

# Model BTD-200

## Lightning Warning System



*Self-contained, standalone lightning warning system*

*Gives advance warning of overhead lightning risk*

*Proven, professional-grade detection system*

*Designed for both sporting events and outdoor pursuits as well as industrial and professional meteorological applications.*

### **KEY FEATURES & 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
- 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

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 35km (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 Lightning Works for monitoring, warning and data logging of approaching thunderstorms.

### **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 low frequency 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.

## BTD-200 Lightning Warning System Specifications

### Measurement

Lightning Detection	Cloud-to-cloud, cloud-to-ground and intra-cloud 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
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 35km
False alarm rate	<2%
Maximum flash rate	120 per minute
Maximum update rate	2 seconds

### 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 277 Vac 5A
Connection method	Screw terminals

### Power Requirements

Supply Voltage	9 to 30Vdc, 110/115 or 230/240Vac
Power Consumption	Less than 5W

### Environmental

Operating temperature	-20°C to +50°C
Relative humidity	0 – 100%
Protection rating	IP66
Wind speed	60m/s
Altitude	-200m to 2,000m (-656ft to 6,561ft)
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

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

### Maintenance

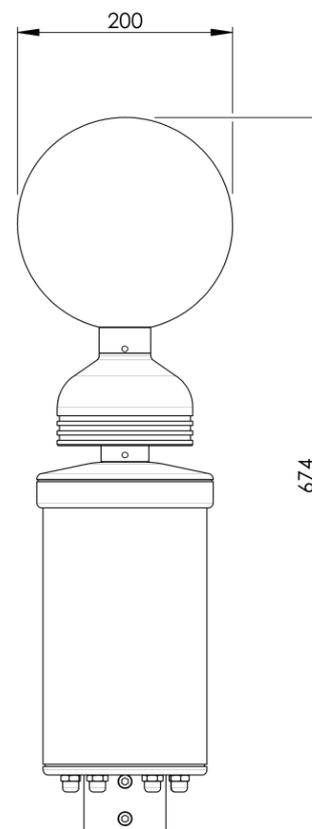
Self-test capability	Standard feature
Visual inspection	6 to 12 months

### Included with Sensor

The sensor is delivered in sturdy recyclable packaging with: <ul style="list-style-type: none"> <li>- Universal input mains power supply adaptor</li> <li>- Optically isolated Serial RS422 to USB adapter</li> <li>- Control and display software on USB drive</li> <li>- User Manual</li> </ul>
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### Lightning Works Software

<ul style="list-style-type: none"> <li>• Multi-user capability. Maximum of 5 simultaneous users</li> <li>• Map overlay showing lightning distance bands</li> <li>• Warning state icons</li> <li>• Sensor health status display</li> <li>• System configuration window</li> <li>• Warning state cancellation buttons</li> <li>• Automatic data logging</li> <li>• Export of logged data in CSV format</li> </ul>
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Dimensions in mm