

Z/I DMC[®] II₂₅₀ Camera System



Large-format digital camera includes five camera heads

Z/I is a world leader in providing photogrammetric solutions that support all your earth imaging requirements, from data acquisition to exploitation and data distribution. Our Digital Mapping Camera (DMC[®]) is the industry's most innovative turnkey large-format digital camera system. We developed the medium-format Z/I RMK D[™] so more organizations can take advantage of the most advanced imaging technology available. Now, Z/I offers the Z/I DMC II₂₅₀, the first large-format digital aerial camera that uses a single monolithic camera (figure 1) head to produce extreme wide-ground coverage (figure 2).

One single pan cone – one large CCD

The Z/I DMC II₂₅₀ includes one large 17.2k x 14.6k charge-coupled device (CCD), exclusively customized by DALSA for Z/I Imaging[®]'s digital camera technology. The Z/I DMC II₂₅₀ camera design is an evolution of the proven DMC camera technology and includes a new customized lens design by Carl Zeiss, Germany, to produce an unmatched level of high-image quality. The single monolithic PAN camera head achieves the ultimate design goal for digital aerial camera development with one single lens for large ground coverage, the basic optics design principle for all film cameras for many decades. By eliminating potential sources of errors for geometric accuracy and radiometric quality, this new approach delivers images that exceed your requirements for all mapping and remote sensing tasks. Fundamental design characteristics include a nadir-looking view and a single-lens projection center. The Z/I DMC II₂₅₀ image data post-processing does not require CCD stitching or image mosaicking.

Advanced design

The Z/I DMC II₂₅₀ is based on the DMC II camera family design. It includes five nadir-looking camera heads – four multispectral cameras for red, green, blue, (RGB) and near-infrared (NIR), and a fifth high-resolution PAN camera head. Each multispectral camera has a 42 MPixel CCD (6846 x 6096 pixel) with 7.2 micron pixel size and a dedicated color filter. The focal length for the multispectral cameras is 45 millimeters (mm). Each camera head uses a unique piezo-driven customized airborne shutter that performs automatic self-calibration. This also ensures maximum synchronous behavior during the exposure cycle for all five camera heads. The PAN camera includes a 250 MPixel CCD with 5.6 micron pixel size and 112 mm focal length. The PAN camera has an infrared cut-off filter to remove the spectral wave length beyond 710 nm.

Increased performance

Our Z/I DMC II₂₅₀ is a high-performance digital camera system. It has a high frame rate to maintain fast-air speed for high-forward overlap and high resolution (at 80 percent forward overlap and 10 centimeter [cm] Ground Sample Distance [GSD], maximum air speed is 237 knots). The PAN/color ratio of 1:3.2 provides high-radiometric quality images for RGB and Color-InfraRed (CIR). The long focal length and small pixel size delivers high-resolution image data 10 cm (3.9 inch) GSD at 6562 feet (2000 meters) above ground level. A strong base-to-height ratio of 0.28 provides excellent stereo measurement accuracy. The nadir-looking monolithic PAN camera offers unmatched radiometric and geometric quality.

Image data post-processing

Image data post-processing for Z/I DMC II₂₅₀ is based on the DMC post-processing software. Development has implemented the Z/I DMC II₂₅₀ sensor model. The user interface is unchanged, which eliminates any training effort for existing DMC customers. Final image format after post-processing is 16768 x 14016 pixels.

The power to see



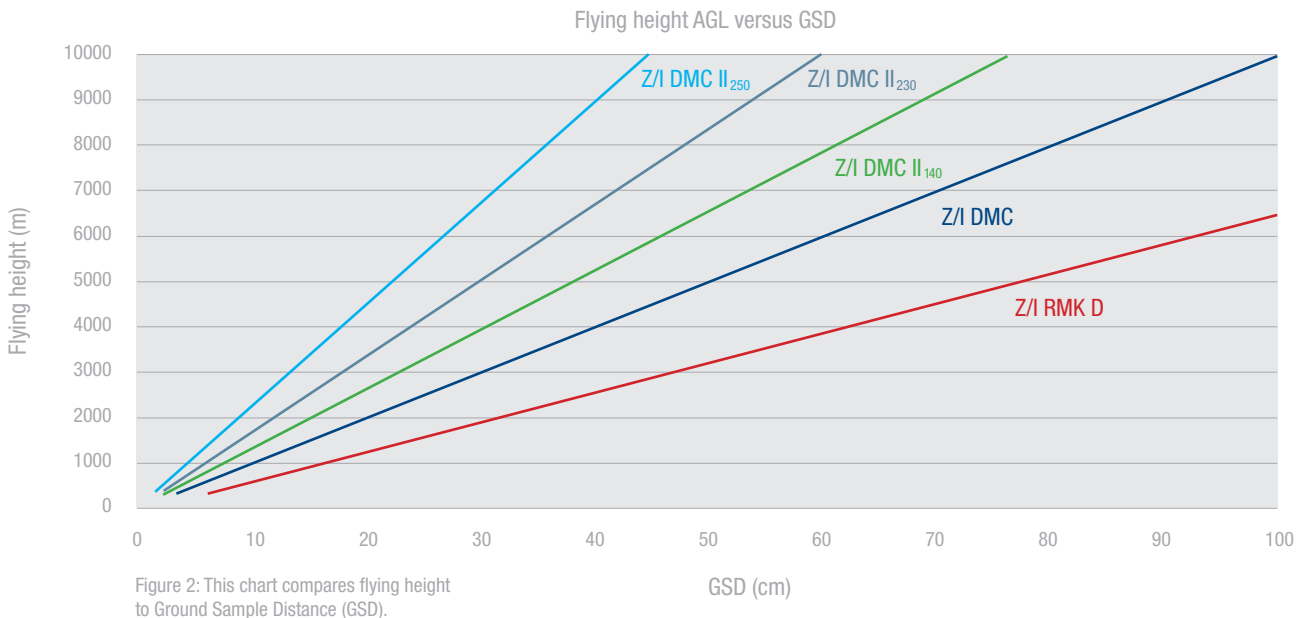
Modular and compatible

Z/I DMC II₂₅₀ is compatible with all existing peripheral devices used for Z/I RMK TOP, DMC, and Z/I RMK D, which include Z/I Mission Planning software, Z/I Inflight sensor management system, Solid State Disks (SSD) storage cartridges, readout station and Z/I Mount. In addition, a new adapter plate for the new generation of Z/I Imaging cameras allows you to use a wide range of different Inertial measurement Unit (IMU) sensors. You can easily upgrade your Z/I RMK D into a Z/I DMC II₂₅₀ by installing the PAN camera head.



Figure 1: The Z/I DMC II camera design is an evolution of the proven DMC camera technology.

Z/I DMC II ₂₅₀ Technical Specifications		
Feature	Value	Comment
Pixel across track (1)	16768	
Pixel along track (1)	14016	
FoV across track	45.5 °	
FoV along track	38.6 °	
Focal length	112 mm	
GSD@500m	2.5 cm	
B/H	0.28	
Pixel size	5.6 micron	
Number of camera heads	5	
PAN: Color resolution	1:3,2	
Frame rate	2.3 sec	PAN 16 readouts, MS 2 readouts
Color channels	PAN, R, G, B, NIR	
A/D resolution per pixel	14 bit	
FMC	yes	via TDI
CCD dynamic range	>67 dB	
Onboard storage	2 TByte	2200 images
Weight	66 kg	Including storage
Power consumption	350 W	Including storage
Altitude nonpressurized	8000 m	
Operating temperature	-20°C - 40°C	Electronic inside the aircraft: 0°C - 40°C
	(1) Number of pixels of the processed image	



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