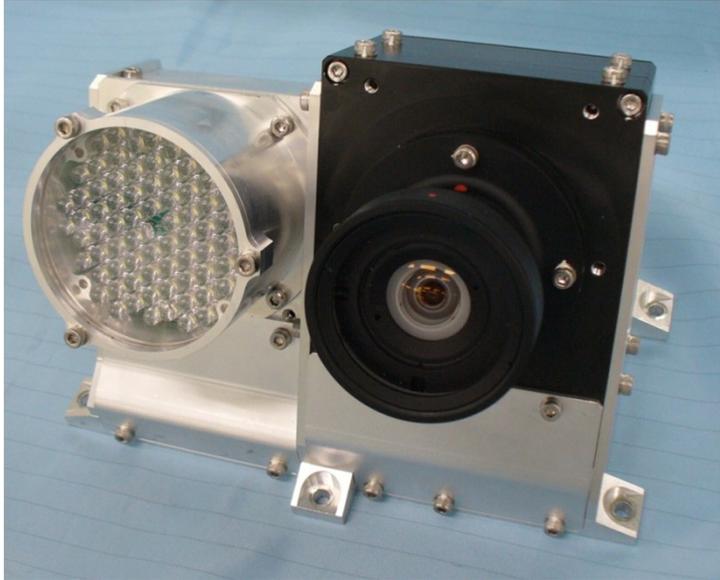


# Monitor Camera for Spacecraft



## Outline

The monitor camera is a unit consisting of a floodlight (left), a camera (right) and a camera controller to take pictures of deployments of satellite-mounted solar battery paddles and antennas.

## Heritage:

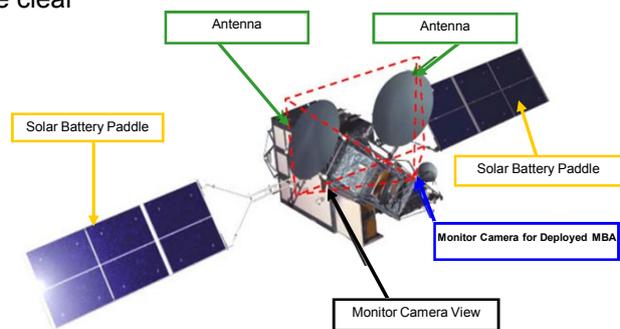
- 3 units for world's fastest communication satellite "KIZUNA" (WINDS)
- 8 units for greenhouse gas observation technology satellite "IBUKI" (GOSAT)
- 3 units for Quasi-Zenith Satellite "MICHIBIKI" (QZSS)
- 6 units for Global Change Observation Mission 1st-Water SHIZUKU" (GCOM-W1)

## Features

- Space environment applications
- Vibration and shock proof against the launch of H-II A
- Filming either in still image and video formats
- JPEG data output
- The floodlight lighting up the object to ensure the clear images even in the shaded area



Image: MBA deployment. The antenna system carries two types of antennas for communicating with Japan (left) and other countries (right) respectively.



Monitor Camera positions to capture views of the deployment of the MBA on the "KIZUNA" (JAXA)

This image shows "KIZUNA" launched in February 2008 with 3 units of Monitor Camera loaded. Each camera is set to respectively monitor how Multi-Beam Antenna (MBA) and the two Solar Battery Paddles (north side and south side) are deployed.

\* This product was developed in support of JAXA (Japan Aerospace Exploration Agency). WINDS project was technically cooperated by NEC Corporation, and MICHIBIKI project was cooperated by Mitsubishi Electric Corporation.  
 \* Note that, with due to the rights of other relevant parties and/or depending on usage, application and/or delivery place, the product may not be sold, commercially distributed, leased or included in a part of product or system which intends to receive benefits through the inclusion of the product.

## Specifications

Optical Performances	Camera Type	Wide Angle	Standard	Zoom
Imaging Element	1/3.3 inches CMOS image sensor			
Number of Effective Pixels	131 million pixels approx.			
Lens Composition	Radiation shielding window + 8 elements in 5 groups	Radiation shielding window + 6 elements in 5 groups	Radiation shielding window + 4 elements in 3 groups	
Focal Length (35mm camera equivalent)	2.86 mm (23 mm)	8.0 mm (63mm)	45.5 mm (360 mm)	
F Value	F 2.0	F 4.0	F 4.1	
FOV	84° x 63°	30° x 24°	5° x 4°	
Object Distance	Fixed focus			

Performances		Configuration	Camera Controller	Camera	Floodlight
Electrical	Interface		1553B / RS422 (synchronous communication)	RS422 (synchronous communication)	Dedicated interface
	Image Data Format		JPEG (parameter programmable)		
	Image Size		SXGA: 1280 X 1024 px. / VGA: 640 X 480 px. (switching)		
	Continuous Shooting Speed		SXGA: 6.6 frames /sec. max. / VGA: 26.6 frames/sec. max.		
	Memory Size		1GB (flash memory)		
	Power Consumption		12.0 W	4.0 W	5.4 W
	Power Supply Voltage		+24 V to +32 V	+5 V	+/-15 V
Mechanical	Mass		3500 g approx.	1100 g approx.	600 g approx.
	Dimension (protrusions included )		D155 X W230 X H130 mm	D122 X W120 X H126 mm	D98 X W97 X H105 mm
	Lowest Natural Frequency		100 Hz or higher		
	Operating Temperature		-15 ° C to +55 ° C		

\* The specifications will be tailored to suit your needs.

## Appearances



Camera Controller



Wide Angle Camera



Floodlight



### Caution

- Specifications and designs are subject to change without notice.
- Specifications and designs are based on the standard model. Please contact us regarding further customization to suit your project's needs.
- This products may be subject to the application of the Foreign Exchange and Foreign Trade Act and other related laws and regulations in Japan. Customer agrees to comply with such regulations and acknowledges that it is their responsibility to obtain any required licenses to export, re-export, or import this products.
- We shall not be liable for any damages arising out of or in connection with the use of specifications herein, including liability for lost profit, business interruption, or any other damages whatsoever.
- The printed colors may appear difficult from the actual product.

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