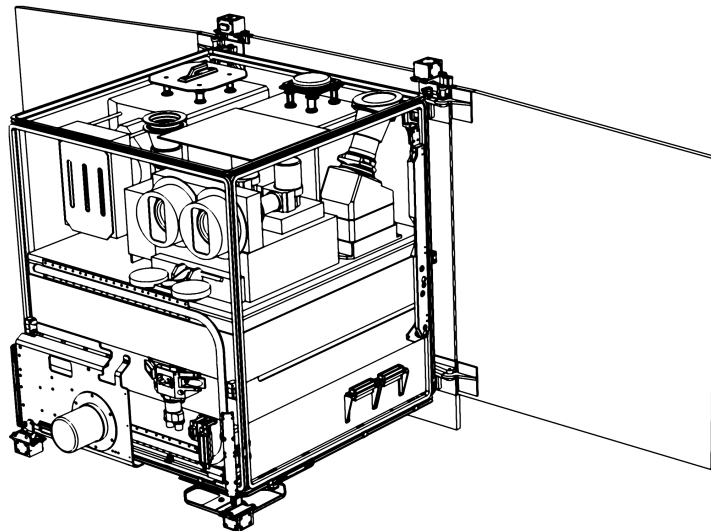


# BIRD

## Small Satellite Mission



Mission objectives:	Testing of small satellite technologies and of a new generation of infrared sensor in space, remote sensing of fires and of the land surface
Mission preparation and realization:	DLR in cooperation with <ul style="list-style-type: none"><li>• Global Fire Monitoring Center</li><li>• GMD German National Research Center for Information</li><li>• Astrium Jena-Optronik GmbH</li><li>• Astro- und Feinwerktechnik Adlershof GmbH</li><li>• TU Berlin</li></ul>
Mission operations:	GSOC and DFD of DLR
Launch:	2001, piggyback on PSLV-C3
Orbit:	572km high, circular, sun-synchronous
Satellite:	3-axis stabilized, 92kg, 60W/ 230 W peak
Payload:	Infra-red sensor system (MWIR, TIR), VNIR-sensor WAOSS-B, Neural network experiment, 2x1Gbit mass memory

### Spacecraft bus:

Attitude control and navigation system	2 star sensors, sun sensors, 3-axis gyroscope system, magnetometer, GPS-receiver, 4 reaction wheels, 3 magnetic spools ; ACS-computer as board computer, on-board navigation system
Board computer	PowerPC core, 8MB SDRAM, 2MB Flash, real-time operation system
Telemetry and telecommand	Main and emergency antennas for S-band (2dBic max.), S-band receiver, S-band transmitter (BPSK, max. 5W RF power), PCM coder
Structure and mechanisms	Ground plate of Aluminium, payload platform of honeycomb, frame, connecting elements, deployment mechanism, eject mechanism
Power system	Power supply: 3 solar panels with Si High- $\eta$ -cells; power storage: 8 NiH <sub>2</sub> -cells, 12 Ah; charge control: direct energy transfer; power distribution: unregulated 20 V bus
Thermal-control system	Heat pipes, heater, temperature sensors, MLI, IR radiator, satellite radiator

### Instruments:

	<b>WAOSS-B</b>	<b>MWIR</b>	<b>TIR</b>
Wavelength	600-670nm 840-900nm	3.4-4.2 $\mu$ m	8.5-9.3 $\mu$ m
Focal length	21.65mm	46.39mm	46.39 mm
Field of view	50°	19°	19°
f-number	2.8	2.0	2.0
Detector	CCD lines	CdHgTe Arrays	CdHgTe Arrays
Detector cooling	passiv, 20°C	Stirling, 80K	Stirling, 80K
Pixel size	7 $\mu$ m $\times$ 7 $\mu$ m	30 $\mu$ m $\times$ 30 $\mu$ m	30 $\mu$ m $\times$ 30 $\mu$ m
Pixel number	2880	2x512 staggered	2x512 staggered
Quantization	11bit	14bit	14bit
Ground pixel size <sup>1</sup>	185m	370m	370m
GSD	185m	185m	185m
Swath width	533km	190km	190km

1	Orbit altitude = 572km
WAOSS-B	Wide Angle Optoelectronic Stereo Scanner
MWIR	Medium Wave Infrared Sensor
TIR	Thermal Infrared Sensor
GSD	Ground Sample Distance

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