

## Lightning Warning System

### BTD-200

#### INTRODUCTION

The BTD-200 is a self-contained lightning warning system developed from Senseca's professional aviation-grade lightning detection technology. It is designed for sporting events, outdoor pursuits, industrial and meteorological applications where reliable and early warning of thunderstorms is critical. Using a unique quasi-electrostatic principle, the sensor detects all forms of lightning activity out to 35 km (22 miles), while advanced signal processing delivers a very low false alarm rate and accurate ranging. It can warn of dangerous overhead lightning risk even before the first strike occurs. Supplied as a complete "out-of-the-box" solution with universal power supply and Lightning Works server software, the BTD-200 is quick to install and provides automatic monitoring, warning and data logging of approaching thunderstorms.



#### FEATURES

##### Standalone lightning warning solution

Complete, self-contained system including sensor, power supply and Lightning Works server software for monitoring, alarms and data logging.

##### Proven detection technology

Quasi-electrostatic detection, derived from professional aviation systems, reliably detects lightning with high efficiency and very low false alarm rates.

##### Early warning of overhead risk

Detects charged precipitation and strong atmospheric electric fields, providing advance warning of overhead lightning risk before the first discharge.

##### Accurate 35 km range

Detects lightning up to 35 km (22 miles) with 1 km range resolution, giving a clear picture of storm approach and intensity.

##### Flexible interfacing & standalone alarms

Fully automatic alarm outputs and built-in self-test ensure the system is operational without constant supervision.

##### Standards compliant

Complies with EN50536:2011+A1:2012 for a Class 1 detector and performs in accordance with IEC 62793 for a Class A detector.

- **COMPLETE, OUT-OF-THE-BOX WARNING SYSTEM WITH MINIMAL INSTALLATION**
- **FULLY AUTOMATIC ALARM TRIGGERING**
- **WARNS OF THE MOST DANGEROUS (OVERHEAD) LIGHTNING RISK EVEN BEFORE THE FIRST LIGHTNING STRIKE**
- **ADVANCED, AUTOMATIC SELF-TEST TO ENSURE SYSTEM OPERATION**
- **ACCURATE 35KM (22MILES) DETECTION RANGE**
- **DETECTS CLOUD-TO-GROUND, INTRA-CLOUD AND CLOUD-TO-CLOUD LIGHTNING**
- **DETECTS CHARGED PRECIPITATION AND STRONG ATMOSPHERIC ELECTRIC FIELDS**
- **SUPPLIED WITH LIGHTNING WORKS SERVER SOFTWARE**
- **COMPLIANCE WITH EN50536:2011+/A1:2012 FOR A CLASS 1 DETECTOR**
- **PERFORMS IN ACCORDANCE WITH IEC62793 FOR A CLASS A DETECTOR**

#### CONFIGURATION & MEASUREMENT

##### Detection principle

When lightning occurs, large charges are transferred and create a low-frequency (<50 Hz) disturbance in the atmospheric electric field that can be sensed over distances greater than 100 km. The BTD-200 antenna measures these low-frequency disturbances and filters out higher-frequency radio noise that causes false alarms in traditional radio-based detectors.

##### Measurement performance

The system detects cloud-to-cloud, cloud-to-ground and intra-cloud lightning discharges, classifying storm activity into range bands up to 35 km (22 miles). Detection efficiency is typically 95% for a single flash, rising to 99–99.9% for storms with multiple flashes within 35 km. The false alarm rate is less than 2%, with a maximum flash rate of 120 per minute and an update interval as fast as 2 seconds.

##### Outputs and interfaces

The BTD-200 connects to a user PC or base control box via a wired RS422 serial link, with an additional RS485 link for a wide-area sounder. Three volt-free relays (self-test, warning state and alert state) provide direct alarm outputs to local indicators or control systems.

##### Power and environmental configuration

The sensor operates from a 9–30 VDC supply (universal AC-DC adaptor included) with power consumption below 5 W. It is housed in stainless steel and coated aluminium, rated IP66, and is designed to operate from -20 °C to +50 °C in 0–100% relative humidity, making it suitable for demanding outdoor environments.

## General specifications

### OUTPUTS

User computer or Base Control Box	Wired serial connection (RS422)
Wide Area Sounder	Wired serial connection (RS485)
Relays	3 Relays with volt free contacts: <ul style="list-style-type: none"> <li>• Alert state</li> <li>• Warning state</li> <li>• Self-test</li> </ul> All relays 16Vac 35VDC 5A
Connection method	Screw terminals

### POWER REQUIREMENTS

Supply voltage	9 to 30 Vdc, universal mains power adaptor included
Power consumption	Less than 5W

### ENVIRONMENTAL

Operating temperature	-20 °C to +50 °C
Relative humidity	0 - 100% RH
Protection rating	IP66
Wind speed	60 m/s
Shock and vibration	Land based fixed installation

### PHYSICAL

Material	Stainless steel and epoxy powder coated aluminium
Weight	4.3 kg (9.5 lbs) sensor only
Height	675 mm (26.6")
Diameter	200 mm (7.9")
Warranty	1 years

### CERTIFICATION & COMPLIANCE

- CE Certified
- EMC compliance with EN61326-1:2013 Industrial immunity, domestic emissions
- Compliance with EN50536:2011+A1:2012 for a Class 1 detector
- Performs in accordance with IEC 62793 for a Class A detector
- RoHS and WEEE compliant

### Ordering codes

BTD200 | Lightning warning system

### Accessories – Optional

BA.005 / 06 / 07	Power Cable, available in 20, 50 or 100 m
BA.009 / 10 / 11	Power Cable, available in 20, 50 or 100 m
BA.017	Mounting Pole, Flange base
BA.020 /21/22	Earthing Kit, available in 2, 5 or 10 m
BA.023	Wall Mounting Bracket
BA.024	Direction Finder
BA.026	Lightning Works Messenger Program
BA.027	Field Test Unit
BA.000	Serial Communications Interface Unit
BTD.WTY200	1 Year Extended Warranty

The sensor is delivered in sturdy recyclable packaging with universal power adaptor (90/264 Vac to 24 Vdc), optically isolated serial RS422 to USB adaptor, control and display software on USB drive, user manual.

## Measurement specifications

Detects	Cloud-to-Cloud, cloud-to-ground and intracloud lightning discharges
Thunderstorm activity for advanced warning of lightning	Charged precipitation and strong electric field
Detection efficiency	95% for a single lightning flash 99% for storm with 2 lightning flashes 99.9% for storm with 3 lightning flashes For flashes within 35 km
Range	35 km (22 miles)
Range Resolution	1 km
False alarm rate	<2%
Maximum flash rate	120 per minute
Maximum update rate	2 seconds

## Lightning Works Software

- Multi-user capability. Maximum of 5 simultaneous users
- Map overlay showing lightning distance bands
- Warning state icons
- Sensor health status display
- System configuration window
- Warning state cancellation buttons
- Automatic data logging
- Export of logged data in CSV format

## Dimensions

