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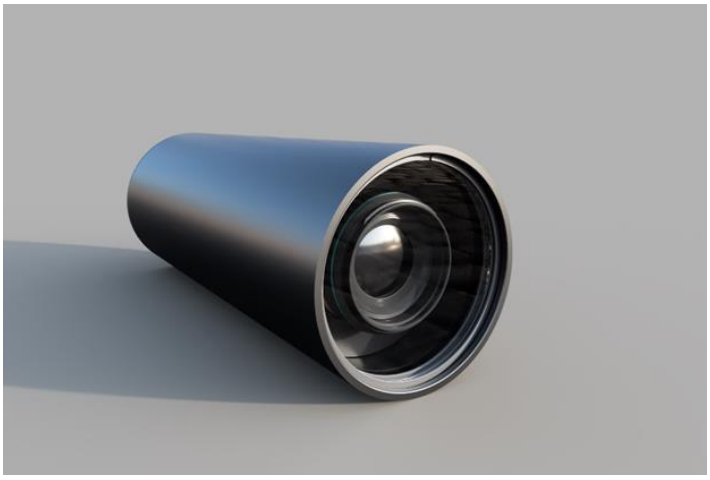
# SS511 ~ Low Light Color Video Camera Specifications



The SS511 low-light, high definition, full color day/night video camera is a cutting-edge imaging solution specifically designed for operation in the most demanding environments, offering exceptional performance in the lowest light conditions in place of the limited capabilities of thermal cameras. The SS511 camera features a remarkably low-light sensor with 0.0005 lux minimum subject illumination. Single-Shot auto focus, manual or automatic Iris, and digital zoom are available through the remote TCP/IP connection.

The SS511 contains a high sensitivity full HD 35mm full frame equivalent CMOS sensor. This brings great noise reduction compared to previous generation technology when shooting in low light. The camera can shoot color in dim environments with little video noise. All camera options are adjustable via the Remote-Control IP address. The video stream can be viewed through the IP interface using the ONVIF standard in H.264/H.265 and MJPG. Supported streaming formats are MPEG-2 TS (UDP), RTP, RTSP, RTSPS, RTMP, RTMPS, SRT, and TSRTP.

**Features:**

- Full color, high definition
- Temperature range of -4°F to 122°F (-20°C to 50°C)
- Integrates seamlessly with a range of platforms, including autonomous underwater vehicles (AUVs), unmanned surface vessels (USVs), and manned systems, providing flexible deployment options for both above- and below-water operations.
- Digital zoom can be used to achieve 2x, 3x and 4x zoom
- Long-range lens options increase capabilities in low light
- Low Latency IP video streaming using the ONVIF standard in H.264/H.265 and MJP
- Output resolution, both streams 1920 x 1080 pixels, 30FPS
- 2 separate IP interfaces run parallel through one ethernet connection
- Up to 100m Depth Rating
- Auto Focus, Auto White Balance, Auto Iris/Exposure, Auto Gain

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## IMAGE SPECIFICATIONS:

| | |
|---|---|
| **Image Sensor** | 35mm full-frame equivalent CMOS sensor Rolling Shutter |
| **Pixel Size** | 19um x 19um |
| **Color Filter Array** | Bayer RGB |
| **System Frequency** | 59.94 Hz, 50.00 Hz |
| **Max Frame Rate** | 30 fps |
| **Effective Pixels** | ~2.07M |
| **Total Pixels** | 3.02M |
| **Maximum Gain (ISO)** | 75 dB (4,560,000) |
| **Exposure** | AE Shift, standard light metering |
| **White Balance** | Automatic white balance, preset A, preset B, Daylight, and Incandescent lighting |
| **Iris** | Manual, Automatic |
| **Focus** | One-Shot Auto Focus, Far, Near |
| **Gamma** | Standard presets, Wide Dynamic Range, Logarithmic, Linear |
| **Image Processing** | DIGIC DV4 |
| **Optical Filter** | Low Pass |
| **Digital Zoom** | 2x, 3x, 4x [center focused] |
| **Full Well Charge** | 61,000 e @ gain x 1 |
| **Dark Random Noise** | 2.2 e rms @ gain x 16, room temperature |

## IMAGE CONTROL

| | |
|---|---|
| Focus Control | Motor-Driven Control |
| Resolution/Frame Rate | 1920 x 1080 resolution, Max 30fps |
| Shutter Speed | 9.51 to 1/24000 |

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## ENVIRONMENTAL:

| | | |
|---|---|---|
| Minimum subject illumination | 0.0005 lx or lower*<br>(ISO 4,000,000 equivalent) | |
| | * Under the following conditions: color, no light accumulations, f/1.2, shutter speed 1/30, 50 IRE, max gain 75db | |
| Angle of view | In Air | In Water |
| | 35mm Lens: 63° | 35mm Lens: 46° |
| | 50mm Lens: 46° | 50mm Lens: 34° |
| Window | Sapphire or acrylic optically corrected | |
| Housing material | Aluminum, stainless steel, titanium | |
| Housing Dimensions | 35mm: 16” (excluding connector), 5.56” diameter | |
| | 50mm: 14” (excluding connector), 5.56” diameter | |
| Weight | 35mm: 16.5 lbs (7.50 kg) in air | |
| | 50mm: 16 lbs (7.25 kg) in air | |

## FEATURES:

| | |
|---|---|
| Communication | Ethernet |
| Iris | Automatic, manual |
| Focus | Auto Focus available via remote command |

## IMAGE CONTROL

| | |
|---|---|
| Connector 1 | MCBH-8 |
| Connector 2 | DBH13M |

## ELECTRICAL REQUIREMENTS

| | |
|---|---|
| Power Requirements | 12-24 VDC, 20W MAX |

## DESIGN:

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NOTES:
1. PERFORMANCE SPECIFICATIONS:
   a. 35MM FULL FRAME CMOS SENSOR W ROLLING SHUTTER
   b. ILLUMINATION REQS: < 0.0005 LUX
   c. FIXED 50MM LENS
   d. FOV WITH 50MM LENS: 46° IN AIR
   e. OPTICALLY CLEAR SAPPHIRE LENS

2. ENVIRONMENTAL REQUIREMENTS:
   a. OPERATING TEMPERATURE: -4°F TO 122°F (-20°C TO 50°C)
   b. OPERATING INTERNAL HUMIDITY: 20% TO 90% RH NON-CONDENSING
   c. STORAGE TEMPERATURE: -20°C TO +85°C
   d. STORAGE INTERNAL HUMIDITY: 10% TO 95% RH
   e. VIBRATION TOLERANCE: 10~500Hz, 2G 10min./1CYCLE, 60min. EACH ALONG X,Y,Z AXES.
   f. OPERABLE TO A DEPTH OF 100M

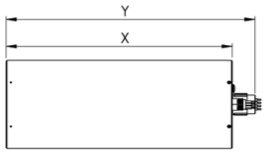
3. ELECTRICAL REQUIREMENTS:
   a. INPUT VOLTAGE: 12-24VDC
   b. 20W MAX

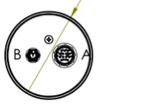
4. PRODUCT PART NUMBER IS A DERIVATION OF THE DOCUJMENT NUMBER, AS FOLLOWS:
   a. 904004302-XX, WHERE "XX" IDENTIFIES AS A PARTICULAR CONFIGURATION OF THE PRODUCT. SEE PART NUMBER/ CONFIGURATION TABLE FOR AVAILABLE CONFIGURATIONS.

| REVISIONS | | | |
|---|---|---|---|
| REV. | DESCRIPTION | DATE | DRAWN |
| A | INITIAL RELEASE | 12/20/2023 | JW |
| B | REMOVED SUNSHIELD | 2/28/2024 | JW |

DETAIL B
SCALE 1 : 1

DETAIL A
SCALE 1 : 1




| LENGTH TABULATION TABLE | | | |
|---|---|---|---|
| PART# | LENS SIZE | "X" LENGTH W/O BULKHEAD CONNS | "Y" LENGTH W/ BULKHEAD CONNS |
| 904004304 | 35mm | 16 | 17.8 |
| 904004303 | 50mm | 14 | 15.8 |

| PART NUMBER / CONFIGURATION TABLE | | | |
|---|---|---|---|
| DASH# | DESCRIPTION | MATERIAL | WEIGHT (LBS.) |
| 904004302-01 | ASSEMBLY, SS510 LOW LIGHT, AL HARD BLACK ANODIZE | ALUMINUM | 11 |
| 904004302-02 | ASSEMBLY, SS510 LOW LIGHT, TITANIUM | TITANIUM | 16 |
| 904004302-03 | ASSEMBLY, SS510 LOW LIGHT, 316SS ELECTRO-POLISH | STAINLESS STEEL | 26 |

MATERIAL: N/A
FINISH:

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UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES AND MAYBE REFERENCED IN [MILLIMETERS].
TOLERANCES:
ANGULAR: MACH± 1° BEND±1°
X.XX ± .01 [.25]
X.XXX ± .005 [.125]
U.O.S.
DIMENSIONING AND TOLERANCING PER ASME Y14.5M & 84.3 APPLY

| | NAME | DATE |
|---|---|---|
| DRAWN | J. WAITS | 12/21/23 |
| CHECKED | L. POOL | 12/21/23 |
| ENG APPR. | A. ALBARRAN | 12/21/23 |

THIRD ANGLE PROJECTION

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TITLE: ASSEMBLY, OI, SS511 LOW-LIGHT CAMERA, FIXED LENS

| SIZE | DWG. NO. | REV |
|---|---|---|
| B | 9040043XX-XX OI | B |

SCALE: 1:5 | WEIGHT: | SHEET 1 OF 1