



mFL.12

micro Fluorescence LiDAR

Measures water quality from above the surface, day and night.

mFL.12 is installed above the water for unattended 24/7 monitoring. It measures water quality at user-defined intervals, revealing how conditions change over time. The system can operate autonomously, transmitting data to the cloud for real-time visualization and analysis.

PORTABLE HYPERSPECTRAL
LASER-INDUCED FLUORESCENCE LiDAR



MFL.12 SENSOR RENDER

405 nm

LASER WAVELENGTH

288

SPECTRAL BANDS

1.75 kg

MASS

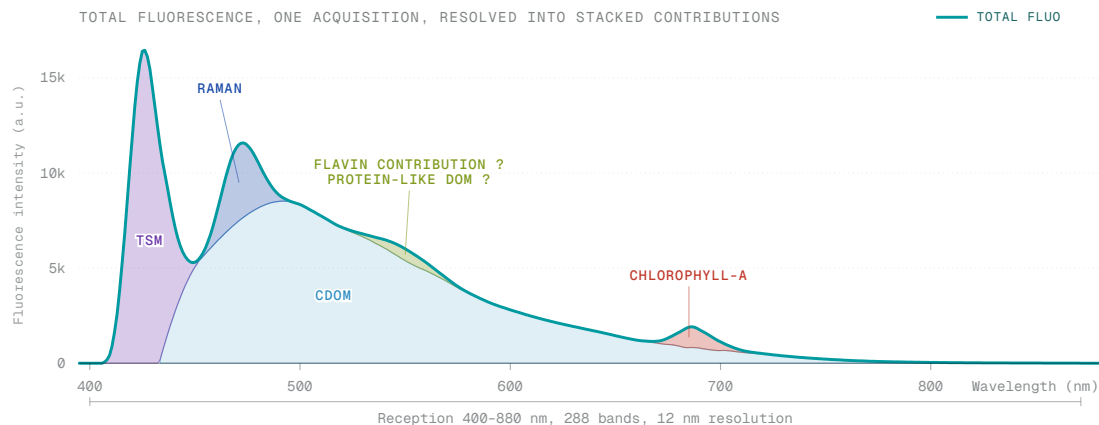
12 W

PEAK POWER

IP68

MARINE-GRADE

HOW IT WORKS



Recorded on Lake Parentis, Bordeaux, August 2026. The 405 nm laser produces fluorescence and scattered light, recorded in 288 bands from 400 to 880 nm. The shaded areas show contributions from suspended matter, CDOM, water Raman scattering, an unassigned band near 550 nm and chlorophyll-a. Spectral features help identify these constituents. Signals are normalized to the water Raman reference to estimate concentrations after calibration. Intensity is shown in arbitrary units.

The sensor alternates measurements with the laser on and off. Subtracting the background light allows it to **measure during the day and at night**, without shading the water. At each scheduled interval, it wakes, records a measurement and returns to standby.

WHAT IT MEASURES

Chlorophyll-a

Total concentration

CDOM

Coloured dissolved organic matter

TSM

Total suspended matter

Oil-in-water

Surface films and in-water emulsions



SPECIFICATION

EXCITATION	405 nm, software-modulated
RECEPTION	400-880 nm hyperspectral
SPECTRAL BANDS	288 px
SPECTRAL RESOLUTION	12 nm
DETECTOR	High-sensitivity CMOS linear image sensor
CAMERA	Integrated context camera
FIELD OF VIEW	1°
DETECTION RATE	Up to 1 Hz, ambient-light dependent
ACQUISITION	Single continuous auto-integration mode
INTEGRATION TIME	270 µs to 1 000 000 µs, auto + manual
ADC	12-bit
COMMS	RS485, Wi-Fi, 4G / 5G
INTERNAL LOGGING	Up to 512 GB
POSITION	GPS + IMU
PROTECTION	IP68, marine-grade
POWER	12 V DC, 12 W peak
POWER OPTION	Solar panel, autonomous operation
OPERATING TEMP.	0 to +30 °C
STORAGE TEMP.	-20 to +70 °C
SIZE	130 × 140 × 121 mm
MASS	1.75 kg

ORDERING

Every system is built to order. Build time is three months, including component procurement, assembly, testing and calibration.

APPLICATIONS

- Chl-a, CDOM and TSM concentration estimation**
ENVIRONMENTAL RESEARCH
- Petroleum detection: surface films and oil-in-water emulsion**
PORTS, TERMINALS, WATER-QUALITY CONTROL
- Wastewater monitoring**
DISCHARGE AND OUTFALL COMPLIANCE
- Algal species recognition and early bloom detection**
AI-BASED ANALYSIS FOR HARMFUL ALGAL BLOOMS
- Buoy networks**
MONITORING ACROSS ONE WATER BODY
- Industrial water-quality monitoring**
DESALINATION, HYDROELECTRIC PLANTS

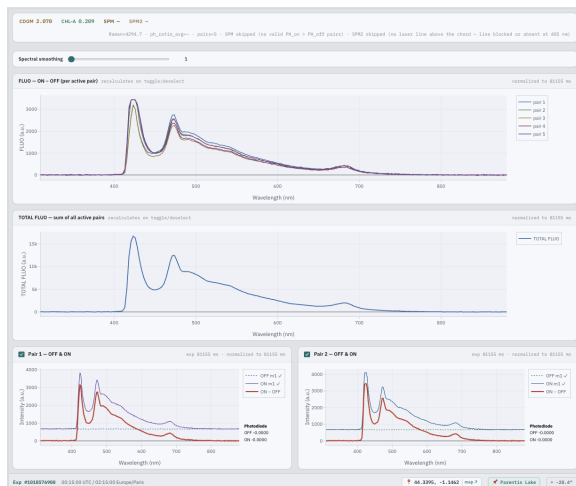
SOFTWARE

The included Microsensor Viewer processes incoming spectra automatically and displays the results in real time. You can view measurements in a web browser, without installing software or processing the spectra yourself.

NETWORK

Use one sensor to monitor a site, or add sensors to cover more locations. Each operates autonomously and sends data to the same cloud platform. The hardware and software remain the same as the network grows.

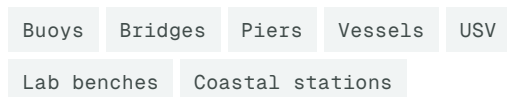
THE VIEWER PLATFORM



Microsensor Viewer: mFL.12 measurements from a Parentis experiment

The Microsensor Viewer is included with the sensor. It displays incoming measurements in real time and keeps raw spectra, calculated values and quality indicators together. You can select records by date or station, compare sites and export data for further analysis. The data structure also supports AI-based changes to acquisition settings. After calibration on the water body, the Viewer can interpolate between measurements to map water-quality parameters across the area. These maps estimate conditions between sampling locations.

INSTALLATION



Measures water in place without contact. The instrument remains above the surface.

EXPLORE THE DATA

See data examples and how they support water-quality research at lifelidar.com. Explore the measurements at viewer.lifelidar.com.

COMPLEMENTARY INSTRUMENTS



LIFL.11 ON SURVEY

LIFL.11 combines fluorescence, elastic scattering and Raman measurements for vessel or airborne surveys. It measures surface water, land and the near-surface atmosphere, and profiles water to 50 m at 532 nm. Each instrument uses 266 or 355 nm with 532 nm and 48 detection bands.



mFL.12 ON A MAST

mFL.12 monitors fixed sites with a single 405 nm laser, measuring the surface layer without entering the water. Its compact design and lower cost suit long-term installation on buoys, piers and monitoring stations.



mHR.2 DEPLOYED

mHR.2 calculates remote-sensing reflectance from sunlight reflected by the water. Install it beside mFL.12 to record reflectance for satellite comparisons and laser-induced fluorescence at the same location.

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