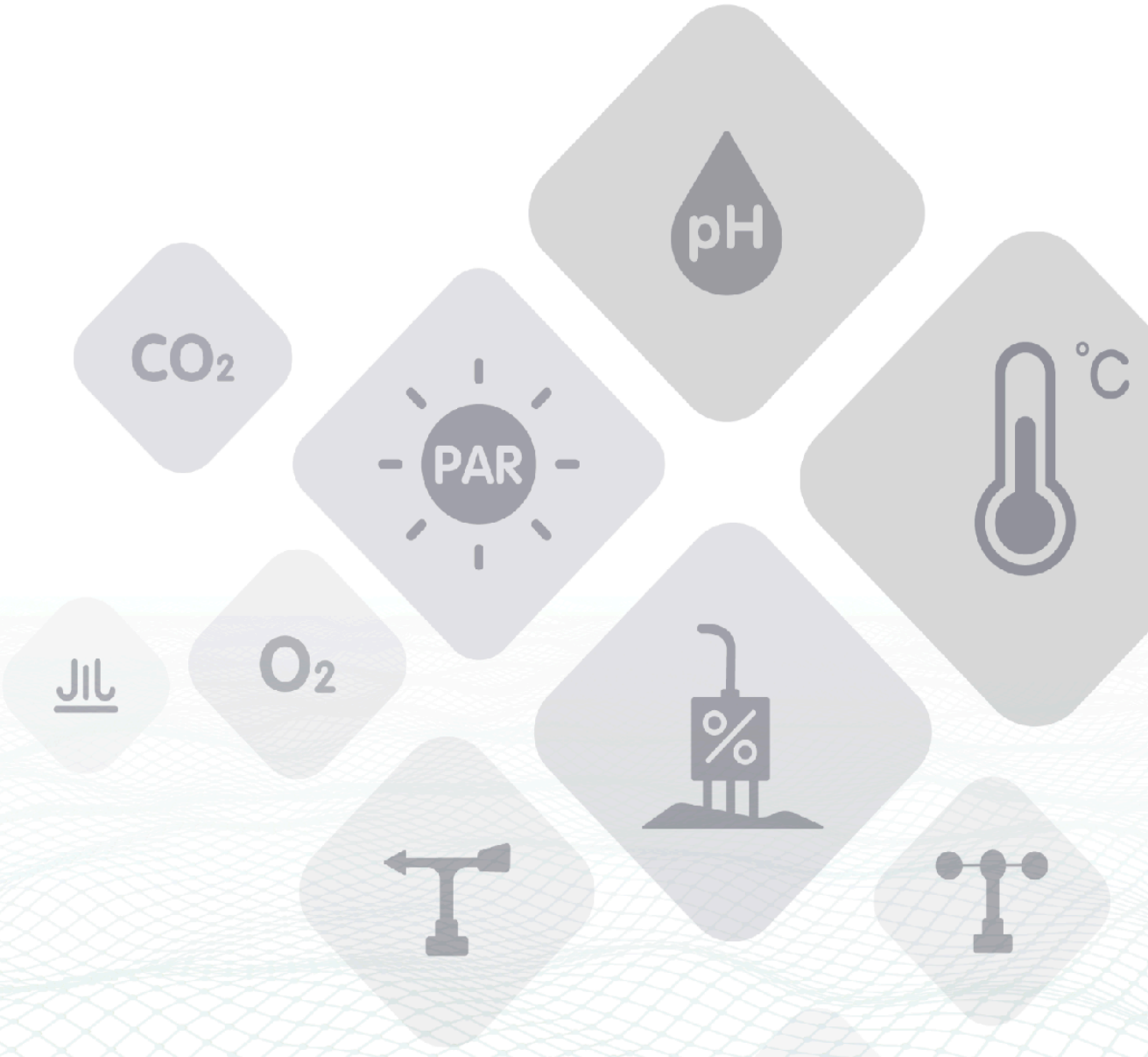
SENSECAP

RS485 Industrial Lightning

Detection Sensor



Index

1 Introduction

1.1 Brief

RS485 Industrial Lightning Detection Sensor is an advisory instrument used for the detection of lightning strikes. The sensor indiscriminately detects cloud-to-cloud, intra-cloud, and cloud-to-ground discharges. It provides strike count, estimated distance of the last strike (0 to 40 km/24 miles), and several other parameters through the RS485 interface. The RS485 physical interface is used for applications that require long cable runs or many sensors.

RS485 Industrial Lightning Detection Sensor 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.

Features

- Integrated AMS AS3935 lightning sensor
- Lightning sensor warns of lightning storm activity within a radius of 40km
- Distance estimation to the head of the storm from overhead to 40km in 15 steps
- Detects both cloud-to-ground and intra-cloud (cloud-to-cloud) flashes
- Embedded man-made disturber rejection algorithm to reduce false detections
- Programmable detection levels enable threshold setting for optimal controls
- Digital Output RS485 with built-in surge protection
- Small size with high accuracy and excellent stability
- Wall mounting installation
- Reverse power protection and Built-in TVS/ESD protection
- Excellent price-performance ratio

Applications

- Industrial Site Storm Advisory
- Weather Station Lightning Monitoring
- Outdoor Safety Management
- Smart Agriculture Storm Warning

1.2 Limitations

- RS485 Industrial Lightning Detection Sensor is not a lightning protection device.
- The RS485 Industrial Lightning Detection Sensor has measurement errors and cannot detect all lightning strikes.
- RS485 Industrial Lightning Detection Sensor cannot predict lightning strikes.
- The probability and efficiency of strike detection are dependent on the installation, environment,

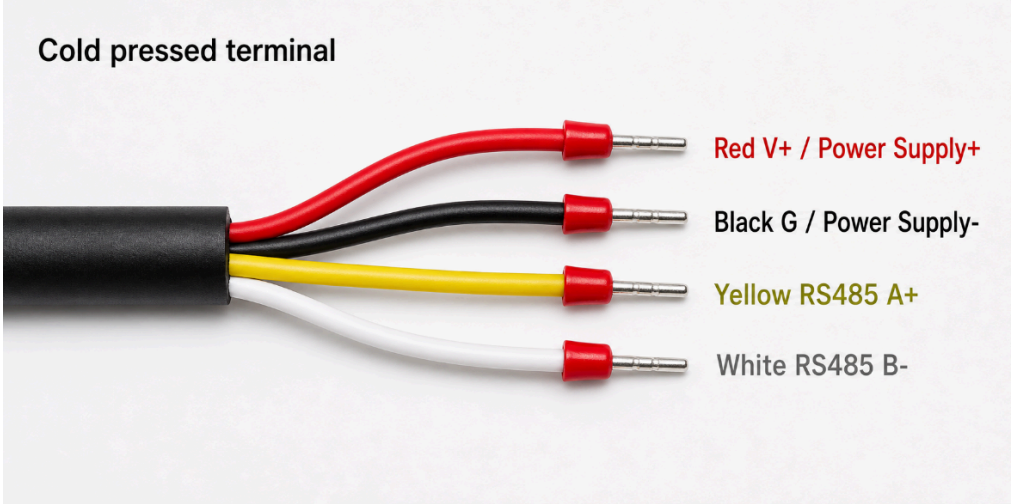
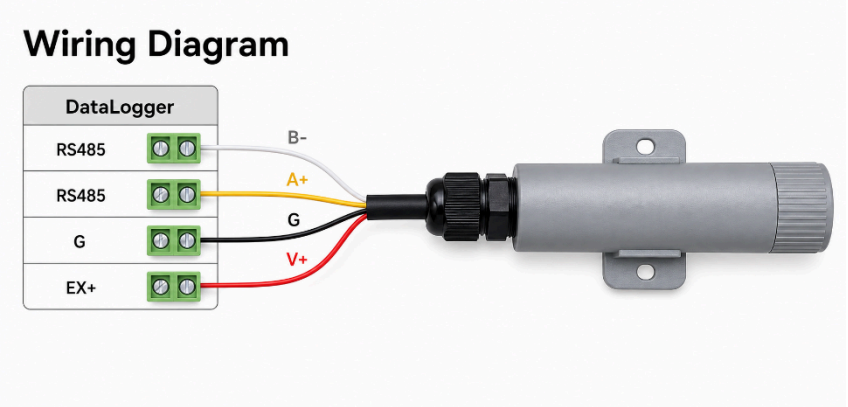
user settings.

- RS485 Industrial Lightning Detection Sensor should be considered an advisory instrument only to augment knowledge, skill, understanding, and judgment of the users.

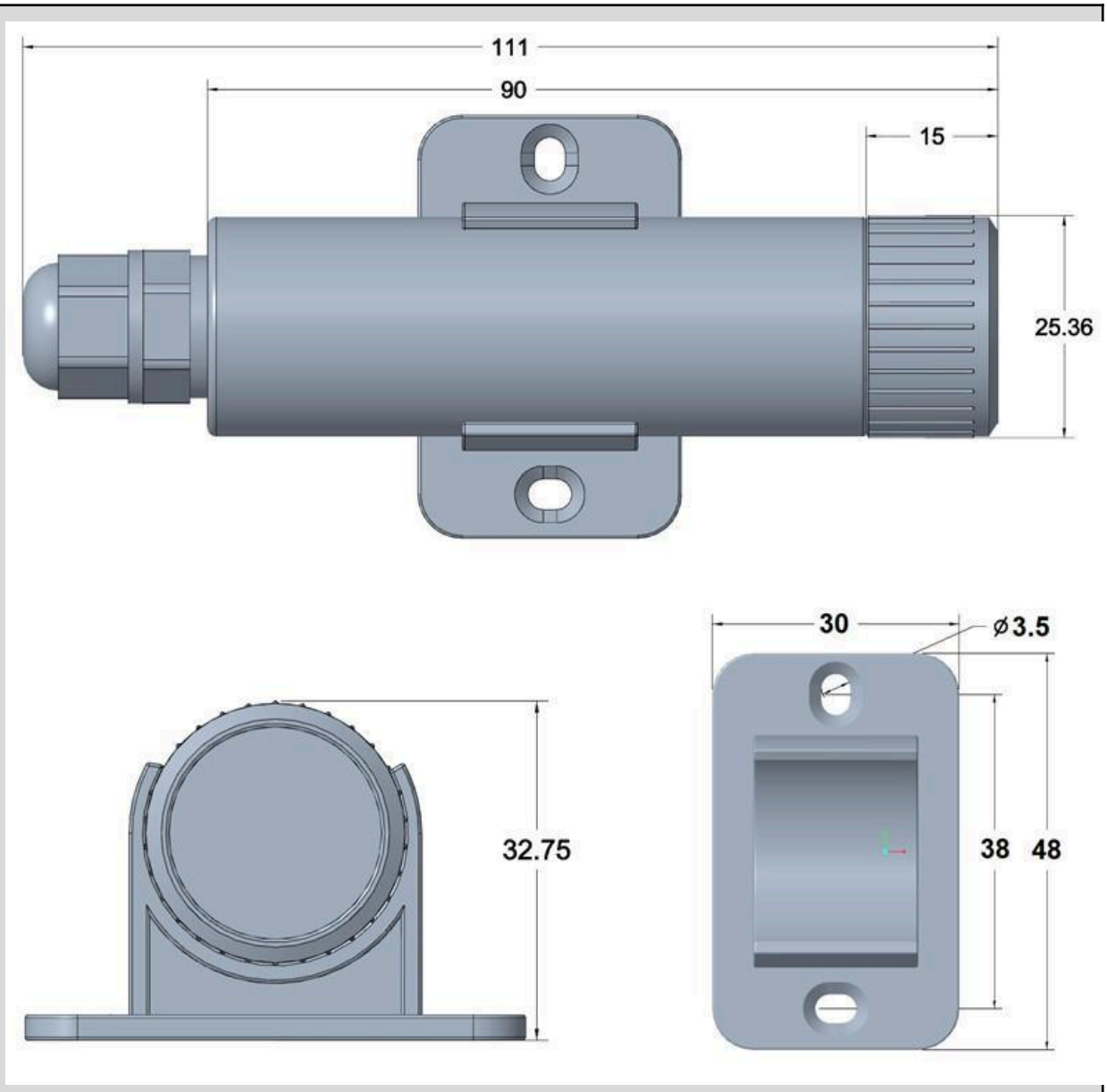
2 Specifications

Specifications	
Output Interface	RS485, Modbus-RTU
Power Supply	5-28V DC
Power Consumption	RS485 Interface: Quiescent current: <1.2mA @12V DC Max. current during lightning detected: <6mA @12V DC
Detection	Storm head Range Estimate: 15 values from 0 km to 40 km (0 miles to 24 miles) Consecutive Strike Span: 1 s Detection Efficiency: Approximately 40% 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 in industrial environments, but this will also impact lightning detection.
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
Operating	Temperature: -40~80℃, Humidity: 0-100%
IP Ratings	IP68
Installation	Wall mounting
Cable Length	2 meters
Dimension	Sensor body: 111*25.5mm (Length*Diameter)

3 Wiring

Type	Wiring diagram
RS485 Interface	
Connections	

4 Dimensions



Unit: mm

5 RS485 Communication

5.1 Modbus Protocol

Modbus Protocol is widely used to establish master-slave communication between intelligent devices or sensors. A MODBUS message sent from a master to a slave contains the address of the slave, the function code (e.g., 'read register' or 'write register'), the data, and a checksum (LRC or CRC).

The sensor is RS485 interface with the Modbus protocol. The default serial communication settings are slave address 1, Modbus RTU, 9600bps, 8 data bits, and 1 stop bit. All communication settings can be changed with Modbus commands and take effect after re-powering the sensor.

The following Modbus function codes are supported by the sensor.

Modbus Function Code 0x03: used for reading holding registers.

Modbus Function Code 0x04: used for reading input registers.

Modbus Function Code 0x06: used for writing a single holding register.

Modbus Function Code 0x10: used for writing multiple holding registers.

5.2 Modbus Register

Please refer to the chapter " Modbus Register Detail Description" for detail description.

Parameters	Register Addr. (HEX/DEC)	Data Type	Modbus Function Code(DEC)	Range and Comments	Default Value
Sensor Verify Status VERIFY_STATUS	0x0000 /0	UINT16 RO	3/4	The register is a bit combination of the following: 0x0000 - No Error 0x0001 - Calibration on TRCO failed 0x0002 - Calibration on SRCO failed 0x0004 - Cal on LCO failed, too slow 0x0008 - Cal on LCO failed, too fast 0x0010 - Sensor error	N/A
Strike Count Since Last Read STRIKECOUNT_LAST READ	0x0001 /1	UINT16 RO	3/4	0-65535	N/A
Noise Count Since Last Read NOISECOUNT_LAST READ	0x0002 /2	UINT16 RO	3/4	0-65535	N/A
Disturber Count Since Last Read DISTURBERCOUNT_	0x0003 /3	UINT16 RO	3/4	0-65535	N/A

LASTREAD					
Distance Estimate (km) DISTANCE_ESTIMATE	0x0004 /4	UINT16 RO	3/4	0-63	N/A
Strike Energy High 16 bits STRIKE_ENERGY_MSB	0x0005 /5	UINT32 RO	3/4	0-2097151 (0-0x1FFFFF)	N/A
Strike Energy Low 16 bits STRIKE_ENERGY_LSB	0x0006 /6				
Strike Count 10 Minutes STRIKECOUNT_10MINS	0x0007 /7	UINT16 RO	3/4	0-65535	N/A
Strike Count 30 Minutes STRIKECOUNT_30MINS	0x0008 /8	UINT16 RO	3/4	0-65535	N/A
Strike Count 60 Minutes STRIKECOUNT_60MINS	0x0009 /9	UINT16 RO	3/4	0-65535	N/A
Noise Count 60 Minutes NOISECOUNT_60MINS	0x000A /10	UINT16 RO	3/4	0-65535	N/A
Disturber Count 60 Minutes DISTURBERCOUNT_60MINS	0x000B /11	INT16 RO	3/4	Reserved	0
RESERVED	0x000C /12	INT16 RO	3/4	Reserved	0
RESERVED	0x000D /13	INT16 RO	3/4	Reserved	0
RESERVED	0x000E /14	INT16 RO	3/4	Reserved	0
RESERVED	0x000F /15	INT16 RO	3/4	Reserved	0

Analog Front End Gain AFEGAIN	0x0020 /32	UINT16 R/W	3/6/16	0: Outdoor 1: Indoor	0
Noise Floor Level NOISEFLOORLEVEL	0x0021 /33	UINT16 R/W	3/6/16	0-7	2
Watchdog Threshold WDTHRESHOLD	0x0022 /34	UINT16 R/W	3/6/16	0-15	4
Minimum Number Lightning Strikes MINNUMLTNSTRIKE	0x0023 /35	UINT16 R/W	3/6/16	0-3 0: 1 time 1: 5 times 2: 9 times 3: 16 times	0
Spike Rejection SPIKEREJECTION	0x0024 /36	UINT16 R/W	3/6/16	0-15	2
Floating Point Register Byte Order FLOATBYTEORDER	0x0025 /37	UINT16 R/W	3/6/16	Configure floating point register byte order. 0: Big-endian [ABCD] 1: Little-endian[DCBA] 2: Big-endian byte swap [BADC] 3: Little-endian byte swap[CDAB]	3
Data register clear configuration REGCLEARCONFIG	0x0026 /38	UINT16 R/W	3/6/16	0-1 0: Each time the register below is read, the value is reset to zero. 1: The register below is reset to zero manually by sending the "REGCLEAR" command. STRIKECOUNT_LASTREAD NOISECOUNT_LASTREAD DISTURBERCOUNT_LASTREAD	0
Data register clear REGCLEAR	0x0030 /48	UINT16 R/W	3/6/16	Write 0x0000 to this register to reset the following registers to zero: STRIKECOUNT_LASTREAD NOISECOUNT_LASTRE	0

				AD DISTURBERCOUNT_LA STREAD	
Reset Factory RESETFACTORY	0x0031 /49	UINT16 R/W	3/6/16	Write 0xFFFF to this register to reset the following registers to factory default value: AFEGAIN NOISEFLOORLEVEL WDTHRESHOLD MINNUMLTNSTRIKE SPIKEREJECTION	0
Modbus Slave Address ADDRESS	0x0200 /512	UINT16 R/W	3/6/16	0-255	1
RS485 baudrate BAUDRATE	0x0201 /513	UINT16 R/W	3/6/16	0-5 0: 1200bps 1: 2400bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps	3: 9600bps
RS485 Protocol PROTOCOL	0x0202 /514	UINT16 R/W	3/6/16	0 0: Modbus RTU	0: Modbus RTU
RS485 parity PARITY	0x0203 /515	UINT16 R/W	3/6/16	0-2 0: NONE 1: EVEN 2: ODD	0: NONE
RS485 data bits DATABITS	0x0204 /516	UINT16 R/W	3/6/16	1 1: 8 bits	1: 8 bits
RS485 Stopbits STOPBITS	0x0205 /517	UINT16 R/W	3/6/16	0-1 0: 1 stop bit 1: 2 stop bits	0: 1 stop bit
Reserved RESERVED	0x0206 /518	UINT16 R/W	3/6/16	Reserved	0
Reserved RESERVED	0x0207 /519	UINT16 R/W	3/6/16	Reserved	0
User Defined Serial	0x0220 /544	UINT16	3/16	0x0000000000000000	N/A

Number USERSN	0x0221 /545 0x0222 /546 0x0223 /547	R/W		-0xFFFFFFFFFFFFFFFF Those four registers should be read/write in one command.	
Sensor Verify Status VERIFY_STATUS_FLOAT	0x1000 /4096	FLOAT RO	3/4	0-65535	N/A
Strike Count Since Last Read STRIKECOUNT_LASTREAD_FLOAT	0x1002 /4098	FLOAT RO	3/4	0-65535	N/A
Noise Count Since Last Read NOISECOUNT_LASTREAD_FLOAT	0x1004 /4100	FLOAT RO	3/4	0-65535	N/A
Disturber Count Since Last Read DISTURBERCOUNT_LASTREAD_FLOAT	0x1006 /4102	FLOAT RO	3/4	0-65535	N/A
Distance Estimate (km) DISTANCE_ESTIMATE_FLOAT	0x1008 /4104	FLOAT RO	3/4	0-63	0
Strike Energy STRIKE_ENERGY_FLOAT	0x100A /4106	FLOAT RO	3/4	0-2097151 (0-0x1FFFFF)	0
Strike Count 10 Minutes STRIKECOUNT_10MINS_FLOAT	0x100C /4108	FLOAT RO	3/4	0-65535	0
Strike Count 30 Minutes STRIKECOUNT_30MINS_FLOAT	0x100E /4110	FLOAT RO	3/4	0-65535	0
Strike Count 60 Minutes STRIKECOUNT_60MINS_FLOAT	0x1010 /4112	FLOAT RO	3/4	0-65535	0
Noise Count 60 Minutes NOISECOUNT_60MINS_FLOAT	0x1012 /4114	FLOAT RO	3/4	0-65535	0
Disturber Count 60 Minutes DISTURBERCOUNT_	0x1014 /4116	FLOAT RO	3/4	0-65535	0

60MINS_FLOAT					
RESERVED_FLOAT	0x1016 /4118	FLOAT RO	3/4	Reserved	0
RESERVED_FLOAT	0x1018 /4120	FLOAT RO	3/4	Reserved	0
RESERVED_FLOAT	0x101A /4122	FLOAT RO	3/4	Reserved	0
RESERVED_FLOAT	0x101C /4124	FLOAT RO	3/4	Reserved	0
RESERVED_FLOAT	0x101E /4126	FLOAT RO	3/4	Reserved	0

UINT16: 16-bit unsigned integer

INT16: 16-bit signed integer

RO: Register is Read Only

R/W: Register is Read/Write

HEX: Hexadecimal (data with 0x/0X prefix)

DEC: Decimal

FLOAT: Floating point register, the byte order is configured by the "Floating Point Register Byte Order, FLOATBYTEORDER" register. Please refer to "Modbus Register Detail Description" for more details.

5.3 Modbus Register Detail Description

VERIFY_STATUS: Sensor Verify Status, UINT16		
Range	The register is a bit combination of the following: 0x0000 - No Error 0x0001 - Calibration on TRCO failed 0x0002 - Calibration on SRCO failed 0x0004 - Cal on LCO failed, too slow 0x0008 - Cal on LCO failed, too fast 0x0010 - Sensor error	Default: N/A
Parameter Save	N/A	

Note: System codes are bit-level codes representing internal functional errors. A clear (0) bit indicates no errors were detected. A set (1) bit indicates an error. Contact customer support if system errors are encountered.

STRIKECOUNT_LASTREAD: Strike Count Since Last Read, UINT16/FLOAT

Range	0-65535	Default: N/A
Parameter Save	N/A	

Note: Strike count since last read. The strike count gives the number of detected lightning strikes.

The value can be reset to zero each time the register is read (when REGCLEARCONFIG = 0). For example, if the register holds a value of five (5), after it is read it will be cleared to zero (0). If the register is read again, it will read zero (0). Or reset to zero by sending a REGCLEAR command (when REGCLEARCONFIG = 1)

NOISECOUNT_LASTREAD: Noise Count Since Last Read, UINT16/FLOAT		
Range	0-65535	Default: N/A
Parameter Save	N/A	

Note: Noise count since last read. High counts of this register indicate that the sensor is detecting a noisy signal environment and the signal cannot be evaluated. The Noise Floor Level should be increased if this occurs.

The value can be reset to zero each time the register is read (when REGCLEARCONFIG = 0). For example, if the register holds a value of five (5), after it is read it will be cleared to zero (0). If the register is read again, it will read zero (0). Or reset to zero by sending a REGCLEAR command (when REGCLEARCONFIG = 1)

DISTURBERCOUNT_LASTREAD: Disturber Count Since Last Read, UINT16/ FLOAT		
Range	0-65535	Default: N/A
Parameter Save	N/A	

Note: Disturber count since last read. Each incoming signal that passes the noise threshold is evaluated for shape characteristics. If it is determined to be a likely lightning strike, the strike count is incremented. If it fails to meet the requirements, Disturber Count is incremented. Following the detection of a "disturber", the sensor is deactivated for 1.5 s. This allows the disturber to dissipate before further detections are analyzed and reduces the probability of false detections. This dead period is fixed.

The value can be reset to zero each time the register is read (when REGCLEARCONFIG = 0). For example, if the register holds a value of five (5), after it is read it will be cleared to zero (0). If the register is read again, it will read zero (0). Or reset to zero by sending a REGCLEAR command (when REGCLEARCONFIG = 1)

DISTANCE_ESTIMATE: Distance Estimate (km), UINT16/FLOAT

Range	0-63 (63 indicates that the distance is out of range for evaluation)	Default: N/A
Parameter Save	N/A	

Note: Distance Estimate (km) of last strike. Once a detected signal is determined to be lightning, an energy analysis is performed. A rough approximation of the distance to the lightning strike is given. Inasmuch as lightning itself can span several miles and can range in energy, the distance value should be considered an approximation. Devices to which the RS485 Industrial Lightning Detection Sensor is connected can use Distance Estimate to determine whether a storm front is approaching or receding. This value is not automatically calculated on the sensor due to the uncertainty in the powered state of the sensor; a power interruption of the sensor may lead to an incorrect indication.

STRIKE_ENERGY_MSB: Strike Energy High 16 bits/ Low 16 bits, UINT16		
Range	0-2097151 (0-0x1FFFFF)	Default: N/A
Parameter Save	N/A	

Note: Energy relative index of last strike. The detected energy of the received signal is a relative value only and does not correlate to the actual energy dissipated by the lighting. The energy value is provided as a reference to integrators.

STRIKE_ENERGY_FLOAT: Strike Energy, FLOAT		
Range	0-2097151 (0-0x1FFFFF)	Default: N/A
Parameter Save	N/A	

Note: Energy relative index of last strike. The detected energy of the received signal is a relative value only and does not correlate to the actual energy dissipated by the lighting. The energy value is provided as a reference to integrators.

STRIKECOUNT_10MINS: Strike Count 10 Minutes, UINT16/ FLOAT		
Range	0-65535	Default: N/A
Parameter Save	N/A	

Note: Strike Count 10 minutes. This count is a rolling value of strikes occurring over the previous 10 minutes. This value includes the Strike Count value.

STRIKECOUNT_30MINS: Strike Count 30 Minutes, UINT16/ FLOAT

Range	0-65535	Default: N/A
Parameter Save	N/A	

Note: Strike Count 30 minutes. This count is a rolling value of strikes occurring over the previous 30 minutes. This value includes the 10-minute count.

STRIKECOUNT_60MINS: Strike Count 60 Minutes, UINT16/FLOAT		
Range	0-65535	Default: N/A
Parameter Save	N/A	

Note: Strike Count 60 minutes. This count is a rolling value of strikes occurring over the previous 60 minutes. This value includes the 30-minute count.

NOISECOUNT_60MINS: Noise Count 60 Minutes, UINT16/FLOAT		
Range	0-65535	Default: N/A
Parameter Save	N/A	

Note: Noise Count 60 minutes. Accrued noise counts over 60 minutes.

DISTURBERCOUNT_60MINS: Disturber Count 60 Minutes, UINT16/FLOAT		
Range	0-65535	Default: N/A
Parameter Save	N/A	

Note: Disturber Count 60 minutes. Accrued disturber count over 60 minutes.

AFEGAIN: Analog Front End Gain, UINT16		
Range	0: Outdoor 1: Indoor	Default: 0
Parameter Save	YES	

Note: This is the initial signal (front-end) amplifier. All signals, noise, and desired signals are affected by this value. The amplifier has two modes, Indoor (1) and Outdoor (0), and should be set according to the location in which the sensor is installed.

NOISEFLOORLEVEL: Noise Floor Level, UINT16

Range	0-7	Default: 2
Parameter Save	YES	

Note: Like static on the radio, the noise floor is the ambient white noise that a receiver hears. In some environments, the noise floor is higher than in others. Increasing this value tells the sensor that it is operating in a noisy environment. Increasing this value will allow only the desired high signals to be analyzed. If it is set too high, it may decrease sensitivity to lightning strikes. Decreasing the value will increase sensitivity. If decreased too far, the noise may overload the signal processing or increase the probability of false detections. When noise is detected, the sensor will deactivate signal processing for approximately 1.5 s. If the sensor is installed in an electrically noisy environment, the Noise Counter will be high. Users will want to increase the Noise Floor Level setting.

WDTHRESHOLD: Watchdog Threshold, UINT16		
Range	0-15	Default: 4
Parameter Save	YES	

Note: The detector is constantly listening to incoming signals. When a signal exceeds the Watchdog Threshold, the signal is processed, and the signal shape is evaluated to determine whether it is random noise (disturber) or a lightning strike. Increasing the watchdog level increases the threshold required before the signal is evaluated. If the disturber counter is high, increase the Watchdog Threshold.

MINNUMLTNSTRIKE: Minimum Number Lightning Strikes, UINT16		
Range	0-3	Default: 0
Parameter Save	YES	

Note: Setting this register to a value above zero, a minimum number of strikes must be detected within a 15-minute period before the sensor increments the Strike Counter. When set to zero (0). Each strike detection will add one (1) to the strike count register. When set to two (2). Five strikes must be detected within 15 minutes. Once the fifth strike is detected, one (1) will be added to Strike Count. The following table shows the association between Minimum Number Lightning Strikes value and the required strikes before Strike Count is incremented.

SPIKEREJECTION: Spike Rejection, UINT16

Range	0-15	Default: 2
Parameter Save	YES	

Note: The Spike Rejection value can be used to minimize false strikes. Spike Rejection is applied after a signal passes the Watchdog Threshold. Larger Spike Rejection values will reduce the likelihood that a disturbance will be categorized as a strike, but also increase the probability that a strike will not be detected.

FLOATBYTEORDER: Floating Point Register Byte Order, INT16		
Range	0-3 0: Big-endian [ABCD] 1: Little-endian[DCBA] 2: Big-endian byte swap [BADC] 3: Little-endian byte swap[CDAB]	Default: 3
Parameter Save	YES	

Note: Configure floating point register byte order.

Example: The 123456.00 in IEC754 is 0x47F12000 (A=47, B=F1, C=20, D=00), then

0: Big-endian [ABCD]

1: Little-endian[DCBA]

2: Big-endian byte swap [BADC]

3: Little-endian byte swap[CDAB]

REGCLEARCONFIG: Data register clear configuration, UINT16		
Range	0-1 0: Each time the register below is read, the value is reset to zero. 1: The register below is reset to zero manually by sending the "REGCLEAR" command.	Default: 0
Parameter Save	YES	

Note: The following values can be reset to zero each time the register is read (when REGCLEARCONFIG = 0). For example, if the register holds a value of five (5), after it is read it will be cleared to zero (0). If the register is read again, it will read zero (0). Or reset to zero by sending a REGCLEAR command (when REGCLEARCONFIG = 1)

STRIKECOUNT_LASTREAD

NOISECOUNT_LASTREAD

DISTURBERCOUNT_LASTREAD

REGCLEAR: Data register clear, UINT16

Range	Write 0x0000 to this register to reset the following register values to zero: STRIKECOUNT_LASTREAD NOISECOUNT_LASTREAD DISTURBERCOUNT_LASTREAD	Default: N/A
Parameter Save	YES	

Note: N/A

RESETFACTORY: Reset Factory, UINT16		
Range	Write 0xFFFF to this register to reset the following registers' values to factory default: AFEGAIN NOISEFLOORLEVEL WDTHRESHOLD MINNUMLTNSTRIKE SPIKEREJECTION	Default: N/A
Parameter Save	YES	

Note: N/A

SLAVEADDRESS: Modbus Slave Address, UINT16		
Data Range	0-255	Default: 1
Parameter Storage	YES	

Note: Please power up the sensor to take effect after setting.

BAUDRATE: Serial Comm Baudrate, UINT16		
Data Range	0-5 0:1200bps 1:2400bps 2:4800bps 3:9600bps 4:19200bps 5:38400bps	Default: 3
Parameter Storage	YES	

Note: Please power up the sensor to take effect after set.

PROTOCOL: Serial Comm Protocol, UINT16		
Data Range	0 0:Modbus RTU	Default: 0
Parameter Storage	YES	

Note: Please power up the sensor for the setting to take effect after set.

PARITY: Serial Comm Parity, UINT16		
Data Range	0-2 0:NONE 1:EVEN 2:ODD	Default: 0
Parameter Storage	YES	

Note: Please power up the sensor for the setting to take effect after set.

DATABITS: Serial Comm Databits, UINT16		
Data Range	1: 8 databits	Default: 1
Parameter Storage	YES	

Note: Please power up the sensor for the setting to take effect after set.

STOPBITS: Serial Comm Stopbits, UINT16		
Data Range	0-1 0: 1 stop bit 1: 2 stop bits	Default: 0
Parameter Storage	YES	

Note: Please power up the sensor for the setting to take effect after setting.

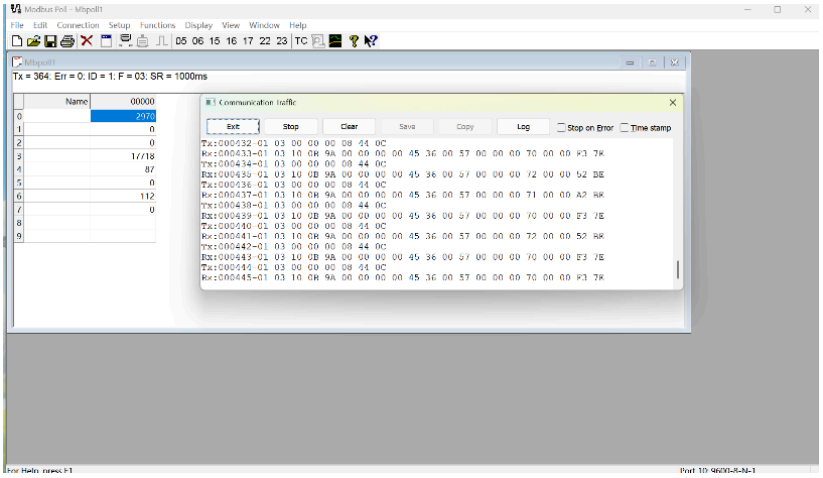
USER_SN--- User Serial Number		
Data Range	0x0000000000000000-0xFFFFFFFFFFFFFFFF User Serial Number. These four registers should be read	Default: N/A

	and written together from the start address 0x0220 with quantity 4.	
Parameter Storage	YES	

5.4 Software Configuration Utility

Software: Modbus Poll

You can use the software listed below to try reading/ writing the register of the sensor. Click this link to Download.



5.5 Command example

5.5.1 Modify the slave address

Default Registers	1
Change Slave Address	05
Address	0x0200 (512)
Number of Registers	1
Function Code	0x06
Default Sensor Address	01

To change the Modbus device address of the sensor from 01 to 05, use the following command:

Example:

Send Command	01 06 02 00 00 05 48 71
Response	01 06 02 00 00 05 48 71

Note: The address is changed to 05 and saved after power-off

5.5.2 Modify the baud rate

Address	0x0201 (513)
Number of Registers	1

Function Code	0x06
Default Value	3 (9600bps)
Supported Values	0-5 (1200-38400bps)

The baud rate can be set via the upper computer and takes effect after re-powering the sensor. The baud rate is saved after power-off.

The integer values map to baud rates as follows:

Integer value	Baud Rate
0	1200bps
1	2400bps
2	4800bps
3	9600bps
4	19200bps
5	38400bps

Example:

Send Command	01 06 02 01 00 02 58 73
Response	01 06 02 01 00 02 58 73

Note: The baud rate is changed to 4800bps and saved after power-off

5.5.3 Read measurement data

This reading includes ten values.

Address	0x0000 (0)
Number of Registers	10
Function Code	0x03

Example:

Send Command	01 03 00 00 00 0A C5 CD
Response	01 03 14 00 00 00 00 00 00 00 03 00 3F 00 00 00 00 00 00 00 00 00 00 69 B0

6 Document version

Version	Date	Description	Editor
V1.0		First Version	Zhai Chenyang