

LASER MONITORING FIXED WING

REMOTE METHANE DETECTION



The **Laser Monitoring Fixed Wing (LMF)** is a sensor which is used for remote detection of methane utilizing a laser beam and is installed on an unmanned aerial vehicle (UAV).

It allows for measuring of total methane content along an optical path of the laser beam from the device to any ground-based object. Remote detection can be made from distances up to 328 feet, by measuring absorption of the laser by the methane.

LMF may be applied for remote monitoring of natural gas pipelines including other gas facilities where leaks may be suspected.

Features and Benefits

- **Full automation**
- Detects faster than conventional method (detection speed: 0.1 sec)
- **Methane-only sensitivity.** No false alarms
- **User-friendly software**
- Archives data for the entire period of operation
- **Automatic calibration** and self-check during the operation
- Online data **downlink** capability
- **Automatic** time synchronization by GPS / GLONASS. Report with **all necessary information** (time, leak concentration, coordinates, image of the leak from built-in Full HD camera)

Laser Monitoring Fixed Wing / LMF Technical Specifications

Target Gas	Methane (CH ₄) and methane-containing gases (natural gas and similar)
Sensitivity from distance 100 m	150 ppm × m
Distance	up to 328 ft
Humidity, not more than	90%
Sampling Rate	10 measurements per second
Power supply voltage LMF	12 V
Power consumption	30 W
Working temperature	14 °F ... 104 °F
Power cable length	2 m
Time for auto testing	5 min
Video camera	Full 1920 × 1080 / 30p High Definition
Dimensions of the device (L × H × W)	5.12 × 3.74 × 5.51 inches
Weight of the device	3.75 lbs



Principle of Remote Gas Detection

LMF is based on the utilization of laser absorption spectrophotometer of methane gas for gas measurement.

The system detects natural gas leaks by emitting a laser beam at a particular wavelength and analyzing the light reflected from an object to determine how much was absorbed by the methane in the natural gas.

The measured gas volume is expressed by methane column density (ppm × m): methane density (ppm) multiplied by length (m).

The Optical Unit (OU) of the **LMF** detector is installed on a gyro-stabilized platform so that the laser beam is continuously directed towards pipelines and other natural gas facilities.

