WorldView-3

WorldView-3 is the industry’s first multi-payload, super-spectral, high-resolution commercial satellite. Operating at an altitude of 617 km, WorldView-3 provides 31 cm panchromatic resolution, 1.24 m multispectral resolution, 3.7 m short-wave infrared resolution, and 30 m CAVIS resolution. WorldView-3 has an average revisit time of <1 day and is capable of collecting up to 680,000 sq km per day, further enhancing the DigitalGlobe collection capacity for more rapid and reliable collection.

Features & Benefits

- Very high-resolution
- Panchromatic 31 cm
- Visible & near-infrared 1.24 m
- Short-wave infrared 3.7 m
- CAVIS 30 m
- The most spectral diversity commercially available:
  - Panchromatic band
  - 4 standard VNIR colors: blue, green, red, near-IR1
  - 4 added VNIR colors: coastal, yellow, red edge, and near-IR2
  - 8 SWIR bands: Penetrates haze, fog, smog, dust, and smoke
  - 12 CAVIS bands: Maps clouds, ice and snow, corrects for aerosol and water vapor
- Industry-leading geolocation accuracy
- High capacity in various collection modes
- Bi-directional scanning
- Rapid retargeting using Control Moment Gyros (two times faster than any competitor)
- Direct Access tasking from and image transmission to customer sites
- Daily revisits
- Simultaneous, high resolution, super-spectral imagery
- Large area mono and stereoscopic collection eliminates temporal variations
- Precision geolocation possible without ground control points
- Global capacity of 680,000 km sq per day
- New and enhanced applications, including:
  - Mapping
  - Land Classifications
  - Disaster Preparedness/Response
  - Feature Extraction/Change Detection
  - Soil/Vegetative Analysis
  - Geology: Oil & Gas, Mining
  - Environmental Monitoring
  - Bathymetry/Coastal Applications
- Superior haze penetration
**Design and specifications**

### Orbit
- Altitude: 617 km
- Type: Sun synchronous, 10:30 am descending node
- Period: 97 min.

### Life
- Spec Mission Life: 7.25 years
- Estimated service life: 10 to 12 years

### Spacecraft size, mass and power
- Size: 5.7 m (18.7 ft) tall x 2.5 m (8 ft) across
- 7.1 m (23 ft) across deployed solar arrays
- Mass: 2800 kg (6200 lbs)
- Power: 3.1 kW solar array, 100 Ahr battery

### Sensor bands
- Panchromatic: 450–800 nm
- 8 Multispectral:
  - Coastal: 397–454 nm
  - Blue: 445–517 nm
  - Green: 507–586 nm
  - Yellow: 580–629 nm
- 8 SWIR Bands:
  - SWIR-1: 1184–1235 nm
  - SWIR-2: 1546–1598 nm
  - SWIR-3: 1636–1686 nm
  - SWIR-4: 1702–1759 nm
  - SWIR-5: 2137–2191 nm
  - SWIR-6: 2174–2232 nm
  - SWIR-7: 2228–2292 nm
  - SWIR-8: 2285–2373 nm
- 12 CAVIS Bands:
  - Desert Clouds: 405–420 nm
  - Aerosol-1: 459–509 nm
  - Aerosol-2: 635–685 nm
  - Water-1: 845–885 nm
  - Water-2: 897–927 nm
  - Water-3: 930–965 nm

### Sensor resolution (or GSD, Ground Sample Distance; off-nadir is geometric mean)
- Panchromatic nadir: 0.31 m
- SWIR nadir: 3.70 m
- 20° off-nadir: 0.34 m
- 20° off-nadir: 4.10 m
- Multispectral nadir: 1.24 m
- CAVIS nadir: 30.00 m
- Multispectral 20° off-nadir: 1.38 m

### Dynamic range
- 11-bits per pixel Pan and MS; 14-bits per pixel SWIR

### Swath width
- At nadir: 13.1 km

### Attitude determination and control
- Type: 3-axis Stabilized
- Actuators: Control Moment Gyros (CMGs)
- Sensors: Star trackers, precision IRU, GPS

### Pointing accuracy and knowledge
- Accuracy: <500 m at image start/stop
- Knowledge: Supports geolocation accuracy below

### Retargeting agility
- Time to Slew 200 km: 12 sec

### Onboard storage
- 2199 Gb solid state with EDAC

### Communications
- Image & Ancillary Data: 800 and 1200 Mbps X-band
- Housekeeping: 4, 16, 32, or 64 kbps real time, 524 kbps stored, X-band
- Command: 2 or 64 kbps S-band

### Max contiguous area collected in a single pass (30° off-nadir angle)
- Mono: 66.5 km x 112 km (5 strips)
- Stereo: 26.6 km x 112 km (2 pairs)

### Revisit frequency (at 40° N Latitude)
- 1 m GSD: <1.0 day
- 4.5 days at 20° off-nadir or less

### Geolocation accuracy (CE90)
- Predicted <3.5 m CE90 without ground control

### Capacity
- 680,000 sq km per day