

# PRECIPITATION MEASURING TECHNOLOGY

## Clima Sensor US

**Part number: 4.920x.x0.00x**

This instrument has a GPS receiver. It serves for the determination of position and time, the sun position is additionally calculated herefrom. Position, Time and sun position are transmitted serially.

The compact construction, easy mounting, and diverse options of data output are the basis for the use in several fields:

- Building control system
- Traffic engineering
- Meteorology
- Energy supply
- Ecological monitoring



## Specification

**Part number: 4.920x.x0.00x**

### Wind speed

Measuring range	0 ... 60 m/s
Resolution	0.1 m/s ( standard )
Accuracy	0 ... 10 m/s ± 0.25 m/s (rms - mean over 360 °) 10 ... 30 m/s ± 2.5 % (rms - mean over 360 °) 30 ... 60 m/s ± 3.5 % (rms - mean over 360 °)

### Wind direction

Measuring range	0 ... 360 °
Resolution	1 ° 0.1 ° in special telegrams
Accuracy	±2 ° WS > 2 m/s

### Data output digital

Interface	RS485 / RS422
Baudrate	1200 ... 921600 Baud
Data values	div. meas. data, date, time, check sum, Precipitation type according to Synop etc.
Output range	1 per 10 msec up to 1 per 60sec

Status signals	heating, Meas section error, Temperature of meas section
Protocol	ASCII ( preselected )
<b>Data output analog</b>	
Type	max. 8 x 0 ... 10 V
Wind speed	0 ... 10 V
Stromausgang	max. 400
Wind direction	0 ... 10 V
Voltage output	min. 2000
Output parameters	wind speed, wind direction, brightness, precipitation, rel. humidity, air temperature, air pressure, etc,
<b>Operating voltage</b>	
Electronic	6 ... 40V DC or 10 ... 28 V AC / typ. 50mA @ 24V
Heating	24 V AC/DC, typ 1,4 A @ 24V
<b>General</b>	
Bus operation	up to 98 sensors
Electr. connection	19 pol. connector
Mounting	on a mast tube 1,5''
Housing	Plastic LEXAN (Polycarbonat, UV-stabilised)
Protection	IP 67

## Versions

As per 4.920x.x0.00x, but:

**Product number 4.9200.00.001**

### Precipitation

Measuring range general	0.001 ... 10 mm/min
Accuracy	typ. 95%

### Radiation

Measuring range	0 ... 2000 W/m <sup>2</sup>
Accuracy	± 30 W/m <sup>2</sup> compared to a Class B pyranometer, calculated from brightness and sun position

### Temperature

Measuring range	-50 ... +80 °C
Accuracy	±0,3 K ( @ 25 °C )

#### Rel. Humidity

Measuring range	0 ... 100 % rel. h.
Accuracy	± 1.8 % rel. h. ( 10 ... 90 % rel. H. )

#### Brightness

Measuring range	0 ... 150 kLux
Accuracy	3 % of rel. measuring value

#### Twilight

Measuring range	0 ... 250 Lux
Accuracy	3 % of rel. measuring value

#### Air pressure

Measuring range	260 ... 1260 hPa
Accuracy	±0.25 hPa @ - 20 ... +80 °C @ 800 ... 1100 hPa ±0.50 hPa @ - 20 ... +80 °C @ 600 ... 800 hPa ±1.00 hPa @ - 50 ... -20 °C @ 600 ... 1100 hPa

#### Data output digital

Protocol	MODBUS RTU ( preselected )
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#### Data output analog

Output parameters	wind speed, wind direction, brightness, precipitation, rel. humidity, air temperature, air pressure , etc.
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#### General

Dimension	Ø 150 x 220 mm
Weight	0.9 kg

#### Product number 4.9201.00.000

#### Temperature

Measuring range	-50 ... +80 °C
Accuracy	±0,3 K ( @ 25 °C )

#### Rel. Humidity

Measuring range	0 ... 100 % rel. h.
Accuracy	± 1.8 % rel. h. ( 10 % ... 90 % rel. H. )

#### Air pressure

Measuring range	260 ... 1260 hPa
Accuracy	±0.25 hPa @ - 20 ... +80 °C @ 800 ... 1100 hPa ±0.50 hPa @ - 20 ... +80 °C @ 600 ... 800 hPa ±1.00 hPa @ - 50 ... -20 °C @ 600 ... 1100 hPa

**Data output analog**

Output parameters	wind speed, wind direction, rel. humidity, air temperature, air pressure , etc.
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**General**

Dimension	Ø 150 x 220 mm
Weight	0.9 kg

**Product number 4.9201.00.001**
**Temperature**

Measuring range	-50 ... +80 °C
Accuracy	±0,3 K ( @ 25 °C )

**Rel. Humidity**

Measuring range	0 ... 100 % rel. h.
Accuracy	± 1.8 % rel. h. ( 10 % ... 90 % rel. H. )

**Air pressure**

Measuring range	260 ... 1260 hPa
Accuracy	±0.25 hPa @ - 20 ... +80 °C @ 800 ... 1100 hPa ±0.50 hPa @ - 20 ... +80 °C @ 600 ... 800 hPa ±1.00 hPa @ - 50 ... -20 °C @ 600 ... 1100 hPa

**Data output digital**

Protocol	MODBUS RTU ( preselected )
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**Data output analog**

Output parameters	wind speed, wind direction, rel. humidity, air temperature, air pressure , etc.
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**General**

Dimension	Ø 150 x 220 mm
Weight	0.9 kg

**Product number 4.9202.00.000**
**Precipitation**

Measuring range general	0.001 ... 10 mm/min
Accuracy	typ. 95%

**Radiation**

Measuring range	0 ... 2000 W/m <sup>2</sup>
Accuracy	± 30 W/m <sup>2</sup> compared to a Class B pyranometer, calculated from brightness and sun position

**Brightness**

Measuring range	0 ... 150 kLux
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Accuracy	3 % of rel. measuring value
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**Twilight**

Measuring range	0 ... 250 Lux
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Accuracy	3 % of rel. measuring value
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**Data output analog**

Output parameters	wind speed, wind direction, brightness, precipitation, etc.
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**General**

Dimension	Ø 150 x 175 mm
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Weight	0.7 kg
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**Product number 4.9202.00.001**

**Precipitation**

Measuring range general	0.001 ... 10 mm/min
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Accuracy	typ. 95%
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**Radiation**

Measuring range	0 ... 2000 W/m <sup>2</sup>
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Accuracy	±30 W/m <sup>2</sup> im Vergleich zu einem Class B Pyranometer, berechnet aus Helligkeiten und Sonnenstand
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**Brightness**

Measuring range	0 ... 150 kLux
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Accuracy	3 % of rel. measuring value
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**Twilight**

Measuring range	0 ... 250 Lux
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Accuracy	3 % of rel. measuring value
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**Data output digital**

Protocol	MODBUS RTU ( preselected )
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**Data output analog**

Output parameters	wind speed, wind direction, brightness, precipitation, etc.
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**General**

Dimension	Ø 150 x 175 mm
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Weight	0.7 kg
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**Product number 4.9203.00.000**

**Data output analog**

Output parameters	wind speed, wind direction, etc.
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#### General

Dimension	Ø 150 x 175 mm
Weight	0.7 kg

#### Product number 4.9203.00.001

#### Data output digital

Protocol	MODBUS RTU ( preselected )
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#### Data output analog

Output parameters	wind speed, wind direction, etc.
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#### General

Dimension	Ø 150 x 175 mm
Weight	0.7 kg

#### Product number 4.9200.20.000

#### Precipitation

Measuring range general	0.001 ... 10 mm/min
Accuracy	typ. 95%

#### Radiation

Measuring range	0 ... 2000 W/m <sup>2</sup>
Accuracy	± 30 W/m <sup>2</sup> compared to a Class B pyranometer, calculated from brightness and sun position

#### Temperature

Measuring range	-50 ... +80 °C
Accuracy	±0,3 K ( @ 25 °C )

#### Rain Temperature

Measuring range	5 ... 50 °C
Accuracy	0,5 °C

#### Rel. Humidity

Measuring range	0 ... 100 % rel. h.
Accuracy	± 1.8 % rel. h. ( 10 ... 90 % rel. H. )

#### Brightness

Measuring range	0 ... 150 kLux
Accuracy	3 % of rel. measuring value

#### Twilight

Measuring range	0 ... 250 Lux
Accuracy	3 % of rel. measuring value
<b>Air pressure</b>	
Measuring range	260 ... 1260 hPa
Accuracy	±0.25 hPa @ - 20 ... +80 °C @ 800 ... 1100 hPa ±0.50 hPa @ - 20 ... +80 °C @ 600 ... 800 hPa ±1.00 hPa @ - 50 ... -20 °C @ 600 ... 1100 hPa
<b>Data output analog</b>	
Output parameters	wind speed, wind direction, brightness, precipitation, rel. humidity, air temperature, air pressure , etc.
<b>General</b>	
Dimension	Ø 150 x 220 mm
Weight	0.9 kg
<b>Product number 4.9200.20.001</b>	
<b>Precipitation</b>	
Measuring range general	0.001 ... 10 mm/min
Accuracy	typ. 95%
<b>Radiation</b>	
Measuring range	0 ... 2000 W/m <sup>2</sup>
Accuracy	± 30 W/m <sup>2</sup> compared to a Class B pyranometer, calculated from brightness and sun position
<b>Temperature</b>	
Measuring range	-50 ... +80 °C
Accuracy	±0,3 K (@ 25 °C)
<b>Rain Temperature</b>	
Measuring range	5 ... 50 °C
Accuracy	0,5 °C
<b>Rel. Humidity</b>	
Measuring range	0 ... 100 % rel. h.
Accuracy	± 1.8 % rel. h. ( 10 ... 90 % rel. H. )
<b>Brightness</b>	
Measuring range	0 ... 150 kLux
Accuracy	3 % of measuring value
<b>Twilight</b>	

Measuring range	0 ... 250 Lux
Accuracy	3 % of measuring value
<b>Air pressure</b>	
Measuring range	260 ... 1260 hPa
Accuracy	±0.25 hPa @ - 20 ... +80 °C @ 800 ... 1100 hPa ±0.50 hPa @ - 20 ... +80 °C @ 600 ... 800 hPa ±1.00 hPa @ - 50 ... -20 °C @ 600 ... 1100 hPa
<b>Data output digital</b>	
Protocol	MODBUS RTU ( preselected )
<b>Data output analog</b>	
Output parameters	wind speed, wind direction, brightness, precipitation, rel. humidity, air temperature, air pressure , etc.
<b>General</b>	
Dimension	Ø 150 x 220 mm
Weight	0.9 kg
<b>Product number 4.9202.20.000</b>	
<b>Precipitation</b>	
Measuring range general	0.001 ... 10 mm/min
Accuracy	typ. 95%
<b>Radiation</b>	
Measuring range	0 ... 2000 W/m <sup>2</sup>
Accuracy	± 30 W/m <sup>2</sup> compared to a Class B pyranometer, calculated from brightness and sun position
<b>Rain Temperature</b>	
Measuring range	5 ... 50 °C
Accuracy	0,5 °C
<b>Brightness</b>	
Measuring range	0 ... 150 kLux
Accuracy	3 % of rel. measuring value
<b>Twilight</b>	
Measuring range	0 ... 250 Lux
Accuracy	3 % of rel. measuring value
<b>Data output analog</b>	
Output parameters	wind speed, wind direction, brightness, precipitation, etc.



### General

Dimension	Ø 150 x 175 mm
Weight	0.7 kg

### Product number 4.9202.20.001

#### Precipitation

Measuring range general	0.001 ... 10 mm/min
Accuracy	typ. 95%

#### Radiation

Measuring range	0 ... 2000 W/m <sup>2</sup>
Accuracy	± 30 W/m <sup>2</sup> compared to a Class B pyranometer, calculated from brightness and sun position

#### Rain Temperature

Measuring range	5 ... 50 °C
Accuracy	0,5 °C

#### Brightness

Measuring range	0 ... 150 kLux
Accuracy	3 % of rel. measuring value

#### Twilight

Measuring range	0 ... 250 Lux
Accuracy	3 % of rel. Measuring value

#### Data output digital

Protocol	MODBUS RTU ( preselected )
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#### Data output analog

Output parameters	wind speed, wind direction, brightness, precipitation, etc.
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### General

Dimension	Ø 150 x 175 mm
Weight	0.7 kg

### Product number 4.9200.00.000

#### Precipitation

Measuring range general	0.001 ... 10 mm/min
Accuracy	typ. 95%

#### Radiation

Measuring range	0 ... 2000 W/m <sup>2</sup>
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Accuracy	± 30 W/m <sup>2</sup> compared to a Class B pyranometer, calculated from brightness and sun position
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#### Temperature

Measuring range	-50 ... +80 °C
Accuracy	±0,3 K (@ 25 °C)

#### Rel. Humidity

Measuring range	0 ... 100 % rel. h.
Accuracy	± 1.8 % rel. h. ( 10 % ... 90 % rel. H. )

#### Brightness

Measuring range	0 ... 150 kLux
Accuracy	3 % of rel. measuring value

#### Twilight

Measuring range	0 ... 250 Lux
Accuracy	3 % of rel. measuring value

#### Air pressure

Measuring range	260 ... 1260 hPa
Accuracy	±0.25 hPa @ - 20 ... +80 °C @ 800 ... 1100 hPa ±0.50 hPa @ - 20 ... +80 °C @ 600 ... 800 hPa ±1.00 hPa @ - 50 ... -20 °C @ 600 ... 1100 hPa

#### Data output analog

Output parameters	wind speed, wind direction, brightness, precipitation, rel. humidity, air temperature, air pressure , etc.
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#### General

Dimension	Ø 150 x 220 mm
Weight	0.9 kg

## Accessories

Product	Product name	Brief description				
	Cable for Clima Sensor US 509311	Cable assembled, 16-core connecting cable for Clima Sensor US  • length 10 m  <b>General</b> <table border="1" data-bbox="703 2427 1774 2552"> <tr> <td>Cable</td> <td>FRNC 16 x 0,25 mm<sup>2</sup></td> </tr> <tr> <td>Length</td> <td>10 m</td> </tr> </table>	Cable	FRNC 16 x 0,25 mm <sup>2</sup>	Length	10 m
Cable	FRNC 16 x 0,25 mm <sup>2</sup>					
Length	10 m					

Cable for Clima  
Sensor US  
509427

Cable assembled, 8-core connecting cable for Clima Sensor US.

- length 10 m

**General**

Cable length	10 m
Cable	LiYCY 8 x 0,25 mm <sup>2</sup>

Thies Device  
Utility  
9.1700.81.000

The PC program “Thies Device Utility” serves for the initial operation and configuration of Thies sensors with serial interface.  
The program can find all sensors connected to the PC, and facilitates an initial operation via terminal function. Thanks to a user-friendly surface design the communication with the sensors is very easy.

**General**

Function	searching for Thies-sensors settings for the communication monitor-presentation of instantaneous measuring values and settings
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**Compatibility**

Connectable instruments	Weather Station Compact WSC11 4.9056.00.000 Clima Sensor US 4.920x.00.000 US-Anemometer 2D 4.38xx.xx.xxx US-Anemometer 3D 4.3830.xx.xxx US-Anemometer 2D compact 4.3875.xx.xxx etc.
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System requirements	PC with Windows 7 or higher
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Power supply Unit  
9.3389.20.000

Serves for the power supply of the ClimaSensor US as well as for the connection and distribution of cable resp. cable wires.

- primary:
- 230 V AC
- secondary:
- 24 V AC / 30 W

**Operating voltage**

Primary	230 V AC / 115 V AC
Secondary	24 V AC / 30 W

**Electrical connection**

Series terminals	16
Cable gland	3 x M16x1.5 1 x M20x1.5

**General**

Housing	plastic
Protection	IP 66
Dimension	ca. 125 x 112.5 x 104 mm
Weight	approx. 1.5 kg