

## Z/I Mount



Image Courtesy of Aero Asahi Corp., Japan

The quality of an aerial photo depends largely on conditions that affect the stability of the camera during flight time. Z/I Mount from Intergraph® empowers you to take highly accurate images even in challenging flight conditions. The gyrostabilized digital mount compensates for the roll, pitch, and yaw of the aircraft. You can use it with Intergraph's Digital Mapping Camera (DMC®), the RMK TOP and several other sensors, including small-format digital cameras or light detection and ranging (LIDAR) systems. Additionally, Z/I Mount's digital control ensures precise operation, whether running in standalone mode or under the control of an inertial measurement unit (IMU).

Micro Electro Mechanical System (MEMS) sensor-based gyro technology, active control components, and passive vibration damping stabilizes the camera. This stabilization, combined with improved vertical alignment of the camera, provides you with more scope for action during the photo flight and ensures better image quality.

In addition to the complete elimination of image motion, Z/I Mount supports improved image quality through full utilization of the DMC lenses. When used with the RMK TOP it also allows you to use high-resolution, low-speed black-and-white or color film.

### IMPROVED EFFICIENCY

- Ability to conduct photo flights in unfavorable light conditions
- Ability to conduct missions in rough flight conditions
- Greater overlap accuracy and higher precision in pinpoint photography
- Increased range of flying altitude and photo scale
- Increased usage of camera and aircraft

### PERFORMANCE BENEFITS

- Suitable for DMC and RMK TOP
- Accurate vertical camera alignment
- Integration with the automatic control process of DMC and Z/I Inflight

- Ability to record pitch, roll, and drift movements of the aircraft
- State-of-the-art digital MEMS gyro and control technology
- Field serviceable, passive damping system can be exchanged at customer's site by a service technician

### TECHNICAL DESCRIPTION

The Z/I Mount suspension mount connects the camera body with the aircraft floor. Its primary function is to ensure vibration-free vertical photography. The pitch, roll, and drift movements of the aircraft are measured by three digital MEM sensor-based gyros, and correction data is continuously transferred to the  $\omega$ ,  $\phi$ , and  $\kappa$  control loops. The solid state digital precision gyros are mounted on the base plate. The drive assemblies move the  $\omega$  and  $\phi$  frames and the  $\kappa$  ring to compensate for rotary movements of the aircraft and keep the camera body stabilized. Leveling sensors for  $\omega$  and  $\phi$  have been integrated into the control loops for the vertical alignment of the camera axis. The signal of the  $\kappa$  gyro is used in the control loop for drift compensation of the camera mount.

Z/I Mount is as compact as other suspension mounts that do not provide stabilization. When Z/I Mount is used with the DMC, the pitch, roll, and drift angles can be recorded in the Z/I Inflight database. The data can be used for continuous checking and for computation of the actual eccentricity between the camera and the aircraft antenna for GPS-supported aerotriangulation.

### ADDITIONAL FEATURES

Z/I Mount has new features when compared to its predecessor and other suspension mounts:

- **IMU Control** – When operating Z/I Mount with the Z/I Inflight Flight Control System (FCS), you can automatically control its drift angle with an optional IMU to compensate for aircraft drift without using special interface boxes.

- **Pre-orientation** – Using a wedge-shaped based plate, Z/I Mount has a 1.5° pre-orientation. In combination with the -7 ° phi angle, no mechanical pre-orientation is required.
- **Power Switch** – You can disconnect the new power switch cable from the mount during transportation.
- **Diagnostic** – Z/I Mount has a built-in diagnostic CAN bus and self-calibration during power up. Field firmware updates are possible.
- **Integrated Digital Interface** – Z/I Mount can be controlled via high-speed serial interface (RS232).

## TECHNICAL SPECIFICATIONS

### RANGE OF MOVEMENT

$\omega \pm 5^\circ$

$\phi -7^\circ$  to  $+5^\circ$

$\kappa \pm 30^\circ$

### STABILIZATION RANGE

$\omega \pm 5^\circ$

$\phi -7^\circ$  to  $+5^\circ$

$\kappa \pm 30^\circ$

### ROTATION

Maximum rotation speed  $\omega, \phi: 20^\circ/\text{second}$   $\kappa: 15^\circ/\text{second}$

Maximum acceleration  $\omega, \phi, \kappa: 500^\circ/\text{second}^2$

### GRADE OF STABILIZATION

1:30 ... 1:10 for all axes @ 90kg payload

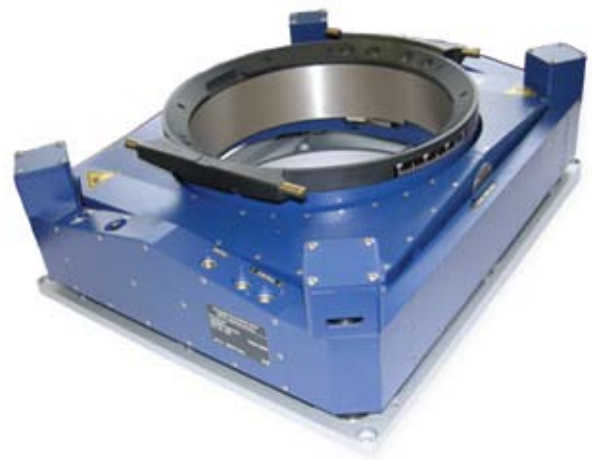
(Stimulus: 0,1 Hz ... 0,5 Hz,  $\pm 3^\circ$ )

### VERTICAL DEVIATION

< 0.5 ° standard deviation

Temperature	
Operating	-20°C to + 40°C

Storage	-20°C to + 70°C
Dimensions	
Length	647 mm
Width	510 mm
Height	220 mm
Weight	
Payload	110 kg max, no need for counter weighting
Electrical	
Input Voltage range	22.5 V to 30.5 DC
Power consumption typical	50 W (full payload)
Power consumption max	140 W (full payload)



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## ABOUT INTERGRAPH

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