# Integrating Arecont Vision Cameras Quick Start Guide

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- This document provides a basic understanding of how to properly integrate Arecont Vision cameras.  Before reviewing this document, please download the User's Manual from Arecont Vision's Camera API webpage.  The User's Manual is referenced throughout this document.

- Arecont Vision's goal is to make integrating our products as easy as possible.  There are three paths to integrate the cameras:

  - Fully dynamic driver   (see next page)

  - Backward compatibility   (see next page)

  - Camera specific drivers:  This path requires custom integration for every new camera AV releases.  This is the least popular path to integration.

<u>Fully Dynamic Driver:</u>

- A Fully Dynamic driver pings the camera to identify what properties it has and builds a driver based on the responses.
- When AV releases a new resolution product, a dynamic driver identify the new resolution with no development needed.
- Many of the cameras' features can be identified through the "Features" request that will respond with yes/no for 16 different features.  See the API manual for more details.
- For the features that are not covered by the "Features" command, sending other HTTP requests will provide the needed information.  More details about this can be found in the API manual.

<u>Backward Compatibility Feature:</u>

- The Backward Compatibility Feature uses the Get?Model request to allow the VMS to identify the core model/resolution of the camera.  Then the VMS would apply the appropriate request stream to the camera.
- AV continues to use the same Get?Model responses that were used when we introduced H.264 to the megapixel market in 2008.  The Get?Model response is tied to the resolution of the camera.  For example:
  - The original 3MP h.264 model number was AV3105DN.  The Get?Model response is the numerical value, "3105".
  - All 3MP cameras released since then, and in the future, will respond with Get?Model = 3105.  This allows the software to know to apply the same API to the new camera as it does for all other 3MP cameras.
  - To get the actual model number of the new camera to display in the GUI, simply use the Get?Model=ReleaseName request.
- A matrix of Get?Model responses versus product families is provided later in this document.
- NOTE:  When AV introduces new resolution cameras, it will require additional integration work.

# Model Numbers

# Innovation: Most Complete Product Line

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Multi-Sensor

**Surround**Video® Omni
**AVxx7x**

180º WDR    180º    360º WDR    360º

**Surround**Video®
**AVxx6x, AVxx8x**

Flush    Surface

**Micro**Dome®
**AVx45x, AVx55x**

Flush    Surface    Wall Mount

**Mega**Ball®
**AVxx4x**

Motorized    Motorized IR

**Mega**Dome®
**AVx15x, AVx25x,
AVx35x**

Telephoto    Wide Angle

**Mega**View®
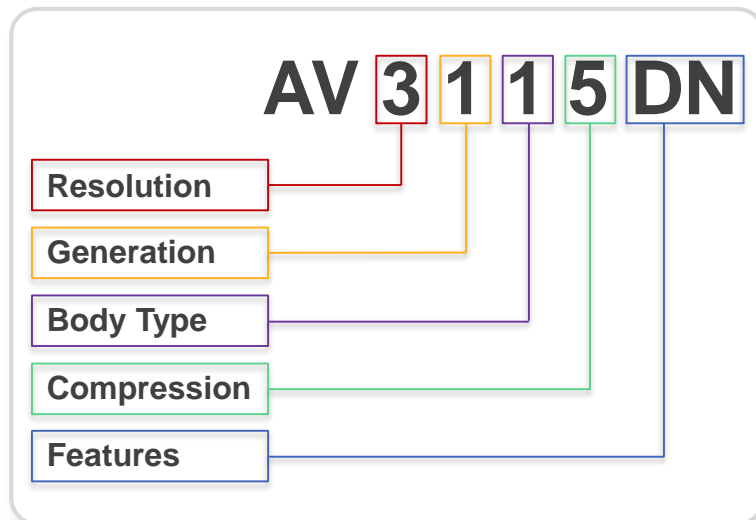**AVxx2x**

Single Sensor    Dual Sensor

**Mega**Video® Compact
**Single Sensor: AVxx1x
Dual Sensor: AVxx3x**

D4S    D4SO    D4F

**Mega**Video® Compact D4
**D4x-AVxx1x**

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# Model Numbers: Single/Dual Sensor Cameras

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## AV 3 1 1 5 DN

- Resolution
- Generation
- Body Type
- Compression
- Features



AVxx**1**x



AVxx**2**x



AVxx**3**x



AVxx**4**x



AVxx**5**x*

### Resolutions:

- 1 = 1.2MP/1.3MP
- 2 = 2MP
- 3 = 3MP
- 5 = 5MP
- 10 = 10MP

### Generation:

- Generation of the Specific Body Type

### Body Type:

- 1 = **Mega**Video® Compact
- 2 = **Mega**View®
- 3 = **Mega**Video® Compact Dual Sensor
- 4 = **Mega**Ball®
- 5 = **Mega**Dome®/**Micro**Dome®

### Compression / WDR:

- 0 = MJPEG Only
- 5 = H.264/MJPEG
- 6 = 5 + WDR

### Features that Require Integration:

- AM = **A**uto Iris + DN + **M**otorized
- PM = **P**-Iris + DN + **M**otorized
- T = **T**elephoto Lens
- -A = **A**udio
- -S = **S**DHC Card
- "1" Resolution + "-S" = **S**TELLAR™

### Features that *Do Not* Require Integration:

- CO = Color
- AI = **A**uto **I**ris + Color (MegaVideo®)
- DN = **D**ay/**N**ight
- IR = **I**nfra **R**ed Illumination
- -B = **B**ell Mount (MegaBall)
- -D = **D**ome Mount
- -F = **F**lush Mount (MicroDome®)
- -H = **H**eater (some models have "HK")
- -LG = **L**ight **G**ray Dome (MegaBall® Domes)
- -NL = **N**ow **L**ens
- -S = **S**urface Mount (MicroDome®)
- -W = **W**all Mount
- v1 = Minor hardware change
- ## = Number values indicate focal length of lens

* MicroDome® and MegaDome® are both impact-resistant domes, so they share a body type

**Note:** Features after the "-" may be combined (example: "-A" + "-H" = "-AH")

# Model Numbers: **Mega**Ball® and **Mega**Video® Compact D4

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## AV5145DN - 3310 - W

- Camera
- Lens
- Mount

## D4S - AV2115DN - 3312

- Mount
- Camera
- Lens



AVxx4x-3310-D

AVxx4x-01-D-LG

AVxx4xPM-W *(Discontinued)*

D4F

D4S *(Discontinued)*

D4SO
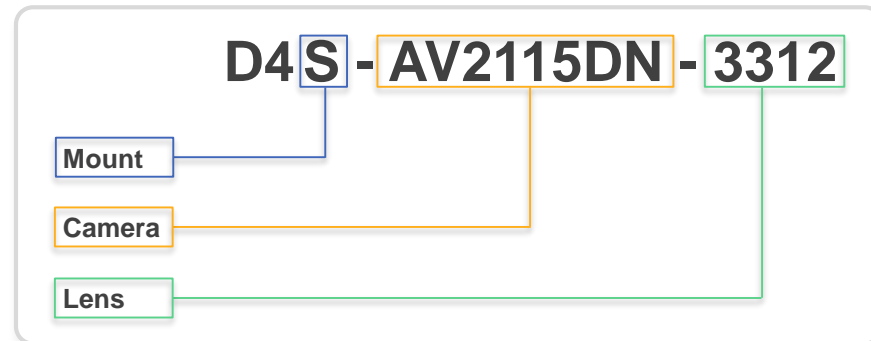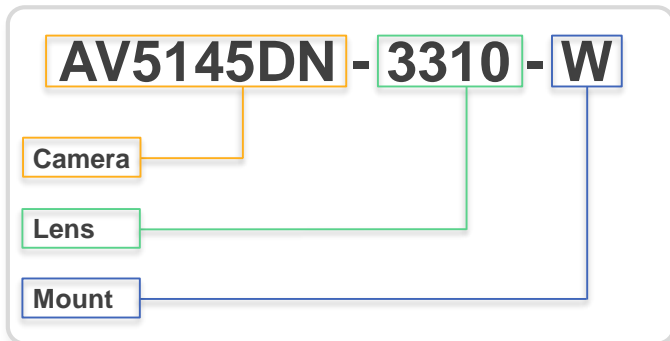
**Camera:**
- AVx14x  (Gen 1)
- AVx24x  (G2)

**Lens:**
- -01 = ImmerVision Enables®
   Panomorph Lens
- -3310 = 3.3-10mm (Gen1)
- G2 versions do not have numbers

**Mounts & Features:**
- -B = **B**ell Mount
- -D = **D**ome Mount
- -W = **W**all Mount  ♦
- -LG = **L**ight **G**ray Housing

**Mount + In/Outdoor:**
- F = **F**lush Indoor
- S = **S**urface Indoor ♦
- SO = **S**urface **O**utdoor

**Camera Option:**
- AV1215
- AV2215
- AV3215
- AV5215

**Lens:**
- 3312 = MPL33-12

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♦ Discontinued

# Model Numbers: **Surround**Video® Quad Sensor Cameras

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**Resolution:**

- 5 = 5MP (4x 1.2MP Sensors)
- 8 = 8MP (4x 2MP Sensors)
- 12 = 12MP (4x 3MP Sensors)
- 20 = 20MP (4x 5MP Sensors)
- 40 = 40MP (4x 10MP Sensors)

**Generation:**

- Generation of the Specific Body Type

**Body Type:**

- 7 = OMNI / Multi-Directional
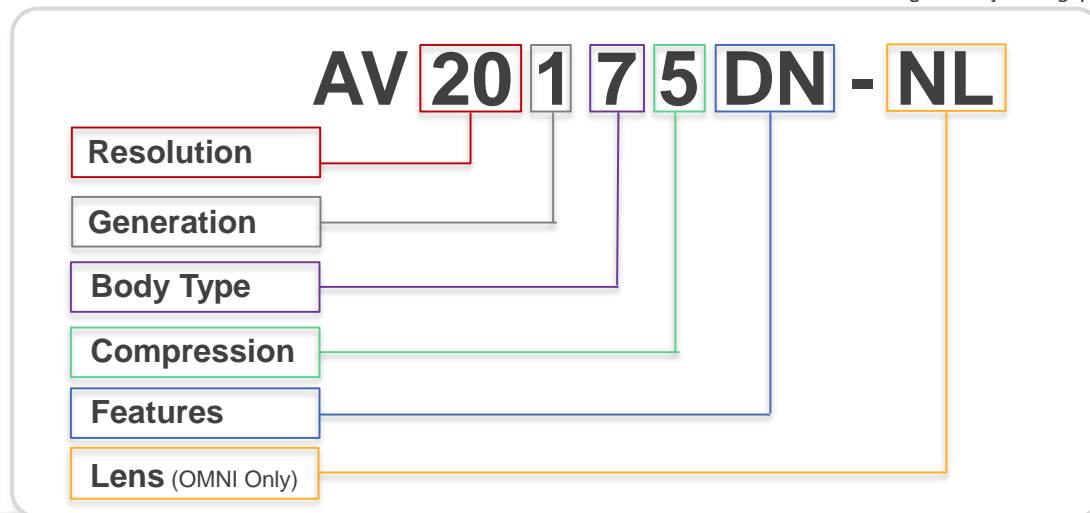- 8 = 180° Panoramic
- 6 = 360° Panoramic

**Compression / WDR:**

- 5 = H.264/MJPEG
- 6 = 5 + WDR

**Features:**

- CO = **C**olor **O**nly
- DN = **D**ay/**N**ight
- -HB = **H**eater + **B**lower

**Lens: (OMNI Only)**

- -08 = 8mm Lenses
- -28 = 2.8mm Lenses
- -NL = **N**o **L**ens

## AV **20** **1** **7** **5** **DN** - **NL**

- Resolution
- Generation
- Body Type
- Compression
- Features
- Lens (OMNI Only)

AVx185DN
AVx58xPM

AVx365DN

AVx186DN
AVx58xDN

AVx366DN
AVx56xDN

AVx17xDN
AVx27xPM

# Requesting Video

NOTE:

Review the API Manual for details on each feature in the request string.

Full RTSP string:

rtsp://cam_ip/h264.sdp?res=half/full&x0=X0&y0=Y0&x1=X1&y1=Y1&qp=[4..51]&[doublescan=0/1]&bitrate=[upto64Kbps]&ratelimit=[upto64Kbps]&fps=fps&sei=on&iframe=1/0&ssn=[1..65535]

- Add this for SD card support:        &sd=playback/rewind/recording
- Add this for audio support:          mic=on/off

Minimal RTSP string that will work with any AV single sensor camera:

rtsp://cam_ip/h264.sdp?res=full&doublescan=0&fps=fps&ssn=[1..65535]

# RTSP Request String: Dual Sensor Cameras

NOTE:

Review the API Manual for details on each feature in the request string.

Full RTSP string:

rtsp://cam_ip/h264.sdp?res=half/full&x0=X0&y0=Y0&x1=X1&y1=Y1&qp=[4..51]&[doublescan=0/1]&bitrate=[upto64Kbps]&ratelimit=[upto64Kbps]&fps=fps&sei=on&iframe=1/0&ssn=[1..65535]

- Add this to control channel streaming (see API manual):          channel=color/scaled/mono

Minimal RTSP string that will work with any AV dual sensor camera:

rtsp://cam_ip/h264.sdp?res=full&doublescan=0&fps=fps&ssn=[1..65535]

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NOTE:

Review the API Manual for details on each feature in the request string.

Full RTSP string:  (4 separate streams are required, see below example and API manual)

rtsp://cam_ip/h264.sdp#?res=half/full&x0=X0&y0=Y0&x1=X1&y1=Y1&qp=[4..51]&[doublescan=0/1]&bitrate=[upto64Kbps]&ratelimit=[upto64Kbps]&fps=fps&sei=on&iframe=1/0&ssn=[1..65535]

Minimal RTSP string that will work with any AV 4 sensor camera:

rtsp:// cam_ip /h264.sdp1?res=full&doublescan=0&ssn=465      {channel 1}

rtsp:// cam_ip /h264.sdp2?res=full&doublescan=0&ssn=466      {channel 2}

rtsp:// cam_ip /h264.sdp3?res=full&doublescan=0&ssn=467      {channel 3}

rtsp:// cam_ip /h264.sdp4?res=full&doublescan=0&ssn=468      {channel 4}

NOTE:

Review the API Manual for details on each features in the request string.

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# RTSP Request String: Supporting Information

- Below are the resolution values for the X0, X1, Y0, Y1 parameters

| Maximum Sensor Resolution **Single Sensor** Cameras | x0= | y0= | x1= | y1= |
|---|---|---|---|---|
| 1.2MP 1280x960 | 0 | 0 | 1280 | 960 |
| 1.3MP 1280x1024 | 0 | 0 | 1280 | 1024 |
| 2MP 4:3 A:R 1600x1200 | 0 | 0 | 1600 | 1200 |
| 2MP 1080p 1920x1080 | 0 | 0 | 1920 | 1080 |
| 3MP 2048x1536 | 0 | 0 | 2048 | 1536 |
| 5MP 2592x1944 | 0 | 0 | 2592 | 1944 |
| 10MP 3648x2752 | 0 | 0 | 3648 | 2752 |

| Maximum Sensor Resolution  (per sensor) **4 Sensor Cameras**, SurroundVideo & OMNI | x0= | y0= | x1= | y1= |
|---|---|---|---|---|
| 5MP  (4x 1.2MP) 5120x960 total | 0 | 0 | 1280 | 960 |
| 8MP  (4x 2MP) 6400x1200 total | 0 | 0 | 1600 | 1200 |
| 12MP  (4x 3MP) 8192x1536 total | 0 | 0 | 2048 | 1536 |
| 20MP  (4x 5MP) 10240x1944 total | 0 | 0 | 2560 | 1920 |
| 40MP  (4x 10MP) 14592x2752 | 0 | 0 | 3648 | 2752 |

# Backward Compatibility: Single Sensor Cameras

| | Max Resolution | GetModel? Response | MegaVideo® | MegaView® | MegaDome® | MicroDome® | MegaBall® | SurroundVideo® & OMNI |
|---|---|---|---|---|---|---|---|---|
| **Single Sensor Cameras** | 1.2MP 1280x960 | 1105 | AV1215 | AV1225 | AV1255 | AV1555 | | |
| | 1.3MP 1280x1024 | 1305 | AV1305 AV1115 | AV1125 | AV1355 | AV1455 | AV1145 | |
| | 2MP 4:3 A:R 1600x1200 | 2105 | AV2105 | | AV2155 | | | |
| | 2MP 1080p 1920x1080 | 2805 | AV2115 AV2116 AV2215 AV2216 | AV2125 AV2225 AV2226 | AV2255 AV2256 | AV2455 AV2456 AV2555 AV2556 | AV2145 AV2146 AV2245 AV2246 | |
| | 3MP 2048x1536 | 3105 | AV3105 AV3115 AV3116 AV3215 AV3216 | AV3125 AV3225 AV3226 | AV3155 AV3255 AV3256 | AV3455 AV3456 AV3555 AV3556 | AV3145 AV3146 AV3245 AV3246 | |
| | 5MP 2592x1944 | 5105 | AV5105 AV5115 AV5215 | AV5125 AV5225 | AV5155 AV5255 | AV5455 AV5555 | AV5145 AV5245 | |
| | 10MP 3648x2752 | 10005 | AV10005 AV10115 AV10215 | AV10225 | AV10255 | | | |

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# Backward Compatibility: Dual Sensor Cameras

| 2 Sensor Cameras | Max Resolution | GetModel? Response | MegaVideo® | MegaView® | MegaDome® | MicroDome® | MegaBall® | SurroundVideo® & OMNI |
|---|---|---|---|---|---|---|---|---|
| | Dual Sensor 3MP/1.3MP | AV3135 | AV3135 | | | | | |
| | Dual Sensor 3MP/1.2MP | AV3236 | AV3236 | | | | | |

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| | Max Resolution | GetModel? Response | MegaVideo® | MegaView® | MegaDome® | MicroDome® | MegaBall® | SurroundVideo® & OMNI |
|---|---|---|---|---|---|---|---|---|
| **4 Sensor Cameras** | 5MP 5120x960 | 5585 | | | | | | AV5585 |
| | 8MP 6400x1200 | 8185 | | | | | | AV8185 |
| | 8MP 6400x1200 | 8365 | | | | | | AV8365 |
| | 12MP 8192x1536 | 12366 | | | | | | AV12176 AV12366 |
| | 12MP 8192x1536 | 12186 | | | | | | AV12186 AV12585 AV12586 AV12275 AV12276 |
| | 20MP 10368X1944 | 20365 | | | | | | AV20175 AV20365 |
| | 20MP 10368X1944 | 20185 | | | | | | AV20185 AV20585 AV20275 |
| | 40MP 14592x2752 | 40185 | | | | | | AV40185 |

# Supported Protocols

- Arecont Vision supports several protocols for integration:
  - RTP / RTSP
    - RTP over TCP
    - RTP over UDP
  - HTTP
    - HTTP 1.0 Push & Pull
    - HTTP 1.1 Push & Pull
  - ONVIF

# RTP Integration

- RTP (Real Time Protocol), or more commonly known as RTSP (Real Time Streaming Protocol), is the most popular method of integrating Arecont Vision's H.264 cameras

- RTP over TCP
    - This is the most popular integration method by our partners. Combining this with HTTP commands to change the settings, this method provides a simple and proven approach to integrating Arecont Vision cameras.
    - Positive: Great for use on busy and enterprise networks
    - Limitation: Multicasting is not supported
    - Compression: H.264

- RTP over UDP
    - This is similar to RTP over TCP but enhanced with the ability to multicast. No confirmation packets are sent back to the client meaning on busy networks frames could be lost.
    - Positive: Multicasting
    - Limitation: Not recommended on slow or busy networks
    - Compression: H.264

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- HTTP (Hypertext Transfer Protocol) is used to request and change settings on the cameras. Video can also be streamed with HTTP. Please see the API manual from more information.
    - HTTP1.0 Pull / HTTP1.0 Push
    - HTTP1.1 Pull / HTTP1.1 Push

- Arecont Vision cameras listed as "ONVIF conformant" on the datasheets are ONVIF Profile S Conformant. For more information on ONVIF, visit http://www.onvif.org/.

- Arecont Vision cameras listed as "PSIA conformant" on the datasheets are PSIA Conformant. For more information on PSIA, visit http://www.psialliance.org/.

# Key Contact Information

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# Key Contact Information

- Integration webpage

  - http://www.arecontvision.com/supports/INTEGRATING-ARECONT-VISION-CAMERAS

  - Integration documents can be downloaded here

- Online integration support portal

  - http://support.arecontvision.com

  - Direct access to engineering staff

  - Open an account that all development engineers can share

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