

Lightning Detector LD-1™

Modbus RS-485 Output

DATA SHEET

FEATURE SUMMARY

- Lightning distance estimate
- Strike count
- Cloud-to-cloud detection
- Cloud-to-ground detection
- Customizable thresholds
- Modbus RTU slave
- 5 to 24 VDC input
- Low power: 1.6 mA
- Easy mounting
- Made in USA

DESCRIPTION

Lightning Detector LD-1™ is a Modbus sensor that can be connected to Dyacon weather station control modules and other automation systems, such as PLCs.

The sensor provides strike count, estimated distance of the last strike, and several other parameters through the Modbus connection.

LD-1 is designed for industrial users, weather researchers, safety management applications, and system integrators where advisory instruments may be helpful in making safety and management decisions.

Applications of **LD-1** include:

- Weather and meteorology
- Industrial hygiene and safety management
- School and athletic event safety
- Asset management and risk assessment
- Golf courses
- Outdoor pools and other recreational venues



KEY FEATURES

Detection: **LD-1** detects lightning by analyzing electromagnetic disturbances. The processing chip analyzes the shape and energy level of detected signals to identify characteristic lightning patterns.

LD-1 contains several settings so that users may tune the sensor performance for their environment.

Construction: The **LD-1** enclosure and mounting fitting are made of machined Delrin®.

Outdoor-rated cable length may be configurable at order time.

Data Connection: Power and data are provided through a 4-wire connection. **LD-1** uses an RS-485 (Modbus RTU slave) data connection that allows for long cable runs.

Firmware updates may be done through the same data cable.

Mounting: The **LD-1** uses a female 1" NPT pipe thread to provide a versatile, low-cost, and convenient mounting system that does not require proprietary hardware and can be readily installed in a variety of locations.

Accessories: **LD-1** can be used with Dyacon weather station controllers to provide alert SMS text messages and email alerts when lightning is detected.

®Delrin is a registered trademark of DuPont.

DETECTION

Sensor	AMS AS3935
Stormhead Range Estimate	15 values from 0 km to 40 km (0 miles to 24 miles)
Consecutive Strike Span	1 s
Detection Efficiency*	Approximately 40%
Response Time	<1 s

DATA

Protocol	Modbus slave with configurable data rate and address.
Detection Parameters	Strike Count Since Last Read Noise Count Since Last Read Disturber Count Since Last Read Distance Estimation Energy of Last Strike (relative) Strike Count 10 minute Strike Count 30 minute Strike Count 60 minute Noise Count 60 minute Disturber Count 60 minute
Configuration Parameters	Front-end Amplifier Gain Noise Floor Level Watchdog Threshold Minimum Number Lightning Strikes Spike Rejection Level

*Detection efficiency is dependent on the use environment and the level of ambient, man-made electromagnetic noise. Detection thresholds are user configurable and may be increased to reduce the false detection rate at industrial environments, but this will also impact lightning detection.

ELECTRICAL

Power Input	5 VDC to 24 VDC
Current	1.6 mA _{avg} at 12 VDC [†]
Circuit Protection	Gas discharge tube and transient suppression on signal and power wires.

MECHANICAL

Material	White Delrin® enclosure
Diameter x Length	4 cm x 12.7 cm (1.6" x 5") Not including optional mounting pipe.
Cable	4 conductor, 24 AWG, stranded Foil shield w/ drain wire Outdoor rated cable
Total Weight	226 g (8 oz) Not including optional mounting pipe.

ENVIRONMENTAL

Operating Temperature	-40°C to 80°C
Storage Temperature	-40°C to 80°C
Humidity	up to 100%

ACCESSORIES

Mounting	6" PVC mounting pipe 1" PVC mounting system
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[†] Full run mode, reading 200 range registers once per second.



LD-1™ shown with mounting pipe and mounting system.



LD-1 Shown with mounting pipe.