

Swiss Centre for Electronics and Microtechnology (CSEM)

Switzerland · founded 1984 · csem.ch

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as of 20 August
2026

Swiss Centre for Electronics and Microtechnology (CSEM)

The Swiss Centre for Electronics and Microtechnology (CSEM) is a private, non-profit applied research and innovation centre headquartered in Neuchâtel, Switzerland, with additional sites in Basel, Alpnach, MuttENZ, Zurich, and Geneva. Founded in 1984 through an alliance between Switzerland's leading industrial companies and federal authorities, CSEM bridges the gap between academic research and industrial application across microelectronics, digital systems, photonics, and precision engineering. In the space sector, CSEM develops miniaturized instruments, sensors, and photonic systems for satellite payloads and scientific missions. The center's space heritage includes solar-blind UV detectors for space weather monitoring, miniaturized spectrometers, ultra-precise oscillators and timing systems, and custom ASIC designs for ESA and other space agencies. CSEM's photonics division produces optical components and subsystems that meet space-qualification requirements for radiation environments and thermal extremes. CSEM operates at the intersection of fundamental research and industrial transfer, employing approximately 550 people and collaborating with Swiss universities, European research institutes, and over 400 industrial partners worldwide. The center holds thousands of patents and has generated numerous spin-off companies across its decades of operation. Beyond space, CSEM's divisions cover medtech, energy harvesting, quantum sensing, semiconductor design, and advanced manufacturing — with the space division benefiting from cross-pollination with miniaturization technologies developed for medical and watchmaking applications, sectors where Switzerland maintains a global leadership position.

This profile is generated from the live NewSpace Market catalogue. Specifications are as published by the manufacturer; every product links to a page where a request for quotation reaches the company directly.

SERVICES

Services

Digital Technologies Solutions CSEM provides state-of-the-art solutions in IoT, wearables, edge computing, artificial intelligence, and Industry 4.0 to convert digital concepts into real products.	Precision Engineering Solutions CSEM offers precision engineering services, pioneering innovations in techniques like 3D printing, lasers, sensors, and printed electronics to develop specialized products and optimize manufacturing.
Sustainable Energy Systems Optimization CSEM provides solutions for optimizing approaches to integrating, storing, monitoring, controlling, and maintaining renewables for a more sustainable future.	Technology Development CSEM offers technology development services, leveraging multi-disciplinary expertise and a bespoke approach to innovate and develop individual projects for customers.

Product catalogue



SWISS CENTRE FOR ELECTRONICS AND MICROTECHNOLOGY (CSEM)

High-Precision Space Mechanisms

Flexure-based precision mechanisms for satellites, telescopes and planetary rovers — 30+ years heritage with ESA/NASA, flown on MTG, Metop, XMM and ExoMars.

Precision	Micrometer-level, sub-micron resolution capable
Bearing type	Frictionless flexure structures
Operating environments	Cryogenic and vacuum
FEM analysis	COMSOL Multiphysics
Manufacturing	Conventional and additive (3D printed) with topological optimization
Qualification	ESA-accredited MEMS lab
Flight heritage	Metop, MTG, XMM, ExoMars (CLUPI), RemoveDEBRIS, LISA

flight proven · TRL 9 price on request

[datasheet](#)



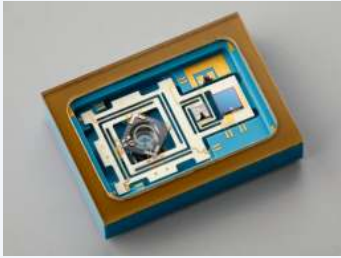
SWISS CENTRE FOR ELECTRONICS AND MICROTECHNOLOGY (CSEM)

LiDAR for Space Navigation and Debris Removal

Miniaturized flash imaging LiDAR for spacecraft navigation, rendezvous, rover landing and in-orbit servicing — flown on RemoveDEBRIS; under development for ClearSpace-1.

Technology	Flash imaging LiDAR, FMCW ranging
Resolution	Sub-millimetre
Applications	Spacecraft landing, rendezvous, rover navigation, debris removal, ISR
Flight heritage	RemoveDEBRIS in-orbit demonstration (H2020)
Ongoing programme	ClearSpace-1 (ESA active debris removal)
Technology partner	ClearSpace (Switzerland)

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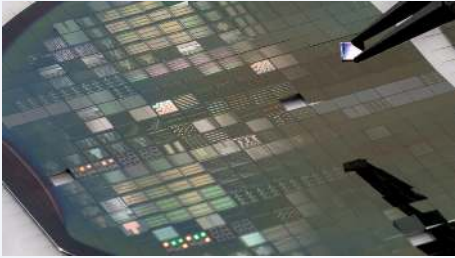
SWISS CENTRE FOR ELECTRONICS AND MICROTECHNOLOGY (CSEM)

Miniature Atomic Clocks and Timing Systems

MEMS-based miniature microwave and compact optical atomic clocks for space systems — ACES mission heritage, Safran and Orolia partnerships.

Atomic reference technology	Patented MEMS rubidium vapour cells
Miniature microwave clock	Low SWaP, MEMS-based rubidium reference
Compact optical clock	All-optical operating principle, rack-compatible
Quantum sensor types	Magnetometers, gyroscopes, radiometers (NV-diamond and MEMS vapour cell)
Heritage	ACES mission (Safran), Orolia Chip Scale Rubidium Oscillator
Materials	Rubidium vapour cells, diamond NV-centers, LNOI, ScAlN, SiC

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SWISS CENTRE FOR ELECTRONICS AND MICROTECHNOLOGY (CSEM)

Ultra-Stable Laser Metrology Systems

Ultra-high-stability laser systems for space interferometry — developed for the LISA gravitational wave detection mission.

Laser types	Ultra-stable continuous-wave, femtosecond sources
Photonic platform	Thin-film lithium niobate (TFLN), MOEMS foundry
Heritage programme	LISA gravitational wave interferometer (ESA/NASA)
Capabilities	High-speed modulation, phase shifting, nonlinear photonics
Applications	Gravitational wave detection, satellite laser ranging, atomic clocks, quantum sensing, opt

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Contact Swiss Centre for Electronics and Microtechnology (CSEM)

Open the company profile on NewSpace Market to see full specifications and datasheets, and to send a request for quotation that reaches the manufacturer directly.

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<https://www.csem.ch>

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