 s ~ 1/10,000 s, 21 steps
<i>Effective pixels</i>	1.43 megapixels	3 megapixels	3 megapixels
<b>Video</b>			
<i>Compression</i>	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG	H.264 / M-JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<i>Bit rate</i>	32Kbps to 8Mbps	32Kbps to 8Mbps	32Kbps to 8Mbps
<i>Video resolution</i>	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 480 (V) / 720 (H) x 576 (V)	1920 (H) x 1080 (V) / 1280 (H) x 720 (V) / 720 (H) x 576 (V) / 352 (H) x 288 (V)
<i>Signal system</i>	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25	1080p/29.97, 1080p/25, 1080i/59.94, 1080i/50, 720p/50, 720p/29.97, 720p/25
<i>Frame rate</i>	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)	25 fps at full D1 (PAL), 30 fps at full D1 (NTSC)
<i>Image enhancement</i>	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display	auto white balance, AGC, backlight compensation, auto exposure, WDR, tour recording, guard tour, auto track, iris control, on-screen display
<i>Preset points</i>	128	128	128
<b>Audio</b>			
<i>Audio input</i>	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p	one channel MIC in or line input unbalanced 1.4 Vp-p
<i>Audio output</i>	one channel, RCA interface, linear output	one channel, RCA interface, linear output	one channel, RCA interface, linear output
<i>Audio compression</i>	G.726, G.711, ADPCM	G.726, G.711, ADPCM	G.726, G.711, ADPCM
<b>Alarm System Integration</b>			
<i>Alarm input</i>	one channel on/off input NO/NC	one channel on/off input NO/NC	one channel on/off input NO/NC
<i>Alarm output</i>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<i>Serial port</i>	RS485 transparent protocol	RS485 transparent protocol	RS485 transparent protocol
<i>Recording</i>	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule	motion trigger, alarm trigger, manual or schedule
<b>Network and Storage</b>			
<i>Ethernet port</i>	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port	10/100M Base-t self-adapting Ethernet port
<i>Protocol</i>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<i>Web browser</i>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<i>Wireless protocols</i>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)
<i>SD storage</i>	up to 32GB	up to 32GB	up to 32GB
<b>Operating Conditions</b>			
<i>Operating temp.</i>	-10° C ~ +60° C	-10° C ~ +60° C	-10° C ~ +60° C
<i>Storage temp.</i>	-20° C ~ +80° C	-20° C ~ +80° C	-20° C ~ +80° C
<i>Operating humidity</i>	10% ~ 85%	10% ~ 85%	10% ~ 85%
<b>Weight and Dimensions</b>			
<i>Input voltage</i>	12 VDC	12 VDC	12 VDC
<i>Power consumption</i>	15W	15W	15W
<i>Dimensions (cm)</i>	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)
<i>Weight</i>	BM-1: 8 Kg BM-3: 17 Kg	BM-1: 8 Kg BM-3: 17 Kg	BM-1: 8 Kg BM-3: 17 Kg

## Lens

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<b>Image sensor</b>	Global Shutter CMOS
<b>Sensor Size</b>	Super 35 (22.53 x 11.88mm)
<b>Resolution</b>	4096x2160 or 3840x2160 (4x full HD)
<b>Dynamic Range</b>	12 stops
<b>Minimum illumination</b>	0,3 lux

## Video

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<b>Compression</b>	H.264 / M_JPEG support dual stream/ MPEG4/ ASP/ MxPEG
<b>Bit rate</b>	32Kbps to 8Mbps
<b>Video output</b>	4x 3G/HD-SDI (4x BNC)
<b>Quad Link Output Formats</b>	10-bit 4:4:4 quad link (UHD and 4K:23.98, 24, 25, 29.97, 30) 10-bit 4:2:2 or RAW quad link (UHD: 23.98, 24, 25, 29.97, 30, 50, 59.94, 60), (4K: UHD and 4K:23.98, 24, 25, 29.97, 30, 47.95, 48, 50, 59.94, 60) progressive scan
<b>Frame rate</b>	NTSC / PAL
<b>Image enhancement</b>	manual and auto white balance, 1-Shot auto, matrix adjustment and saturation correction, backlight compensation, auto exposure, WDR, integrated IR-cut filter and OLPF, iris control, on-screen display
<b>Preset points</b>	128
<b>Sensitivity Adjustment</b>	ISO control; up to 4x digital gain

## Audio

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<b>Audio input</b>	one channel MIC in or line input unbalanced 1.4 Vp-p
<b>Audio output</b>	one channel, RCA interface, linear output
<b>Audio compression</b>	G.726, G.711, ADPCM

## Alarm System Integration

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<b>Alarm input</b>	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol
<b>Recording</b>	motion trigger, alarm trigger, manual or schedule

## Network and Storage

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<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)
<b>SD storage</b>	up to 32GB

## Operating Conditions

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<b>Operating temp.</b>	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%

## Weight and Dimensions

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<b>Input voltage</b>	12 VDC
<b>Power consumption</b>	15W
<b>Dimensions (cm)</b>	20 x 14.1 x 26.7 (W x L x H)
<b>Weight</b>	5 Kg
<b>Colors</b>	white, black, camouflage wrap

# BM-Low Light Insert



## BUMA-LL

## BUMA-EMCCD

### Core

<b>Sensor type</b>	1/2" Exview HAD CCD II	1/2" Frame Interline Transfer (FIT) impactron
<b>Active pixel</b>	752 x 582	658 x 496
<b>Pixel size</b>	8.6µm x 8.3µm	10µm x 10µm
<b>Active area</b>	6.47mm x 6.83mm	6.58mm x 4.96mm
<b>Dynamic range</b>	>60dB	55dB
<b>Spectral response</b>	350-1100nm	350-1100nm
<b>Minimum illumination</b>	< 1µlux	< 200µlux
<b>Resolution</b>	480 TV lines	450 TV lines
<b>Cooling</b>	active, no fan	active, no fan
<b>Antiblooming protection</b>	-	yes (>500:1)
<b>Exposure time</b>	-	500µs to 1/50s (CCIR) or 1/60 (EIA)
<b>Frame rate</b>	25Hz (CCIR), 30Hz (EIA/NTSC)	25Hz (CCIR), 30Hz (EIA)
<b>Readout mode</b>	progressive scan	progressive scan

### Alarm System Integration

<b>Alarm input</b>	one channel on/off input NO/NC	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol	RS485 transparent protocol
<b>Recording</b>	manual or schedule	manual or schedule

### Network and Storage

<b>Ethernet port</b>	10/100M Base-t self- adapting Ethernet port	10/100M Base-t self- adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)	802.11b/g supports WEP, WPA, WPA2 (optional)

### Operating Conditions

<b>Operating temp.</b>	-10° C ~ +60° C	-10° C ~ +60° C
<b>Storage temp.</b>	-20° C ~ +80° C	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%	10% ~ 85%

### Weight and Dimensions

<b>Input voltage</b>	12 VDC	12 VDC
<b>Power consumption</b>	14W	15W
<b>Dimensions (cm)</b>	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)
<b>Weight</b>	BM-1: 8 Kg BM-3: 17 Kg	BM-1: 8 Kg BM-3: 17 Kg
<b>Colors</b>	white, black, camouflage wrap	white, black, camouflage wrap

# BM-Thermal Insert



## Core

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<b>Sensor Type</b>	Uncooled
<b>Material</b>	Polysilicon
<b>Thermal response time</b>	7ms
<b>Resolution</b>	384x288
<b>Pixel size</b>	35umx35um
<b>Spectral range</b>	8-14um
<b>Fill factor</b>	>80%
<b>Brightness, Gain Control</b>	Auto / Manual
<b>NETD</b>	<100mk@30° C
<b>Start-up time</b>	≤25s (25° C normal operating)

## Alarm System Integration

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<b>Alarm input</b>	one channel on/off input NO/NC
<b>Alarm output</b>	one channel on/off output 120 VAC 1A / 24 VDC 1A
<b>Serial port</b>	RS485 transparent protocol
<b>Recording</b>	manual or schedule

## Network and Storage

---

<b>Ethernet port</b>	10/100M Base-t self-adapting Ethernet port
<b>Protocol</b>	TCP/IP, UDP, RTP, RTSP, RTCP, HTTP, DNS, DDNS, DHCP, FTP, NTP, PPPOE, SMTP, UPNP
<b>Web browser</b>	Internet Explorer 9.0 or above
<b>Wireless protocols</b>	802.11b/g supports WEP, WPA, WPA2 (optional)

## Operating Conditions

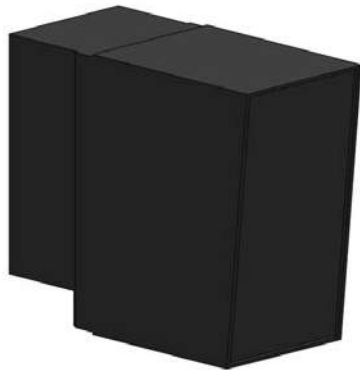
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<b>Operating temperature</b>	-10° C ~ +60° C
<b>Storage temperature</b>	-20° C ~ +80° C
<b>Operating humidity</b>	10% ~ 85%

## Weight and Dimensions

---

<b>Input voltage</b>	12 VDC
<b>Power consumption</b>	4.5W
<b>Dimensions (cm)</b>	BM-1: 39 x 39.9 x 26.8 ( W x L x H) BM-3: 39 x 13.3 x 26.8 ( W x L x H)
<b>Weight</b>	BM-1: 8 Kg BM-3: 17 Kg



## Description

To be used alone or in conjunction with the BUMA Modular Camera Inserts, we offer several other insert options for both the single and triple frame housings. To further enhance nighttime surveillance capabilities, we offer IR and laser illuminator modules. For low-light applications, power to the IR and illuminator modules is activated by a built-in light sensor. They are optimally paired with our standard camera core modules for a complete visual surveillance solution.

A speaker module provides a way to remotely deliver announcements to the surveillance field. This module can also be used to provide sirens, alerts or signals to notify bystanders of impending threats or dangers. The speaker has an efficient, compact design, yet offers premium sound quality with heat-resistant capabilities. This ensures continued operations and message delivery through volatile, high-heat environments.

Another valuable insert option for the BUMA Modular is a spotlight for ground illumination. We offer a spotlight module that can be activated when ground or area illumination is needed. The compact light features highly efficient LED lights that provide up to 900 lumens at over 90 lumens/watt, with a 120-degree beam pattern.

## Insert Features



Audio /  
Alarm  
Broadcast



Short  
Range  
Night Vision



Long Range  
Night Vision



Area  
Illuminator

## Compatible Housing and Mounts



BM  
Housing

## Materials and Finish



Mixed  
Media



Camouflage



Housing  
Color



Glass  
Color

## Certifications



ONVIF



CE  
Certified



FCC  
Certified



IP Rating



IK Rating

## Audio Broadcast

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**Volume:** 43.9 dBm

**Effective range:** 1 Km minimum

**Power:** 12 VDC

**Power handling:** 25 Watt

**Output:** voice, Siren.

## Short Range Night Vision

---

**Wavelength:** 850nm

**Horizontal field-of-view:** 45 degrees

**Vertical field-of-view:** 45 degrees

**Distance:** up to 100 m

## Long Range Night Vision

---

**Rang:** 3.2 Km Min

**Wavelength:** 830 nm

**Output Power (max.):** 600 mW

**Illuminator Divergence:** 4°

**Laser Class:** 1 EyeSafe

**Environmental Rating:** IP-67 (waterproof)

**Working Ranges:** Human detection 1500m, Vehicle detection 3000m

## Area Illumination

---

**Power source:** 12 VDC

**Body colour:** black

**Power consumption:** 20w

**Lumens output:** 1200lm

**Beam angle:** 120 degrees

**Light colour:** 4500k



# Camera Series Summary



Camera Features	Model 1	Model 3	Model 5	Model 7	Model 9	BUMA	BH	BM
SD / HD Camera	■	■	■	■	■	■	■	■
Ultra High Definition Camera						■	■	■
EMCCD Camera						■	■	■
Thermal Imaging Camera								■
2D/3D Noise Reduction	■	■	■	■	■	■	■	■
Day & Night Function	■	■	■	■	■	■	■	■
Image Stabilization						■	■	■
Digital Image Stabilizer	■	■	■	■	■	■	■	■
H. 264 <small>JPEG-Dual Stream</small> Frame Rate	■	■	■	■	■	■	■	■
Illumination Sensitivity	■	■	■	■	■	■	■	■
NTSC PAL Image Format	■	■	■	■	■	■	■	■
WDR Wide Dynamic Range	■	■	■	■	■	■	■	■
External Optics Compatible			■					■
Lightweight								■
360° Panorama								
Continuous 360° Pan			■	■	■	■	■	■
Pan / Tilt / Zoom Capability			■	■	■	■	■	■
Optical Fiber Integrated Optical Fiber						■	■	■
Dual Decoder							■	

# Camera Series Summary



Camera Features	Model 1	Model 3	Model 5	Model 7	Model 9	BUMA	BH	BM
Dual Output	■	■					■	
WiFi Connectivity		■					■	
Wifi Hotspot							■	
IP Output			■	■	■	■	■	■
POE Connection	■	■	■	■	■	■	■	■
Internal Battery							■	
512 GB Local Storage							■	
Local Storage	■		■	■	■	■	■	■
Server and Networking						■	■	■
Two-Way Audio	■	■	■	■	■	■	■	■
Audio / Alarm Broadcast								■
IR Short Range Night Vision								■
Long Range Night Vision								■
Thermal Night Vision								■
Area Illuminator								■
Future Proof								■
Plug and Play								■
Customizable Height						■	■	■
Ruggedized			■		■		■	

# Camera Series Summary












Camera Features	Model 1	Model 3	Model 5	Model 7	Model 9	BUMA	BH	BM
Modular Freedom						■	■	■
Quick Install								■
Off Grid Compatible						■	■	■
Renewable Energy						■	■	■








Housing and Mounts	Model 1	Model 3	Model 5	Model 7	Model 9	BUMA	BH	BM
Smart Perimeter System						■	■	■
External Vehicle Mount						■	■	■
In-Vehicle Mount	■	■						
Maritime			■		■	■	■	■
Indoor Mount	■	■	■	■	■			
Outdoor Mount			■	■	■	■	■	■
Wall Mount	■		■	■	■	■	■	■
Ceiling Mount		■			■			
In-Ceiling Mount				■				
BM Housing								■
Portable						■	■	■
IP 67 External Fixed Housing			■					
IP 67 External PT Housing			■			■	■	■
Ballistic Resistant							■	

# Camera Series Summary



Housing and Mounts	Model 1	Model 3	Model 5	Model 7	Model 9	BUMA	BH	BM
 Pole Height Extension						■	■	■
 High Speed PTZ			■		■	■	■	■

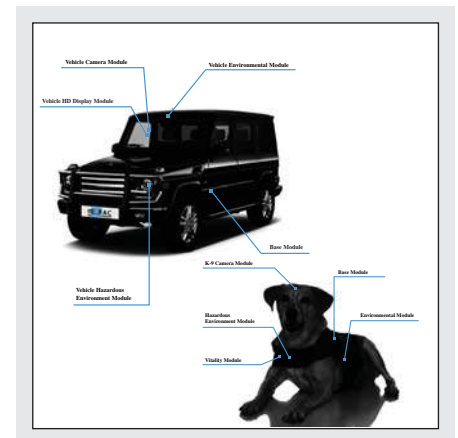
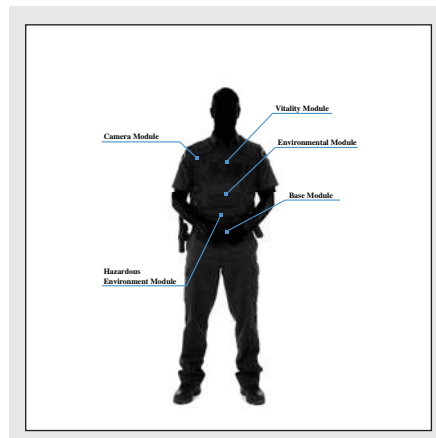
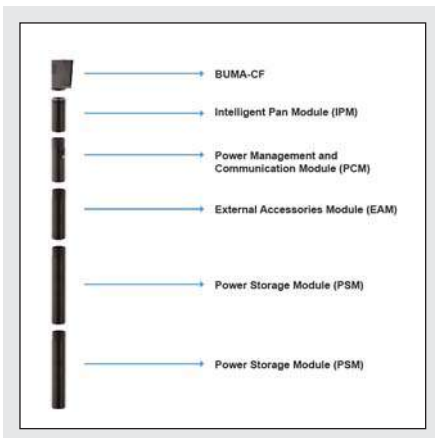
Materials and Finish	Model 1	Model 3	Model 5	Model 7	Model 9	BUMA	BH	BM
 Aluminum		■		■	■	■	■	
 Carbon Fiber						■	■	■
 Mixed Media	■		■					■
 Corrosion Resistant Materials			■		■	■	■	■
 Camouflage						■	■	■
 Housing Color	■	■	■	■	■	■	■	■
 Glass Color		■		■	■	■	■	■

Certifications	Model 1	Model 3	Model 5	Model 7	Model 9	BUMA	BH	BM
 ONVIF	■	■	■	■	■	■	■	■
 CE	■	■	■	■	■	■	■	■
 FCC	■	■	■	■	■	■	■	■
 UL						■	■	■
 WiFi Certified		■				■	■	■
 IP Rating	■	■	■	■	■	■	■	■
 IK 10			■		■	■	■	■

## *Securing Perfection*

*in design. Our new carbon fiber products are ultra-light, fiercely protective, and extend the life of motorized components*

# REKKS Systems for Smart Protection And Control










Born from m\_PAC’s uniquely modular approach to security, the REKKS Systems for Smart Protection And Control are the first to offer truly modular and comprehensive protection in outdoor perimeter and personal surveillance systems for infrastructures, humans, animals, vehicles and mobile security.

Our REKKS Systems embody our philosophy of security through design. The patent pending smart pole concept goes beyond traditional visual surveillance capabilities and lives up to the promise of its name – the REKKS Smart Perimeter System (SPS). The SPS stacks individual modules such as a camera, a weather station, hazardous material detectors, an integrated server and mobile data connection, and off-grid power sources in our unique pole design to offer security and surveillance solutions in almost any environment.

Building upon the modular design of the SPS, the REKKS Systems offer the patent pending Personal Surveillance System (PSS) and K-9 Surveillance System (KSS) with wearable modules, equipping the wearer with advanced surveillance capabilities and allowing the wearer to become a mobile, integrated, information center. The SPS and PSS modules are also capable of complete vehicle integration in our Vehicle Surveillance System, or VSS, for mobile security and surveillance needs.

# REXKS-SPS (Smart Perimeter System)



-   
 Maritime Mount
-   
 Smart Technology
-   
 External Vehicle Mount
-   
 Signature Series
-   
 Off-Grid
-   
 Portable
-   
 Outdoor



- \_\_\_\_\_ **Head Modules**
- \_\_\_\_\_ **Illumination Modules**
- \_\_\_\_\_ **Intelligent Pan Modules**
- \_\_\_\_\_ **Display Modules**
- \_\_\_\_\_ **Panorama Modules**
- \_\_\_\_\_ **Audio Modules**
- \_\_\_\_\_ **Environmental Sensor Modules**
- \_\_\_\_\_ **External Accessory Module with Attachments**
- \_\_\_\_\_ **Network Modules**
- \_\_\_\_\_ **Power Modules**
- \_\_\_\_\_ **Connectivity Modules**
- \_\_\_\_\_ **Base Modules**

## Description

The REKKS Smart Perimeter System, or SPS, is an advanced, independent tool. In design, the SPS adopts a completely modular format, giving the customer the power to build a completely customized surveillance and protection solution – module by module.

Beginning with the base, several mounting options are available, which range from permanent outdoor in-ground or indoor surface mounts to portable bases designed for complete mobility. Atop the selected base module a system can be built with almost limitless possibilities. As each module is compactly built and designed to operate independently, an SPS can include as few (or as many) modules as needed.

Each system is available in either aluminum or carbon fiber housing. To aid in environment integration, system longevity and component performance, the SPS is offered with pixelated camouflage or customized color patterns upon request.

## Applicable Industries

- Banking and Treasuries
- Bases and Compound Development
- City Planning and Infrastructures
- Construction
- Homeland Security
- Law Enforcement
- Meteorology
- Perimeter Protection
- Tactical Operations

## Certifications

ONVIF	CE Certified	FCC Certified	UL Certified
WiFi Certified	IP Rating	IK Rating	

## System Features

Standard & High Definition	EMCCD	Thermal Imaging Camera	Area Illuminator	Short Range Night Vision
Long Range Night Vision	Panorama	Ballistic Resistant	Audio / Alarm Broadcast	Hazmat Detection
Traffic Management	Server and Networking	Universal Data Adapter	Modular Freedom	Off Grid Compatible
Lightweight	Ruggedized	Portable Control Room	24 Hour Power Management	3rd Party Integration

## Housing and Mounts

Indoor	Outdoor	Portable	Smart Perimeter System Mount	Wall Mount
Ceiling Mount	Maritime Mount			

## Materials and Finish

Aluminum	Carbon Fiber	Camouflage	Housing Color	Glass Color



## Head Modules



The BUMA



The BUMA  
Heavy Duty



The BUMA Modular



Streetlight Module



Platform Module

## Module Features

- SD / HD
- UHD
- EMCCD
- Thermal
- Optical Fiber
- DIS
- PTZ
- External Optics
- 3rd Party Integration
- Area Illumination
- Traffic Management
- Renewable Energy Compatible

## Highlighted Applications

- Bases, Outposts and Checkpoints
- Conflict Zones
- Construction Sites and Pipelines
- Energy Infrastructures and Drill Sites
- Existing System Integration
- Long Range Surveillance
- Off-Grid Traffic Control
- Perimeter Protection
- Public Event Management

## Description

Each of our Signature Series cameras is designed to integrate seamlessly into the SPS, providing advanced imaging capabilities in all lighting conditions. In addition to visual surveillance, the SPS can be topped with traffic management systems such as basic traffic signals, a platform for flat surface needs or 3rd party integration, or a streetlight for area illumination. Each system can only accommodate one head module. However, multiple systems can be incorporated to meet additional project requirements.

## Illumination Modules

## Module Features



Spotlight Illumination Module



Laser Illumination Module

- Short Range Night Vision
- Long Range Night Vision
- Area Illumination

## Description

The SPS has several illumination options to provide optimal picture quality in all lighting conditions. A Spotlight Module provides highly efficient LEDs for directional ground illumination - a priceless security asset. Long, medium, and short range directional IR illumination provides optimal lighting for day and night surveillance. To further enhance nighttime surveillance capabilities, we also offer a Laser Pole Module. The laser illuminator provides powerful and targeted long-range night vision capabilities. For low-light applications, power to the illuminator is activated by a built-in light sensor.

## Intelligent Pan Modules

## Module Features



Classic Pan Module



Heavy Duty Pan Module

- Continuous 360° Pan

## Description

A motorized pan module enables continuous 360-degree rotation when paired with any of our other Smart Perimeter System modules for complete field surveillance. The Classic Pan model is ideal for pairing with single or double module movement. We offer a pan module with a high-powered motor for pairing with three or more modules. With the weight load of additional modules, the more powerful Heavy Duty Pan can assure smooth, sustained, and continuous 360-degree movement.

## Highlighted Applications

- Bases, Outposts and Checkpoints
- Governmental Facilities
- Long Distance Illumination
- Nighttime Surveillance
- Perimeter Protection
- Remote and Undeveloped Areas

## Display Modules

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Single Port  
Module



Mutiport  
Module

## Module Features

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- ÚHD Display
- HD Display
- Visual Display
- Lightweight
- Renewable Energy Compatible

## Highlighted Applications

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- Air and Sea Ports
- Alerts and Public Service Announcements
- Building Facility Signage
- Commercial Displays
- Event Management
- Traffic Construction and Flow Management

## Description

---

Moving beyond passive surveillance, the SPS can be a valuable information center and message delivery system with several different display module options. For indoor or close parameter use, traditional or UHD LCD Color Displays can be used to display meeting and event schedule updates, in airports for the latest departure and arrival information, and to communicate emergency messages and alerts.

For outdoor use or in traffic management, large LED Color Display Modules can show traffic alert messages or be used to guide event traffic. When incorporating unique or other 3rd party media displays, standardized single or multiport output modules are available.

## Panorama Modules



Panorama Camera Module



Panorama IR Module



Panorama Spotlight Module



Panorama Sound Module

## Module Features

- ÚHD Camera
- Short Range Night Vision
- Long Range Night Vision
- Continuous 360° Pan
- Audio Broadcast

## Highlighted Applications

- Bases, Outposts and Checkpoints
- Border and Port Facilities
- Construction Sites and Pipelines
- Event Management
- Nighttime Surveillance
- Off-Grid Surveillance

## Description

Panorama modules offer complete 360-degree surveillance and illumination for comprehensive area coverage. The Panorama Camera Module offers a 360-degree, 4k picture to provide continuous, generalized field monitoring and comprehensive visual surveillance. For nighttime or low-light applications, the panorama module design is available with infrared (IR), which can be activated by built-in light sensors or run continuously. To provide approach awareness, a Motion Detection Module is capable of directional or complete 360-degree motion detection. Using advanced passive IR (PIR) sensors, movement can be detected from any direction and the module can be programmed with automatic response actions. The sensors feature anti-masking protection and low false-alarm rates from weather or animal interference.

In addition to visual surveillance, a Panorama Spotlight Module is equipped with spotlights for multi-directional ground illumination. For non-targeted ambient sound monitoring, the Panorama Sound Module uses omnidirectional microphones, providing the command center essential field auditory information.

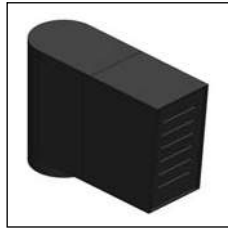
For optimum coverage, the panorama modules can be paired with one of our Signature Series camera heads. When motion or an event of interest is detected by one of the panorama modules, the advanced Signature Series camera can manually or automatically be directed to focus on the area in question for more in-depth investigation.

## Audio Modules

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Audio Broadcasting  
Module



Directional Microphone  
Module



Audio Port  
Module

## Module Features

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- Audio Broadcasting
- Audio Recording

## Highlighted Applications

---

- Bases, Outposts and Checkpoints
- Governmental Facilities
- Long Distance Illumination
- Nighttime Surveillance
- Perimeter Protection
- Remote and Undeveloped Areas

## Description

---

Sound modules give the command center two way communication capabilities in even the most remote locations. The Speaker Module provides a way to remotely deliver announcements to the surveillance field, and can also be used to deliver sirens or alerts to notify bystanders of impending threats or dangers. In addition to sound output capabilities, a directional microphone with zoom capabilities allows for localized and focused sound recording. The microphone can be placed above a pan module for pairing with visual surveillance and movement in response to environmental conditions. For portable applications or use with 3rd party audio equipment, the Audio Port Module provides an XLR and audio port. Equipment can be connected directly to the module's audio port for seamless integration into the SPS and network.

## Environmental Sensor Modules



Weather Module



Environment Module



Hazardous Materials  
Module



Extreme Environment  
Module

## Features

- Temperature Monitoring Forecasting
- Ambient Environment Monitoring
- Hazardous Gas Protection
- Radiation Detection
- Climate Stabilization

## Highlighted Applications

- Bases, Outposts and Checkpoints
- Border and Port Facilities
- Construction Sites and Pipelines
- Energy Infrastructures and Drill Sites
- Extreme Environments
- Meteorological Monitoring
- Off-Grid Surveillance
- Remote and Undeveloped Areas

## Description

Several module options enable complete environmental readings, providing the command center with a more complete gauge of surrounding conditions. Without sacrificing personnel safety, the Hazardous Materials Module also enables continuous and remote access to readings that indicate the presence of hazardous materials.

The rugged and simplistic design of the SPS makes it an ideal solution for even the most extreme environments. Heating and cooling modules inside the Extreme Environments Module protects against great temperature differentials and helps to moderate internal operating temperatures for optimal component performance. For a complete picture of conditions surrounding the system, the Weather Station Module offers up-to-the-minute readings for ambient temperature, wind speed, humidity, barometric pressure, precipitation levels and forecasts.

Especially valuable in construction, drilling, and industrial zones, a Hazardous Materials Module can monitor air quality and the presence of potentially hazardous materials by measuring carbon monoxide, carbon dioxide, natural gases, and sulfur levels. An included radiation sensor can be used to measure and/or monitor alpha, beta and gamma radiation levels in areas of known exposure as well as in a precautionary capacity to alert the command center to the presence of harmful radiation levels.

## External Accessory Module and Attachments



External Attachment Module



50cm Attachment



150cm Attachment



High Height Attachment



Motorized Movement Attachment



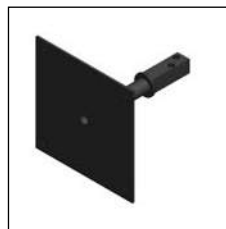
Security Barrier Attachment



Lightning Protection Attachment



Platform Attachment



Display Attachment

## Attachment Features

- Solar Panel Compatible
- Microwave Antenna Compatible
- Area Antenna Compatible
- Display Mount Compatible
- 3rd Party Integration
- Lightning Protection
- Anti-Climb Barrier
- Height Stability Control
- Automatic Sun Tracking

## Highlighted Applications

- Border Monitoring and Patrol
- Energy Infrastructures and Drill Sites
- Long Range Surveillance
- Off-Grid Surveillance
- Perimeter Protection
- Public Event Management

## Description

The External Attachment Module, a multifunctional attachment module, acts as a base mount, expanding the capabilities of the SPS and allowing for seamless integration of external and 3rd party modules. External power and data functionality are incorporated through the addition of either a 50 cm or 150 cm Attachment for solar panel integration and easy attachment of 3rd party communication devices. In an effort to accommodate future technological offerings or advanced customer requirements, a Platform Attachment offers a generic universal base for easy integration of 3rd party components.

When paired with the Display Attachment, most 3rd party visual displays, such as color LCD, color LED, or Ultra High Definition color displays can turn the SPS into a valuable information center and message delivery system. For indoor use the screens can be used to display meeting and event schedule updates, in airports for the latest departure and arrival information and to communicate emergency messages and alerts. When used outdoors, the screens can show traffic alert messages or be used to guide event traffic.

For mid-pole mobility, a Motorized Movement Attachment functions as an independent pan module, providing complete 360-degree pan rotation for a specific external or 3rd party module without affecting movement through the remainder of the SPS. As an added measure of protection from threats, external tampering or vandalism, or electrical shocks we offer both a Security Barrier Attachment and a Lightning Protection Attachment. To maintain stability for systems that exceed a height of 6 meters we require a High Height Attachment be included in the system, which protects the SPS from vertical sway or movement.

## Network Modules



Server  
Module



NAS  
Module



2 TB NVR  
Module



Hub  
Module



Range Extender  
Module

## Module Features

- Decentralized Control Room
- Portable Control Room Infrastructure
- Independent Network Operation
- Cloud Based Security
- Closed Circuit Network
- Surveillance Backup and Archiving
- Universal Power Adapter

## Highlighted Applications

- Border Monitoring and Patrol
- Energy Infrastructures and Drill Sites
- Existing System Integration
- Long Range Surveillance
- Off-Grid Surveillance
- Public Event Management

## Description

Capitalizing on its modular design, the SPS can fully integrate complete control room functionality, making it the first independently contained, cloud-based security system, complete with range extenders for long distance or remote applications.

The Server Module has adopted all the functionalities of a modern-day command center server and integrated them directly into the pole, removing the requirement for an off-site command center. Contained within the pole, the Hub Module aids in network management by streamlining wired networks and cabling and managing data flow. A Network Attached Storage (NAS) Module provides a simple hard drive mount and creates local data storage within the pole for a complement to the integrated functionality of the Server Module. For pole systems that include video surveillance, a 2 TB Network Video Recorder (NVR) Module can be included to provide integrated video recording and playback capabilities



## Power Modules



Power Storage Module



Surge Arrestor Module

## Module Features

- Solar Panel Compatible
- Lightning Protection
- Off-Grid Power Solutions
- Internal Battery
- 24 Hour Power Management
- Hybrid Power Solutions

## Description

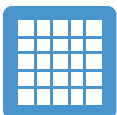
The SPS incorporates advanced power management and storage modules for system operation in almost any environment setting, and is compatible with a wide range of external power sources.

The Power Storage Module operates as an integrated battery supplying power to other SPS modules and serving as a back-up power source for off-grid power solutions such as wind or solar. Multiple modules may be included in a single system, with each Power Storage Module providing up to 12 hours of power. The batteries contained inside are rechargeable, require minimal maintenance, and have a lifespan of 3-5 years.

To protect the electronics of each component, a Surge Arrestor can be added to the SPS. The Surge Arrestor regulates electric current and prevents any irregular surges or spikes in voltage from reaching the internal electronics and causing damage to the system.

Through the SPS Power Modules, the system is designed to be compatible with traditional grid power, renewable energy sources and even a hybrid combination of both. When project requirements call for the SPS to be integrated into an existing infrastructure or power grid, it can be connected directly. To meet the demands of remote, undeveloped or off-grid applications, or as a backup to traditional power sources, solar panels and wind turbines can be integrated externally. In addition, the SPS can be powered by fuel generators for mobile applications or backup power.

## Compatible External Power Sources



Solar Panels



Wind Turbine



Fuel Generator



Grid Power

## Connectivity Modules

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Power and Data  
Module



Power and Fiber  
Module

## Module Features

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- Power Management
- Data Management
- Attachment Management
- Cable Management

## Highlighted Applications

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- Bases, Outposts and Checkpoints
- Governmental Facilities
- Long Distance Illumination
- Nighttime Surveillance
- Perimeter Protection
- Remote and Undeveloped Areas

## Description

---

As central command modules, the Power and Data and Power and Fiber Modules work in tandem with the Power Storage Module for power and data input and management. The Modules act as an attachment base for external power and data attachments, as well as a management center for incoming data and communication cables.

For maximum flexibility, the Modules are compatible with most power and data sources and integrate directly into the SPS. The modules offer connectivity to traditional wired data networks, WiFi, microwave and free-space optical communication.

## Base Modules



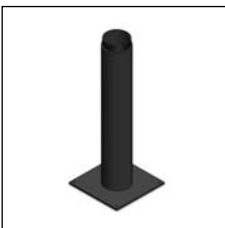
Surface Plate Base



In-Ground Base



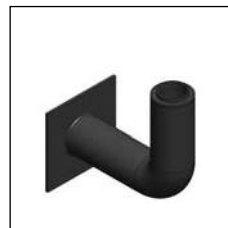
Portable Base



Maritime Mount



External Vehicle Mount



Wall Mount

## Module Features

- Easy Installation
- Light Weight
- Corrosion Resistant Materials
- Flexible Mounting Solutions
- Portable Security
- Mobile Security

## Highlighted Applications

- Air and Sea Ports
- Bases, Outposts and Checkpoints
- Border Monitoring and Patrol
- Energy Infrastructures and Drill Sites
- Maritime Surveillance
- Mobile Security
- Public Event Management
- Traffic Construction and Flow Management

## Description

The SPS is available with several different base and mounting options for optimal system integration. The Surface Plate Mount attaches directly to the floor surface and is designed for system mounting in indoor applications. The Wall Mount provides a secondary option for indoor system applications. By providing indoor mounts for the SPS, the surveillance system capabilities can be applied to an expanded range of applications, even integrating directly into existing infrastructures. For outdoor use, an In-Ground Base Module secures the SPS firmly into the ground for stable, fixed installation and serves as entry point for incoming communication and power cables.

For non-fixed applications, the SPS is compatible with our Portable Base Module. The portable base features a hollow design that can be weighted at the installation site, minimizing ground installation and civil works requirements. For use with heavy duty and tactical vehicles, the External Vehicle Mount provides a way to attach the pole system directly to the vehicle for a truly mobile surveillance system. The Maritime Mount is designed to provide comprehensive monitoring and surveillance to commercial and cargo vessels while at sea. As protection, the housing is available in marine grade aluminum or treated carbon fiber and can be further protected in our marine camouflage for low-profile integration.

## *Securing Perfection*

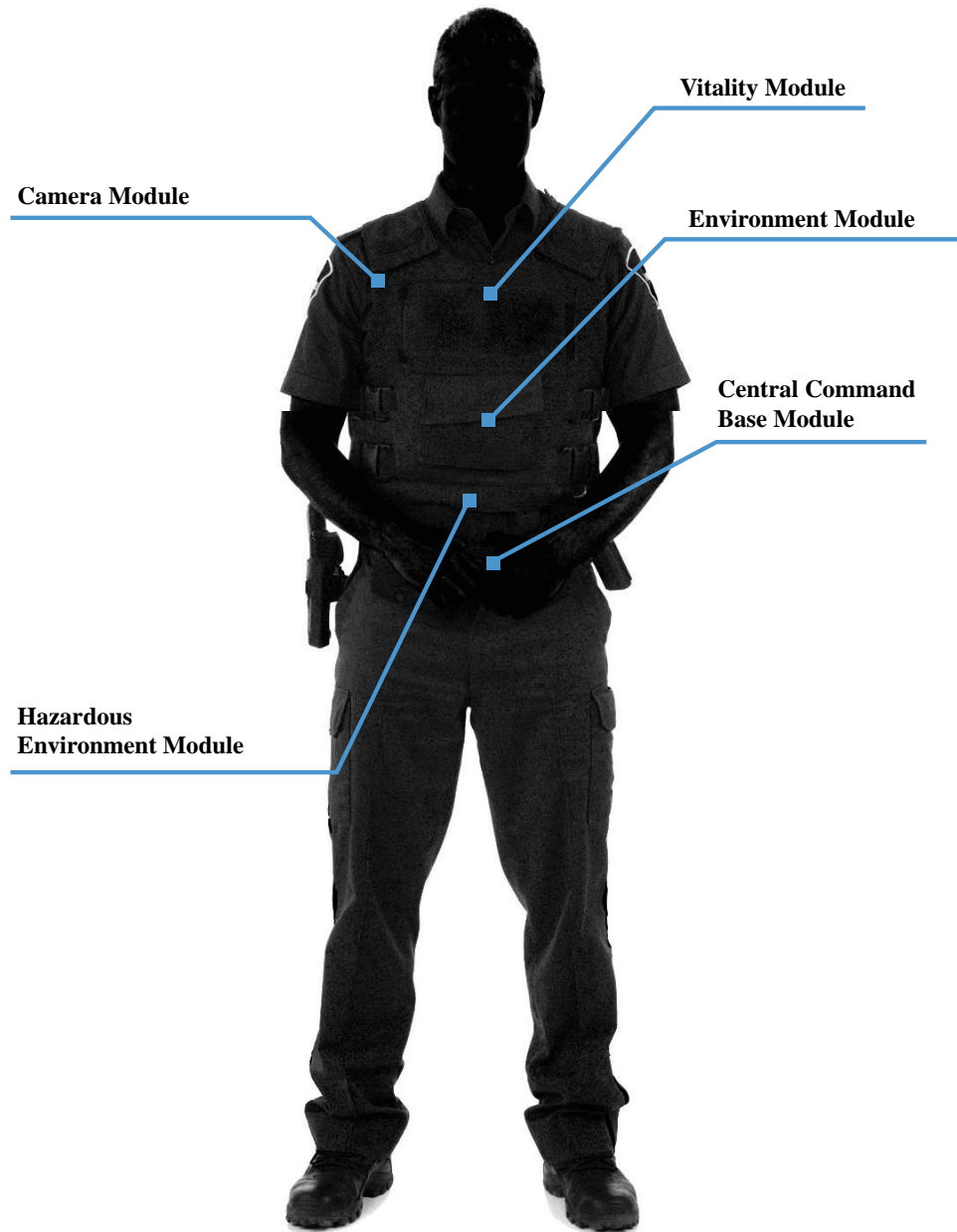
*through renowned German engineering standards, the latest technology and the most innovative designs*

Maritime Mount

Smart Technology

Indoor

Outdoor



## Accessories

- Single Pack Charger
- Multi-Pack Charger
- Solar Charger
- Kinetic Charging

## Description

With our most recent addition to the REKKS Systems and an industry first, we introduce a customizable Personal Surveillance System (PSS); a portable information system that can be incorporated into almost any garment for individual mobile security. It provides users the ability to gather, analyze, and disseminate information from the field in real time, from a command center or remote location.

The PSS is comprised of a main Base Module and additional peripheral modules as selected by the end user. The base module case is both exceptionally lightweight and designed for ruggedized use. System features can include a base video display, camera and microphone, vitality sensors, accelerometer, toxic gas and natural gas sensors, pressure sensors, radiation detector, a radio frequency identification (RFID) tag, positioning information, and a panic button. The systems components use NFC and Bluetooth technology to communicate and readings can be both stored locally and communicated to a command center over WiFi or mobile data.

The PSS components are compact and can be secured to the wearer via our MOLLE compatible case or a standard utility belt.

## System Modules

- Central Command Base Module
- Camera Module
- Vitality Module
- Environment Module
- Hazardous Environment Module

## Applicable Industries

- Banking and Treasuries
- Border Patrol
- Cleaning Staff
- First Responders
- Guard Services
- Law Enforcement
- Medical and Pharmaceutical Staff
- Oil and Gas
- Research and Development Facilities
- VIP Protection and Tracking

## System Features

Standard & High Definition	Vitals Readings	Environment Monitoring	Ha mat Detection	Radiation Detection
Mobile Data Connection	RFID	GPS	IPS	Accelerometer
Internal Batter	Modular Freedom	Cloud Based Security	Local Storage	Panic Button
Ruggedized	Scratch Resistant	Ballistic Resistant		

## Housing and Mounts

Indoor	Outdoor	Portable	Mobile	Maritime Mount
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## Materials and Finish

MOLLE	Belt	Cases	Pouch	Helmet
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## Certifications

ONVIF Compliant	CE Certified	FCC Certified	UL Certified	WiFi Certified
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K-9  
Compatible



Smart  
Technology



Indoor



Outdoor

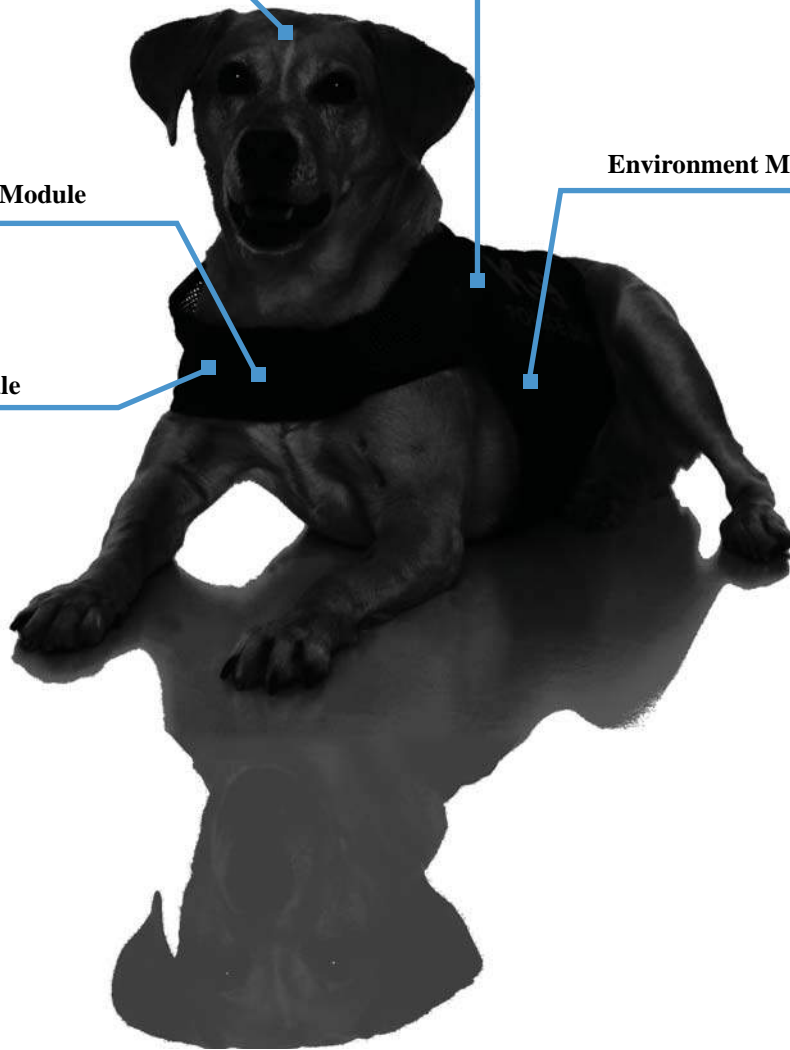
K-9 Camera Module

Central Command  
Base Module

Hazardous  
Environment Module

Environment Module

Vitality Module



## Accessories

- Single Pack Charger
- Multi-Pack Charger
- Solar Charger
- Kinetic Charging

## Description

Animals, especially dogs, are becoming an increasingly valuable asset across many industries. By studying the tasks assigned to working dogs, typical working environments, and dogs' unique movements, we are able to offer our REKKS-PSS for K-9 use—our K-9 Surveillance System (KSS).

The KSS equips the dog with advanced sensors and surveillance capabilities, making the dog itself a valuable information center. The command center is able to gather detailed information about the animal's environment while also being able to closely monitor the animal's health and safety. The Base Module is specifically designed to attach to most K-9 harnesses and includes all Base Module features. As with our traditional PSS, the KSS System can be customized by adding additional modules, including environmental sensors, vitality sensors, and a camera and microphone module that has been specially designed for a snug fit with minimal picture shake through movement.

## System Modules

- Central Command Base Module
- K-9 Camera Module
- K-9 Vitality Module
- Environment Module
- Hazardous Environment Module

## Applicable Industries

- Banking and Treasuries
- Border Patrol
- First Responders
- Guard Services
- Law Enforcement
- Search and Rescue
- VIP Protection and Tracking

## System Features

 Standard & High Definition	 Audio Recording	 Vital Readings	 Environment Monitoring	 Ha mat Detection
 Radiation Detection	 Mobile Data Connection	 RFID	 Navigation	 GPS
 IPS	 Accelerometer	 Internal Batter	 Modular Freedom	 Cloud Based Securit
 Panic Button	 Rugged ed	 Scre less Design	 Ballistic Resistant	

## Housing and Mounts

 Indoor	 Outdoor	 Portable	 Mobile
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## Materials and Finish

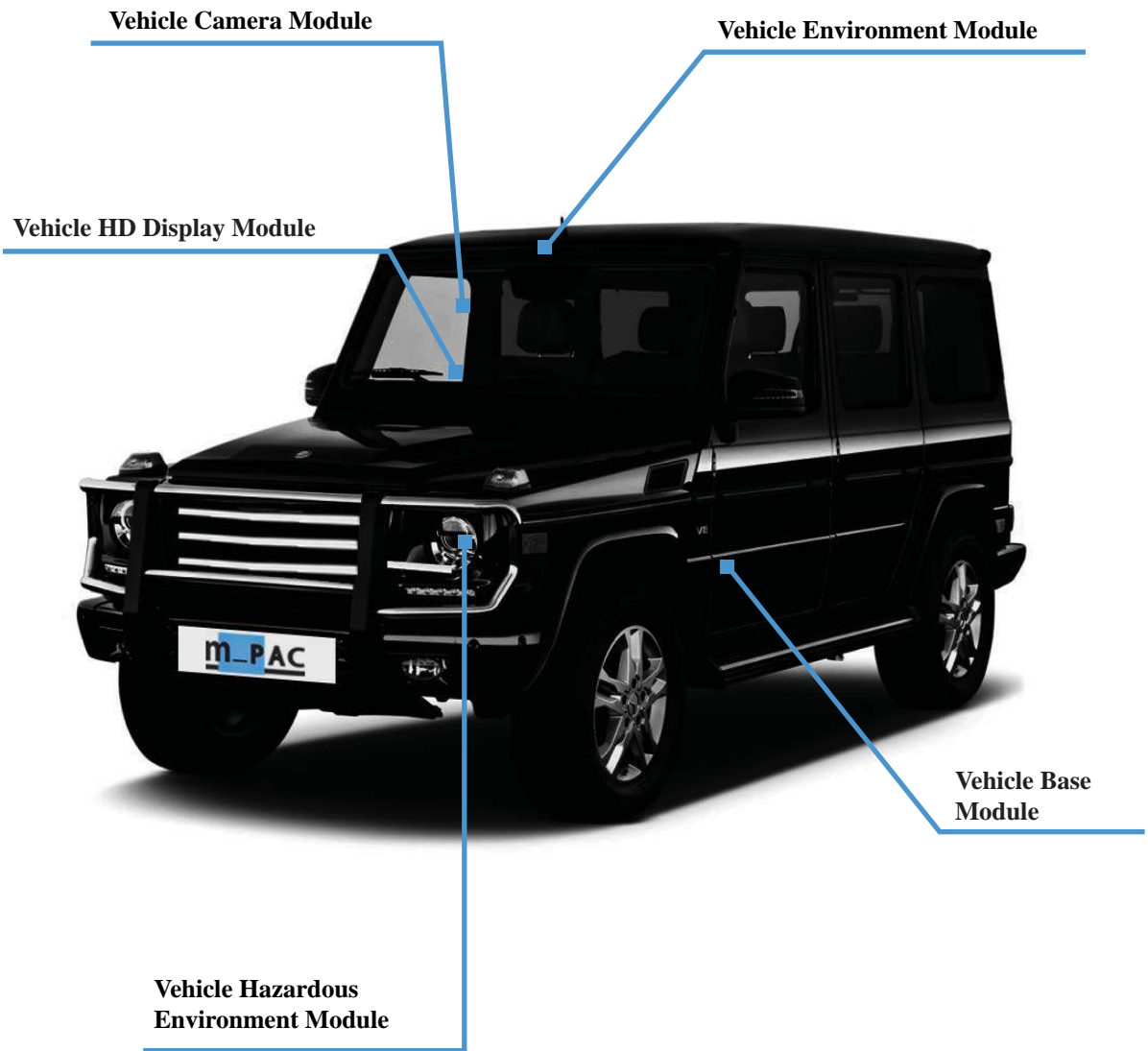
 MOLLE	 Utilit Belt	 Cases	 Pouch
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## Certifications

 ONVIF	 CE Certified	 FCC Certified	 UL Certified	 iFi Certified
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-   
Maritime Mount
-   
Smart Technology
-   
In-Vehicle Mount
-   
External Vehicle Mount



## Accessories

- Vehicle Cable Harness
- USB Charger
- External Vehicle Antenna

## Description

Vehicles are often an integral component of large area or mobile surveillance details, calling on the vehicle itself to be an information gathering asset. Through a hybrid of the REKKS-SPS and PSS modules, we offer a full range of security and surveillance tools to equip vehicles with advanced capabilities. Our vehicle modules are designed for complete vehicle integration into almost any vehicle make and model.

As with the PSS, driver or passenger vitals can be monitored through the vitality module sensors. The VSS is also able to run vehicle diagnostics and share this information with the command center. Essential positioning and environment information can be detected and monitored by incorporating GPS, navigation, and externally mounted environmental sensors. For detecting potential environmental hazards, a Hazardous Environment module can also be integrated into the vehicle.

## System Modules

- Vehicle Base Module
- Vehicle Camera Module
- Vehicle Environment Module
- Vehicle HD Display Module
- Vehicle Hazardous Environment Module

## Applicable Industries

- Correctional Facility Transports
- First Responders
- Guard Services
- Insurance Appraisals
- Law Enforcement
- Medical and Pharmaceutical Staff
- Public Transportation
- Tactical Operations
- Transportation and Logistics

## System Features

 Standard & High Definition	 Thermal Imaging Camera	 HD Display	 Video On Demand	 Weather Station
 Environment Monitoring	 Hazmat Detection	 Radiation Detection	 Ballistic Resistant	 RFID
 Navigation	 GPS	 Accelerometer	 Internal Battery	 Hybrid Solution
 Cloud Based Security	 24 Hour Power Management	 Panic Button	 Ruggedized	 3rd Party Integration

## Housing and Mounts

 Outdoor	 Mobile	 Dash Mount	 Under-Hood Mount	 Roof Mount
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## Materials and Finish

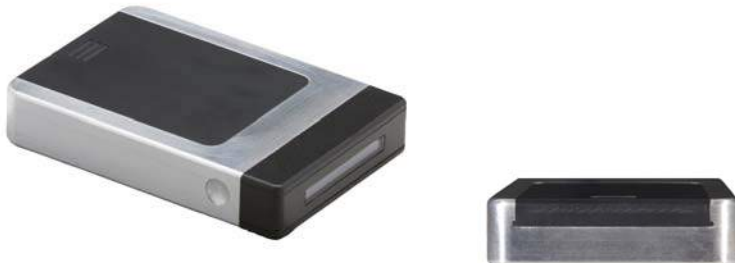
 Carbon Fiber	 Mixed Media	 Housing Color
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## Certifications

 ONVIF	 CE Certified	 FCC Certified	 UL Certified	 IK Rating
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## Central Command Base Module

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### Description

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The PSS Central Command Base Module is the lightweight, durable foundation to the PSS and features protective ballistic resistant Kevlar IP67 housing and a visual display. It plays a vital role in the system as a central hub by integrating network, location, communication, display and sensor modules.

Each console has a panic alert button, which immediately sends vital information to the command center and features a cancellation window to minimize false alarms or accidental triggers. The visual display expands the wearer's communication capabilities and provides system status information with features such as basic two-way messaging and sensor and battery indicators. An accelerometer detects changes in the wearer's orientation or directional heading, pace, sudden changes in movement, free falls, intense vibrations or shocks. The Base Module also features an extensive communication package, which incorporates both outdoor GPS and indoor IPS location tracking systems and uses the latest Bluetooth standards and near field communication (NFC) technology for easy and reliable pairing.

We incorporate WiFi and mobile data transfer over the most popular communication networks worldwide, and provide up to 4th generation LTE speeds where available. Sensor readings and data gathered by the console are both stored locally on the console and communicated directly with the command center. Local storage enables the console to continue gathering and saving information in the event the console goes offline.

## Compatible Systems

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- PSS
- KSS
- VSS

## Module Features

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- Navigation
- Video Display
- Universal Battery Packs
- Accelerometer
- Panic Button
- Mobile Data Connection
- WiFi
- Compass Connectivity
- MOLLE Compatible
- RFID
- GPS
- Internal Storage
- IPS

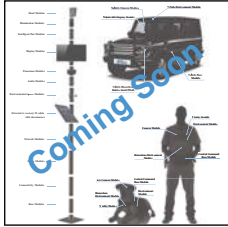
## Highlighted Applications

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- Air and Sea Ports
- Bases, Outposts and Checkpoints
- Corruption Theft Prevention
- Energy Infrastructures and Drill Sites
- Event Management
- Guard Route Management
- Guard Support
- Law Enforcement
- Mining and Construction
- MOLLE Compatible
- Movement Monitoring
- Outdoor Recreation
- Parental Control
- Public Transportation
- Staff Monitoring
- Tactical Operations
- Taxi Drivers, Busses and Chauffeurs

## Camera Module

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## Description

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As an extension of the Base Module, a small and compact Camera Module easily incorporates video and audio functions into the wearable surveillance system. The Camera Module consists of a small camera and microphone unit that can be clipped or affixed onto the wearer's outer garment to provide eyes and ears to the command center. Despite its small, compact design, the camera offers full HD of 1080p at 30 fps and 16x digital zoom. The camera module communicates with the console via Bluetooth, has a built-in microphone to relay sound to the command center, and has both day and night mode capabilities.

## Compatible Systems

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- PSS
- KSS
- VSS

## Module Features

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- SD / HD Recording and Streaming
- Navigation
- Video Display
- Universal Battery Packs
- Compass Connectivity
- Video on Demand
- Internal Storage
- MOLLE Compatible
- Helmet Compatible

## Highlighted Applications

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- Border Patrol
- Corruption and Theft Prevention
- Event Management
- Guard Route Management
- Guard Support
- High Value Transports
- Law Enforcement
- Tactical Operations
- VIP Protection and Tracking

## Vitality Module

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## Description

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As an extension of the Base Module, the Vitality Module enables the command center to closely monitor the wearer's health and physical safety. The sensors are incorporated into a discrete and compact wrist unit with adjustable notification options. The module can alert the command center when the wearer's heart rate becomes dangerously elevated or stops, monitor the wearer's hydration levels, and even monitor whether the wearer may have fallen asleep on the job.

The wearable sensors can provide Electric Cardio Gram, pulse, body temperature, and perspiration level measurements that are transmitted via Bluetooth to the console and wirelessly on to the command center. By monitoring the wearer's vitals, the command center can help protect the health of the wearer and quickly send help should any of the measures drop to dangerous levels.

## Compatible Systems

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- PSS
- KSS
- VSS

## Module Features

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- Universal Battery Packs
- MOLLE Compatible
- Vitals Readings

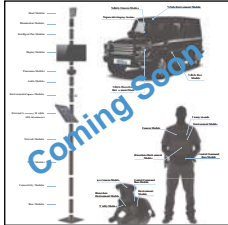
## Highlighted Applications

---

- Air and Sea Ports
- Bases, Outposts and Checkpoints
- Corruption and Theft Prevention
- Energy Infrastructures and Drill Sites
- Event Management
- Guard Route Management
- Guard Support
- Law Enforcement
- Mining and Construction
- Movement Monitoring
- Outdoor Recreation
- Parental Control
- Public Transportation
- Staff Monitoring
- Tactical Operations
- Taxi Drivers, Busses and Chauffeurs

## Environment Module

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### Description

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As an extension of the Base Module, an Environment Module enables both the wearer and the command center to closely monitor environmental conditions. The wearer can proceed with a higher degree of safety and confidence knowing his surroundings are safe. Additionally, the command center can alert nearby personnel when unsafe levels are detected, quickly removing them from danger.

An air quality sensor provides continuous readings on often-undetectable dangers such as carbon monoxide, hydrogen and oxygen levels. A temperature sensor included in the console records ambient temperature and a pressure sensor measures atmospheric pressure, which can be used to detect sudden weather and air pressure changes that result from blasts and explosions. All readings by the environmental sensors are transmitted to the Central Command Module via Bluetooth and on to the command center when the sensors detect unsafe levels.

## Compatible Systems

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- PSS
- KSS
- VSS

## Module Features

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- Universal Battery Packs
- Environmental Readings
- MOLLE Compatible

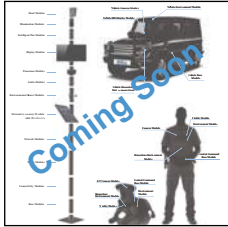
## Highlighted Applications

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- Energy Infrastructures and Drill Sites
- Event Management
- First Responders
- Guard Support
- High Value Transports
- Meteorological Monitoring
- Research and Development
- Tactical Operations

## Hazardous Environment Module

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### Description

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In addition to standard environmental readings, the surveillance system provides tools for detecting hazardous environmental materials, many of which are often undetectable by humans. The console equips the wearer with gas sensors that will alert the wearer and the command center to the presence of propane, butane, methane, and natural gas readings at unsafe levels.

A radiation sensor is an optional feature, which can be used to monitor radiation levels in areas of known exposure as well as in a precautionary capacity to alert the guard and the command center to the presence of harmful radiation levels. The potential for harmful radiation exposure is a devastating byproduct of damage to nuclear energy facilities and uncertain radiation distribution channels from known areas of concentration.

The combined capabilities of the Hazardous Environment Module can also be a valuable tool for first responders and medical personnel engaged in disaster relief by removing uncertainty as to the safety of their environment and allowing them to focus on providing aid to others. All module readings are communicated via Bluetooth to the Base Module for local storage and wirelessly on to the command center.

## Compatible Systems

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- PSS
- KSS
- VSS

## Module Features

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- Universal Battery Packs
- Radiation Detection
- Compass Connectivity
- GPS
- Poisonous Gas Detection
- Internal Storage
- MOLLE Compatible

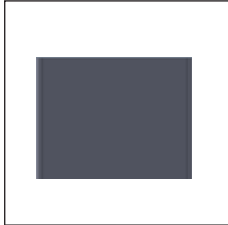
## Highlighted Applications

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- Air and Sea Ports
- Anti-Terrorism
- Border Patrol
- Energy Infrastructures and Drill Sites
- Event Management
- First Responders
- Hazardous Materials Transport
- Law Enforcement
- Mining and Construction
- Public Transportation
- Tactical Operations

## Battery Packs

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## Compatible Systems

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- PSS
- KSS

## System Features

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- Exchangeable
- Interchangeable
- Rechargeable

## Description

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The surveillance systems feature an interchangeable battery design for cross-compatibility with our module components. For the modules that naturally draw more power, the batteries are removable to facilitate on-the-go battery exchanging. The batteries are compact and lightweight so as to allow the user to carry an extra. All external batteries are exchangeable and rechargeable and have an average battery life of 10 hours on a full charge.

## Battery Chargers

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- Single Pack Charger
- Multi-Pack Charger
- Vehicle Charger (Single)
- Solar Charger (Single)
- Kinetic Charger (Single)

## Compatible Systems

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- PSS
- KSS

## System Features

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- 110-240V
- Battery Heat Monitor
- Fast Charge
- Off-Grid Charge

## Description

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All batteries used in the surveillance system are rechargeable. Our external battery charger is available with a single charging bay or a multi-charging bay that can charge up to 5 batteries simultaneously. A single-bay vehicle charger is offered for charging on-the-go. Modules with internal mount batteries offer wireless charging. For renewable energy recharging, single pack solar and kinetic chargers are also available. Battery health and charging status can be monitored through each of our charging units.






















# REXKS Systems Summary



Camera Features	SPS	PSS	KSS	VSS
 SD / HD Camera	■	■	■	■
 Ultra High Definition Camera	■			
 EMCCD Camera	■			
 Thermal Imaging Camera	■			
 External Optics	■			■
 Image Stabilization	■			■
 Area Illuminator	■			■
 Short Range Night Vision	■			■
 Long Range Night Vision	■			
 Continuous 360° Pan	■			■
 Panorama	■			■
 Visual Display	■			■
 HD Display	■			■
 Video on Demand	■			■
 Audio/Alarm Broadcast	■			■
 Audio Recording	■	■	■	■
 Vitals Readings		■	■	■
 Weather Station	■			
 Environment Monitoring	■	■	■	■




















# REXKS Systems Summary



Camera Features	SPS	PSS	KSS	VSS
 Hazmat Detection	■	■	■	■
 Radiation Detection	■	■	■	■
 Traffic Management	■			
 Motion Detection	■			
 Lightning Protection	■			■
 Tamper Protection	■			■
 Server and Network	■			■
 Bluetooth		■	■	■
 Mobile Data Connection	■	■	■	■
 Optical Fiber	■			
 Universal Data Adapter	■			■
 Range Extender	■			■
 RFID	■	■	■	■
 Navigation		■	■	■
 GPS	■	■	■	■
 IPS		■	■	
 Accelerometer		■	■	■
 Internal Battery	■	■	■	■
 Renewable Energy Compatible	■			


















# REXKS Systems Summary



Camera Features	SPS	PSS	KSS	VSS
 Grid Power	■			
 Hybrid Power Solution	■			■
 Universal Power Adapter	■			
 Dual Decoder	■			■
 Future Proof	■	■	■	■
 Modular Freedom	■	■	■	■
 Off-Grid Compatible	■	■	■	■
 Lightweight	■	■	■	■
 Cloud Based Security	■	■	■	■
 Portable Control Room	■			■
 CCN	■			
 Portable Power Solution	■	■	■	■
 24 Hour Power Management	■			■
 Local Storage	■	■	■	■
 Panic Button	■	■	■	■
 Screwless Design	■	■	■	■
 Complete Vehicle Integration				■
 3rd Party Integration	■			■
 Smart Technology	■	■	■	■



















# REXKS Systems Summary



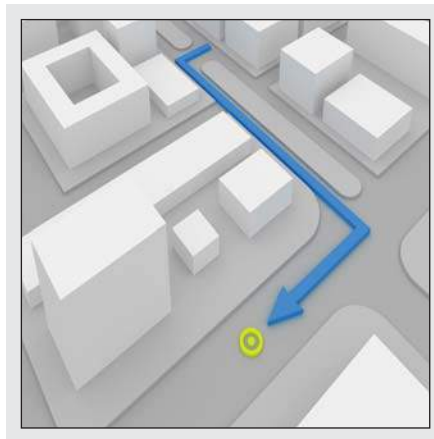
Housing and Mounts	SPS	PSS	KSS	VSS
 Indoor	■	■	■	
 Outdoor	■	■	■	■
 Portable	■	■	■	■
 Mobile		■	■	■
 Smart Perimeter System	■			
 External Vehicle Mount				■
 In-Vehicle Mount				■
 Dash Mount				■
 Under Hood Mount				■
 Roof Mount				■
 Wall Mount	■			
 Ceiling Mount	■			
 Maritime	■	■		■
 Customizable Height	■			
 Ruggedized	■	■	■	■
<b>Materials and Finish</b>				
 Aluminum	■			
 Carbon Fiber	■			■

# REXKS Systems Summary



Materials and Finish	SPS	PSS	KSS	VSS
 Mixed Media		■	■	■
 Ballistic Resistant	■	■	■	■
 Corrosion Resistant Materials	■			■
 Camouflage	■			■
 Housing Color	■	■	■	■
 Glass Color	■			
 MOLLE		■	■	
 Utility Belt		■	■	
 Cases	■	■	■	
 Pouch		■	■	
 Helmet		■		
Certifications	SPS	PSS	KSS	VSS
 ONVIF	■	■	■	■
 CE	■	■	■	■
 FCC	■	■	■	■
 UL	■	■	■	■
 WiFi Certified	■	■	■	■
 IP Rating	■	■	■	■
 IK Rating	■			■

## Security Index



Our products are breaking ground at every turn and we are excited to share these breakthroughs with our customers. Our designs are sleek – we combine simplistic and modern designs, use innovative materials, and incorporate the latest technologies with alternative energy power. Our technology is cutting edge - we offer our customers some of the most advanced security and surveillance capabilities available in the world. Our team is responsive - we work with each of our customers to tailor a security system that meets their precise needs, modifying products and offerings when applicable. Our products are revolutionary.

We are dedicated to providing our customers with support, and that includes providing knowledge about our technology, our products, and how we can provide comprehensive security and surveillance solutions. Within the Security Index we provide explanations for the icons featured throughout this catalog.



## 24 Hour Power Management

Security is a “twenty-four hours a day, seven days a week duty”. To provide our products with continuous power and uninterrupted security, our products are equipped with power management systems that offer power backups and integrated batteries.



## 2D/3D Noise Reduction

This new technology captures low noise images even in low light environments, eliminating image blur and offering spatial noise reduction in video frames. It also reduces the image’s frame size to facilitate quick transmission and minimize storage space requirements.



## 3rd Party Integration

In the world of security we recognize that no one can ‘do it alone’. Our systems provide customers the ability to integrate 3rd party components for truly customized and maximized solutions.



## 512 GB Local Storage

The heavy-duty head has 512 GB of internal solid state storage, and two separate video streams - one that is stored locally and one that transmits to the command center.



## Accelerometer

Built into the console, the multi-axis sensor provides a wealth of information about the wearer and his surrounding environment such as changes in orientation or directional heading, pace, sudden changes in movement, free falls, and intense vibrations or shocks. This important feature provides an additional layer of in-field information and can reduce response times in the event of an attack on the wearer, sudden fall, earthquake, natural disaster, or explosion.



## Area Illuminator

Ground illumination capability can be a priceless asset. We offer a spotlight module that can be activated when ground illumination is needed. The compact light features highly efficient LED lights that provide up to 1200 lumens at over 60 lumens/watt, with a 120-degree beam pattern.



## Audio Recording

Audio recording is available in our pole, wearable and vehicle systems. In combination with the panorama microphone, directional microphone, or our wearable camera and microphone module, audio information can be discretely recorded and shared with the command center.



## Audio/Alarm Broadcast

The speaker module is a valuable addition, providing a way to remotely deliver announcements to the surveillance field. This module can also be used to provide sirens or alerts to notify bystanders of impending threats or dangers. The speaker has an efficient, compact design yet offers premium sound quality with heat-resistant capabilities to ensure it can continue operating and communicating important messages through volatile, high-heat environments.



## Ballistic resistant

Select product systems incorporate the latest in ballistic resistant housing including Kevlar composite housing and ballistic resistant glass. With an added layer of external protection, these products remain uncompromised even in the most hostile environments.



## Bluetooth

All standard sensors and optional additional modules use the latest Bluetooth standards and near field communication (NFC) technology for easy and reliable pairing between the console’s sensors and the processor.



## CCN

Building upon the advantages offered by closed circuit television (CCTV), we incorporate additional features into a secure, closed circuit network (CCN) optimally designed for secure surveillance. Video and data transmissions are made point-to-point or point-to-multipoint over a secure wireless network in the field, back to a command center.



## Cloud Based Security

Because of the decentralized nature of our systems, operations can be set up completely off-site, with automatic back ups and monitoring from anywhere in the world. Each system can be designed to provide complete control room functionality from within the smart pole module and offer user control and monitoring from a handheld device.



## Complete Vehicle Integration

In both traditional and discrete applications, the VSS offers optimized mounts and integrated solutions for complete vehicle integration.



## Continuous 360° Pan

Several of our camera models provide continuous 360-degree pan capabilities. The Model 7 offers continuous pan within its protective dome housing, while the Signature Series Cameras, mounted on either a traditional pan module or our advanced Smart Perimeter System, utilizes complete pan functionality for area surveillance.



## Corrosion Resistant Materials

For marine applications, our housing is offered in marine grade aluminum and/or coated carbon fiber to protect against corrosion and internal component damage.



## Customizable Height

Our modular pole design allows for customized product height. For higher height applications additional pole modules and accompanying stability anchors can be added to the core system modules.



## Day & Night Function

With an automatic “Day & Night” function, our cameras can operate successfully in a minimum illumination environment. As the scene darkens, the infrared cut filter is automatically disabled and the camera switches to night vision mode where the near-infrared sensitivity increases.



## Digital Image Stabilizer

The image stabilizer function minimizes the appearance of shaky images caused by low-frequency vibration and maintains a normal horizontal resolution. The stabilization algorithm is activated automatically with zoom, where the slightest mechanical movement can introduce picture shake. This function is useful for outdoor surveillance and traffic monitoring applications.



## Dual Decoder

To provide the highest level of forensic integrity, select products are available with dual decoder functionality. The dual decoder helps combat surveillance integrity through tampering or vandalism attempts by storing surveillance data twice. Data is sent through the network to the control room and also stored locally as a backup in the event of network failure or tampering.



## Dual Output

To aid in system compatibility, this camera features both analog and IP output connectivity. Through the respective ports data can be sent from the camera via coaxial cables or optical fiber, or over an IP network.



## EMCCD Camera

The ultra-sensitive electron multiplying charge coupled device (EMCCD) camera offers outstanding target recognition and identification capabilities by delivering crisp images in a diverse range of lighting levels. EMCCD technology combines thermoelectric cooling to reduce the effect of dark current noise and DSP technology for superior digital noise reduction. Our EMCCD core offers a resolution of 658 x 496 and has a monochrome accumulation mode of 0.00002 lux.



## Environment Monitoring

Environmental sensors monitor air quality and provide continuous readings on often-undetectable dangers such as carbon monoxide and oxygen levels. In addition, sensors for ambient temperature and atmospheric pressure can be used to detect sudden changes in weather or air pressure that result from blasts and explosions.



## External Optics Compatible

For specialized, long-distance surveillance imaging select camera models are compatible with 3rd party optics such as external lenses and filters.





## Frame Rate

Our cameras provide both National Television System Committee (NTSC) and Phase Alternating Line (PAL) resolution standards, offering compatibility almost anywhere in the world.



## Future Proof

Our product systems are designed for longevity and technological growth. When new technologies call for upgrades or replacements, our systems allow for isolated component replacement, which saves customers the cost and logistical burden of replacing an entire system.



## GPS

Integrated Global Positioning System (GPS) technology is used in the console to identify the current location of the wearer when positioned outside and to track the wearer's geographic movement. This is a useful tool for the command center through which the wearer's position can always be determined.



## Grid Power

For direct integration into traditional grid power, our systems are dual voltage (110/120V to 220/240V) compatible.



## Hazmat Detection

In addition to standard environmental readings, the surveillance system detects hazardous environmental materials, many of which are often undetectable by humans. The console equips the pole or wearer with gas sensors that will alert the wearer and the command center when propane, butane, methane, and natural gas readings indicate unsafe levels.



## HD Display

An HD video display is incorporated into all of our smart protection and control systems. For SPS applications, a large display screen can provide video broadcasts and important information to bystanders. When paired with the PSS, KSS or VSS, a handheld or wearable display connects the user to the control for video display on command and system information updates.



## High Speed PTZ

Select camera models are equipped with a high speed motor for quick, sharp and responsive pan, tilt and zoom (PTZ) functions. As with our traditional PTZ models, our High Speed PTZ cameras offer continuous 360-degree pan and broad tilt angles to maximize the viewing area.



## Hybrid Power Solution

To maximize system efficiency and 24 hour power management, hybrid power solutions are available through the combination of grid and renewable power sources.



## Illumination Sensitivity

Due to its high shutter speed, the camera works within a minimum illumination range of 1.4 lux at 1/50s shutter speed up to 0.01 lux at 1/4s shutter speed with ICR on, allowing the camera to offer visibility in dark lighting conditions.



## Image Format

Our cameras support H.264 compression, providing clear moving images over IP networks. The high H.264 compression algorithm works with half of the bit rate of previous compression algorithms, with a controllable bit rate up to 5Mbps, even on limited bandwidth networks.



## Image Stabilization

For truly advanced capabilities in outdoor or mobile surveillance applications, select camera models are available with an image stabilization core. The more ruggedized stabilization core goes beyond standard digital stabilization to deliver steady and clear images through movement or shake.



## Integrated Optical Fiber

Upon request, an optical fiber connector can be integrated into the camera. An integrated optical fiber facilitates the direct connection to the fiber cable, eliminating the need for an extra junction box, and can extend the range up to 20 km.



## Internal Battery

The larger ruggedized housing of the BUMA Heavy Duty allows for independent and rechargeable internal battery power for the camera core. The internal battery provides backup power to the camera head in the event of power loss and ensures uninterrupted 24-hour surveillance.



## IP Output

These cameras have all the advantages and flexibility of an IP Network, allowing flexible connectivity through network cables, optical fiber cables or wireless systems. We provide customers with several installation options, depending on their requirements and the layout of the installation site.



## IPS

Through calibration with existing wireless networks, the console is able to track distance between other WiFi hotspots and provide the command center with precise location and internal positioning system (IPS) information. More precise room-by-room tracking is possible when building schematics are uploaded to the command center.



## Lightning Protection

A lightning rod can be attached to our pole modules that grounds electric current and protects internal electronic components and housing integrity in the event of a lightning strike.



## Lightweight

Cameras incorporating our newly designed carbon fiber housing integrate the benefits of lightweight carbon fiber. Without compromising durability or sacrificing protection, the lightweight carbon fiber design lessens the weight burden placed on mounts and motorized components and thus extends the life of these components.



## Local Storage

Sensor readings and data gathered by the console are both stored locally on the console and communicated directly with the command center where it can be backed up on a secure server. Local storage enables the console to continue gathering and saving information in the event the console goes offline and ensures the readings and data collected during such an outage is not lost. Once the console goes back online, the readings and data will then be sent automatically to the command center where it can be accessed and stored.



## Long Range Night Vision

To further enhance the nighttime surveillance capabilities of our BUMA Modular, we offer an IR laser illuminator module. For low-light applications, power to the illuminator is activated by a built-in light sensor. The IR laser illuminator is optimally paired with our standard camera core modules for a complete surveillance solution in any lighting condition.



## Mobile Data Connection

To facilitate completely portable and mobile operations, our systems adhere to global data network standards for fast and uninterrupted cellular connections.



## Modular Freedom

Single solution products no longer fit the varying and dynamic demands of the security industry. For maximum flexibility, customized solutions, and efficient technological upgrades we have based all of our product systems on a modular principle and design.



## Motion Detection

Motion detection modules provide valuable information about movement around the SPS, including the size and threat level of the object detected and the speed of the object's approach. The motion detection modules are optimally used in perimeter protection, ingress and egress detection and traffic speed enforcement.



## Navigation

Integrated GPS and Google Maps compatibility delivers seamless navigation and tracking capabilities. Navigation and positioning information can also be shared with the user from the command center over our HD display modules.



## Off-Grid Compatible

The use of highly efficient, flexibly designed solar panels and wind turbines makes off-grid solutions available for many different types of terrains and weather conditions. To further ensure uninterrupted surveillance, each power station is equipped with internal batteries to bridge any lapse in power. The batteries are rechargeable, can provide up to 48 hours of power, and have a lifespan of three to five years.



## PTZ Capability

Our cameras offer pan/tilt/zoom features. Each model offers 360° continuous pan and tilt angles are designed to allow the user to monitor a wider viewing area. Cameras paired with pan and tilt capabilities also feature superior zoom functionality. The 5 Series features a tilt angle from +20° to -70°, the 7 Series features an auto flip tilt angle from 0° to 180°, and the BUMA cameras feature a tilt angle from 10° to -45°.



## Panic Button

A panic alert button is a standard feature on every console. Once triggered, an alert signal is immediately sent to the command room, which relays vital information such as time, precise location, and current readings from all sensors. To minimize false alarms or accidental triggers, the panic alert button can incorporate a cancellation window during which the panic alert signal may be disarmed.



## Panorama

For complete, simultaneous, 360-degree field surveillance we offer several Smart Perimeter System Panorama Modules. Four modules provide generalized area surveillance, covering all ground angles surrounding the pole mount. Optional targeted head modules can be integrated into the pole system to provide more advanced and higher resolution features for targeted area focus.



## Plug and Play

To facilitate easy installation and maximize compatibility between system modules, we have chosen to incorporate plug and play technology. Modules featuring this design can be 'plugged' in directly for immediate operation as well as replaced quickly for future system upgrades.



## POE Connection

Each camera in our product portfolio offers power over Ethernet (PoE). Through a single Ethernet cable the camera is able to receive both power and data connectivity, reducing the cabling infrastructure requirements and streamlining the security network. The camera can also act as a powered device (PD) to supply power over Ethernet to other devices.



## Portable Control Room

Network modules integrated into our smart systems can provide all necessary technology for completely portable control room functionality.



## Portable Power Solution

We work with the latest power sourcing technology and leading providers of alternative energy to bring customers optimal and often renewable energy solutions to power their their security needs anywhere in the world.



## Quick Install

The modular, flexible design of our products facilitates quick installation with minimal civil works. Our portable, off-grid products completely remove the requirements for civil works or existing infrastructures, which make them ideal for mobile, temporary or special event security.



## Radiation Detection

Paired with the hazardous materials sensors, a radiation detector can alert the wearer and command center of the presence of harmful radiation levels so that people can evacuate the contaminated area and seek protection.



## Range Extender

To extend transmission signal power, receiver power and coverage distance, range extenders are available for vehicle and pole mount systems.



## Renewable Energy Compatible

Our stand-alone camera systems are optimal for remote, undeveloped locations. Efficient power consumption by our cameras allows easy and autonomous integration of green technologies such as solar and wind power. We have entirely removed any requirements for connection to a power grid or related utility power as well as the need for civil works for installation, integration, or compatibility.



## RFID

An RFID tag will carry a unique number and will be used to identify the wearer and store useful information as determined by the end user. When used with RFID readers, the command center can track the wearer at checkpoints and through rounds, which can improve efficiency and help monitor a wearer's mobility.



## Ruggedized

Our systems are designed for optimal functionality in remote, off-grid and extreme environments. Component ruggedization includes specially coated internal electronics to withstand movement and shocks. Our systems are further protected by our heavy duty housing, which provides maximum durability, longevity and flawless performance in any environment.



## Screwless Design

Following our philosophy of 'security through design' our products offer a screwless design for sleek, yet tamper protective, housing.



## Server and Network

Networking modules offered in the SPS completely remove the need for dedicated server and control room locations. We integrate these functions into the pole system to enable cloud computing, remote access and full mobility.



## Short Range Night Vision

An external IR illuminator is used to provide clear night vision images and extends the night vision range up to 300 meters.



## Smart Technology

Going beyond single function products, we integrate smart technology directly into our product modules to offer advanced capabilities and a more comprehensive solution.



## SD / HD Camera

All of our camera modules are available with either SD or HD camera cores. Our SD cameras offer exceptional image quality and are available with 18x, 26x, or 40x zoom. For detailed or high contrast environment surveillance, the HD cameras deliver full HD resolution of 1920x1080p at 30 frames per second. The HD cores are available with up to 30x optical zoom and are further enhancement through digital image stabilization and true wide dynamic range (WDR) processing.



## Tamper Protection

Anti-climb caging and wiring can be used to prevent tampering and maintain system integrity. The anti-climb barriers are a valuable complement to our screwless design in creating a thorough tamper resistant system.



## Thermal Imaging Camera

Thermal imaging cameras offer image penetration through smoke, dust, and water vapor in addition to providing clear images at near or mid-range distances in full darkness. Our thermal camera has a 384 x 288 pixel uncooled detector and uses an image detail enhancement (IDE) algorithm to enhance low contrast targets in high dynamic range scenes.



## Thermal Night Vision

We proudly offer today's most advanced thermal imaging technologies. The thermal imager collects heat signatures of all approaching targets and allows for detailed environment detection and monitoring at 0 lux.



## Traffic Management

Using traffic signals and speed enforcement cameras, a traffic management system with basic directional signals and alerts can be set up in developed or off-grid locations for construction site traffic or special events.



## Two-Way Audio

Two-way audio enables the camera to both transmit audio information to a PC monitoring the camera and receive audio information sent from the command center. A single channel MIC in or line input facilitates audio input, and a single channel RCA linear output interface facilitates output.



## Ultra High Definition Camera

We are pleased to announce that our BUMA, and BUMA Modular cameras will soon be available with an ultra high definition (UHD) core. Bringing our customers the latest in video imaging technology, the UHD camera provides superior surveillance imaging and boasts a resolution of 3840x2160 pixels.



## Universal Data Adapter

In a rapidly advancing world with varied regional standards we offer universal data adapters to provide data and communication connectivity across all major technologies and input standards.



## Universal Power Adapter

Our systems are designed to work with almost any power source available, including solar panels, wind turbines, fuel generators, internal rechargeable batteries, and traditional grid power. The system incorporates a universal power adapter which acts as a buffer between the incoming power source and system components for smooth current transfer and steady operations.



## Video on Demand

The HD display modules allow users to select and view recorded video footage, play live video feeds on command from the system's camera modules, or access information sent from the command center. With this feature the control room can also access the wearer's live video stream on command.



## Visual Display

The Base Module in our wearable surveillance systems includes a visual display to keep the wearer up-to-date on sensor readings, battery charge and connectivity status.



## Vitals Readings

A discrete wearable sensor can provide Electric Cardio Gram, pulse, body temperature, and perspiration level measurements that are transmitted via Bluetooth to the console and forwarded wirelessly to the command center. By monitoring the wearer's vitals, the command center can help protect the health of the wearer and quickly dispatch help should any of the readings drop to dangerous levels.



## Weather Station

A weather station can be incorporated into the pole system to offers up-to-the-minute readings for ambient temperature, wind speed, humidity, barometric pressure, precipitation levels and forecasting.



## Wide Dynamic Range

These cameras are capable of backlight compensation, which improves the video dynamic range of the camera by 128 times. The camera captures the same image twice, first with normal shutter speed and then with a high shutter speed. The two images are then processed and combined into one clear image using an advanced DSP LSI, producing a final product with clear images and visible detail even in extremely high contrast environments.



## Wifi Connectivity

The extensive communication features of the console include WiFi conforming to IEEE 802.11 industry standards.



## WiFi Hotspot

In response to increasing use and reliance on wireless technology, we incorporate a WiFi access point/extender directly into our product. This creates a discrete solution for the extension and broadcasting of commercial and company networks.



## **BUMA Modular Housing**

The housing of the BUMA Modular system is designed to accommodate its plug-and-play design. The housing is comprised of a single or triple bracket frame into which individual modules can easily be inserted.



## **Ceiling Mount**

To provide complete 360° surveillance from above, these products are available with a ceiling mount.



## **Dash Mount**

For use in non-commercial vehicles, our smaller cameras and module can be dash mounted for stable, mobile use.



## **External Vehicle Mount**

Carbon fiber and/or mixed media housing is used to securely mount our systems to tactical vehicle exteriors for maximum technology integration with minimal impact on vehicle performance. This mounting capability creates a comprehensive mobile system, ideal for tracking personnel and equipment.



## **In-Ceiling Mount**

For more discreet surveillance, our cameras utilize an in-ceiling mount, making the camera's presence less obtrusive while still providing complete surveillance coverage.



## **Indoor**

These products feature light, protective housing and are designed for indoor use.



## **In-Vehicle Mount**

Our smaller camera modules can easily be installed 'in-vehicle' for surveillance needs onboard public transportation vehicles, commercial transports, and personal vehicles.



## **IP 67 External Fixed Housing**

To provide the highest level of protection, our fixed cameras are available in durable IP67 certified protective housing. The IP67 rating ensures that the camera and components will remain protected from airborne solids as well as water.



## **IP 67 External PT Housing**

For outdoor applications, the cameras offer IP67 certified housing can be paired with a pan/tilt base for a complete PTZ visual surveillance solution.



## **Maritime**

Several of our systems have been adapted for maritime use to equip travelers with the tools to combat the increasing dangers of maritime travel, threats of dangerous weather and the need for 360° surveillance. Our maritime systems feature maritime grade aluminum and/or coated carbon fiber IP68 housing with ruggedized internal components.



## **Mobile**

Our systems are designed to be completely mobile with the most modern materials, advanced power methods, and wireless communication systems to accommodate vehicly security, personnel, and a society on the move.



## **Outdoor**

Designed to withstand harsh environments and the elements of nature, our outdoor products are protected in a minimum of IP 67 housing and offer ruggedized internal component mounts.



## **Height Extension Module**

Height Extension modules can be added to any pole system to provide design flexibility and meet custom height requirements.

# Housing and Mounts



## Portable

The simplicity and modularity of our design, along with lightweight carbon fiber housing, allows for simple system assembly and easy transport between locations.



## Roof Mount

Smaller VSS components that require external mounting such as cameras and environmental sensors can be attached snugly to the vehicle's roof or hood without compromising the vehicle's performance or silhouette.



## Smart Perimeter System

Our Signature Series cameras and select individual component modules are compatible with and can be integrated directly into our REKKS Smart Perimeter System (SPS).



## Under Hood Mount

To aid in complete vehicle integration and discrete surveillance, our VSS modules can be mounted under a vehicle's hood or body frame.



## Wall Mount

To meet varying camera and system needs, an upright wall mount can integrate into existing structures and can be used as an alternative to our pole mount.

# Materials and Finish



## Aluminum

Our high grade aluminum housings are treated to withstand harsh environmental conditions and corrosion. The lightweight metal is durable and provides superior protection for the internal components.



## Camouflage

As a way to further protect the internal components of our carbon fiber products as well as provide discrete surveillance options, we offer 4 camouflage film options for complete environment integration: arctic, forest, marine, and desert. The camouflage film helps to extend the life of the product by protecting the exterior, reflecting heat and providing insulation in cooler environments.



## Carbon Fiber

Among its many advantages, carbon fiber has very high strength to weight and stiffness to weight ratios, is significantly lighter than steel and aluminum, offers high rigidity, is among the most corrosion resistant materials available, is an excellent conductor of electricity and demonstrates superior fatigue properties. In addition, carbon fiber's low thermal expansion properties prevent significant expansion, shrinkage, or warping when exposed to large or repeated temperatures changes.



## Cases

Components designed for portable and/or mobile use are offered with a protective case in which system components can be secured during travel.



## Glass Color

In combination with housing color selections, we offer several color choices for dome and window glass components. Our standard material finishes include traditional clear, tinted, and reflective, with the option for customized colors upon request.



## Helmet

Our wearable modules are compatible with universal helmet side rails for easy integration and transferability.



## Housing Color

To offer more flexibility in housing colors, we offer our aluminum housed products in three colors: white, silver or standard black. Additional color options can be accommodated by our team upon request.



## Mixed Media

In some instances one size does not fit all for housing materials. In response to unique product attributes we offer select products with mixed media housing - our hybrid solution for optimized external protection. Our mixed media housing incorporates both aluminum and carbon fiber, maximizing the benefits of both materials.



## MOLLE

Wearable components in both our PSS and KSS have clip and pouch attachments that are directly compatible with Modular Lightweight Load-carrying Equipment (MOLLE) systems for simple and seamless integration.



## Pouch

A soft, fitted pouch is available for PSS and VSS modules for added protection between uses and during transport.



## Utility Belt

PSS components have clip and pouch attachments that are directly compatible with most standard utility belts.

## Certifications



### CE

In compliance with European Union regulations, all m\_PAC products have received a Declaration of Conformity for compliance with CE standard requirements.



### FCC

In compliance with United States regulations, all m\_PAC products have received a Declaration of Conformity for compliance with FCC standard requirements.



### IK Rating

In addition to having a dust-tight and immersible IP67 rating, this product also features an IK10 external mechanical impact rating. As defined by the European Standard EN 62262, an IK10 rating indicates that when enclosed in housing, the camera is protected from external impacts of up to 20 Joules.



### IP Rating

Our outdoor products feature housing with a minimum Ingress Protection (IP) rating of 67 that provides protection against solid particles, water, extreme weather conditions, and vandalism.



### ONVIF

As a member of the Open Network Video Interface Forum (ONVIF), m\_PAC stays current in the development of global IP-based physical security standards. All of our products conform to the latest ONVIF standards.



### UL

In order to ensure user safety and optimal product performance we certify our components conform to applicable safety standards and have received certification from Underwriters Laboratories (UL) or an alternate Nationally Recognized Testing Laboratory.



### WiFi Certified

To stay current with the latest communication standards and ensure smooth system operability our WiFi enabled modules are WiFi Certified.



# Product Ordering



We welcome your interest in our products and are happy work with you on pricing requests, orders, or building a quotation for your project. A full risk assessment, optimized security solutions and a site visit may be incorporated into a product quotation request.

For more information, please visit our website or contact us directly as provided below. Our team values your business and the importance of your project. Once you have submitted your request, an expert from our sales team will contact you.

We assure you that your request will be promptly and comprehensively reviewed by our team. We look forward to working with you on your upcoming security and surveillance needs.



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