



DSSTM SPECIFICATIONS

TRIMBLE DIGITAL SENSING SYSTEM (DSS) SPECIFICATIONS MODEL 439 DUALCAM RGB/IR

The dual camera version of the Trimble Digital Sensor System (DSSTM) 439 RapidOrthoTM medium format aerial mapping system produces 4-band ortho-imagery in a single pass. With all the features and benefits of the DSS 439 RapidOrtho Solution, the dual camera version adds a second DSS camera with a monochromatic (Charge-Coupled Device) CCD array specifically configured to capture Near Infra Red (NIR) imagery. The DSS 439 RapidOrtho DualCam system is available as a stand-alone solution, or it can be integrated with LIDAR. Applications for the system include: shoreline mapping, forestry management, biomass mapping, and other airborne mapping applications.

CAMERA

Image Size	Dual 39 MP nadir: 5412 x 7216 each image
Pixel Size:	0.0068 mm
Filter Array:	Bayer Array Color (VIS) and Monochromatic Near-Infrared (NIR)
Applanix AeroLens TM by Carl Zeiss:	Standard: 60 mm, F/3.5, FOV (deg): crosstrack 44, alongtrack 34, diagonal 54 (VIS and IR) Optional: 40 mm, F/4, FOV (deg): crosstrack 62, alongtrack 49, diagonal 74 (VIS and IR)
Exposure Control:	Aperture priority (calibrated) Manual or Shutter priority
Light Metering:	Center weighted average
Shutter:	Electronically controlled focal plane
Shutter Speed:	125 to 4000 (slower speeds not recommended)
ISO	Up to 800
Exposure Compensation:	+ - 2 EV in 1/3 EV steps
Max Capture Rate:	< 3 seconds, sustained, including display of QA/QC thumbnail and status, logging of image and POS data
Sensor Head:	Proprietary CCD mount, Ruggedized exoskeleton, Designed to hold geometric accuracy over RTCA/DO-160D shock /vibe spec to within 1 pixel*
Calibration:	Terrestrial and Airborne calibration with full report

* When mounted on stabilized mounts

COMPUTERSYSTEM

Data Logger

- Embedded OS
- Removable pressurized and temperature controlled ruggedized disk drive, 7000 image capacity per drive (4 supplied, 500 GByte each)

Navigation, Direct Georeferencing and Flight Management

- Embedded Applanix POStTrack, Integrated GPS/Inertial Direct Georeferencing and Flight Management System
- XTRACK Mission Planning software
- Remote Pilot display with touch screen
- Operator or pilot only operation mode
- Panasonic Toughbook for optional operator interface (operator client can be run on any Windows computer)
- Real-time image, camera and POS status display

Tested and meets RTCA/DO-106D specs for shock and vibe

PERFORMANCE

Direct Georeferencing, RMS

	C/A GPS	DGPS*	Post-Processed
Position (m)	4.0 - 6.0	0.3 - 2.0	0.05 - 0.3
Velocity (m/s)	0.1	0.05	0.005
Roll and Pitch (deg)	0.015	0.010	0.008
True Heading (deg)	0.08 - 0.016	0.050	0.015

*When using optional Satellite Based Augmentation Service (SBAS).

TruSpectrum™ Radiometry

(nm)	4 (IR)	1 (RED)	2	3 (BLUE)
Bands		600-700	(GREEN)	400-500
VIS Images	850-1100		500-600	

NIR Images

Minimum Ground Sample Distance (GSD)*

Effective (Developed Images) 0.033 m (1.3 X Theoretical GSD)

*60 mm lens, Speed < 60 kts, Height < 220 m AGL, 30% endlap, 1/f > 2000

*40 mm lens: Speed < 60 kts, Height < 150 m AGL, 30% endlap, 1/f > 2000

Product Accuracy, RMS, High Precision Post-processing*

Orthophoto:		max of 1.2 X GSD** (max) or POS AV position accuracy
Stereo	H:	max of 1.2 X GSD** (max) or POS AV position accuracy
	V:	max of 3 X GSD** (max) or POS AV position accuracy

*Post-processed POS AV, QA/QC procedure followed, self-extracted or high-accuracy DEM (LIDAR), datum errors removed.

**Effective GSD = (1.2 - 1.3) X Theoretical GSD for VIS imagery

PHYSICAL DATA

Component	Size	Weight	Power	Temperature
Camera sensor head w/o stab. mount	L = 180mm, W = 180mm, H = 160mm (each)	~14 kg (60mm lens)		0 deg C to + 40 deg C
Computer system	L = 340mm, W = 370mm, H = 450mm	40 kg	20 VDC 336 W (max) w/o stab. mount	-20 deg C to +55 deg C
Humidity	5 to 90% RH non-condensing			
Altitude	up to 10,000 ft, with supplied operator laptop (higher altitude option available) up to 20,000 ft, without supplied laptop			

PROCESSING TOOLS

DSS TOOLS

- MissionView: Data management software; downloads images from removable drives
- ImageView: Image development software; lens fall-off correction < 3%, image sharpening tools, formats conversion: TIFF, JPEG, IMG, quantization conversion: 8 bit or 12 bit, color balance via calibration inputs

POSPAC MMS

- GNSS Aided INS Processing Tools: Differential GNSS processing, Inertial/GNSS post-processing
- Photogrammetry Tools: Direct Georeferencing software; produces direct exterior orientation for each photo, IMU/camera boresight calibration, camera calibration, Quality Control

DTMBox and OrthoBox

- Softcopy Software by InPHO; automatic DTM extraction and OrthoMosaic generation

USER SUPPLIED EQUIPMENT

PC FOR POST-PROCESSING

PC with Windows OS, Minimum of 300 GB disk space (512 MB of RAM), Tower rack with external SATA or USB port

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