

Space

LIGHTNING IMAGER OPTICAL INSTRUMENT

The Lightning Imager (LI) has been designed for the Meteosat Third Generation (MTG) mission, dedicated to meteorological and climate forecasts.

The instrument will detect lightning discharges (interclouds and clouds-to-ground), covering with continuous observation Europe, Africa and part of South America in every light condition.

The data will then be used for short term weather forecasting and to assess the influence of climate change on the atmosphere. The MTG programme is funded by ESA and EUMETSAT and the first satellite to operate the Lightning Imager is planned to be launched in 2017.

The Lightning Imager (LI) Instrument on board the ESA / EUMETSAT Meteosat Third Generation satellites will allow the continuous detection, over almost the full Earth disc, of the lightning discharges taking place “in clouds” or “between cloud and ground” with a resolution around 5 km (at sub-satellite point).

KEY FEATURES

- Large field of view associated to high detection efficiency of faint lightning pulses, over-imposed to bright and extremely variable background (day/night, ocean/ground reflections, seasonal effects)
- Low probabilities of false alarms thanks to the optical filtering and on-board processing

LIGHTNING IMAGER TECHNICAL DATA

- High sensitivity (detection of lightning pulses up to $4\mu\text{J}/(\text{m}^2\text{sr})$ energy)
- Low false alarms probability
- Radiometric accuracy greater than 10%
- Spatial Accuracy greater than 1,6Km (at sub-satellite point)
- Detection efficiency: 70% average, 90% on Central Europe, 40% minimum on the other EUMETSAT member States
- Day and night full operations
- Lifetime 8.5 years in GEO

The LI instrument is made by an Optical Head (LI OH) and a separated electronic control unit (LI Main Electronics):

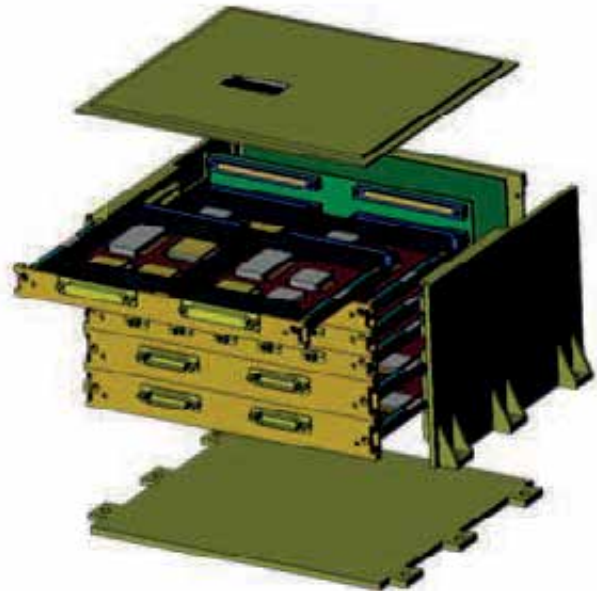
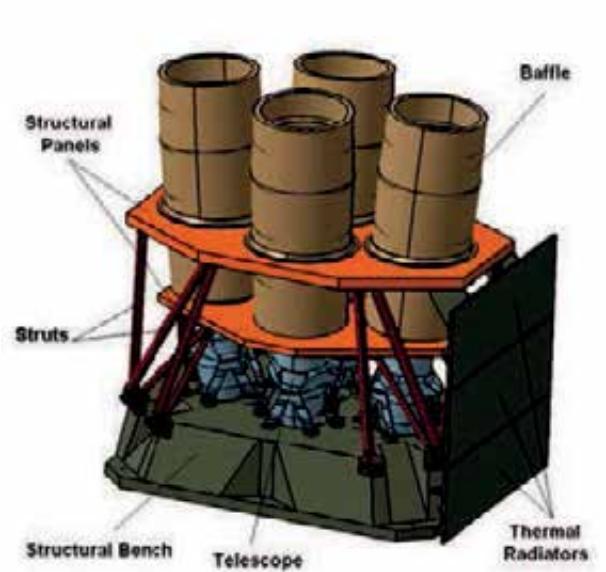
TECHNICAL CHARACTERISTICS

Lightning Imager Optical Head

Overall Dimensions	715 x 1100 x 1200 mm
Total Mass	90 Kg
Power Consumption	100 W

Lightning Imager Main Electronics

Overall Dimension	300x 240 x 160 mm
Total Mass	12 Kg (+4 Kg Harness)
Power Consumption	95 W



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