Smart Sensing
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µSMART SERIES
Lightning Strike Sensor

Model LS (X)

The Lightning Strike sensor counts lightning strikes by detecting electrical fields with signal strength greater than the factory set threshold voltage of the sensor. An early warning of impending lightning activity allows sensitive equipment to be isolated from mains power or time to carry out a controlled shut down of a plant or dangerous operation.

Detection sensitivity varies with:

- The severity of the lightning strike, (the peak current of which may vary from a few thousand amperes up to several hundred thousand amperes);
- The sensor threshold voltage which will be between 0.1 volt and 1 volt depending on the version selected; and,
- The general topography of the surrounding district.

As a general guide, typical coverage is an area within a 5 kilometre radius of the sensor for the LS1 to >30 k with the LS3.

The sensor is designed for connection to Monitor Sensors data loggers for analysis of lightning activity but can also be linked to the counter input of a variety of other loggers. It is important to mount the lightning strike sensor away from sources of electrical interference.

NB: Monitor Sensors' automatic weather stations are designed to withstand secondary lightning strikes. However for stations permanently c onnected to other systems such as computers and PLCs, the use of product LP1 Lightning Protection Kit is recommended.

Features

Robust Design
Corrosion Resistant Finish
Low Power Consumption
Low Maintenance
Available in several signal strength options for short or long range monitoring
High sensitivity for long range monitoring

Applications

Meteorological
Automatic Weather Stations
Forestry - Fire
Emergency Services
Educational
Lightning Warnings
Early warning for spectator/player evacuation at Sporting events.
Shut down of blasting operations.
Monitoring lightning activity around Munitions dumps and explosives manufacturing plants.

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Quality Assurance

Monitor Sensors products are manufactured under a third party accredited ISO9002 System.

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Specifications

Measurement Parameter:	Electrical field with signal strength exceeding - >1.0 volt/metre >0.3 volts/metre >0.1 volt/metre
Sensitivity:	LS1 1.0 v/m LS2 0.3 v/m LS3 0.1 v/m
Maximum Count Rate:	5 strikes per second in pulse output. 100 strikes a second when operating as a µSmart sensor.
Temperature Range:	-10 ^{0}C to +50 ^{0}C
Humidity Range:	0-100%
Output:	Serial Data in ASCII text, or +5 volt pulse, 100-millisecond duration
Power Supply:	5-28 v DC unregulated
Current Drain:	0.1 ma
Weight (unpacked):	250 grams
Dimensions:	Overall height including spigot 535 mm Diameter 28 mm
Mounting:	Designed to mount on Monitor Sensors standard cross arm (product code M10). Alternatively, a ½ inch BSP adaptor is available for fitting to a standard water pipe.
Cable Details:	Standard product has 0.2 mts of cable. Longer cable lengths may be order ed - allow $2.50/m for additional cable.
Related Products :	AWS1 Automatic Weather Station LP1 Lightning Protection Kit BP1 Barometric Pressure Sensor R4(X) Tipping Bucket Rain gauge M10 Standard Cross Arm Mount LSS(X) Lightning Strike Station

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LS1 LS2 LS3

µSMART Lightning Strike Sensor

The ***µSMART*** Lightning Strike sensor counts lightning strikes by detecting electrical fields with signal strength greater than the factory set threshold voltage. An early warning of impending lightning activity allows sensitive equipment to be isolated from mains power or the controlled shut down of a plant or dangerous operation.

The sensor ***Monibus*** interface allows the user to modify the sensor operation through the built-in sensor menus. The sensor incorporates a microprocessor to provide accurate, repeatable readings and to allow optional analogue outputs. The robust mechanical design ensures a long operational life.

Mechanical
- Powder coated aluminium body
- Fully sealed
- High durability cable

Specifications

Range:

LS1	1.0 volt/m	3 km
LS2	0.3 volts/m	10 km
LS3	0.1 volts/m	>30 km

Operational: -20°C to +60°C

Output options:
- ***Monibus*** serial data ASCII format
- Voltage 0-1, 0-2.5 volts
- 4-20mA (requires >12Vdc supply)
- Frequency TTL pulse 2-10 Hz

Power Supply: 6-28 Vdc unregulated

Supply current: 1.2 mA active
0.5 mA economy mode

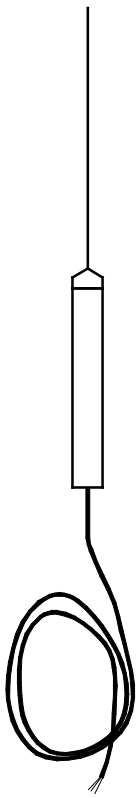
Sensor weight: 250 grams

Dimensions: Overall height – 170 mm x 25 mm Ø

Mounting: 25 mm Ø
dwg no: MSM-06-0038

Cable Details: Standard product has 4m of cable – other cable lengths may be ordered

Warranty: **12 months** – full details can be found in the Monitor Sensors standard warranty document
http://www.monitorsensors.com/docs/std_warranty.pdf



Order codes:

LS1	standard sensor	**LS1-C**	Hi/Low control
LS1-F	TTL pulse		
LS2	standard sensor		
LS2-F	TTL pulse		
LS3	standard sensor		
LS3-F	TTL pulse		

Telf.: 96 816 2005 - 96 111 3302
Mail: comercial@sensovant.com
Web: www.sensovant.com

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RG1 RG2 RG5

µSMART Rain Gauge

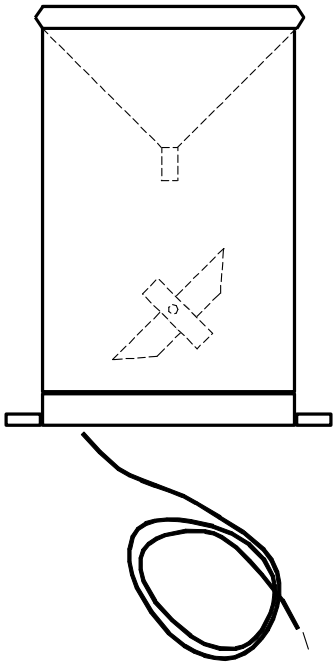
The ***µSMART*** tipping bucket rain gauge accurately measures rainfall. The construction includes a flow regulating siphon assembly, a debris filter, and a bubble level for horizontal adjustment.

The sensor ***Monibus*** interface allows the user to modify the sensor operation through the built-in sensor menus. The sensor incorporates a microprocessor to provide accurate, repeatable readings.

The robust mechanical design ensures a long operational life.

Mechanical

Jewel bearing – ABS bucket
High quality reed switch & magnet
Powder coated aluminium body
Stainless steel filter
High durability cable



Specifications

Range: **RG1** 0.1mm bucket
RG2 0.2mm bucket
RG5 0.5mm bucket

Accuracy: ± 2% at a rainfall rate of 720mm/hr

Operational: -40°C to +80°C

Output options: ***Monibus*** serial data ASCII format
voltage free contacts – 1 x closure each tip

Power Supply: 6-28 Vdc unregulated

Supply current: 1.2 mA active

Sensor weight: 3.2 kg

Dimensions: Overall height – 320 mm x 250 mm Ø

Mounting: 3 x M12 bolts – allows levelling adjustment

Cable Details: 4m - 10m up to 100m by special order

Warranty: **12 months** – full details can be found in the Monitor Sensors standard warranty document
http://www.monitorsensors.com/docs/std_warranty.pdf

Order codes:

RG1	0.1 mm bucket tip	**RG1-D**	0.1 mm bucket tip voltage free contact
RG2	0.2 mm bucket tip	**RG2-D**	0.2 mm bucket tip voltage free contact
RG5	0.5 mm bucket tip	**RG5-D**	0.5 mm bucket tip voltage free contact
RGA	1 mm bucket tip	**RGA-D**	1 mm bucket tip voltage free contact

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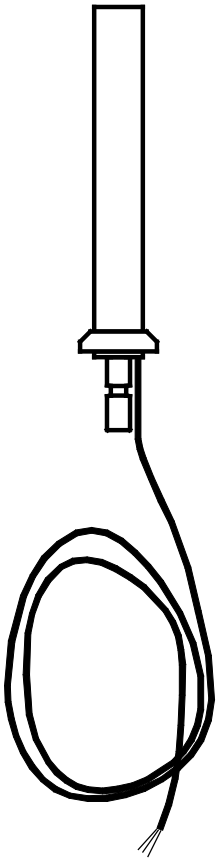
SR

µSMART Solar Radiation Sensor

The ***µSMART*** solar radiation sensor is designed to measure global solar radiation. The sensor has a cosine correction filter that normalises the sensor measurement as the sun moves across the sky.

The sensor ***Monibus*** interface allows the user to modify the sensor operation through the built-in sensor menus. The sensor incorporates a microprocessor to provide accurate, repeatable readings and to allow optional analogue outputs.

The robust mechanical design ensures a long operational life.



Mechanical
- Powder coated aluminium body
- High durability cable
- Fully sealed

Specifications

Range: 0 … 2000 w/m² 400 … 950 nanometres

Accuracy: ± 5%

Cosine Correction: within 2% of theoretical curve

Operational: -20°C to +60°C

Output options:
- ***Monibus*** serial data ASCII format
- Voltage 0-1, 0-2.5 volts
- 4-20mA (requires >12Vdc supply)
- Frequency TTL pulse 2-10 Hz

Power Supply: 6-28 Vdc unregulated

Supply current: 1.2 mA active
0.5 mA economy mode

Sensor weight: 250 grams

Dimensions: Overall height – 170 mm x 25 mm Ø

Mounting: 12 mm Ø spigot
dwg no: MSM-06-0038

Cable Details: Standard product has 2100mm of cable – other cable lengths may be ordered

Warranty: **12 months** – full details can be found in the Monitor Sensors standard warranty document
http://www.monitorsensors.com/docs/std_warranty.pdf

Order codes:

SR2	standard sensor	**SR2-C**	Hi/Low control
SR2-V1	0…1 volt output	**SR2-CV1**	Hi/Low control + 0…1 volt output
SR2-V2	0…2.5 volt output	**SR2-CV2**	Hi/Low control + 0…2.5 volt output
SR2-A4	4…20 mA output	**SR2-CA4**	Hi/Low control + 4…20 mA output
SR2-F	2…10 Hz output	**SR2-9**	sunshine hours on channel 2

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