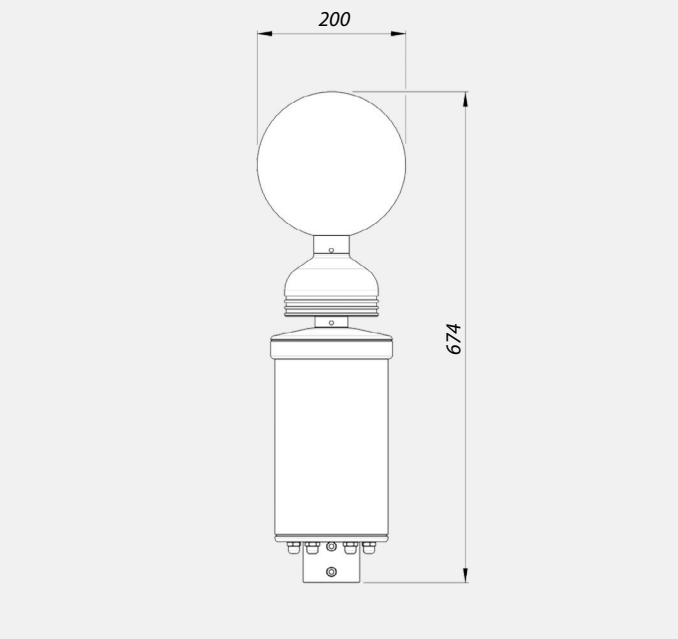
BTD-200

Lightning Warning System

The BTD-200 lightning warning system is a complete detection and warning system which has been developed from the Biral range of professional aviation grade lightning detection systems. Its proven detection technology reliably detects the presence of all forms of lightning out to a range of 35 km (22 miles) from the sensor. Designed to be quickly and easily installed, it comes complete with a universal mains voltage power supply and the essential PC server application for monitoring, warning and data logging of approaching thunderstorms.

BTD-200 Lightning Warning System



BTD-200 Dimensions in mm

Complete, out-of-the-box warning system with minimal installation

Fully automatic alarm triggering

35 km (22 miles) detection range

Lightning directions with direction finder option (0° - 360° with 1° resolution, not just 8 octants)

Unique Lightning Detection

When a lightning discharge occurs there is a significant transfer of electric charge which causes a disturbance in the atmospheric electric field detectable to a distance of more than a hundred kilometres. The low frequency (<50 Hz) disturbance is detected by the BTD-200 antenna and the signal is processed to both detect and range lightning discharges. Due to the lowfrequency nature of the lightning discharge signal,the BTD-200 filters out the higher frequency electromagnetic radio waves which confuse other sensors. Due to these limitations, most standalone lightning detectors employ secondary measurements such as optical flash detection in an attempt to reduce false alarms and employ complex signal analysis to estimate range. These techniques are only partially effective, giving these older technology lightning detectors a poor reputation due to their high false alarm rate, poor distance accuracy and short working lifetimes. As virtually no manmade or natural source can disturb the Earth's electric field in same way as a lightning discharge, the BTD-200 has an almost zero false alarm rate.

Most importantly, the BTD-200 is able to issue warning of potential overhead lightning before the first strike. Such early warning is not possible using radio based detection systems.

Key Features and Benefits

- 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
- Performs in accordance with IEC62793 for a Class A detector
- 35 km (22 miles) detection range
- Detects cloud-to-ground, intra-cloud and cloud-to-cloud lightning
- Detects charged precipitation and strong atmospheric electric fields
- Compliance with EN50536:2011+/A1:2012 for a Class 1 detector

Technical Specifications

Measurement

Lightning Detection	Cloud-to-cloud, cloud-to-ground and intracloud lightning discharges
Thunderstorm activity for advanced warning of lightning	Charged precipitation and strong electric field
Lightning detection range	35 km (22 miles)
Range resolution	1 km
Range resolution uncertainty	+/- 2.7 nautical miles (nm) within the range of 0 to 10 nautical miles (nm)
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
False alarm rate	< 2 %
Maximum flash rate	120 per minute
Maximum update rate	2 seconds
Direction	reporting of the lightning bearing 0° - 360° with 1° resolution (Direction finder option needed)

Outputs

User computer or Base Control Box	Wired serial connection (RS-422)
Wide Area Sounder	Wired serial connection (RS-485)
Relays	3 Relays with volt free contacts: • Self-test • Warning state • Alert state All relays 16 V AC 35 V DC 5A
Connection method	Screw terminals

Power requirements

Supply Voltage	9 to 30 V DC, 110/115 or 230/240 V AC
Power Consumption	Less than 5W
Extended heating (optional for BTD-300)	30 W

Environmental parameters

Operating temperature	-20 °C to +50 °C
Relative humidity	0 % to 100 %
Protection rating	IP 66
Wind speed	60 m/s

Altitude	-200 m to 2,000m (-656 ft to 6,561 ft)
Shock and vibration	Land based fixed installation

Certification & Compliance

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

Physical parameters

Material	Stainless steel and epoxy powder paint coated aluminium
Colour	Silver and White
Weight	4.3 kg (9.5 lbs) Sensor only
Height	675 mm (26.6”)
Diameter	200 mm (7.9”)
Warranty	1 year

Maintenance

Self-test capability	Standard feature
Visual inspection	6 to 12 months

Options

BTD-200 Power Cable	(20, 50, 100 m or cusmer specified length)
BTD-200 Data Cable	(20, 50, 100 m or cusmer specified length)
BTD-200 Mounting Pole	Flange base
BTD Earthing Kit	(2, 5 or 10 m)
BTD-200 Direction Finder	reporting of the lightning bearing 0° - 360° (1° resolution)