



# Automated Rendezvous and Docking Sensor

Neptec's TriDAR combines the optical design of a space qualified, near field Laser Camera System (based on triangulation) with a long-range Time-of-Flight (LiDAR) system. TriDAR operates at distances ranging from 5 metres to over 2000 metres without sacrificing speed or precision at either end of the range.

Neptec's 3D Automated Rendezvous and Docking Sensor (AR&D) system is based on two Neptec innovations: the TriDAR 3D sensor and Neptec's 3D Intelligence (3Di) software toolkit. This combination of hardware and software creates a dynamic, powerful and resourceful system which enables efficient and reliable docking without the need for traditional target arrays.

TriDAR combines a short-range, high-precision triangulation optics with a mid to long-range Time-of-Flight LiDAR sensor. This proprietary optical design produces a sensor dynamic range unparalleled among LiDARs. Data quality at 2000 meters matches the data quality at 5 meters, with no low intensity dropouts or high intensity saturation, all while using the same detection settings and laser output power.

Neptec's 3Di software reduces the amount of data collected and processes the data efficiently on the



sensor head, drastically reducing the computational overhead of working in 3D. The result is six degree-of-freedom (6DOF) real-time tracking and pose estimation.

The system has been certified for flight use aboard Orbital Science's Cygnus spacecraft, for unmanned resupply of the International Space Station, under NASA's Commercial Orbital Transportation Services (COTS) and Commercial Resupply Services (CRS) program.



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Top picture was taken by NASA.