

## Development of the Omni-SLR system

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The Omni-SLR project aims to demonstrate the possibilities of a low-cost, compact SLR system, envisaging the future expansion of the SLR network and users. It is also linked with crossover research topics such as mobile communications and time transfer. The key components of the system are (1) a CryLAS laser with 1-ns pulse width, 10 kHz repetition and 6 microJ output, (2) an event timer of Swabian Instruments, (3) a Vixen equatorial mount converted to the Alt-Az system. All components are commercially available, except for the assembly jig. Applying a distributed system approach by assigning a Raspberry Pi for each component/task, it is designed to be flexible and expandable.

During the test at the National Institute of Polar Research (Tachikawa, Tokyo), we successfully laser-ranged several low-orbiting satellites in December 2023. The system was then moved to and is being tested at the Ishioka Geodetic Observing Station (Ibaraki; of the Geospatial Information Authority of Japan) that is the most established geodetic station in Japan with VLBI, GNSS and gravimeters operational. The system should be upgraded to be operational in the daytime and at a low temperature because we plan to test it in Antarctica in 2026-2027.