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RVS© 3000 Product Family

ready for the next rendezvous

The advanced 3D imaging LIDAR for rendezvous and docking.
Acquisition, tracking and imaging of both cooperative and non-cooperative targets.

Jena-Optronik's RVS (Rendezvous and Docking Sensor) is the most frequently used LIDAR sensor for docking to the International Space Station ISS.

Numerous flight models have been delivered to customers in the United States, Japan and Europe. All flight models being used in orbit delivered a flawless , fully reliable performance.

Based on the RVS success story Jena-Optronik has developed the next generation of Rendezvous and Docking Sensors, RVS 3000 product family.

RVS 3000 product family

ready for the next rendezvous

The advanced 3D imaging LIDAR for rendezvous and docking.
Acquisition, tracking and imaging of both cooperative and non-cooperative targets.

Swiss army knife for space: From approaching ISS to removing space debris – our RVS 3000 product family serves a wide range o from LEO to GEO as well as lunar orbit and landinger applications.

- For rendezvous and docking to cooperative targets, e.g. ISS
- For rendezvous and docking to non-cooperative targets and space robotics applications, like 3D point cloud imaging

The fields of application of the RVS 3000 has been increased signifcantly with the possibility to approach also non-cooperative targets (like satellites). In the frame of the MEV-1 and MEV-2 conducted by US space company Northrop Grumman, the lifetime of the IS-901 and IS-1002 satellites could be extended for several years – thanks to our sensors and the given possibility to perform a docking with these spacecraft. Along such servicing missions for lifetime extension, the RVS3000-3D will be also used to clean up space debris, e.g. in the frame of Astroscale's ELSA-m mission.

But also in the area of space exploration, Jena-Optronik's RVS portfolio is in great demand. In addition, to catching a probe with Mars material in orbit in the frame of the MSR ERO mission (Mars Sample Return – Earth Return Orbiter), astronauts will be guided by a Jena-Optronik sensor on their way to the moon when they approach and dock with the Lunar Gateway (the planned space station in the moon orbit) or the Human Landing System to go down to the moon's surface

The possibilities to use the RVS portfolio are manifold and it is planned to extend the RVS capabilities towards a landing application in order to enable a safe landing of spacecraft on other celestial bodies, like Moon and Mars, in the future.

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RVS 3000 product family performance

	RVS 3000	RVS 3000-X
Application		
Use case	cooperative targets	cooperative and non-cooperative targets, landing application
Scan Parameter		
Field of View	40° x 40° ... 1° x 1°	40° x 40° ... 1° x 1°
Line of Sight 3σ noise	< 0.05°	< 0.05°
Laser		
Wavelenght	1.5 µm (eye safe < 10 mW)	1.5 µm (up to 350 mW) scalable without modification of laser beam characteristics
Operating Range Cooperative Targets		
Range min.	< 1m	< 1m
Range max.	> 2 km	> 6 km
Operating Range Non-cooperative Targets		
Range min.	< 1m	< 1m
Range max.	> 100 m	> 1.5 km
Power Consumption		
Nominal (approximately)	63 W	71 W
Maximun (approximately)	85 W	97 W
Mechanical Interface		
Mass	12.4 kg	12.4 kg ... 15.3 kg depending on radiation shielding
Dimensions	342 mm x 267 mm x 215 mm	350 mm x 275 mm x 220 mm
Electrical Interface		
Power nominal	28 V	28 V
Data Interface	MIL-1553B	MIL-1553B, SpaceWire, others on request
Output Data		
	Relative position data to target (Azimuth, Elevation, Range)	Relative position data to target (6-DOF), 3D point cloud image data, vision modes

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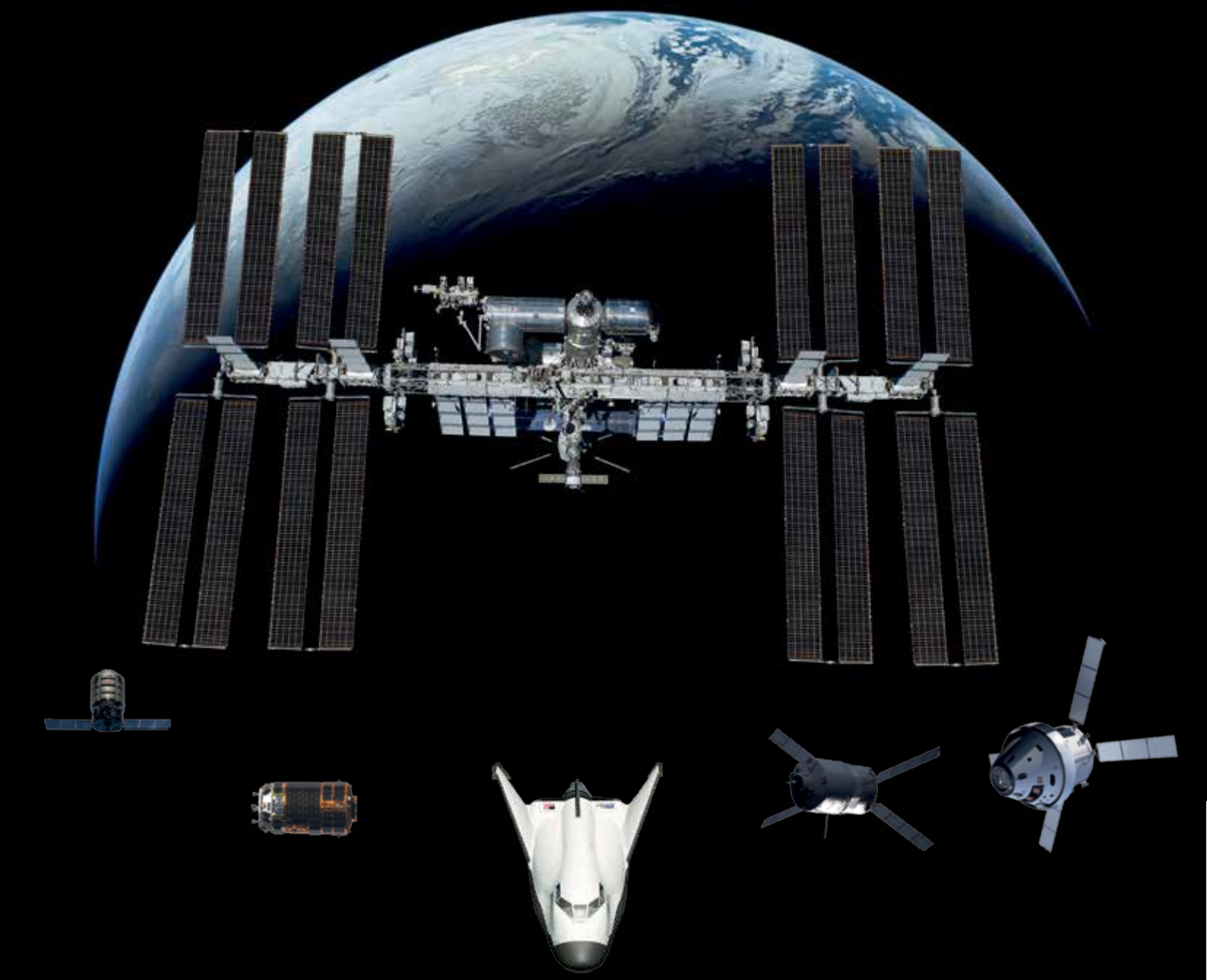

Jena-Optronik presents

rendezvous in space

Starring RVS™ and RVS™ 3000

space for success

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