



# Boundless Security Systems, Inc.


*the communications bandwidth experts*



Energy Saving  
Battery Capable

## Low Power, Ultra Low Bandwidth, 5 Mega-Pixel, Outdoor Covert Cellular Smart uPTZ Camera Model 2 with Stranger Detector™ Comparison Chart

The capabilities of Boundless' small, low power, ultra low bandwidth, custom built, system-in-a-box, *Outdoor Covert Smart uPTZ Camera* are compared to a typical competitor.

Feature	Boundless' <i>Smart uPTZ Camera</i>	Typical Competitor
<p><b>1. Photo</b></p>	 <p>Photo may vary. Shown with optional dark numerals. For size reference, floor tiles are one foot square. Long antenna is for cell service and is required. Short antenna is WiFi for <i>Stranger Detector™</i> and is optional.</p>	<p>Appearance varies. Much larger and more conspicuous than <i>Smart Camera</i>. Typically a large fiberglass box with a large dark window on the front.</p> <p>Usually just an IP camera with a cell modem. No internal recording. Requires distant network video recorder, heavy continuous data, and limits quality of recording to what can be sent live, which varies with network congestion. Also reduces quality of recorded video when live viewing is desired due to overloading of cellular uplink.</p>
<p><b>2. Enclosure</b></p>	<p>Small unit mimics outdoor wireless telecommunications eqpt., a WiFi hotspot. 8"W x 6"H x 3.5"D, about the lateral size of a large outstretched hand. Camera window can be concealed by optional dark numerals, which are placed around, not over, and near the covert window. Other enclosures are available, including ones intended to be placed in an outer shell.</p>	<p>Much larger and typ. has decals that say, "danger high voltage."</p>

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<b>3. Camera Window</b>	Only 1" dia. due to patent-pending, <i>forward-pivot</i> pan-tilt design. Clear, scratch and abrasion-resistant poly-carbonate. Pan and tilt viewing angles approx. +/- 25° due to <i>forward-pivot</i> . No concealment over the window to lose sharpness or brightness.	Typ. at least 4" sq. and dark, to conceal the camera, reducing low light sensitivity.
<b>4. Weight</b>	Approx. 5 pounds.	Much heavier.
<b>5. Power Dissipation</b>	Low to very low. Wide voltage range DC input. Only 2.0W in opt. extra low power models with super power saver mode, when modem and fan are off, where modem is turned on and off on a schedule, but video capture remains active. Power depends on cell carrier, temperature, scene, viewing and options. Standard model is typ. 3-4W with GSM (e.g., AT&T, T-Mobile) or 4-5W with CDMA (e.g., VerizonWireless) when active. About 0.25W asleep (no video).	A standard definition IP camera with 4G cell modem typ. has an AC input and requires about 20W or 25-30W with internal NVR.
<b>6. Power Input</b>	Suitable for battery and solar operation with wide voltage range, 10.5 to 15 VDC input, 12.25V min. to turn unit on (standard model). Has battery-saving, low voltage shut-down. Uses Passive PoE – single EN connector, for power and, in some models, wired LAN.	Typ. AC input, not usable with a battery without a power-wasting, DC/AC converter and ability to handle low voltage shut down and bounce-back from removing a load from a discharged battery.
<b>7. Run Time on External LiFePO4 Lithium Battery (not included)</b>	Depends on camera model. <b>Approx. one day per 1.25 pounds</b> of LiFePO4 battery with extra low power option in super power saver mode; a 12V 60AH LiFePO4 battery weighs about 16 pounds and provides about 14 days' continuous video capture time in ideal conditions.	Poor. Approx. 1/10 <i>Smart Camera</i> .
<b>8. Solar Power Ready</b>	Yes. Only requires a small LiFePO4 solar power system (not included). Handles the range of voltages from charging and discharging a 12V battery. Opt. handles rapid voltage rises during start of charging, and bounce-back from removing a load from a battery due to low voltage.	No. Would require a large solar power system, avoid premature turn on, operate from a range of voltages, low voltage disconnect, and ability to handle bounce-back from removing a load from a discharged battery.

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<b>9. Video Resolution</b>	High definition: <b>Evidentiary Stream</b> is 1920x1080 (default) with high sharpness, and <b>Monitoring Stream</b> is 960x540 (default), both at 5 fps default. Programmable, max 30 fps.	1920x1080. User chooses frame rate and amount of compression depending on performance of cell network at installation location.	
<b>10. Pan and Tilt</b>	True, mechanical, pan and tilt. Motorized, patent-pending <i>forward-pivot</i> for wide movement angle with small window and low power. Lens pivots near front of lens not behind, minimizing window. Remotely controlled. Rugged, 4-point suspension. <b>Tilt movement is above and below horizon enabling camera to be placed high or low.</b>	Two-point suspension, which is not suitable for mobile applications. Tilt movement is only in one direction, requiring camera to look downward. Some use very limited, digital pan, tilt, zoom with megapixel IP camera, reducing resolution.	
<b>11. Lens and Zoom</b>	True motorized optical zoom. Standard lens has 3 mega-pixel resolution with 12 to 33 mm focal length, providing long telephoto operation and enabling the reading of a license plate at 450 feet from the best-quality internally recorded video in daylight. Focal length, focus and digital iris are motorized and remotely controlled.	Motorized zoom lenses typically range between 10X and 36X, and span wide angle to narrow angle. Most outdoor applications use only a small part of the zoom range due to large subject distances and their need for telephoto operation.	
<b>12. Internal Video Recording</b>	Remotely accessible via Internet. Enables higher quality video to be recorded internally than can be sent live. Continuous internal <b>dual-stream recording</b> of <i>Monitoring Stream</i> and <i>Evidentiary Stream</i> . Default configuration of <i>Evidentiary Stream</i> is 1920x1080 @ 5 fps with low compression for high sharpness, typ. 2 to 4 Mbps in daylight. Format is universal, H.264/MP4. Continuous internal recording avoids missing activity when recording is event-triggered, and avoids recording dropouts due to frequent variations in cell network performance.	None. Some have up to 128 GB memory card. Some have internal network video recorder with higher capacity. Some have short duration, event-triggered recording, which misses events.	<b>13. Distance</b>

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<b>14. Distance to Subject</b>	An automotive license plate can be read from recorded Evidentiary video at a subject distance approx. 150 feet (wide angle) to 450 feet (telephoto). Lens can be focused as close as approx. 1 foot.	
<b>15. Remote Access and Control</b>	Full remote access to live video, internally recorded normal and optional timelapse video, <i>Stranger Detector™</i> locating system, and PTZ control via combination of cellular data network, Internet, Boundless' Cloud-based Portal, and web browser. Various viewing devices provide various functionality.	No internal video recording. Requires special app or plugin for browser to view video.
<b>16. Timelapse Video</b>	Optional <u>internal</u> <i>Rapid Review / Integrated Timelapse</i> software creates a timelapse video every hour of the previous hour at 1 frame every 30 seconds (15 seconds in some models), and every day of the previous day at 1 frame every 15 minutes. An hour's or a day's timelapse video can be viewed over the air in 30 seconds. It is integrated with the camera's normal recorded video so one can drill down, viewing timelapse video at very high speed, pausing playback, and viewing normal, sharper recorded video for more details and smoother motion.	None without sending images to an external service provider.

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<b>17. Smartphone WiFi Monitoring</b>	Patent #9,286,776, <i>Stranger Detector™</i> locating system detects <b>patterns of presence of persons whose identities are unknown.</b> Access is via Boundless' Portal, which provides many ways to sort and view the data. Alerts can be sent when presence is detected. Database is organized by time and Smartphone Signature, aka static WiFi MAC address. Wide area searches of Boundless' systems can be performed. Assists investigators in making reports of times of presence of particular mobile devices, and by extension, their owners. Monitoring is completely passive; no bogus WiFi hotspots or cellular access points are used. Range outdoors depends on antenna used, typ. about 150 feet with omni-directional antenna. User can use a high gain, directional WiFi antenna for much longer range. Works best with devices that do not randomize their MAC address when idle.	None.
<b>18. User-specific Configuration</b>	Fully custom pre-configured for plug and play, no setup required, via cellular network. Just apply power and go to URL provided for full operation.	
<b>19. Image Sensor</b>	5 mega-pixels, 1/4" color CMOS, backside illumination, interlaced scan. 1920x1080 pixels are read from the center of the image sensor.	2 mega-pixels
<b>20. Low Light Capability</b>	IR-cut filter is removed in low light, enabling response to near-IR, increasing sensitivity. Frame integration further increases low light performance but blurs moving objects.	Models using outdoor PTZ cameras remove IR-cut filter in low light.
<b>21. Video Format</b>	H.264/MP4, which plays natively in HTML5 and most media players.	H.264/MP4, sometimes H.264 stream or M-JPEG for viewing in a browser.

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<b>22. Live Video</b>	<i>Monitoring Stream</i> (only) is remotely accessible buffered live via Internet and has default configuration of 960x540 @ 5 fps with typ. 256 Kbps in daylight. Approx. 15-second buffering. Also see PTZ Viewing.	Common cause of sporadic live video is excessive data rate and continuously changing speed and latency of cell networks. Would be avoided if video were continuously recorded internally, which minimizes cellular traffic.
<b>23. PTZ Viewing</b>	Low latency PTZ video stream provides approx. 1 to 2 second viewing delay. Intended for short term use while adjusting PTZ,	M-JPEG stream provides approx. 1 to 2 second delay with 3G cell network, less with 4G.
<b>24. Internal Video Recording Duration</b>	Depends on many factors and is not guaranteed, but typ. more than 14 days for default configuration of both <i>Monitoring Stream</i> and <i>Evidentiary Stream</i> with 256 GB in Model 2 of internal solid state video storage. <i>Stranger Detector</i> <sup>TM</sup> data is stored indefinitely in a second solid state storage device. New video files overwrite old ones.	Most models do not have internal recording.
<b>25. High Speed Recorded Viewing</b>	<i>Monitoring Stream</i> can be viewed over the air at accelerated speed, depending on speed of cellular uplink and video content, typ. 6X, a great time-saver. <b>Everyone loves this time-saving feature.</b> Optional <i>Rapid Review / Integrated Timelapse</i> enables reviewing an hour or a day in 30 seconds.	Recorded video cannot be viewed at accelerated speed since only one video stream is recorded.
<b>26. Rapid Access Video File System</b>	Rapid access video file system is provided. Video is stored in endless series of 15-second clips to minimize the amount of video transferred and speed remote access.	Large, long duration video files must be downloaded to get short segments of desired video, wasting time and bandwidth.
<b>27. Bandwidth</b>	Ultra low using continuous internal video recording with better quality than can be sent live, dual H.264/MP4 video streams, and bandwidth-saving, video on demand, not bandwidth-wasting, video streaming to distant recorder. <b>Typ. reduces cellular usage by 250 GB/month.</b>	A H.264 1920x1080 camera with distant network video recorder typically requires 250+ GB/month.

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<b>28. Remote Power Management</b>	Camera can be turned off via Boundless' Portal, and turned on via the Portal and camera's Watchdog Timer. For use with battery-powered cameras, which can be placed in the field and activated when needed.	None.
<b>29. Smart Power Monitoring</b>	Voltage and current are continually measured. Power, accumulated power usage, accumulated current usage and estimated run time remaining are calculated every few seconds and reported via Boundless' Portal. Low-power warning is sent via e-mail.	None.
<b>30. Time-Saving Features</b>	Many: fully custom preconfigured, no training required, full remote access and control from Internet, no need to set up external video recording, true pan-tilt-zoom, dual-stream recording, view recorded <b>monitoring stream</b> at accelerated speed, <i>Stranger Detector™</i> locating and alerting system, high definition recorded <b>evidentiary stream</b> . Optional <i>Rapid Review / Integrated Timelapse</i> enables reviewing an hour or a day in 30 seconds. One-page quick start guide.	None.
<b>31. Demos</b>	Go to BoundlessSecurity.com home page for screen shots of <b>Monitoring Stream</b> and <b>Evidentiary Stream</b> , and then to Demos.	
<b>32. Grade</b>	Public safety. Much more than just a camera, it's an entire system disguised as outdoor wireless telecommunications equipment.	
<b>33. Remote Access Software</b>	Accessible via PC's. MAC's and mobile devices via Boundless' Cloud-based Portal. Uses HTML5 without any browser plugins on PC's and Android. Requires VLC Media Player plugin to view live video on iOS. Chrome is the recommended browser on a PC.	Requires special app or browser plugin.

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<b>34. Viewing on Mobile Devices</b>	Uses a browser without plugins on PC's and Androids. Video uses H.264 / MP4, the most widely used video format on the Internet, which plays natively in HTML5. Viewing live video on iOS requires a free media Player, VLC Media Player. <i>Stranger Detector™</i> locating system is text-based and readily viewable. More viewing functions are available on PC's than handheld devices.	
<b>35. User Interface</b>	Graphical User Interface is provided by Boundless' Portal. Simple, comprehensive and self-explanatory. No training required. Also reports online status of unit.	
<b>36. Cellular Data Network</b>	Most models include a 3G cell modem. Models without a cell modem are available and require a wired Internet connection. Customer provides cell service. Customer must activate modem for final system checkout by Boundless. Modem is specific to a cell carrier. Many cellular networks have a firewall between them and the Internet, blocking access from the Internet to mobile servers. However, the <i>Smart Camera</i> tunnels through cellular firewalls to Boundless' Portal, working where others do not, providing full remote access and control. The <i>Smart Camera</i> can use any cellular network using a modem <u>for the particular carrier.</u>	Requires fixed public IP address, limiting choice of networks and presenting Cyber security hazard for Denial-of-Service attacks.
<b>37. Antennas</b>	N-type connectors are used for cell antenna, and WiFi antenna used for <i>Stranger Detector™</i> locating system.	
<b>38. Wireless</b>	Full remote access and control via Internet, Boundless' Cloud-based Portal and cell network are standard. Units can also be used with customer's own wireless network via LAN port, which is primary over cellular, if any.	Requires cell network with static public IP address, excluding many networks.



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<b>39. Wired Network Access</b>	Depends on model. A weatherproof Ethernet jack is provided, if only for power. Some models, when booting, check for a wired Internet connection, and if present, use it instead of cellular. Camera tunnels through routers and firewalls to reach Boundless' Portal, from which users access the unit. No configuration of network equipment is required when a DHCP server is present.	Hard coded fixed LAN IP address, not accessible from Internet.
<b>40. IP-based</b>	Yes but not ONVIF-compliant. Live and recorded video, PTZ and <i>Stranger Detector™</i> are accessed via http via Boundless' Portal.	Yes but requires use of cell network with static public IP address, excluding many cell networks.
<b>41. Uninterruptible Power Supply (UPS)</b>	Internal, battery-free, shutdown UPS bridges up to 3-second power losses and protects file system from power loss. No risk of hydrogen buildup since there are no rechargeable batteries in UPS. Enables camera to be totally sealed, keeping out dust and moisture. Charges whenever power is applied.	None.
<b>42. Dust and Moisture Resistance</b>	Excellent. Unit is fully sealed due to use of a battery-free UPS, which does not require venting, and a weatherproof Ethernet connector.	Many models with internal storage are not fully sealed.
<b>43. Mounting</b>	Dual: camera tripod (some models), or pole 1.5+” dia. using band clamps	Utility pole.
<b>44. Antenna Mounting</b>	Two N-type connectors, one for cellular and one for <i>Stranger Detector™</i> WiFi receiver, for use with attached or cabled antennas.	Cell antenna only.
<b>45. External Triggers</b>	<i>Stranger Detector™</i> Smartphone WiFi monitoring system can detect presence of specified MAC addresses, or receive messages via WiFi from customer-supplied detectors, and send alerts.	None.
<b>46. Watchdog Timer</b>	Provides remote power management for Sleep mode. Restarts system after brief power loss (3+ sec) long enough to shut system down, but too short to power-cycle the system and restart it.	None.

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<b>47. Cyber Security</b>	Able to use dynamic IP addresses and firewalled cellular networks to thwart Denial of Service DoS attacks. Each unit has a unique, revocable, cyber security key that is required to access it. Internally recorded information is protected from theft of unit. No customer data is stored on Boundless' Portal.	None.
<b>48. Remote Configuration</b>	Boundless' Portal and VPN provide remote configuration by Boundless, software updates and diagnostics.	User must maintain.
<b>49. Software Updates</b>	Boundless provides software updates to cameras with active Portal service.	None.
<b>50. Status Reports</b>	Exception reports and hourly status reports are e-mailed to Boundless' account set up for each camera. E-mail travels over Boundless' VPN and does not require user setup.	None.
<b>51. E-mail Sending</b>	Sent via VPN and Boundless' Portal, no carrier-specific setup required.	None.
<b>52. Operating Temperature</b>	0° to 125°F, free air circulation is required. Optional heater.	
<b>53. Thermal Management</b>	Temperature-controlled fan. Opt. heater. White enclosure minimizes solar heating.	
<b>54. Vandal Resistance</b>	Yes, but not vandal- or bullet-proof.	
<b>55. Manufacture</b>	USA. Some foreign components.	
<b>56. Instant Service</b>	Phone, e-mail and over-the-air	
<b>57. Warranty</b>	Yes.	

**Note:** Specifications are subject to change without notice.

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