The Deep Space Systems WRA50X cameras are derived from a terrestrial machine vision camera.

**Size, Weight and Power:**
- **Size:** 3.2 x 2.7 x 3.1 in. (W x D x H)
- **Weight:** ≤ 0.67 lbs.
- **5 VDC, Power:** 8.8 W Peak Heater Mode, 5 W Avg Camera Streaming (No LED), 3.5 W Avg Camera Idle (No LED), 1 W LED

**Performance:**
- **5.3 Megapixel (2592 x 2048) CMOS Image Sensor**
- **75 fps at Full Resolution with 8 bit pixel format**
- **In Flight Commandable Controls**
- **USB 3.0 Interface**

The capabilities added by Deep Space Systems’ installation of a Heater-Illumination-Power (HIP) board include:
- Built In Closed Loop Heater Control (enabled upon command)
- Over-temperature shutdown protection
- 60 Lumens LED Illuminator with beam focusing lens
- Power supply diodes for over-voltage and electro-static discharge (ESD) protection

**Environmental Qualification**
- Qualified operational baseplate temperature range in vacuum: -69°F to 187°F (-56°C to 86.1°C)
- Radiation Tolerant (proton and heavy ion radiation tested)
- Random Vibration: 17.26 G\(_{\text{rms}}\) Qual for 735 seconds
- Shock: 2937 Gs, Qual Peak Gs
- Aluminum-to-aluminum and connector body to aluminum bonding < 2.5 milliohms

**Lenses**
- Lenses are ruggedized and space qualified (other custom optics are available upon request)
  - AZURE Photonics AZURE-06520ML5M (6.5mm, F2.0 - 22, FOV = 88.7 x 72.9°)

**Other Specifications**
- **Pixel Size:** 4.8 x 4.8 microns
- **Optical Format:** 1 in
- **Peak Quantum Efficiency (QE):** 53% at 550 nm
- **Fixed-Frame Noise (FPN) < 1% of signal**
- **Photo Response Non-Uniformity (PRNU) < 2% of signal**
- **Dynamic Range:** 53 dB
- **Bit depth:** 8- or 10-bit
- **Responsivity at 550 nm:**
  - 24 LSB10 /nJ/cm², 4.6 V/lux.s
- **Pipelined and Triggered Global Shutter**
- **Flexible Region of Interest**
- **Linux API available**
- **High Dynamic Range (HDR)**
- **Auto & Manual Exposure**
- **Auto & Manual White Balance**
- **Monochrome or Color**
- **Manual control of:**
  - Color Temperature
  - Gain
  - Gamma
  - Saturation
  - Binning and Decimation
  - Image Flip and Rotate