

Thunderstorm Detector: BTD-300



Thunderstorm Detector

- Stand-alone, single site lightning detection and ranging system with a maximum range of 83 km (51 miles)
- Optional direction finding capability
- Total lightning activity - detects all the flashes in the storm, not just cloud-to-ground
- Immune to man-made radio interference
- Very low maintenance requirements
- Provides additional warning for overhead thunderstorm development, before the first lightning flash occurs
- Designed to meet US Federal Aviation Authority performance requirements for aerodrome lightning detectors
- High lightning detection efficiency with low false alarm rate
- Customisable thunderstorm proximity alerts

BTD-300 OVERVIEW

The detector is sensitive to all forms of lightning (cloud-to-ground, cloud-to-cloud etc.) and provides accurate range estimation for lightning up to 83 km (51 miles) away. Storm direction is also available if combined with the optional direction finding module. Output is updated every 2 seconds and can be displayed on computer or warnings indicated directly via optional relays. Users can customise the distance for up to four lightning proximity alerts.

A key advantage of this stand-alone detector is that it is sensitive to the small intra-cloud lightning flashes which can occur before the hazardous cloud-to-ground ones and can be up to ten times as frequent. Detection of these intra-cloud flashes provides a complete account of storm lightning intensity compared to conventional low-frequency radio systems.

The BTD-300 operates below all forms of radio interference, minimising false alarms. There are no moving parts to maintain or optical windows to keep clean. In addition to real-time total lightning data, users are alerted to signs of potential overhead thunderstorm development, before the first flash occurs. The sensitivity to these developing storm signals can be tailored to your specific requirements.

Comparison with established lightning detector networks show the BTD-300 detects between 50-250% more flashes within 60 km, mainly due to its sensitivity to weak intra-cloud flashes.

A complete solution to single-site thunderstorm warning requirements, with no reliance on external detection networks or continued subscription costs.

Biral BTD-300 Specifications	
Maximum reporting range	83 km (51 miles), reported to nearest 0.01 km
Customisable lightning proximity alerts?	Yes, four proximity alert ranges can be chosen between 2-83 km
Flash detection efficiency	>95% for all lightning types
False alarm rate	<2%
Flash location accuracy	±5 km between a range of 0-20 km and ±10 km between 20-83 km
Flash types detected and ranged	All types – cloud-to-ground (CG), intra-cloud (IC), cloud-to-cloud (CC)
Flash polarity, multiplicity and type reporting?	No
Direction finding	Yes, reported to nearest degree (requires optional module)
Update and reporting period	2s
Report time of each flash	Yes, to nearest 10ms
Maximum detectable flash rate	120 flashes per minute
Automatic self-checking	Yes
Detection method	Passive, quasi-electrostatic (RF for optional direction finder)
Operating (listening) frequency	1-47 Hz for the main unit. The optional direction finder receiving band is ~3 kHz to 1 MHz
Filter for RF interference	Analog front end with additional digital filtering
Additional environmental monitoring	Overhead Cumulonimbus warning via detection of strong electric field and charged precipitation
Operating environment	Designed to meet US FAA harsh weather conditions (FAA class 2) Temperature: -55°C to +60°C Relative humidity: 5% to 100% condensing Wind: Up to 85 kt (44m/s)
Power supply	110-240V AC supply
Power consumption	<10W (excluding optional 30W enclosure heater)
IP rating	IP66
Connections	Ethernet (default) or RS422 / RS485
External indicators	Status LED
Interface	Computer, with option for additional relay outputs (x3)
Visualisation software	Included for use on PC computer systems
Weight	23 Kg
Installation site	Outdoors only, no overhead obstructions

BTD-300 Dimensions

