ORION-GC Climate computer

The ORION-GC is a climate computer to control the climate in up to 8 departmentsin a horticulture greenhouse. You can choose between controlling the aeration (wind or protected side), the screen (shadow and energy screen), heating (2 heaters or 3 mixture valves), recirculation ventilation, humidification and lighting, among other things.

The ORION-GC controls on the basis of the selected sensors and settings. The computer also has switching clocks. If a number of departments have to be controlled, some additional CAN-IO units can be included via Can-bus. There can be both an analog and digital weather station connected to Orion-GC.

The computer's control buttons are based on clear symbols that enable you to see what you are doing at a glance. It is possible to make use of curves in case of important settings. A PC and smartphone can be used to operate remotely and read out and log data.

App
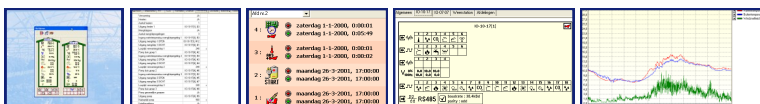
Rainbow HC

Hotraco Horti

Stationsstraat 142
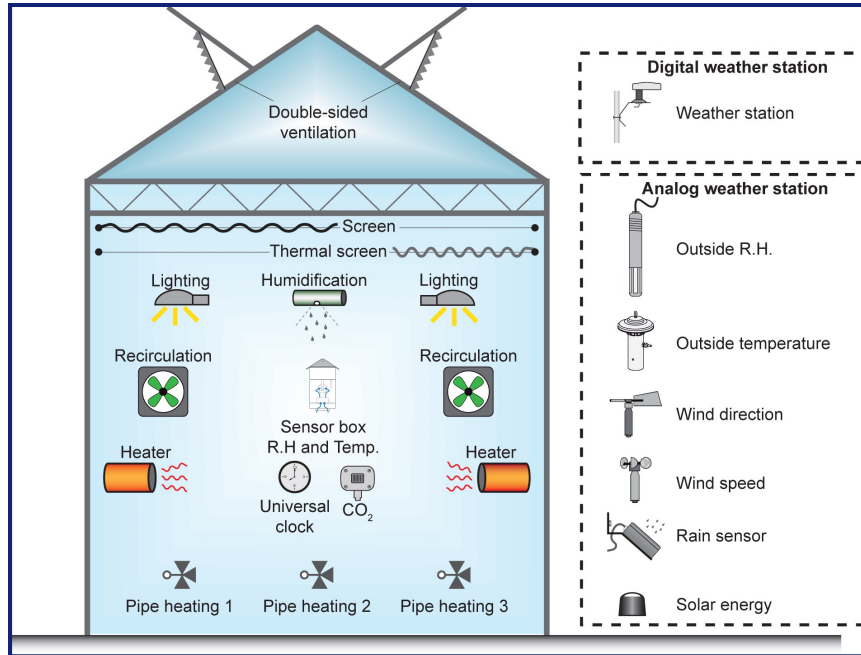5963 AC Hegelsom
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Hotraco Group is an internationally operating group of innovative and high-tech companies specialised in system development and system integration, in particular of control technology oriented solutions. Hotraco Horti develops, produces and supplies simple and high-tech systems and products for the horticulture sector.
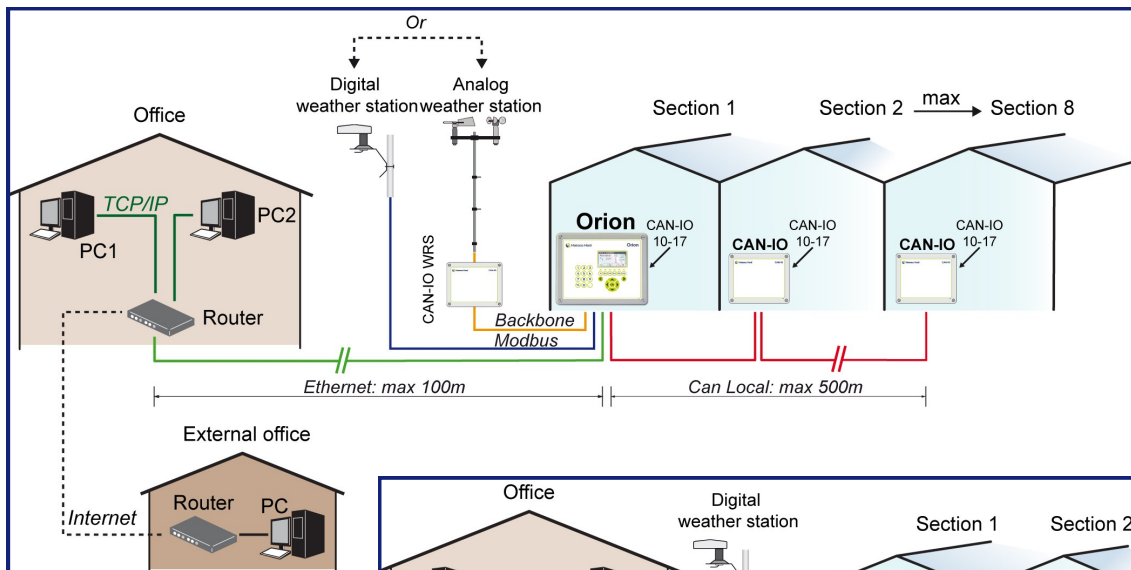
Our own R&D and production departments allow us to realize (almost) all your wishes with regard to control technology. More than 140 skilled employees, whose service is characterized by a high degree of service orientation and flexibility, serve our customers worldwide daily.
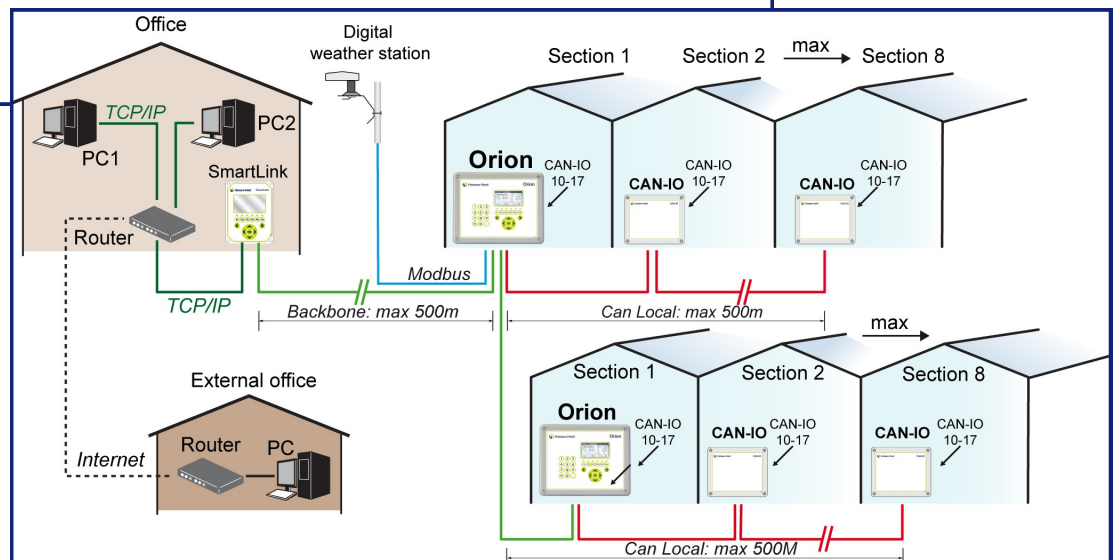
Service & Support
Hotraco's helpdesk and service center is available 24/7. Our team has the possibility to monitor and control our clients' systems, wherever in the world, via state of the art ICT technology.
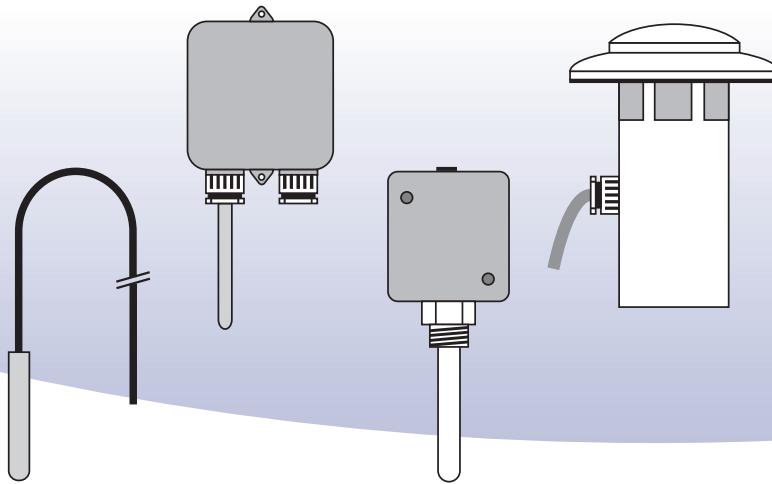
Greenhouse / department

Double-sided ventilation

Screen
Thermal screen
Lighting
Humidification
Lighting
Recirculation
Recirculation
Sensor box R.H and Temp.
Heater
Heater
Universal clock
CO_2
Pipe heating 1
Pipe heating 2
Pipe heating 3

Digital weather station
Weather station

Analog weather station
Outside R.H.
Outside temperature
Wind direction
Wind speed
Rain sensor
Solar energy

Or
Digital weather station
Analog weather station
Office
Section 1
Section 2
max → Section 8
TCP/IP
PC2
PC1
Router
CAN-IO WRS
Backbone Modbus
Orion
CAN-IO 10-17
CAN-IO 10-17
CAN-IO 10-17
Ethernet: max 100m
Can Local: max 500m
External office
Internet
Router
PC

System with 1 computer

Office
Digital weather station
Section 1
Section 2
max → Section 8
TCP/IP
PC2
PC1
SmartLink
Router
Orion
CAN-IO 10-17
CAN-IO 10-17
CAN-IO 10-17
Modbus
TCP/IP
Backbone: max 500m
Can Local: max 500m
max
External office
Internet
Router
PC
Section 1
Section 2
Section 8
Orion
CAN-IO 10-17
CAN-IO 10-17
CAN-IO 10-17
Can Local: max 500M

System with multiple computers

PT1000 · *Temperature sensor*

The PT1000 is a 3-wire temperature sensor with protection to be ordered in different encasings. The sensors can be integrated in configurations with ORION computers.

TECHNICAL SPECIFICATIONS

Temperature range	-50 °C to +100 °C
Tolerance	± 0.1 %
Wiring	PVC-cable grey 3 x 0,25 mm^2 + shield
Resistance temperature	white-brown; 1000 Ω (0 °C) + 3.8 Ω / °C
	brown-green: 0 Ω

Hotraco Agri

Stationsstraat 142
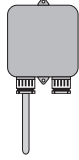**5963 AC Hegelsom**
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Hotraco Agri is a globally operating supplier of innovative computerized systems for use in the pig and poultry sectors specialised in creating and maintaining an optimum indoor climate. Hotraco Agri's main focus is on the development and manufacture of customized computers that regulate, control and monitor the overall animal house system. From climate control and air conditioning, feed and water control, animal weighing, egg counting to fire safety. Over 100 employees serve customers on all continents with innovative and technically advanced systems. The fact that Hotraco Agri has its own R&D and development department means that it is ALWAYS able to deliver customized products and develop problem-specific solutions.
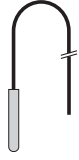
Helpdesk 24/7

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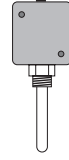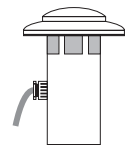
Hotraco Agri
the system creators

	PT1000	PT1000-6	PT1000-W	PT1000-BU
SENSOR	**Roomtemperature**	**Floortemperature**	**Watertemperature**	**Outside temperature**
Material	Stainless steel	Stainless steel	Brass-nickled plated	Stainless steel
Dimensions	Ø 6 mm x 45 mm	Ø 6 mm x 45 mm	Ø 10 mm x 100 mm	Ø 6 mm x 45 mm
Screw thread	-	-	1/2" 15 mm	-
Cable lenght	250 mm	6 m	250 mm	250 mm

ENCASING				
Material	PVC	-	Aluminium	PVC
Dimensions	75 x 75 x 35 mm	-	58 x 64 x 36 mm	Ø 60 mm x 210 mm

RV-Sensor • *Humidity sensor*

The RV-sensor measures the relative air humidity in a room and converts it into an electrical signal. This signal can be used, by means of a climate computer (ORION or SIRIUS), to guard the humidity. If necessary, the climate computer can control a humidifying unit and / or adapt the ventilation.

Three different types of RV-sensors are available

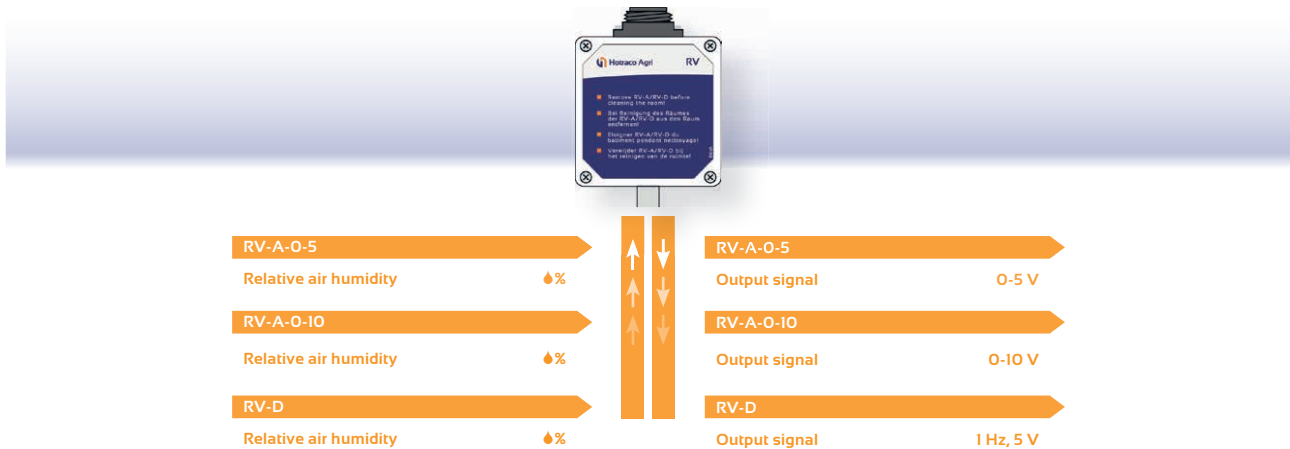|	
RV-A-0-5	Output signal is 0 - 5 Volt
RV-A-0-10	Output signal is 0 - 10 Volt signal
RV-D	Output signal is a 1 Hz, 5 Volt (tt) signal

Hotraco Agri

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Hotraco Agri
the system creators

RV-A-0-5			RV-A-0-5	
Relative air humidity	💧%		Output signal	0-5 V

RV-A-0-10			RV-A-0-10	
Relative air humidity	💧%		Output signal	0-10 V

RV-D			RV-D	
Relative air humidity	💧%		Output signal	1 Hz, 5 V

TECHNICAL SPECIFICATIONS

Electrical

Power supply	+12...+24 Vdc ± 20 %
Power consumption	10 mA
Output signal	0...5 V (RV-A-0-5)
	0...10 V (RV-A-0-10)
	1 Hz, 5 Vtt (RV-D)
Output current	max. 1 mA
Maximum cable length	100 m (0.75 mm² + shield)

Relative air humidity

Measuring range	0...100 % RH
Accuracy at 20 °C	± 3 %
Hysteresis	1.5 %
Working temperature	-10...+ 55 °C

EMC

Emission	EN50081-1
Immunity	EN50082-1

Complies with EC-directives

EMC	2004 / 108 / EC
Low tension	2006 / 95 / EC

Mechanical

Sensor protection	Sintered dust filter
Dimensions (H x W x D)	220 x 82 x 85 mm
Encasing	IP 52
Weight	approx. 210 gr

SENSOR BOX-ES-24VDC

00/Eng/June 2013
Manual

1   General

SENSOR BOX-ES-24VDC is a measuring unit equipped with a circulation fan in which a temperature sensor and a relative humidity sensor can be connected.
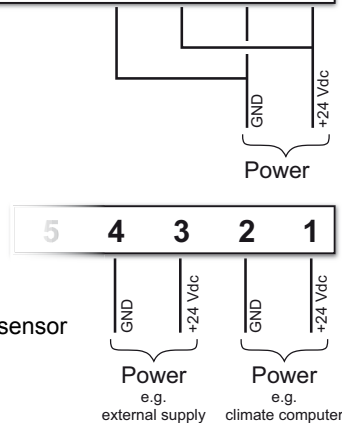
2   Installation and maintenance

Connect temperature and relative humidity sensor according wiring diagram as shown below. Regularly clean the filters to maintain an optimal airflow.

3   Wiring diagram

Air flow
from bottom to top
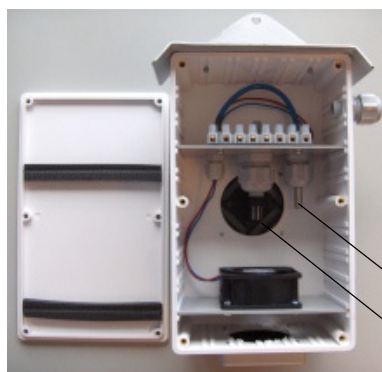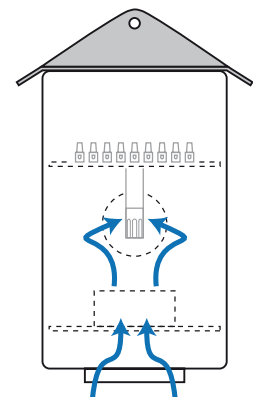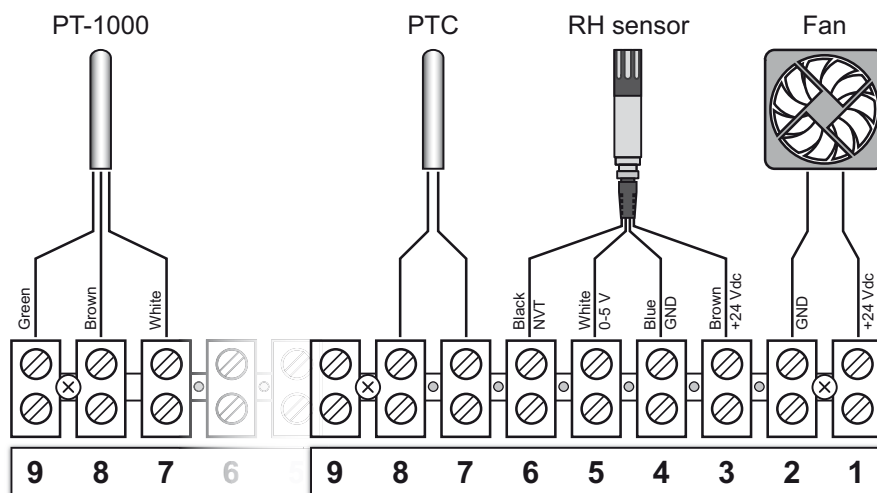
Temperature sensor

RF sensor

Power
e.g.
external supply

Power
e.g.
climate computer

4   Technical specifications

Recirculation fan	:	24 Vdc, 42 mA, 1 Watt
Dimensions	:	225 x 160 x 100 mm
Cable lead-in	:	M16

Thies
CLIMA

The economical model for acquisition of meteorological measuring data in the
- Building technology
- Building automation
- Greenhouse control

WEATHER STATION COMPACT WSC 11

The weather station compact WSC 11 was designed for the varied requirements of the building control technology. The instrument combines precision of the measuring value acquisition with a very compact construction. A smooth integration into new as well as in existing installations is guaranteed.

The acquisition of a total of 11 meteorological parameters on a minimum space characterizes this device. The wind measurement occurs without moving parts. The thermal anemometer measures wind velocity and wind direction without mechanical wear. A costly maintenance is not necessary.

A ceramic sensor detects even small amounts of precipitation. The integrated heating liquefies snow and soft hail, and provides for a quick surface drying.

The integrated GPS and/or RDS/DAB+ module receives automatically date, time, station height, and the geographic position. A manual setting of time is not necessary. The WSC 11 determines the azimuth and the elevation of the sun position from the parameters. The reduced air pressure is calculated by means of the altitude above sea level, and the measured air pressure. All parameters are output with the data telegram.

The data output occurs serially via MODBUS RTU, or in THIES compatible data format. The WSC 11 is mounted on a mast or, by means of a wall holder, directly at the building.

At a glance
- integrable into existing control systems
- with digital interface
- precise and reliable
- wear-free
- easy installation

Global Radiation
Silicium PIN photo diode. The horizontal sensor acquires the diurnal course of the sun radiation.

North marking

Digital interface
RS485 connection (half duplex mode)

Receiving port for mast tube or wall holder

Air pressure
Piezo-resistive MEMS sensor inside. Calculation acc. to the international height formula, based on the sea level (QNH).
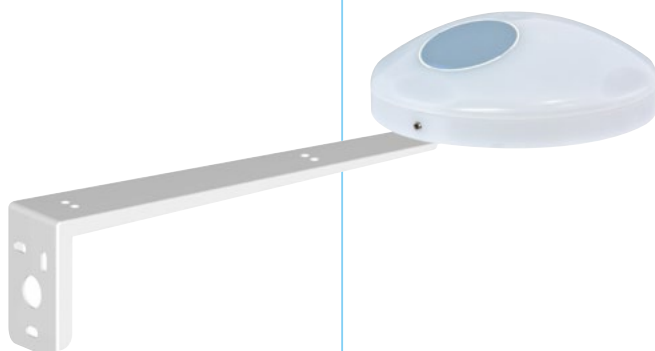
Air humidity
A capacitive sensor measures the relative air humidity.
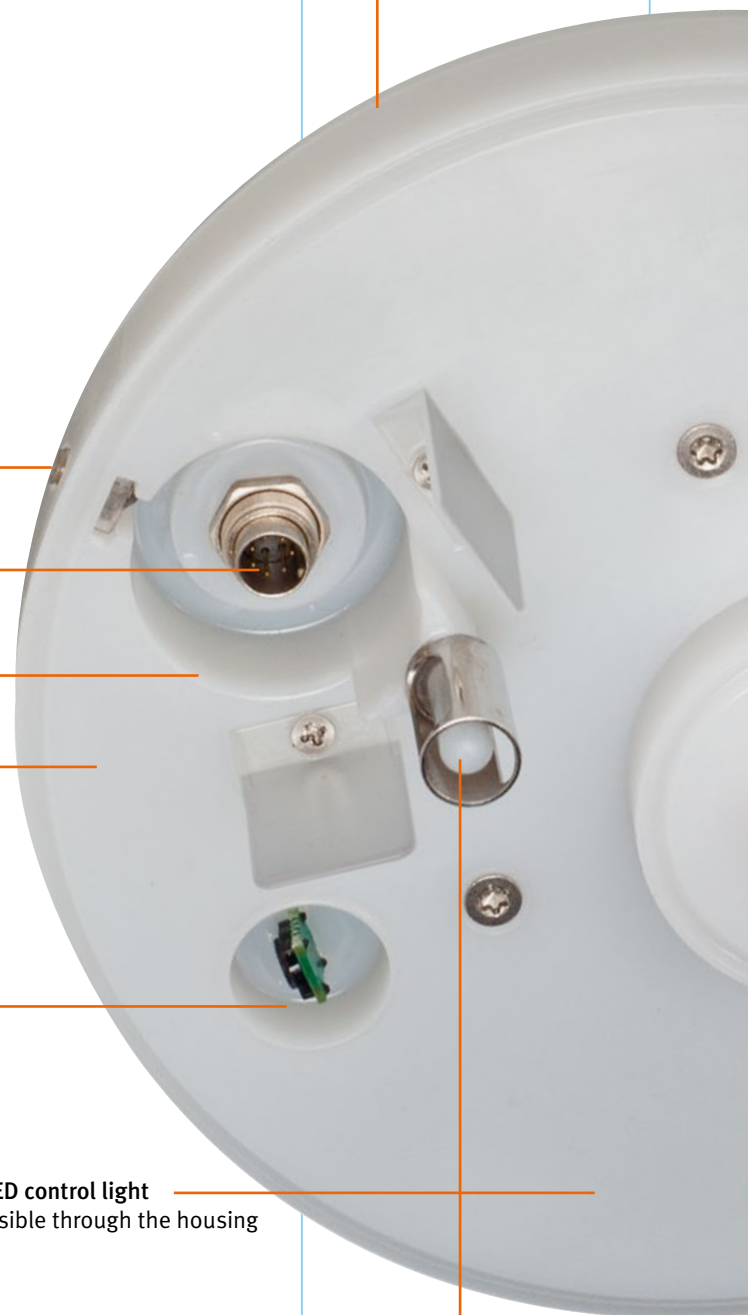
LED control light
visible through the housing

Air temperature
A Pt1000 element acquires the air temperature outside the housing.

WSC 11 with wall holder

Brightness
Silicium photo sensors in the medium elevation angle for all four cardinal directions.

Twilight
Mean value from the four direction-dependent brightness sensors.

Precipitation
Sensor in the housing cover with integrated heating, indicates the precipitation status.

Time/date and geostationary data
GPS and or RDS/DAB+ receiver with integrated RTC.
The backup condenser saves its data w/o power supply up to 3 days.

Sun position elevation and azimuth
The sun position is calculated automatically from the received data.

LED control light
visible through the housing

Wind velocity, wind direction
Thermal anemometer, measuring resistances inside acquire the inflowing wind.

Please request detailed information for your projects.

Technical Data

Wind velocity

Type	Thermal anemometer
Measuring range	0 ... 40 m/s
Resolution	0.1 m/s
Accuracy at	Up to 10 m/s: ±1 m/s
Laminar airflow	From 10 m/s: ±5 %
	RMS mean over 360 °

Wind direction

Type	Thermal anemometer
Measuring range	1 ... 360 °
Resolution	1 °
Accuracy at	±10 °
Laminar airflow	

Brightness

Type	Silicium sensor (North, East, South, West)
Measuring range	0 ... 150 kLux
Resolution	0.1 kLux
Accuracy	±3 % (±4.5 kLux)
Spectral range	475 ... 650 nm

Twilight

Type	Silicium sensor
Measuring range	0 ... 999 Lux
Resolution	1 Lux
Accuracy	±10 Lux

Global radiation

Type	Silicium sensor
Measuring range	0 ... 1300 W/m²
Resolution	1 W/m²
Accuracy	±10 % (±130 W/m²)
Spectral range	350 ... 1100 nm

Precipitation

Type	Ceramic, capacitance measurement
Measuring range	0/1 (precipitation no/yes)
Heating capacity	
Sensor dry	0.1 W (anti-condensation)
Sensor wet	1.1 W (active drying)
Drying phase	3.5 minutes

Temperature

Type	PT1000
Measuring range	-30 ... +60 °C
Resolution	0.1 °C
Accuracy	±1 °C @ WV › 2 m/s and temperature -5 ... +25 °C

Rel. air humidity

Measuring range	0 ... 100 %
Resolution	0.1 %
Accuracy	±10 % @ 10 ... 90 %

Air pressure

Type	Piezo-resistive
Measuring range	300 ... 1100 hPa
Resolution	0.01 hPa
Accuracy	±0.5 hPa @ 20 °C
Long-term stability	±0.1 hPa/year

GPS receiver

Received data	Latitude, longitude date/time, station height
Positional accuracy	3 m (50 % CEP)

Digital interface

Type	RS485
Operating mode	Half duplex mode
Data format	8N1
Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

Protocol

4.9056.10.000	ASCII (Thies-Format)
4.9056.10.001	Binary (MODBUS RTU)

General

Operating voltage	18 ... 30 V DC; 18 ... 28 V AC
Power consumption	‹ 300 mA @ 24 V DC
Temperature range	-30 ... +60 °C
Time	GPS and/or RDS/DAB+ receiver with battery buffered real time clock for approx. 3 days

Housing

Material	PC
Reception opening for mast	25 mm tube diameter
Dimensions	ø 130 mm x 67.5 mm
Weight	0.22 kg
Protection	IP65 only with correct operating position
Connection	7pole plug

Order-No.

WSC 11 with GPS and/or RDS/DAB+ receiver	4.9056.x0.00x

Accessories (optional):

Wall holder 250 mm long	509564
Universal data converter	7.1415.00.200
PC visualization software MeteoOnline	9.1700.98.001
5 m Connection cable	509584
10 m Connection cable	509585

Please contact us
for your system
requirements.
We advise you gladly.

TÜV NORD
TÜV NORD CERT GmbH
ISO 14001/ISO 9001