

Thunderstorm Warning System

BTD-1

INTRODUCTION

The BTD-1 is a standalone thunderstorm warning system designed to detect the presence and range of lightning flashes by monitoring the background quasi-electrostatic field. In addition to lightning detection, it provides early warning of overhead thunderstorm conditions and includes a Severe Storm feature to identify storm cells most likely to generate damaging events such as large hailstones. The BTD-1 is ideal for safety-critical outdoor applications, including renewable energy sites, airports, industrial plants, marine and harbour facilities, outdoor sports venues, and construction sites.

With its plug-and-play architecture, optional modules, and integration-ready communication interface, it offers a flexible solution for both standalone deployment and complete warning systems.

FEATURES

Advanced warning

Provides warning of overhead thunderstorm conditions before the first nearby lightning strike.

Severe Storm feature

Identifies highly active storm cells associated with increased risk of large hailstones and damaging weather.

Best-in-class detection efficiency

High sensitivity to lightning activity, including strong detection of intra-cloud flashes, for earlier and more reliable storm warning.

Unique lightning detection

Low-frequency analysis of thunderstorm activity ensures high detection efficiency with minimal susceptibility to man-made interference.

Long detection range

Measures lightning activity **up to 35 km as standard**, extendable **up to 83 km**.

Plug-and-play architecture

M12 connectors, preassembled leads, and modular accessories simplify installation and deployment.

System integration ready

ASCII communication interface for systems integrators, with broadcast messaging, relays, and optional expansion modules.

Low maintenance outdoor design

Robust construction with IP66 protection and no moving parts.

CONFIGURATION & MEASUREMENT

Lightning and storm event detection

The BTD-1 detects **cloud-to-ground, intra-cloud, and cloud-to-cloud lightning**, and also identifies charged precipitation, strong electric field, and severe storm conditions.

Configurable risk management

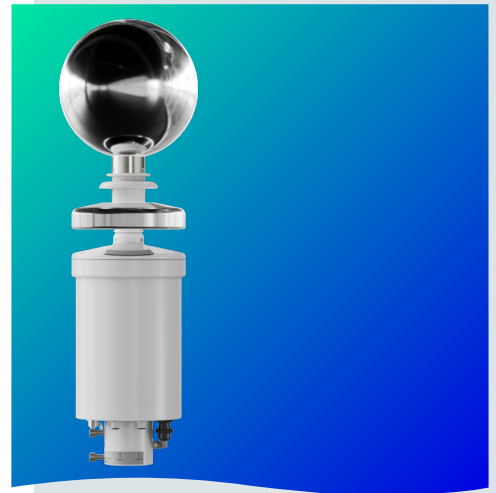
Four risk levels, **All-Clear, Caution, Warning, and Alert**, can be configured according to site-specific requirements.

Accurate timing and optional direction

An integrated GPS/GNSS module supports accurate flash timing. With the optional Direction Finder, the system can also provide lightning bearing.

Communications and software

The sensor operates over RS422 with broadcast output every 2 seconds, supports three internal relays, and integrates with the Lightning Eye software environment for monitoring, diagnostics, and data handling.



ADVANCED WARNING

Early warning of overhead thunderstorm conditions.



SEVERE STORM FEATURE

Highlights storm cells with increased risk of large hailstones.



BEST-IN-CLASS DETECTION EFFICIENCY

Detects more storm activity earlier, with very low false alarm rate and reduced interference from man-made sources.



UP TO 83 KM RANGE

35 km standard range, extendable up to 83 km.



GPS/GNSS TIMING

Integrated GPS/GNSS supports highly accurate flash timing and UTC-based time reference.



PLUG-AND-PLAY MODULARITY

Easy installation with optional accessories and integration modules.

General specifications

Output	RS422, Relays
Power supply	9...36 Vdc
Power consumption	2W Typical Up to 50W with Extreme Heater Module
Connection	M12 Connectors (Stainless Steel)

ENVIRONMENTAL

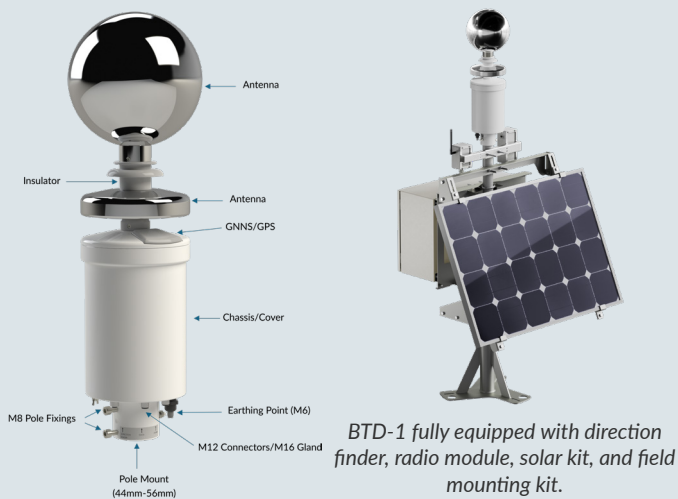
Operating temperature	-20...+40 °C
Relative humidity	0...100% RH
Protection rating	IP66

PHYSICAL

Material	Housing: Aluminium Sphere Antenna: Stainless Steel Insulators: PTFE/Acrylic
Weight	4.3 kg approx.

RELATED STANDARDS

- EN50536:2011+A1:2012, Class 1 Detector
- IEC 62793, Class A Detector
- EN61326-1:2021, Industrial Limits



Ordering codes

BTD-1	S.	000.	Extreme heating option 00 = without heating option EH = with extreme heating option
			RS-422 Communication
Range			
35. = 35 km			
83. = 83 Km			
Version			
SA. = stand alone version			
OM. = OEM version			

Example: BTD-1.SA.35.S.000.EH

Warranty: 2 years. The sensor is supplied in robust packaging.
The stand-alone version includes the configuration kit with AC/DC power supply, RS-422/USB converter, 2 m data and power cables, and software license.
The OEM version is supplied with field-wireable connectors for signal and power.

The field mounting kit, Direction Finder module, solar kit, radio module, and other accessories must be ordered separately.

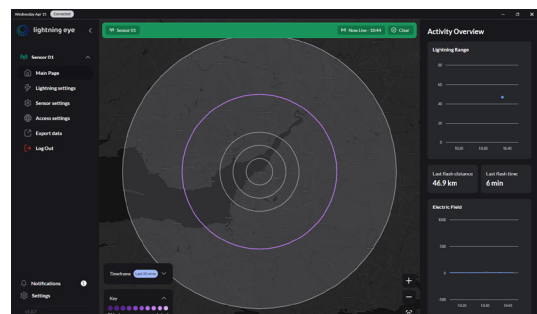


Measurement specifications

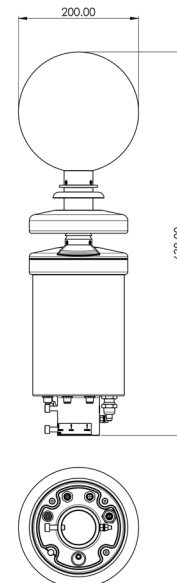
Lightning detection	Triggered by cloud-to-ground, intracloud and cloud-cloud lightning.
Lightning events Detected	Charged Precipitation (Prewarning) Strong Electric Field (Prewarning) Severe Storm
Measuring range	35 km (Default) / 83 km (Option)
Range resolution	1 m
Range accuracy	For flashes within 20 km : +/-5 km For flashes within 83 km : +/-10 km
Detection efficiency	For flashes within 35 km 97% for a single lightning flash 99.9% for storm with 2 lightning flashes For flashes within 83 km 95% for a single lightning flash 99% for storm with 2 lightning flashes 99.9% for storm with 3 lightning flashes
False alarm rate	For flashes within 35 km <1% For flashes within 83 km <2%
Maximum flash rate	120 flashes per minute
Flash Latency	2 seconds

Lightning Eye Software Overview

- Multi-user capability
- Remote connectivity
- Map overlay
- System Status Overview
- Sensor Diagnostics
- System configuration
- Automatic data logging
- Export of logged data



Dimensions



DOC101872.00A- vs1.0

Senseca UK Ltd

Unit 8, Harbour Road Trading Estate - Portishead
Bristol - UK - BS20 7BL
www.senseca.com - info.bristol@senseca.com