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Vaisala Thunderstorm Advanced Total Lightning™ Sensor LS7002

The Advanced Total Lightning™ Sensor network detects cloud and cloud-to-ground lightning with high detection efficiency and excellent location accuracy. It uses combined technology and provides large area coverage with fewer sensors leading to lower lifetime network ownership costs than any other technology.

The Latest in Precision Lightning Geolocation Technology

The LS7002 is an Advanced Total Lightning™ sensor. It detects low frequency (LF) electromagnetic signals generated by lightning in order to provide extremely accurate geolocation capability with industry leading measurement of lightning strength and lightning type classification. The LS7002 is the most cost-effective network-based lightning detection solution for customers demanding high accuracy, reliability, ease of installation, and ease of maintenance.

An LS7002 network uses a combination of magnetic direction finding and time-of-arrival techniques to deliver superior detection efficiency, optimal location accuracy, and system redundancy with fewer sensors than any other method for detecting cloud lightning pulses and cloud-to-ground lightning strokes. It provides large area coverage with fewer sensors leading to lower lifetime network ownership costs than any other technology.

Lightning Data for a Wide Range of Applications

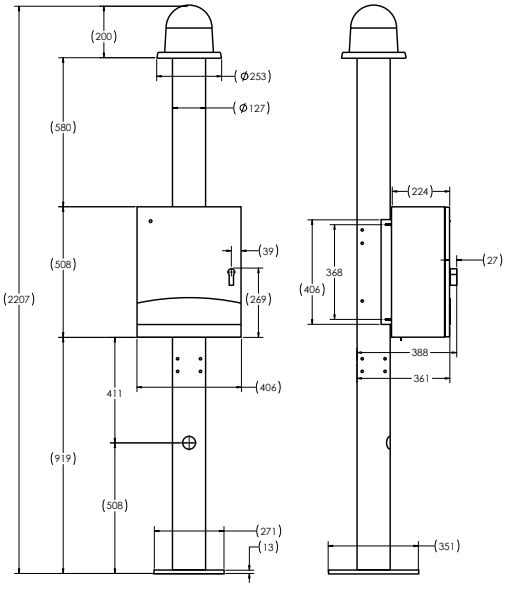
The Advanced Total Lightning™ Sensor LS7002 provides real-time data that is recommended for operations focused on tracking cloud and cloud-to-ground lightning threats to ground-based and airborne assets including applications in:

- Aviation
- Defense
- Forestry
- Meteorology/Climatology
- Power Utilities
- Telecommunications

LS7002 Features and Benefits

- The most precise cloud-to-ground lightning detection, geolocation, and calibrated lightning parameters
- Detects a high percentage of cloud lightning for early thunderstorm identification
- Detects lightning events at long ranges (>1500 kilometers)
- Calibrated parameters for lightning events including time, location, amplitude, polarity, and waveform features
- Up to 95% network detection efficiency for cloud-to-ground lightning and better than 50% network detection efficiency for cloud lightning
- Independently validated 250 meter median location accuracy for cloud-to-ground lightning strokes
- New data buffering capability at the sensor in case of communication failure between sensor and central processor
- New lightning magnetic field waveform storage capability at the sensor
- New capability to generate raw sensor data locally for offline reprocessing and archiving
- Efficient lightweight electronics module allows for ease of installation and maintenance with stand-alone, rooftop and indoor electronic mounting options
- Sensor electronics can be installed separately from the antenna, e.g., indoors in severe weather locations
- Compatible with previous generation Vaisala sensors: IMPACT, LS7000, and LS7001
- Available in AC and DC versions

Technical Data



Operational Specifications

Lightning Type	Cloud (IC) and Cloud-to-ground (CG) lighting events and flashes
Network Flash Detection Efficiency[a, c]	95% for CG; 50% for IC
Network Median Location Accuracy[b, c]	250 m
Range of Recommended Baseline Distances Between Sensors	15 to 350 km
Minimum number of sensors per network	Four
LF Band	1kHz-350kHz
Performance Monitoring	Complete automatic system calibration and self-test with manual capability
Remote Configuration	Operational parameters are remotely configurable

[a] IC flash detection efficiency of higher than 50% can be achieved with network baseline distances shorter than 150 km.

[b] Median network location accuracy can be better than 150 m in the interior of the network.

[c] Performance specifications are applicable to LS7002 networks using the latest version of Vaisala's Total Lightning Processor TLP™

Time Synchronization

Source	GPS receiver
Accuracy	50 nanoseconds to UTC

Dimensions

Weight	37.4 kg
Height	2.2 meters
Width	0.4 m
Depth	0.4 m

Mounting

Concrete ground pad
Non-ground mounting options available

Power Requirements

AC Power	100VAC-240VAC, 4A max, 50-60Hz
DC Power	48VDC, 1A max

Communication Interface

TCP/IP	64 kbps maximum per data stream depending upon network geometry and gain settings
RS-232 Serial	maintenance port for optional on-site connection

Environmental Conditions

Temperature	-40 °C to +55 °C
Relative Humidity	0 to 100% condensing
Wind Speed	0-240 km/h
Altitude	Up to 5500 meters
Hail	2.0 cm in diameter
Ice	8 cm
Rain	8 cm/h at wind speed 65 km/h

Support Services

Training, technical support, and spare parts are available for maintaining optimal network and sensor performance. Contact your Vaisala Sales Representative for service agreement information.

Standard Warranty

Vaisala warrants all products manufactured by Vaisala to be free from defects in workmanship or material for one year from the date of delivery. Contact your Vaisala Sales Representative for specific product service warranty details.

CE IPX4

CONFORMS TO
UL STD UL 61010-1
CERTIFIED TO
CAN/CSA C22.2 NO. 61010-1

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operations.

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Please contact us at
www.vaisala.com/requestinfo

www.vaisala.com

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