Weather Station Compact WSC10

Instructions for Use

4.9042.00.00x

Softwareversion: V00.07 Stand: 02/2023

Dok. No. 022028/02/23

THE WORLD OF WEATHER DATA

Safety Instructions

- Before operating with or at the device/product, read through the operating instructions.
  This manual contains instructions which should be followed on mounting, start-up, and operation.
  A non-observance might cause:
  - failure of important functions
  - endangerment of persons by electrical or mechanical effect
  - damage to objects
- Mounting, electrical connection and wiring of the device/product must be carried out only by a qualified technician who is familiar with and observes the engineering regulations, provisions and standards applicable in each case.
- Repairs and maintenance may only be carried out by trained staff or **Adolf Thies GmbH & Co. KG**. Only components and spare parts supplied and/or recommended by **Adolf Thies GmbH & Co. KG** should be used for repairs.
- Electrical devices/products must be mounted and wired only in a voltage-free state.
- **Adolf Thies GmbH & Co KG** guarantees proper functioning of the device/products provided that no modifications have been made to the mechanics, electronics or software, and that the following points are observed:
- All information, warnings and instructions for use included in these operating instructions must be taken into account and observed as this is essential to ensure trouble-free operation and a safe condition of the measuring system / device / product.
- The device / product is designed for a specific application as described in these operating instructions.
- The device / product should be operated with the accessories and consumables supplied and/or recommended by **Adolf Thies GmbH & Co KG.**
- Recommendation: As it is possible that each measuring system / device / product may, under certain conditions, and in rare cases, may also output erroneous measuring values, it is recommended using redundant systems with plausibility checks for **security-relevant applications**.

Environment

- As a longstanding manufacturer of sensors Adolf Thies GmbH & Co KG is committed to the objectives of environmental protection and is therefore willing to take back all supplied products governed by the provisions of "*ElektroG*" (German Electrical and Electronic Equipment Act) and to perform environmentally compatible disposal and recycling. We are prepared to take back all Thies products concerned free of charge if returned to Thies by our customers carriage-paid.

- Make sure you retain packaging for storage or transport of products. Should packaging however no longer be required, please arrange for recycling as the packaging materials are designed to be recycled.

Documentation

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- Subject to modification in terms of content.
- The device / product should not be passed on without the/these operating instructions.

Contents

Tables

Instructions for use

These instructions for use describe all application and adjustment options for the device.

These detailed instructions allow users to modify the factory settings to their needs via the serial interface of the Weather Station Compact WSC10.

Scope of supply

1 Weather Station Compact WSC10.
1 Copy of the instructions for uses.

For assisting the parameter settings and/or special configurations there is our cost-free Device Utility Tool art.-no. 9.1700.81.000 available for download on our homepage. Please download the tool with following link.

Link: https://www.thiesclima.com/de/Download/

In the section "General", the program "Thies Device Utility".

1 Device version

Designation	Order No.	Output terminal	Data format	Operating voltage
WEATHER STATION Compact WSC10	4.9042.00.000	1 x RS485	Data in ASCII format (command interpreter: THIES)	24V DC +10% / -30%
WEATHER STATION Compact WSC10	4.9042.00.001	1 x RS485	Data in Binär format (command interpreter: MODBUS-RTU).)	24V DC +10% / -30%

2 Application

The Weather Station Compact WSC10 is designed for use in building services automation systems (e.g. shade protection control). The Weather Station Compact WSC10 features the following measured variables:

- Wind speed
- Wind direction
- 4 x brightness (45°)
- Twilight
- Global irradiance
- Precipitation (yes/no)
- Air temperature
- Time / date
- Geostationary data (local altitude, longitude and latitude)
- Position of the sun (elevation / azimuth)
- Relative air humidity
- Absolute humidity
- Dew-point temperature
- Inside temperature of housing

The interface to the device is digital and consists of an RS485 interface in half-duplex mode. Together with ID-based communications the interface allows the Weather Station to be operated in a bus. Two data protocols are available:

- ASCII (THIES- format)
- Binary (MODBUS RTU)

3 Structure / Mode of operation

Wind speed / wind direction:

Wind measurement is based on the hot wire principle. The underside of the housing is equipped with a heated cylindrical sensor. A PID controller adjusts the temperature of the cylinder to a temperature that is constantly increased in relation to the environment. The supplied heat energy is a measure of wind speed.

The metal cylinder contains four temperature-measuring resistors. These resistors are thermally coupled with the cylinder and positioned according to the 4 points of the compass. When an incident flow affects the cylinder as a function of the wind direction, this is accompanied by a temperature gradient which is registered by the measuring resistors. The relationships between the 4 temperature values are used to calculate the wind direction.

In case the wind direction cannot be determined because the wind velocity is 0m/s, the value is set to 0. Wind from the north is displayed with 360°.

Brightness:

The brightness measurement is carried out via 4 Silicium photo sensors, which are aligned to the 4 cardinal directions in the mean elevation angle (40°).

Twilight:

Twilight means the light diffusion in the atmosphere, which arises with the smooth transition between day and night before the beginning or after the end of day.
i.e., the solar disc is not visible.
The twilight is direction-independent.
It is calculated from the sum of the 4 measuring values of the direction-independent brightness sensors. A change to the mean value from the 4 brightness values is possible by command.

Global irradiance:

A silicon PIN photodiode is used to measure global irradiance. The sensor is positioned horizontally and registers the diurnal values of the solar irradiation intensity.

Precipitation:

The detection of precipitation is based on capacitance measurement, i.e. the capacity of the sensor surface varies when wet. The sensor is installed in the housing cover. An integrated heating system adjusts the sensor area to an overtemperature in relation to the ambient temperature. This overtemperature (approx. 2K) prevents bedewing of the sensor surface. The thermal output is increased with precipitation. This accelerates drying of the sensor, allowing the time at which precipitation ended to be identified more accurately.

Air temperature:

A PT1000 measuring resistor is used to measure the air temperature. The sensor is mounted on a flexible printed board and positioned in the lower section of the housing.

Time / date and geostationary data:

The Weather Station has a GPS receiver with a built-in RTC. This allows it to receive the position of the Weather Station (degree of longitude/latitude, local altitude) time (UTC) and date. The GPS receiver does not need alignment.
The built-in RTC (Real Time Clock) is buffered with a backup capacitor and retains its data without a voltage supply for a period of minimum 3 days.

Position of the sun (elevation / azimuth):

On the basis of the GPS data the current sun position is calculated every second.

Humidity measurement:

A built-in hygro-thermosensor is used to measure humidity levels. The sensor has a small air exchange volume thanks to its compact design and responds to changes in humidity in seconds.

A software module uses the relative humidity and air temperature to calculate absolute humidity and the dew-point temperature.

Inside temperature of housing:

A silicon temperature sensor measures the temperature inside the housing.

GPS-Receiver:

The weather station has a GPS receiver with integrated RTC (Real Time Clock) for receiving the position of the weather station, and time + date (UTC).
An alignment of the GPS receiver is not necessary.
The integrated RTC is buffered for a period of 3 days.
General information:
After activation of the Weather Station Compact WSC10 the first satellite data are available after approx. 2.5min.

When receiving the signals from one satellite:	time with an accuracy of < 1µs.
When receiving the signals from three satellites:	position with an accuracy of < 20m
When receiving the signals from four satellites:	altitude, referred to the WGS84-ellipsoid, with an accuracy < 30m

3.1 Data Averaging

The meteorological readings are recorded by the sensor every second. The position of the sun is determined every 30 seconds from the GPS data. The averaging of the wind speed and wind direction can be deactivated (instantaneous value every second) or set from 1min to 10min. All other measured values recorded every second are subjected to a plausibility test and made available in the output telegram without further averaging.

4 Installation of Weather Station Compact WSC10

Please note:
The working position of the Weather Station Compact WSC10 is horizontal (plug connection underneath).
During installation, de-installation, transport or maintenance of the Weather Station Compact WSC10 make sure that no water gets into the device and connector.

4.1 Selection of installation site

An exposed position should be selected for this site. Measurement properties should not be influenced by light reflections, cast shadows or the device being positioned in the lee of the wind. Protection against lightning and overvoltage should also be provided by the customer.

The intended installation of the Weather Station requires the use of a pipe socket / pipe with an **≤ Ø 26mm outer diameter**. The **inside diameter must be ≥21mm** to admit the cable.

For the exact determination of wind- and brightness direction the WEATHER STATION must be mounted in **north alignment** (geographic north).

4.2 Mounting

Mounting is carried out in 3 steps

1. Preparing and connecting of supply-/ data cable
2. Putting the sensor onto mast, support, tube etc.
3. Positioning / northward orientation

1. Preparing and connecting of supply-/ data cable

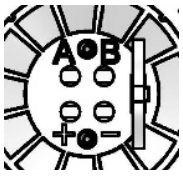
Tools:

Wire strippers

Small needle-nosed pliers, if necessary

Procedure:

1. Strip outer isolation of the cable by 5cm.
2. Strip the now exposed single cable by 1 cm.
3. Twist exposed cable strands each by hand clockwise or counterclockwise (depending on nature of cable).
4. Plug all prepared cable strands successively, by hand, in the marked clamp connection.

Sensor	
A = DATA +	
+ = 24V	
B = DATA -	
- = GND	

Optionally, small needle-nosed pliers might be required as support.

5. Check all cable strands for firm clamping by slight pulling.
6. Fix strain-relief at the cable, and put it into the provided strain-relief hole at the sensor base.

Remark:

If necessary, pull the cable through mast, tube, etc. before cable preparation.

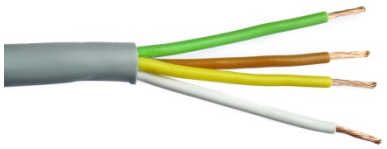


Fig.: Cable

Fig. Sensor base with clamp connections

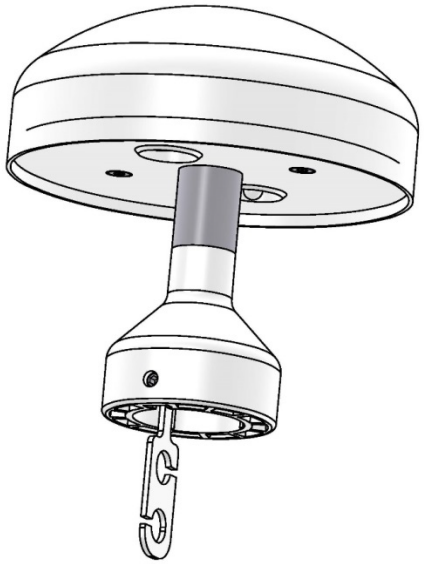


Fig.: Sensor with strain-relief

2. Putting the sensor onto mast, support, tube etc.

Tools:

Allen key size 2

Procedure:

1. If not yet done, lead the cable through the bore hole of mast, tube, bracket etc.
2. Put weather station onto mast, tube.
3. Align weather station to „north" (**procedure see chapter 3. Positioning / northward orientation**)
4. Secure weather station by M4-hexagon socket screws.

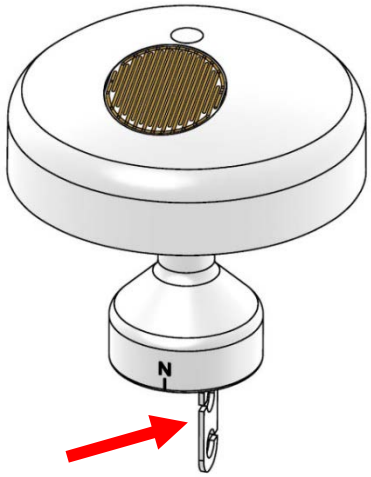
Attention:
The hexagon socket screw is to be tightened by max. 0.6Nm.

Remark: Tube and mounting angle are not included in delivery.

3. Positioning / northward orientation

Tool:

Allen key Gr. 2



Procedure:

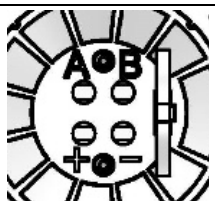
1. Detect a prominent object in the surrounding area (tree, building etc.) in north direction by means of a compass.
2. Via the north marking (N) and an imaginary north-south axis the weather station is to be located on the prominent object.
3. Align weather station.
   The north marking must indicate to the geographic north.
4. In case of match the weather station is to be secured by an M4- hexagon socket screw.

Attention:
The hexagon socket screw is to be tightened by max. 0.6Nm.

Remark:

With the north alignment by means of a compass, the local variation (deviation in direction of a compass needle from the true north direction) by interfering magnetic fields, and magnetic field influences by hardware and electric cable are to be considered.

4.3 Electrical connection

Sensor / terminal connector	Function
	A = DATA +
	+ = Power 24 VDC
	B = DATA **-**
	- = GND (for Power 24 VDC)

4.3.1 Cable

The cable to be used for connection should have the following properties:
4 Cable wires, 0,28 … 0,5mm² wire cross-section, cable diameter max. 5.0mm, resistant to ultraviolet rays, overall shielding.

Attention:
The voltage drop on the cable must be taken into consideration with long cable connections, so that the supply voltage for the Weather Station Compact WSC10is guaranteed.

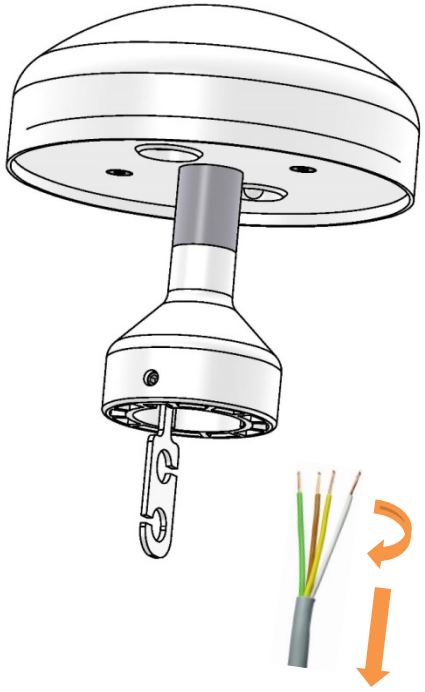
Calculation of the voltage drop on the cable. $U_{Ltg} = R_L * I$; $R = 2 * l * \rho / A$; ρ (rho) = 0,018

Example: I = 0,3A, A = 0,14mm², L = 100m

$R = 2 * l * \rho / A$, R = 25,7Ω

$U_{Ltg} = R_L * I$, **U_{Ltg} = 7,7V**

4.4 Disassembly of the supply / data cable

Disassembly of supply- / data cable	
Tools: Allen key size 2 **Procedure:** 1. Disconnect power supply and data acquisition. 2. Remove weather station from mast, tube, support etc. by loosening the M4-hexagon socket screws. 3. Withdraw strain-relief from base of weather station. 4. Grab single cable wire by finger and thumb. 5. Twist cable strand, thus removing it from the cable clamp. This procedure is to be carried out successively with fixed cable strands.	

5 Maintenance

As the device does not have any moving parts, i.e. is not subject to wear during operation, only minimal servicing is required.
Depending on the location the instrument might pollute. The cleaning should be carried out by means of water and a soft cloth. Aggressive cleaning agents must not be used.

Please note:

During storage, installation, de-installation, transport or maintenance of the Weather Station Compact WSC10 make sure that no water gets into the device or connector.

6 Interface

The interface to the Weather Station consists of a RS485 link (half-duplex mode), with the following data format:

- 9600baud (the baud rate can be selected with command BR).
- 8data bits.
- No parity.
- 1stop bit.
- Data in ASCII format (command interpreter: THIES).
- Data in binary format (command interpreter: MODBUS RTU).

The behavior (configuration) of the Weather Station can be changed using the available commands (see Commands and description).

For the command interpreter Thies-type the query of the measuring values is carried out by command TR.

When the Weather Station starts up, the character string "Weather Station", software version, hardware version and serial number is output:

Sample: Weather Station
V00.04
509914 v12-17
12030123

6.1 Command interpreter THIES

The Weather Station is equipped with a command interpreter of THIES-type, which can be used to change the behaviour of the device. This allows you for example to adjust the averaging periods for wind speed and wind direction. Commands basically have the following structure:

- <id><command><CR> (No parameter: used to interrogate the selected parameter).
- <id><command><parameter><CR> (With parameter: used to set a new parameter).

id:	identification number ("00" to "99")
command:	command encompassing 2 characters (see list of commands)
parameter:	parameter value with between 1 to 10 positions (decimal value in ASCII format)
<CR>:	carriage return (13_{dec}; 0x0D)

The 'id' identification number allows several devices to be operated together in a bus system. Every device is assigned its own 'id' (see command ID).

A transmitted command is acknowledged with an echo telegram. The echo telegram starts with a "!" followed by the id, command and value selected. It ends with the characters "carriage return" and "new line".

Commands can be transmitted with or without a parameter. If no parameter is specified, the set value will be output.

Example: 00BR<CR>
!00BR00005<CR>

If a command is transmitted with a parameter, the parameter is verified. If it is valid, it will be saved and specified in the echo telegram. If the parameter is invalid, it will be disregarded and the set value output in the echo telegram.

Examples:

00BR00005<CR>	transmission command
!00BR00005<CR>	echo telegram (parameter valid and password OK)
00BR00004<CR>	transmission command
!00BR00005<CR>	echo telegram (parameter valid but key incorrect)

Note:

The values measured by the sensor can be queried with the command TR.
In this case the Weather Station does not respond with the echo telegram, but with the requested data telegram!

To avoid any unintentional change in parameters, some commands (see list of commands) are protected with a password. This password must be transmitted before the actual command.

Example: Change baud rate

00KY234<CR>	Release commands of user level
00BR4<CR>	Set baud rate to 4800
!00BR00004<CR>	Baud rate set to 4800

The Weather Station supports 3 different password levels.

- User level (password: "234").
- Calibration data level.
- Administrator level.

Please note:

Password-protected commands are released as long as one of the following conditions is satisfied:
- the supply voltage is switched
- command 00KY0<CR> is transmitted
- no new command is transmitted for min. 120s.

6.1.1 Data telegrams

Data output takes place in response to a request with the command TR. You can choose between the following telegrams:

- Measured value telegram (parameter=1, weather station WSC11 compatible)
- Sensor data telegram (parameter=2)
- Extended measured value telegram (parameter=3, including 4 brightnesses)

Calculation of the checksum, the composition of the status word and the control characters/separators used in the telegrams are described below.

Control characters:

CR – Carriage return (13_{dec}; 0x0D)
LF – Line feed (10_{dec}; 0x0A)
STX – Start of text (2_{dec}; 0x02)
ETX – End of text (3_{dec}; 0x03)

Separators:

The semicolon ';' is used as the separator between the individual measured values in the string.
The checksum separator is the multiplication sign '*'.

Checksum:

The checksum is the XOR link of all characters between <STX> and the byte <*>.
The asterisk acts as the separator from the checksum and is no longer included in the checksum.

Status:

The Weather Station includes a status word (32-bit) which supplies information about the status of the Weather Station. The measured values undergo a plausibility check and are shown in the status word.

Bit number	Function	Description
Bit 0	Precipitation sensor	=1, bedewing protection active.
Bit 1	Precipitation sensor	=1, drying phase of sensor surface.
Bit 2	GPS data	=1, no valid RMC telegram received.
Bit 3	RTC data from GPS receiver	=1, time from GPS receiver invalid.
Bit 4	ADC values	=1, values from analog-digital-converter invalid.
Bit 5	Reserved	=1, Reserved
Bit 6	Brightness north	=1, measured value from brightness sensor north invalid.
Bit 7	Brightness east	=1, measured value from brightness sensor east invalid.

Bit number	Function	Description
Bit 8	Brightness south	=1, measured value from brightness sensor south invalid.
Bit 9	Brightness west	=1, measured value from brightness sensor west invalid.
Bit 10	Twilight	=1, measured value for twilight invalid.
Bit 11	Global irradiance	=1, measured value from global irradiance sensor invalid.
Bit 12	Air temperature	=1, measured value from air temperature sensor invalid.
Bit 13	Precipitation	=1, measured value from precipitation sensor invalid.
Bit 14	Wind speed	=1, measured value from wind speed sensor invalid.
Bit 15	Wind direction	=1, measured value from wind direction sensor is invalid.
Bit 16	Humidity sensor	=1, Readings from the humidity sensor invalid (relative humidity, absolute humidity, dew point temperature).
Bit 17	Watchdog Reset	=1, letzter Neustart durch Watchdog-Reset.
Bit 18	EEPROM Parameters	=1, internal EEPROM parameters invalid.
Bit 19	EEPROM Parameters	=1, internal EEPROM parameters contain the Standard-values.
Bit 20	New FW	=1, last restart was carried out with new firmware.

Table 1 : Status word

6.1.1.1 Measured value telegram

The Weather Station responds to the command "00TR1\r" with the measured value telegram. Only 4 brightness sensors are considered in this telegram. The telegram is compatible with the weather station WSC11. The telegram structure is shown in the following table:

Position	Length	Example	Description
1	1	<STX>	Start of text characters (0x02).
2	3	WSC	Designates the weather station compact WSC10.
5	1	;	Semicolon.
6	2	##	Identification number of weather station.
8	1	;	Semicolon.
9	19	dd.mm.yyyy hh:mm:ss	Date and time separated with a blank character dd: day, mm: month, yyyy: year, hh: hour, mm: minute, ss: second.
28	1	;	Semicolon.
29	6	######	Specifies time format: UTC CEST CET UTC+xh
35	1	;	Semicolon.
36	5	###.#	Brightness north (kLux).
41	1	;	Semicolon.
42	5	###.#	Brightness east (kLux).
47	1	;	Semicolon.
48	5	###.#	Brightness south (kLux).
53	1	;	Semicolon.
54	5	###.#	Brightness west (kLux).
59	1	;	Semicolon.

Position	Length	Example	Description
60	3	###	Twilight (Lux).
63	1	;	Semicolon.
64	4	####	Global irradiance (W/m2).
68	1	;	Semicolon.
69	5	###.#	Air temperature (°C).
74	1	;	Semicolon.
75	1	#	Precipitation status (0: no precipitation, 1: precipitation).
76	1	;	Semicolon.
77	4	##.#	Average[1] wind speed (m/s).
81	1	;	Semicolon.
82	3	###	Average[1] wind direction (°).
85	1	;	Semicolon.
86	6	----.-	Reserved.
92	1	;	Semicolon.
93	6	----.-	Reserved.
99	1	;	Semicolon.
100	5	###.#	Inside temperature of housing (°C).
105	1	;	Semicolon.
106	5	###.#	Relative humidity (% r.h.).
111	1	;	Semicolon.
112	6	###.##	Absolute humidity (g/m³).
118	1	;	Semicolon.
119	5	###.#	Dew-point temperature (°C).
124	1	;	Semicolon.

Position	Length	Example	Description
125	11	####.######	Degree of longitude (°) (GPS position) Positive sign for longitude in eastern direction. Negative sign for longitude in western direction.
135	1	;	Semicolon.
136	1	##.######	Degree of latitude (°) (GPS position).
137	10	###.######	Latitude (°) (GPS position). Positive sign for latitude in northern direction. Negative sign for latitude in southern direction.
147	1	;	Semicolon.
148	5	###.#	Position of the sun, elevation or resp. elevation angle (°). On sunrise and sunset elevation equals 0°. Between these distinctive points (i.e. intraday) the elevation takes positive values.
153	1	;	Semicolon.
154	5	###.#	Position of the sun, azimuth or resp. geographic direction (°). The azimuth is counted positively from the north to the south. 0° = north ; 180° = south.
159	1	;	Semicolon.
160	8	########	32-bit sensor status in hexadecimal format (0000 – FFFFFFFF).
168	1	*	Asterisk as separator for checksum.
169	2	##	8-bit checksum in hexadecimal format (00 – FF). The checksum is calculated from the exclusive OR link of all characters after STX to the character before "*".
171	1	<ETX>	End of text characters (0x03).

Position	Length	Example	Description
172	1	<CR>	Carriage return (0x0D).
173	1	<LF>	Line feed (0x0A).

Table 2 : Measured value telegram

Measured values

The measured values are 1-second average values, with the exception of wind speed and wind direction.

If the specified measuring range is exceeded (see **Te**), the measured value is limited to the maximum (terminal value of measuring range) and the relevant bit set in the status (see **table 1: Status world)**.

6.1.1.2 Sensor data telegram

The Weather Station responds to the command "00TR2\r" with the sensor data telegram. The telegram structure is given in the following table:

Position	Length	Example	Description
1	1	<STX> 0x02	Start of text characters.
2	10	##########	Serial number.
12	1	;	Semicolon.
13	5	##-##	HW version (e.g. 06-11).
18	1	;	Semicolon.
19	5	##.##	SW version (e.g. 01.00).
24	1	;	Semicolon.
25	6	####.#	Height of Weather Station referred to height above sea level in metres, derived from the GPS data (Geoid Model).
31	1	*	Asterisk as separator for the checksum.
32	2	##	8-bit checksum in hexadecimal format (00 – FF). The checksum is calculated from the exclusive OR link of all characters after STX to the character before "*".
34	1	<ETX> 0x03	End of text characters.
35	1	<CR> 0x0D	Carriage return.
36	1	<LF> 0x0A	Line feed.

Table 3 : Sensor data telegram

6.2 Command Interpreter MODBUS RTU

Once the command interpreter is selected the transmitted bytes are interpreted according to the MODBUS specification (http://www.modbus.org/). Here, the Weather Station Compact WSC10 is representing a MODBUS Slave.

The data transmission is carried out in packages, so-called frames, of maximum 256 bytes. Each package contains a 16bit CRC checksum (initial value: 0xffff).

Slave-Address	Function code	Data	CRC	
1byte	1byte	0...252byte(s)	2bytes	
			CRC low-byte	CRC high-byte

Table 4 : MODBUS Frame

The following MODBUS functions are supported:

- 0x04 (Read Input Register).
- 0x03 (Read Holding Registers).
- 0x06 (Write Single Register).
- 0x10 (Write Multiple Registers).

The Weather Station Compact WSC10 supports a write access for the slave-address 0 (“Broadcast”).

All received MODBUS request are checked for validity before carrying out. In error case the weather station responds with one of the following exceptions (➔MODBUS Exception Responses).

Code	Name	Signification
0x01	ILLEGAL FUNCTION	The function code in the request is not allowed for the register address.
0x02	ILLEGAL DATA ADDRESS	The register address in the request is not valid.
0x03	ILLEGAL DATA VALUE	The stated data in the request are not allowed.

Table 5: MODBUS Exceptions

6.2.1 Measuring Values (Input Register)

All measuring values of the Weather Station Compact WSC10 consume 32Bit, i.e. 2 MODBUS register addresses. The following table shows the allocation of measuring value to register address, while the measuring values are sorted as follows:

- By measuring value type (30001 to 34999).
- In unbroken sequence (35001 to 39999).

Register address	Parameter Name	Unit	Multiplicator	Explanation	Data type
30001	Wind speed	m/s	10	value / 10 (1 decimal place, e.g. 101=10.1m/s)	U32
30003	Mean value Wind speed	m/s	10	value / 10 (1 decimal place, e.g.. 101=10.1m/s)	U32
30201	Wind direction	°	10	value/ 10 (1 decimal place, e.g. 1010=101.0°)	U32
30203	Mean value Wind direction	°	10	value / 10 (1 decimal place, e.g. 1010=101.0°)	U32
30401	Air temperature	°C	10	value / 10 (1 decimal place, e.g. 255=25.5°C)	S32
30403	Interior temperature of housing	°C	10	value / 10 (1 decimal place, e.g. 355=35.5°C)	S32
30601	relative humidity	%r.h.	10	value/ 10 (1 decimal place, e.g. 355=35.5°r.F.)	U32
30603	absolute humidity	g/m³	100	value / 100 (2 decimal places, e.g. 923=9.23g/m^3)	U32
30605	Dew point temperature	°C	10	value / 10 (1 decimal place, e.g. 115=11.5°C)	S32
31001	Global radiation	W/m²	10	value / 10 (1 decimal place, e.g 10000=1000.0W/m^2)	S32
31201	Brightness north	kLux	10	value / 10 (1 decimal place, e.g. 1200=120.0kLux)	U32
31203	Brightness east	kLux	10	value / 10 (1 decimal place, e.g.	U32

Register address	Parameter Name	Unit	Multiplicator	Explanation	Data type
				1200=120.0kLux)	
31205	Brightness south	kLux	10	value / 10 (1 decimal place, e.g, 1200=120.0kLux)	U32
31207	Brightness west	kLux	10	value / 10 (1 decimal place, e.g. 1200=120.0kLux)	U32
31209	Twilight	Lux	1	value (no decimal place, e.g. 500=500Lux)	U32
31401	Precipitation status		1	value (no decimal place, (0=no precipitation, 1=precipitation)	U32
34601	Date		1	value (no decimal place, JJJJMMTT, e.g. 20121210=10.12.2012)	U32
34603	Time		1	value (no decimal place, HHMMSS, e.g. 121035=12:10:35)	U32
34605	Time format	h	1	value (no decimal place, offset to UTC in hours, e.g. 60=UTC+1h)	S32
34801	Longitude	°	1000000	value / 1000000 (6 decimal places, e.g.)	S32
34803	Latitude	°	1000000	value/ 1000000 (6 decimal places, e.g.)	S32
34805	Sun position Elevation	°	10	value / 10 (1 decimal place, e.g. 900=90.0°)	S32
34807	Sun position Azimuth	°	10	value / 10 (1 decimal place, e.g. 1800=180.0° / 0°=north, 180°=south, clockwise 0…360°)	S32
34809	Height above sea level	m	1	value (no decimal place, e.g. 240=240m above sea level)	U32
34811	Sensor status		1	value (no decimal place, bit coded, dep. of sensor)	U32
34813	Main loop cycles per 1s	1/s	1	Value (no decimal place, for ex. 2550=2550 1/s)	U32
34815	Operating time	s	1	Value (no decimal place, for ex. 255=255s)	U32
34817	Mean value of the	m	10	Value	U32

Register address	Parameter Name	Unit	Multiplicator	Explanation	Data type
	height over MSL, received via GPS.			(1 decimal place, e.g. 240=24.0m above MSL)	
35001	Wind speed (30001)[1]	m/s	10	value / 10 (1 decimal place, e.g. 101=10.1m/s)	U32
35003	Mean value Wind speed (30003) [1]	m/s	10	value / 10 (1 decimal place, e.g. 101=10.1m/s)	U32
35005	Wind direction (30201) [1]	°	10	value/ 10 (1 decimal place, e.g. 1010=101.0°)	U32
35007	Mean value wind direction (30203) [1]	°	10	value / 10 (1 decimal place, e.g. 1010=101.0°)	U32
35009	Air temperature (30401) [1]	°C	10	value / 10 (1 decimal place, e.g. 255=25.5°C)	S32
35011	Interior temperature of housing (30403) [1]	°C	10	Value / 10 (1 decimal place, e.g. 355=35.5°C)	S32
35013	Dew point temperature (30605) [1]	°C	10	value/ 10 (1 decimal place, e.g. 115=11.5°C)	S32
35015	Rel. humidity (30601) [1]	%r.h.	10	value / 10 (1 decimal place, e.g. 355=35.5°r.h.)	U32
35017	Abs. humidity (30603) [1]	g/m^3	100	value / 100 (2 decimal places, e.g. 923=9.23g/m^3)	U32
35019	-	-	-	-	U32
35021	-	-	-	-	U32
35023	Global radiation (31001) [1]	W/m^2	10	value / 10 (1 decimal place, e.g. 10000=1000.0W/m^2)	S32
35025	Brightness north (31201) [1]	kLux	10	value / 10 (1 decimal place, e.g. 1200=120.0kLux)	U32
35027	Brightness east (31203) [1]	kLux	10	value / 10 (1 decimal place, e.g. 1200=120.0kLux)	U32
35029	Brightness south (31205) [1]	kLux	10	value / 10 (1 decimal place, e.g. 1200=120.0kLux)	U32
35031	Brightness west (31207) [1]	kLux	10	value / 10 (1 decimal place, e.g. 1200=120.0kLux)	U32
35033	Twilight (31209) [1]	Lux	1	value (no decimal place, e.g. 500=500Lux)	U32
35035	Precipitation status (31401) [1]		1	value (no decimal place, (0=no precipitation, 1=precipitation)	U32

Register address	Parameter Name	Unit	Multiplicator	Explanation	Data type
35037	Date (34601) [1]		1	value (no decimal place, JJJJMMTT, e.g. 20121210=10.12.2012)	U32
35039	Time (34603) [1]		1	value (no decimal place, HHMMSS, e.g. 121035=12:10:35)	U32
35041	Time format (34605) [1]	h	1	value (no decimal place, Offset to UTC in hours, e.g. 1=UTC+1h)	S32
35043	Longitude (34801) [1]	°	1000000	value / 1000000 (6 decimal places, e.g.)	S32
35045	Latitude (34803) [1]	°	1000000	value / 1000000 (6 decimal place, e.g.)	S32
35047	Sun position Elevation (34805) [1]	°	10	value / 10 (1 decimal place, e.g. 900=90.0°)	S32
35049	Sun position Azimuth (34807) [1]	°	10	value / 10 (1 decimal place, e.g. 1800=180.0° / 0°=north, 180°=south, clockwise 0…360°)	S32
35051	Height above sea level (34809) [1]	m	1	Wert (no decimal place, e.g. 240=240m above sea level)	U32
35053	Sensor status (34811) [1]		1	value (no decimal place, bit coded, dep. of sensor)	U32
35055	Main loop cycles	1/s	1	value (no decimal place, number cycles per 1s)	U32
35057	SHT2x temperature	°C	10	value / 10 (1 decimal place, e.g. 255=25.5°C)	S32
35059	NTC temperature	°C	10	value / 10 (1 decimal place, e.g. 255=25.5°C)	S32
35061	Operating time	s	1	Value (no decimal place, for ex. 24000=24000s since last reset)	U32
35063	Mean value of the height over MSL (34817)[1], received via GPS.	m	10	Value (1 decimal place, e.g. 240=24.0m above MSL)	U32

Table 6 : MODBUS Input Register

[1]: The numbers in parentheses describe the register addresses, which mean the same measuring value. Thus, the wind speed for ex. is situated at address 30001 and at address 35001.

Remark:

Due to the unbroken sequence of the measuring values, starting from address 35001, the MODBUS master can read-out all measuring values by one request!

6.2.2 Commands (Holding Register)

All commands of the Weather Station Compact WSC10 consume 32Bit, i.e. 2 MODBUS register addresses, and are representing unsigned integral numbers. The following example shows the changing of the baud rate to 19200baud.

1. Set password for the user level (KY=234)

Slave address	Function code	Starting address	Number Registers	Number byte(s)	Data	CRC	
0x01	0x10	0x9C 49	0x00 02	0x04	0x00 00 00 EA	0x4F 7C	
						CRC low-Byte	CRC high-Byte

2. Set command baud rate to 19200 baud (BR=6)

Slave address	Function code	Starting address	Number Registers	Number byte(s)	Data	CRC	
0x01	0x10	0x9C 45	0x00 02	0x04	0x00 00 00 06	0x4E A4	
						CRC low-Byte	CRC high-Byte

6.3 Commands and description

The following table lists the available commands and the associated passwords for read / write:

Command	Initial value factory setting	MODBUS register-address	Description	Password Read[1] / Write[2]	
Command AI	10	40069	Averaging interval for wind speed and wind direction.	None	User
Command BR	96	40005	Select baud rate.	None	User
Command CI	0	40013	Select command interpreter.	None	User
Command DC	0	40081	Mode of calculation for twilight.	None	User
Command FB	1	40001	Quick-start mode.	None	User
Command HP	5	40035	Heating capacity anti-condensation	None	User
Command ID	0 (THIES) 1 (MODBUS)	40003	Identification number resp. slave address.	None	User
Command KY	0	40009	Set key / password.	None	None
Command LC	0	40045	LED control.	None	User
Command NC	0	40037	North correction of the wind direction.	None	User
Command RD	20	40077	Response delay.	None	User
Command RS	-	40029	Reset.	None	User
Command SF	0	40075	Frame format.	None	User
Command SV	-	45005	SW-Version.	None	-
Command TR	-	-	Telegram output.	None	None
Command TT	0	-	Automatic telegram output.	None	User
Command TZ	0	40073	Time zone.	None	User

Table 7 : List of commands

[1]: Command without parameter (used to read selected parameter).

[2]: Command with parameter (used to write a new parameter).

6.3.1 Command AI

<id>AI<parameter><CR>	Averaging interval for wind speed and wind direction
Access:	Read / write.
Description:	The command AI is used to specify the averaging interval for the wind speed and wind direction in minutes. The averaging of the wind velocity is scalar, and the averaging of the wind direction vectorial. If the parameter is 0, the averaging is deactivated, and the mean values correspond to the instantaneous values. Here, the wind direction is reset (to 0°) during calm (< 0.6m/s). Wind from the North is displayed with 360°.
Parameter description:	AI = 0 ➔ averaging disabled AI = 1 ➔ averaging interval = 1 minute
Value range:	0...10
Initial value:	10

6.3.2 Command CI

<id>CI<parameter><CR>	Selection of command interpreter
Access:	Read / write.
Description:	The requested command interpreter is set by command CL.

Remark:
If the identification number (ID) is > 98, it is set to 0 automatically with the change-over to the THIES interpreter!

Remark:
If the identification number (ID) equals 0, a change-over to the MODBUS-RTU-interpreter is not possible!

Parameter description:

Parameter	Description
0	THIES
1	MODBUS RTU

Value range: 0 to 1

Initial value: 0

6.3.3 Command BR

<id>BR<parameter><CR>	Select baud rate
Access:	Read / write.
Description:	The command BR is used to select the required baud rate. Please see command SF.

Parameter description:

Parameter	Description
12	1200baud (8n1)
24	2400baud (8n1)
48	4800baud (8n1)
96	9600baud (8n1)
192	19200baud (8n1)
384	38400baud (8n1)
576	57600baud (8n1)
1152	115200baud (8n1)

Value range:	12 / 24 / 48 / 96 / 192 / 384 / 576 / 1152
Initial value:	96

6.3.4 Command DC

<id>DC<parameter><CR>	Mode of calculation for twilight
Access:	Read/ write.
Description:	The mode of calculation for twilight is stated by command DC. The twilight is calculated from the 4 brightness values, depending on direction. Here, one can select between sum and mean value.
Parameter description:	0: Twilight corresponds to the sum of the 4 brightness values 1: Twilight corresponds to the mean value of the 4 brightness values
value rang:	0...1
Initial value:	0

6.3.5 Command FB

<id>FB<parameter><CR>	Quick-start mode
Access:	Read / write.
Description:	The command FB is used to select quick-start mode.
Parameter description:	0: quick-start mode disabled 1: quick-start mode enabled
Value range:	0...1
Initial value:	1

6.3.6 Command HP

<id>HP<parameter><CR>	Heating power Condensation protection
Access:	Read / write.
Description:	The heating capacity for the condensation protection of the precipitation monitor is set by command “HP”. The indication is stated in percent.
Parameter description:	5…8: Maximum responsivity of the precipitation monitor for detection of the lowest precipitation intensities. 9…17: High responsivity, and at the same time reduction of the responsivity for fog, mist and condensation. 18…22: Maximum insensibility against fog, mist and condensation
Value range:	0...100
Initial value:	5

6.3.7 Command ID

<id>ID<parameter><CR>	Identification number
Access:	Read / write.
Description:	This command is used to specify the identification number (THIES interpreter) resp. the slave address (MODBUS RTU Interpreter). A response telegram will only be transmitted if the 'id' in the command matches the one set in the Weather Station. An exception here is the generic 'id' that causes all weather stations to respond. Once the 'id' has been changed, the device will immediately respond with the new 'id'.
Parameter description:	99 generic 'id' (THIES interpreter) 0 Broadcast slave address (MODBUS RTU Interpreter)
Value range:	0 to 99 (THIES interpreter) 1 to 247 (MODBUS RTU interpreter)
Initial value:	0 (THIES Interpreter) 1 (MODBUS RTU Interpreter)

6.3.8 Command KY

<id>KY<parameter><CR>	Key/password
Access:	Read / write.
Description:	Through of the command “KY” the value for the key (password) is set. For the change of parameters the required password must be used.
Parameter description:	0 no password 234 password for user level
Value range:	0 / 234
Initial value:	0

6.3.9 Command LC

<id>LC<parameter><CR>	LED control
Access:	Read / write.
Description:	The command LC is used to specify the mode for control of the green LED.
Parameter description:	

Parameter	Description
0	LED indicates wind speed
1	LED is dark

Value range:	0 / 1
Initial value:	0

6.3.10 Command NC

<id>NC<parameter><CR>	North correction of the wind direction
Zugriff:	Read / write
Beschreibung:	An offset for the wind direction in ° is specified with the command NC. This can be used to correct the north direction.
Wertebereich:	0 … 360
Initialwert:	0

6.3.11 Command RD

<id>RD<parameter><CR>	Response delay.
Zugriff:	Read / write
Beschreibung:	The RD command is used to query or set the response delay between receiving a command and sending the response.
Parameter description:	Delay in milliseconds e.g. 20 → 20[ms]
Wertebereich:	0 … 50
Initialwert:	20

6.3.12 Command RS

<id>RS<parameter><CR> Reset

Access: Read / write.

Description: Through the command RS a reset of the microcontroller is carried out. The cause for the last reset is output without stating a parameter. Here, the output occurs in the form of strings (see the following table), which are lined up in a row, separated by spaces.

String	Description
GENERAL RESET	Power-On Reset
BACKUP RESET	Reset out Backup-Mode
WATCHDOG RESET	Reset by Watchdog
SOFTWARE RESET	Reset by Software
USER RESET	Reset by NRST Pin

Parameter description:
1 Watchdog reset
2 Software reset

Value range: 1 / 2

Initial value: -

6.3.13 Command SF

<id>SF<parameter><CR> Frame format

Access: read / write.

Description: This command is used to set the frame format oft he weather station.

Parameter description:
0: 8N1 (8 data bits, no parity, 1 stop bit)
1: 8N2 (8 data bits, no parity, 2 stop bits)
2: 8E1 (8 data bits, even parity, 1 stop bit)
3: 8E2 (8 data bits, even parity, 2 stop bits)
4: 8O1 (8 data bits, uneven parity, 1 stop bit)
5: 8O2 (8 data bits, uneven parity, 2 stop bits)

Value range: 0...5

Initial value: 0

6.3.14 Command SV

<id>SV<CR>	SW-Version
Access:	Read.
Description:	The software version can be read by means of command SV.
Parameter description:	-
Response telegram:	-
Value range:	-
Initial value:	-

6.3.15 Command TR

<id>TR<parameter><CR>	Telegram output
Access:	Read / write.
Description:	This command initiates one-off transmission of a telegram. The parameter specifies the type of telegram.
Parameter description:	1 Measured value telegram. 2 Sensor data telegram.
Response telegram:	See chapter 6.1.1
Value range:	1 ... 2
Initial value:	-

6.3.16 Command TT

<id>TT<parameter><CR>	Automatic telegram output
Access:	Read / write.
Description:	The command TT is used to select the automatic output of telegrams (interval = 1 second). Automatic telegram output remains switched off for the first 10 seconds after start-up of the Weather Station. During this time the user has the opportunity of changing the parameter TT.
Parameter description:	0 Automatic telegram output switched off. 1 Measured value telegram. 2 Sensor data telegram.
Response telegram:	See chapter 6.1.1
Value range:	0...2
Initial value:	0

6.3.17 Command TZ

<id>TZ<parameter><CR> Time zone

Access: Read / write.

Description: The command TZ is used to change the output of date/time.

Parameter description:: 0 UTC
23: UTC-Zeit – 1 hours
24: UTC-Zeit
25: UTC-Zeit + 1 hours
48: CEST or CET
The change between summer- and winter time occurs independently.

TZ	Signification
0	UTC
1	UTC – 23 hours
...	...
24	UTC
...	-1
47	UTC + 23 hours
48	CEST or CET

Response telegram: -

Value range: 0...48

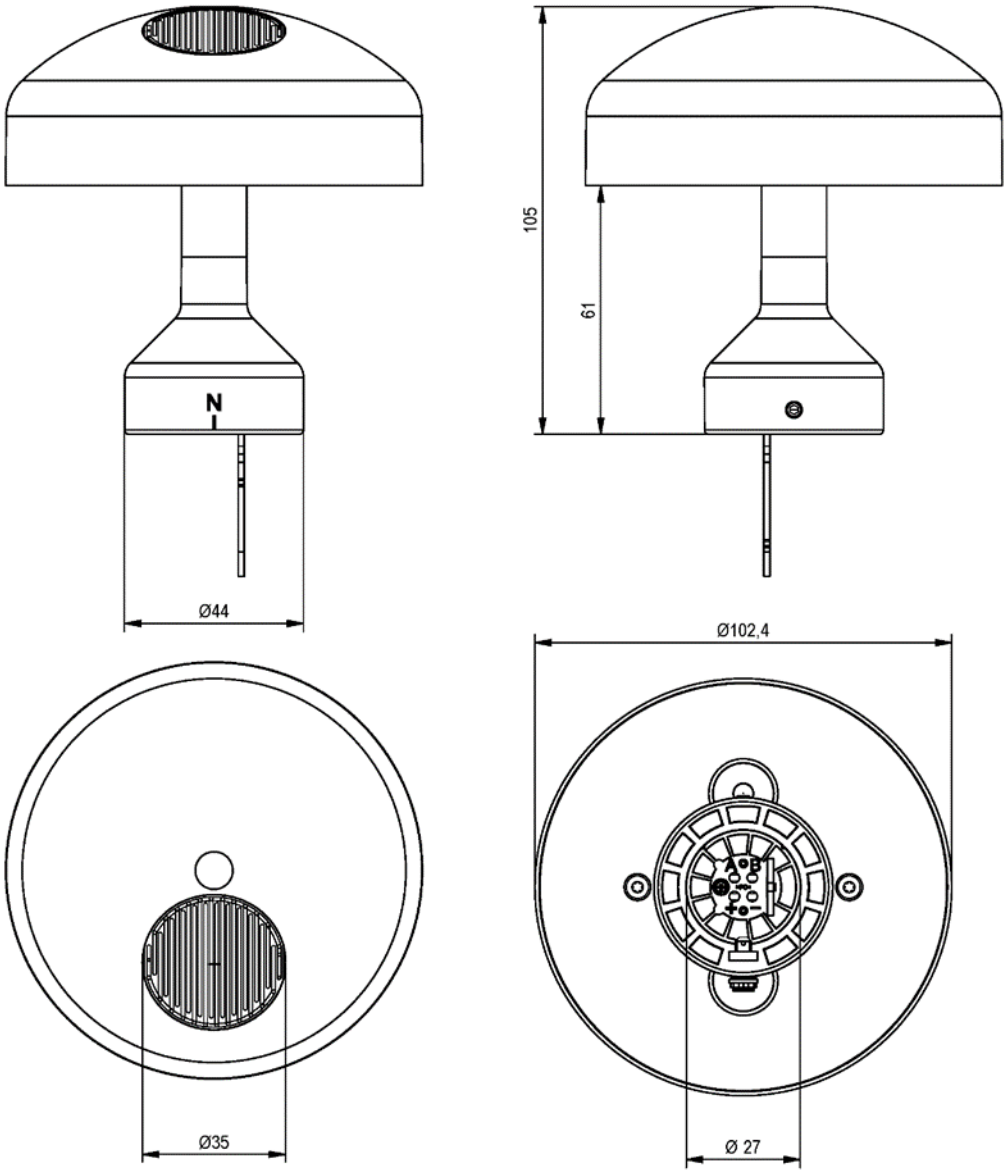
Initial value: 0

7 Technical data

Wind speed		
	Type	Thermal anemometer.
	Measuring range	0 … 35m/s
	Resolution	0.1m/s
	Accuracy	±5 % (±1m/s) rms over 360°
Wind direction		
	Type	Thermal anemometer.
	Measuring range	1 … 360°
	Resolution	1°
	Accuracy with laminar incident flow	±5° @ Wind speed > 2m/s
Brightness		
	Type	Silicon sensor.
(0° , 90°, 180°, 270°)	Measuring range	0 … 100kLux
	Resolution	0.1kLux
	Accuracy	±200 Lux @ < 2kLux ± 10% @ ≥ 2kLux
	Spectral range	475 ... 650nm
Twilight		
	Type	Silicon sensor.
	Measuring range	0 … 1kLux
	Resolution	1Lux
	Accuracy	± 20Lux @ < 100Lux; ± 20% @ ≥ 100Lux
Global Radiation		
	Type	Silicon sensor.
(0°; 90°, 180°; 270°)	Measuring range	0 … 1200W/m²
	Resolution	1W/m²
	Accuracy	± 15W/m² @ < 100W/m²; ± 15% @ ≥ 100W/m²
	Spectral range	350 ... 1100nm
Precipitation		
	Type	Guide value measurement, sensor area heated.
	Measuring range	1 / 0 (precipitation yes/no)
	Thermal output, sensor dry, bedewing protection	0.1W
	Thermal output, sensor wet drying phase	1.1W
Temperature		
	Type	PT1000
	Measuring range	-30 … +50 °C
	Resolution	0.1 °C

	Accuracy with wind speed >2m/s	±1 °C with laminar flow and wind speed > 2m/s
Humidity sensor		
	Type	CMOS capacitive.
Relative humidity		
	Measuring range	0 … 100 % rel. humidity
	Resolution	0.1 % rel. humidity
	Accuracy with wind speed >2m/s	±10% rel. humidity at 20°C and with wind speed > 2m/s
Digital interface		
	Type	RS485
	Mode	Half-duplex mode
	Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
	Data format	-ASCII (command interpreter: THIES) - Binary (command interpreter: MODBUS RTU)
General		
Operating voltage		24V DC +10% / -30%
	Power consumption	<100mA (400mA) at 24VDC (Precipitation sensor wet, Windspeed >20m/s)
Ambient conditions	Temperature range	-30 ... +70 °C
	Humidity range	Non-condensing
GPS reception	GPS receiver with low power consumption, built-in RTC and antenna	
	Holding time of RTC (without voltage supply)	Approx. 1 h
Housing	Material	Polycarbonate (PC)
	Dimensions	See Dimension drawing
	Weight	0.162kg
	Type of protection	IP44 in working position
	Type of connection	4-pol. clamp connector

8 Dimension drawing [in mm]



9 Accessories (optional)

Adapter 1,5“ (51mm) – 3/4“ (27mm) Used to reduce a mast tube diameter from Ø50mm to Ø27mm in order to mount the weather station compact WSC10.	**510686**	Dimension (Outer): Ø66/44/27 mm, 90mm high Dimension (Adaption): Ø51mm for mast tube etc. Ø27mm for weather station compact WSC10 Material: POLYACETAL (POM) Colour: white Weight: 0,14kg
Cable- 12m	**510618**	4 x 0,25mm² with shield, UV resistant
Cable- 20m	**510617**	4 x 0,25mm² with shield, UV resistant
Bracket	**510576**	140mm, for wall and mast mounting

10 EC-Declaration of Conformity

Manufacturer: Adolf Thies GmbH & Co. KG
Hauptstraße 76
37083 Göttingen, Germany
http://www.thiesclima.com

Product: Wetterstation Compact WSC10

Doc. Nr. 2008-44980_CE

Article Overview:

4.9042.00.000	4.9042.00.001

The indicated products correspond to the essential requirement of the following European Directives and Regulations:

2014/30/EU	26.02.2014	DIRECTIVE 2014/30/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.
2014/35/EU	26.02.2014	DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.
2014/53/EU	16.04.2014	DIRECTIVE 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC Text.
2017/2102/EU	15.11.2017	DIRECTIVE (EU) 2017/2102 of the European Parliament and of the Council of November 15, 2017 amending Directive 2011/65 / EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
2012/19/EU	13.08.2012	DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste electrical and electronic equipment (WEEE).

The indicated products comply with the regulations of the directives. This is proved by the compliance with the following standards:

EN 300 400 V 2.2.1	2017-03	Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonised Standard for access to radio spectrum
EN 301489-1 V 2.2.3	2019-12	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility
EN 301489-3 V 2.1.1	2019-03	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU
DIN EN 55024	2016-05	Information technology equipment - Immunity characteristics - Limits and methods of measurement (CISPR 24:2010 + Cor.:2011 + A1:2015)
DIN EN 55032	2016-02	Electromagnetic compatibility of multimedia equipment - Emission Requirements (CISPR 32:2015)
DIN EN 61000-4-2	2009-12	Electromagnetic Compatibility (EMC) - Part 4-2: Testing and measuring procedures - Testing of immunity to static electricity discharge
DIN EN IEC 61000-4-3	2021-11	Electromagnetic compatibility (EMC) - Part 4-3: Test and measurement procedures - Testing of immunity to high-frequency electromagnetic fields
DIN EN 61000-4-4	2013-04	Electromagnetic compatibility (EMC) - Part 4-4: Test and measurement methods - Testing of immunity to fast transient electrical disturbances / burst
DIN EN 61000-4-5	2019-03	Electromagnetic compatibility (EMC) - Part 4-5: Test and measurement procedures - Testing of immunity to surge voltages
DIN EN 61000-4-6	2014-08	Electromagnetic compatibility (EMC) - Part 4-6: Test and measurement methods - Immunity to conducted disturbances, induced by high-frequency fields
DIN EN 61000-4-8	2010-11	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test (IEC 61000-4-8:2009); German version EN 61000-4-8:2010
DIN EN IEC 61000-6-1	2019-11	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments (IEC 61000-6-1:2016)
DIN EN 61000-6-3:2007 + A1:2011	2011-09	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments
DIN EN 61326-2-3	2013-07	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning (IEC 61326-2-3:2012); German version EN 61326-2-3:2013
DIN EN IEC 63000	2019-05	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

Göttingen, 23.02.2023

General Manager - Dr. Christoph Peper

Development Manager - ppa. Jörg Petereit

This declaration of conformity is issued under the sole responsibility of the manufacturer.

This declaration certificates the compliance with the mentioned directives, however does not include any warranty of characteristics.

Please pay attention to the security advises of the provided instructions for use.

11 UK-CA-Declaration of Conformity

Manufacturer: Adolf Thies GmbH & Co. KG
Hauptstraße 76
37083 Göttingen, Germany
http://www.thiesclima.com

Product: Wetterstation Compact WSC10

Doc. Nr. 2008-44980_CA

Article Overview:

4.9042.00.000 4.9042.00.001

The indicated products correspond to the essential requirement of the following Directives and Regulations:

1091	08.12.2016	The Electromagnetic Compatibility Regulations 2016
1101	08.12.2016	The Electrical Equipment (Safety) Regulations 2016
1206	26.12.2017	The Radio Equipment Regulations 2017
RoHS Regulations 2	01.01.2021	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
3113	01.01.2021	Regulations: waste electrical and electronic equipment (WEEE)

The indicated products comply with the regulations of the directives. This is proved by the compliance with the following standards:

EN 300 400 V 2.2.1	2017-03	Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonised Standard for access to radio spectrum
EN 300 400 V 2.2.1	2017-03	Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonised Standard for access to radio spectrum
EN 301489-3 V 2.1.1	2019-03	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU
BS EN 55024	31.01.2011	Information technology equipment. Immunity characteristics. Limits and methods of measurement
BS EN 55032+A1	31.07.2015	Electromagnetic compatibility of multimedia equipment. Emission Requirements
BS EN 61000-4-2	31.05.2009	Electromagnetic compatibility (EMC). Testing and measurement techniques. Electrostatic discharge immunity test
BS EN IEC 61000-4-3	04.11.2020	Electromagnetic compatibility (EMC). Testing and measurement techniques. Radiated, radio-frequency, electromagnetic field immunity test
BS EN 61000-4-4	30.11.2012	Electromagnetic compatibility (EMC). Testing and measurement techniques. Electrical fast transient/burst immunity test
BS EN 61000-4-5+A1	30.09.2014	Electromagnetic compatibility (EMC). Testing and measurement techniques. Surge immunity test
BS EN 61000-4-6	28.02.2014	Electromagnetic compatibility (EMC). Testing and measurement techniques. Immunity to conducted disturbances, induced by radio-frequency fields
BS EN 61000-4-8	30.04.2014	Electromagnetic compatibility (EMC). Testing and measurement techniques. Power frequency magnetic field immunity test
BS EN 61000-6-1	28.02.2007	Electromagnetic compatibility (EMC) - Generic standards - Immunity for residential, commercial and light-industrial environments
BS EN IEC 61000-6-3	30.03.2021	Electromagnetic compatibility (EMC). Generic standards. Emission standard for equipment in residential environments
BS EN IEC 61326-2-3	10.06.2021	Electrical equipment for measurement, control and laboratory use. EMC requirements. Particular requirements. Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning
BS EN IEC 63000	10.12.2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Göttingen, 23.02.2023

Legally binding signature:

General Manager - Dr. Christoph Peper

Legally binding signature:

Development Manager - ppa. Jörg Petereit

This declaration of conformity is issued under the sole responsibility of the manufacturer.

This declaration certificates the compliance with the mentioned directives, however does not include any warranty of characteristics.

Please pay attention to the security advises of the provided instructions for use.

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

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