



BTD-1 Thunderstorm Detector

Datasheet

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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.

Features (continuation)

- 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.

Technical Description

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.

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.

Specifications

<u>Detects</u>	Triggered by cloud-to-ground, intracloud and cloud-cloud lightning.
<u>Output</u>	RS422, Relays
<u>Range</u>	35 km (Default) / 83 km (Option)
<u>Detection efficiency</u>	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
<u>False alarm rate</u>	For flashes within 35 km <1% For flashes within 83 km <2%
<u>Error</u>	For flashes within 20 km: +/-5 km / For flashes within 83 km: +/-10 km
<u>Maximum flash rate</u>	120 flashes per minute
<u>Time of flash</u>	2 seconds (Flash Latency)
<u>Direction (optional)</u>	Lightning bearing via optional Direction Finder module
<u>Sensor Power</u>	9...36 Vdc, 2W typical (up to 50W with Extreme Heater Module)
<u>Operating Temperature</u>	-20...+40 °C
<u>Operating Humidity</u>	0...100% RH
<u>Protection rating</u>	IP66
<u>Weight (Sensor Head)</u>	4.3 kg approx.
<u>Certification & Compliance</u>	EN50536:2011+A1:2012 Class 1 Detector IEC 62793 Class A Detector EN61326-1:2021 Industrial Limits

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