ABB i-bus® KNX
Weather Unit WZ/S 1.3.1.2
Weather Sensor WES/A 3.1
Product Manual

Power and productivity
for a better world™

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1 General

The Weather Unit WZ/S 1.3.1.2 is a KNX modular installation device with a module width of 4 space units. The device processes up to 8 independent weather data sources which are detected by the Weather Sensor WES/A 3.1.

By recording the brightness level, it is possible to automatically adapt the lighting and shading of rooms to the individual needs of the user. Monitoring and security functions are related to weather data. Blinds and awnings can be retracted in the event of strong wind or skylights and fanlights can be closed when it starts to rain.

1.1 Using the product manual

This manual provides detailed technical information on the function, installation and programming of the ABB i-bus® KNX device. The application is explained using examples.

This manual is divided into the following chapters:

Chapter 1	General
Chapter 2	Device technology
Chapter 3	Commissioning
Chapter 4	Planning and application
Chapter A	Appendix

1.1.1 Notes

Notes and safety instructions are represented as follows in this manual:

Note
Tips for usage and operation

Examples
Application examples, installation examples, programming examples

Important
These safety instructions are used as soon as there is danger of a malfunction without risk of damage or injury.

Attention
These safety instructions are used as soon as there is danger of a malfunction without risk of damage or injury.

 **Danger**
These safety instructions are used if there is a danger to life and limb with inappropriate use.

 **Danger**
These safety instructions are used if there is an extreme danger to life with inappropriate use.

1.2 Product and functional description

The device is a modular installation device with a module width of 4 space units in Pro *M* design for installation in distribution boards. The connection to the ABB i-bus® is established using a bus connection terminal on the front side. The assignment of the physical address, as well as the setting of parameters, is carried out with Engineering Tool Software ETS.

- The device allows the recording and processing of eight independent weather data signals from the Weather Sensor.
- The WZ/S has an integrated power supply unit for power supply to the Weather Sensor. The mains voltage is 85...265 V AC, 50/60 Hz.
- The Weather Sensor WES/A 3.1 detects twilight, brightness in three directions, rain, temperature, day/night, wind speed and the date and time using the radio receiver.
- The measured value can be sent as a 1-bit value, 1-byte value, 2-byte value or 3-byte value via the bus, depending on the parameters selected.
- It is possible to set 2 thresholds per sensor. The thresholds each have an upper and lower limit which can be set independently. The thresholds themselves can be modified via the bus. It is important to note that the thresholds are overwritten after a download.
- The internal logic can be set as an AND or OR gate. The gate can be assigned a maximum of 4 inputs and one output. The inputs and outputs can be inverted. It is possible, for example, to link 2 inputs together via the logic function.
- Four value memories each featuring 24 memory slots are available. The values are stored in the ring buffer.
- The Weather Unit possesses two LEDs: LED "On" and LED "Comm. Error".
  - The LED "On" turns green when the device has a mains voltage supply.
  - The LED "Comm. Error" is off when communication between the Weather Unit and the Weather Sensor is free from errors.
  - The LED "Comm. Error" turns yellow when data communication between the Weather Unit and Weather Sensor could not be executed successfully.
- There is an LED on the underside of the Weather Sensor, which functions as follows after switching on:

Note
To switch on the Weather Sensor, connect it to the Weather Unit, which, in turn, is connected to both the power supply and the KNX.

  - The LED lights up permanently when voltage is available.
  - The LED flashes when communication is taking place.
  - The LED flashes once when the Weather Sensor is in compatibility mode.
  - The LED flashes twice when a new protocol is sent.

Note
The LED will stop flashing and go off 10 minutes after the Weather Sensor is switched on.

1.2.1 Integration in the i-bus® Tool

The device possesses an interface to the i-bus® Tool.

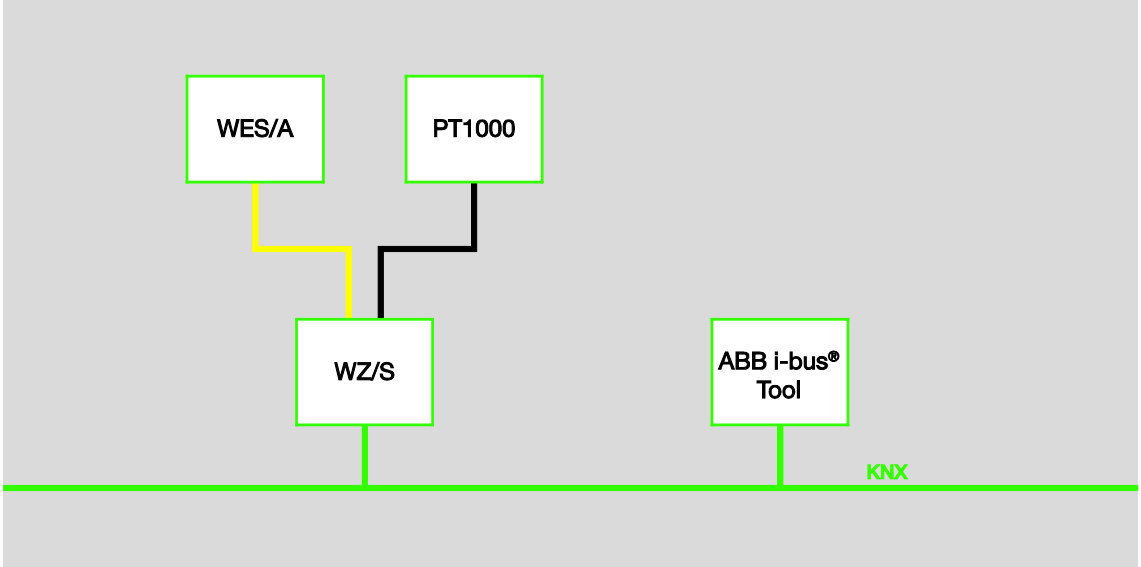
The i-bus® Tool can be used to change settings on the connected device and perform firmware updates, e.g. for the Weather Sensor.

In addition, sensor data can be simulated, e.g. for test purposes. Sensor data can only be simulated when the appropriate sensor has been configured in the ETS. If there is no communication between the Weather Sensor and Weather Unit, then no output values (measured values, logic, thresholds) can be sent to the bus, even if they were simulated using the i-bus® Tool. Simulation with the i-bus® Tool does not overwrite communication objects relating to sensor errors.

The i-bus® Tool can be downloaded for free from our website (*www.abb.com/knx).*

ETS is not required for the i-bus® Tool. However, Falcon Runtime (version 1.6 or higher and version 1.8 or higher for Windows 7) must be installed to set up a connection between the PC and KNX.

A description of the functions can be found in the online help of the i-bus® Tool.



Note
If an update is started for the Weather Sensor, then this can take approx. 30 minutes. The time is influenced, for example, by the PC upon which the i-bus Tool is running.

1.2.2 Backward compatibility of the devices

The MDRC devices and sensors are backward compatible and can be interchanged, although the following restrictions must be taken into account:

For WES/A 3.1 in combination with the WZ/S 1.1:

- The Weather Unit does not detect that the wind sensor is faulty.

For WES/A 1.1 and WES/A 2.1 in combination with the WZ/S 1.3.1.2:

- No additional parameter settings are required.
- A sensor error on the right brightness sensor, center brightness sensor and left brightness sensor can be detected.
- The WES/A 1.1 and WES/A 2.1 sensor can detect a wind sensor error automatically and then send the output value 24 m/s.

2 Device technology

2.1 Weather Unit

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WZ/S 1.3.1.2

The Weather Unit WZ/S 1.3.1.2 is used - primarily in residential applications - to record weather data. The Weather Sensor WES/A 3.1 is connected to the Weather Unit. The connection to the bus is established via the bus connection terminal on the front of the device.

The device is ready for operation after the connection of the mains voltage and the bus voltage. The assignment of the physical address and the parameterization are carried out using ETS and the current application.

Note
Facade control is not possible with the Weather Unit WZ/S 1.3.1.2. Please use the Weather Station WS/S for this. The WES/A sensor combined with the Weather Unit is suitable for small to medium-sized buildings. The facade structure, wind conditions and local influences should also be considered with these buildings.

2.1.1 Technical Data of Weather Unit

Supply	Bus voltage	21…32 V DC
	Current consumption, bus	< 10 mA
	Mains voltage U_S	85…265 V AC, 110…240 V DC, 50/60 Hz
	Power consumption	Max. 11 W at 230 V AC
	Power consumption, mains	80/40 mA, at 115/230 V AC
	Power dissipation	Max. 3 W at 230 V AC
Auxiliary voltage supply to supply the sensor	Nominal voltage U_n	24 V DC ± 2 V
	Rated current I_n	200 mA
	Power	0.38 W, when heating switched off (WES/A 3.1) 4.15 W, when heating switched on (WES/A 3.1)
Connections	KNX	Via bus connection terminal, screwless
	Mains voltage	Via screw terminals
	1 (0 V potential)	Electrical supply
	2 (24 V potential)	Electrical supply
	A (RS 485)	Serial data communication
	B (RS 485)	Serial data communication
	PT1000	Temperature-dependent resistance
Connection terminals	Screw terminals	0.2…2.5 mm^2 fine stranded
		0.2…4.0 mm^2 single core
	Tightening torque	Max. 0.6 Nm
Cable length	Between the Weather Unit and Weather Sensor	Max. 100 m
Cable length / cable cross-section	P-YCYM or J-Y(ST)Y	2 x 2 x 0.8
Operating and display elements	*Programming* Button/LED	For assignment of the physical address
Temperature range	Power	-5 °C…+45 °C
	Transport	-25…+70 °C
	Storage	-25…+55 °C

Design	Modular installation device (MDRC)	Modular installation device, Pro*M*
	Dimensions	90 x 72 x 64.5 mm (H x W x D)
	Mounting width in space units	4 x 18 mm modules
	Mounting depth	64.5 mm
Mounting	On 35 mm mounting rail	to DIN EN 60 715
Installation position	Any	
Weight	0.2 kg	
Housing/color	Plastic housing, gray	
Protection type	IP 20	to DIN EN 60 529
Protection class	II	to DIN EN 61 140
Approvals	KNX to EN 50 090-1, -2	Certification
CE mark	In accordance with the EMC guideline and low voltage guideline	

Device type	Application	Max. number of Communication objects	Max. number of group addresses	Max. number of assignments
WZ/S 1.3.1.2	Weather information/1*	107	254	254

* … = Current version number of the application. **Please refer the software information on our website for this purpose.**

Note

ETS and the current version of the device application are required for programming.

The current version of the application is available on the Internet for download at *www.abb.com/knx*. After import into ETS, it appears in the *Catalogs* window under *Manufacturers/ABB/Input/Weather Unit*.

The device does not support the locking function of a KNX device in ETS. If you use a BCU code to inhibit access to all the project devices, it has no effect on this device. Data can still be read and programmed.

2.1.2 Resolution and accuracy and tolerances

Please note that the tolerances of the sensors which are used will need to be added to the listed values.

With sensors based on resistance measurement, it is also necessary to consider the feeder cable errors.

In the supplied state of the device, the stated accuracies will not be initially achieved. After initial commissioning, the device performs an autonomous calibration of the analog measurement circuit. This calibration takes about an hour and is performed in the background. It is undertaken regardless of whether or not the device is parameterized and is independent of the connected sensors. The normal function of the device is not affected. After calibration has been completed, the calibration values which have been determined will be stored in the non-volatile memory. Thereafter, the device will achieve this level of accuracy every time it is switched on. If the calibration is interrupted by programming or bus failure, it will recommence every time it is restarted. The ongoing calibration is displayed in the status byte by a 1 in bit 7.

PT1000

The PT1000 is precise and can be replaced and is only slightly influenced by feeder cable errors.

Tolerance classes:

Designation	Tolerance
DIN class A	0.15 + (0.002 x t)
1/3 DIN class B	0.10 + (0.005 x t)
1/2 DIN class B	0.15 + (0.005 x t)
DIN class B	0.30 + (0.005 x t)
2 DIN class B	0.60 + (0.005 x t)
5 DIN class B	1.50 + (0.005 x t)
t = Current temperature	

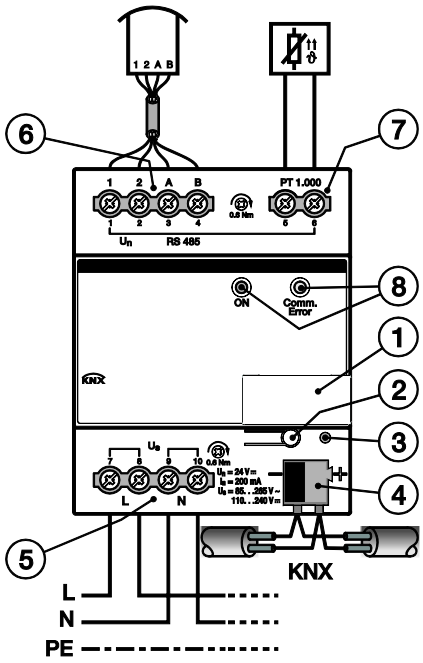
2.1.3 Resistance signals

Sensor signal	Resolution	Accuracy at 25 °C T_u *1	Accuracy at -5…+45 °C T_u *1	Remark
PT1000 *2	0.1 Ohms	± 1.5 Ohms	± 2.0 Ohms	1 Ohm = 0.25 °C

*1 additional to current measured value at ambient temperature T_u

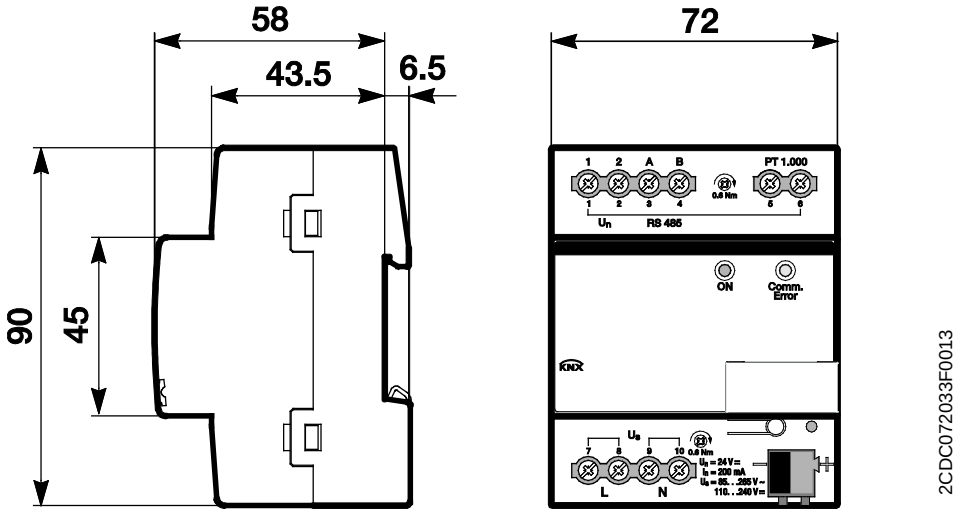
*2 plus feeder cable and sensor faults

2.1.4 Connection diagram for Weather Unit



1	Label carrier	**5**	Power supply
2	*Programming* button	**6**	Connection of Weather Sensor
3	*Programming* LED	**7**	Connection of PT1000 sensor
4	Bus connection terminal	**8**	LED "On" and LED "Comm. Error"

2.1.5 Dimension drawing of Weather Unit



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2.2 Mounting and installation of the Weather Unit

The device is a modular installation device for quick installation in distribution boards on 35 mm mounting rails to DIN EN 60 715.

The installation position can be selected as required.

The electrical connection is implemented using screw terminals. The connection to the bus is implemented using the supplied bus connection terminal. The terminal assignment is located on the housing.

The device is ready for operation once the mains voltage and the bus voltage have been applied.

Accessibility to the device for the purpose of operation, testing, visual inspection, maintenance and repair must be provided compliant to DIN VDE 0100-520.

Note
The Weather Unit WZ/S 1.3.1.2 may not be mounted outdoors. The technical data of the weather sensor must be observed for optimum measuring or monitoring values. The same applies with regard to the specifications for lightning protection equipment.

Commissioning requirement

In order to commission the device, a PC with ETS as well as a connection to the ABB i-bus®, e.g. via a KNX interface, is required.

The device is ready for operation when the mains voltage and the bus voltage have been applied.

Important
The maximum permissible current of a KNX line must not be exceeded. During planning and installation ensure that the KNX line is correctly dimensioned. The device features a maximum current consumption of 12 mA (Fan-In 1).

Mounting and commissioning may only be carried out by electrical specialists. The appropriate standards, guidelines, regulations and specifications for the appropriate country should be observed when planning and setting up electrical installations and security systems for intrusion and fire detection.

- Protect the device from damp, dirt and damage during transport, storage and operation.
- Only operate the device within the specified technical data!
- The device should only be operated in an enclosed housing (distribution board)!
- The voltage supply to the device must be switched off before mounting work is performed.

Danger

To avoid dangerous touch voltages which originate through feedback from differing phase conductors, all poles must be disconnected when extending or modifying the electrical connections.

Supplied state

The device is supplied with the physical address 15.15.255. The application is pre-installed. It is therefore only necessary to load group addresses and parameters during commissioning.

The complete application can be reloaded if required. Downloads may take longer after a change of application or a discharge.

Assignment of the physical address

The assignment and programming of the physical address is carried out in ETS.

The device features a *Programming* button for assignment of the physical address. The red *Programming* LED lights up after the button has been pressed. It goes off as soon as ETS has assigned the physical address or the *Programming* button is pressed again.

Download reaction

Depending on the PC which is used, the progress bar for the download may take up to one and a half minutes to appear, due to the complexity of the device.

Cleaning

The voltage supply to the device must be switched off before cleaning. If devices become dirty, they can be cleaned using a dry cloth or a cloth dampened with a soapy solution. Corrosive agents or solutions should never be used.

Maintenance

The device is maintenance-free. In the event of damage repairs should only be carried out by an authorized person, e.g. during transport and/or storage.

Note
After successful commissioning of the Weather Unit and Weather Sensor, the Weather Sensor will require a settling or heating up phase of about 30 minutes. Only after this phase will the correct temperature be available and can be calibrated if necessary.

2.3 Weather Sensor

WES/A 3.1

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The Weather Sensor WES/A 3.1 detects – primarily in the residential sector – wind speed, rain, brightness in three directions, twilight, temperature and the date and time using the GPS signal.

The WES/A 3.1 is matched to the Weather Unit from ABB.

An additional heating transformer is not required.

Note
Facade control is not possible with the Weather Unit WZ/S 1.3.1.2. Please use the Weather Station WS/S for this. The WES/A sensor combined with the Weather Unit is suitable for small to medium-sized buildings. The facade structure, wind conditions and local influences should also be considered with these buildings.

2.3.1 Weather Sensor technical data

Supply	Voltage	24 V DC ± 2 V
	Current	200 mA
	Power	0.38 W, when heating switched off 4.15 W, when heating switched on
Connections	Electrical supply	1 (0 V potential)
	Electrical supply	2 (24 V potential)
	Serial data communication	A (RS 485)
	Serial data communication	B (RS 485)
Connection terminals	RS 485	Bus connection terminal, 2x (yellow/white) 0.8 mm Ø, single core
	Supply	Terminal, 2-pin, screwless Wire end diameter 0.4…1.5 mm^2
Cable length	Between the Weather Unit and Weather Sensor	100 m
Cable length / cable cross-section	P-YCYM or J-Y(ST)Y	2 x 2 x 0.8
Temperature range	Power	-25…+60 °C
	Transport	-25…+70 °C
	Storage	-25…+60 °C
Ambient conditions	Atmospheric pressure	Atmosphere up to 2,000 m
Mounting	Wall fastening	
Installation position	Horizontal	
Dimensions	L x W x H	227 x 121 x 108 mm
Housing/color	Plastic, transparent 2 cable entries	
Protection type	IP 44	to DIN EN 60 529
Protection class	III	to DIN EN 61 140
Isolation category	Overvoltage category	III to EN 60 664-1
	Pollution degree	3 to DIN EN 60 664-1
Fire classification		V-2
CE mark	In accordance with the EMC guideline and low voltage guideline	

Sensors	3 x brightness sensors (center, left, right) 1 x wind sensor 1 x temperature sensor 1 x rain sensor 1 x GPS receiver	
Brightness sensors / twilight	Total measurement range (max. measurement range)	0… 100,000 Lux (130,000 Lux)
	Accuracy	± 25 %
	Measurement range Resolution	0…100 Lux 1 Lux
	Measurement range Resolution	100…10,000 Lux 10 Lux
	Measurement range Resolution	10,000…100,000 Lux 100 Lux
Daylight	Day => Night Night => Day	Under 10 Lux is night Over 10 Lux is day
Wind sensor	Total measurement range (max. measurement range)	0…24 m/s (0…30 m/s)
	Accuracy	2.5…15 m/s ± 20 % 15…24 m/s ± 30 %
	Resolution	0.5 m/s
	Jump response	5 s at 5…15 m/s
Temperature sensor	Total measurement range	-25…+60 °C
	Accuracy	At least ± 2 °C
	Resolution	0.1 °C
Rain sensor	Power consumption at 24 V	3.77 W, heating 100 % (max.) At 10 °C, no rain and a heating power of 3 W, the rain sensor will dry within 5 min. The heating power is adjusted automatically between 0 % (off) and 100 % (max.). The heating is switched on when the Weather Sensor is started.
	Function	Rain/no rain
Radio receiver	GPS Acquisition mode: Current / power Tracking mode: Current / power Chipset Frequency Communication	Date and time 45 mA / 81 mW, at 1.8 V 35 mA / 63 mW, at 1.8 V SIRFstarIV 1575.42 MHz ± 1.023 MHz Galileo satellites

Note

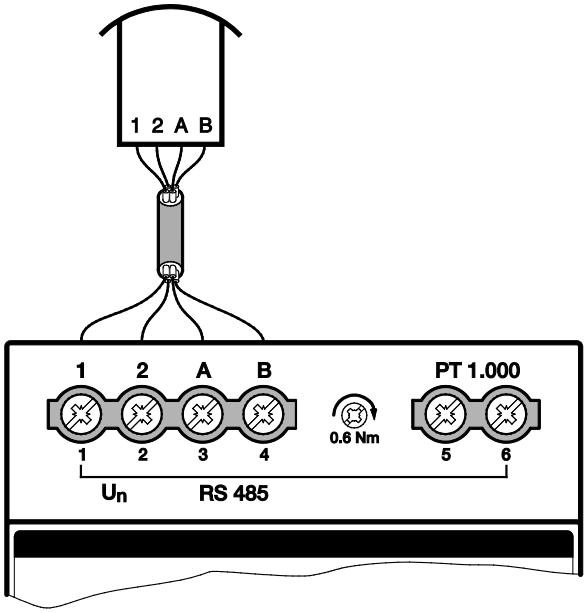
Backward compatibility of the devices

The MDRC devices and sensors are backward compatible and can be interchanged, although the following restrictions must be taken into account:

For WES/A 3.1 in combination with the WZ/S 1.1:

The Weather Unit does not detect that the wind sensor is faulty.

2.3.2 Wiring diagram of Weather Sensor



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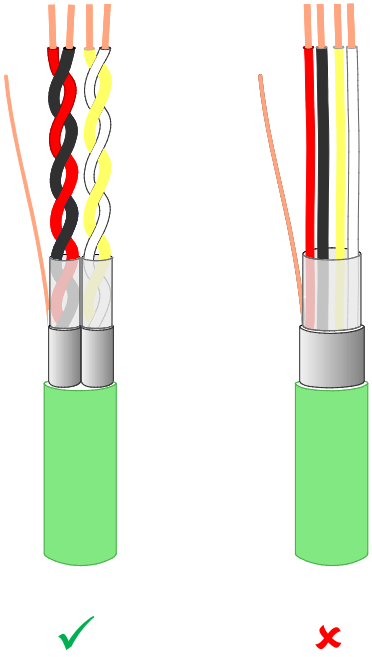

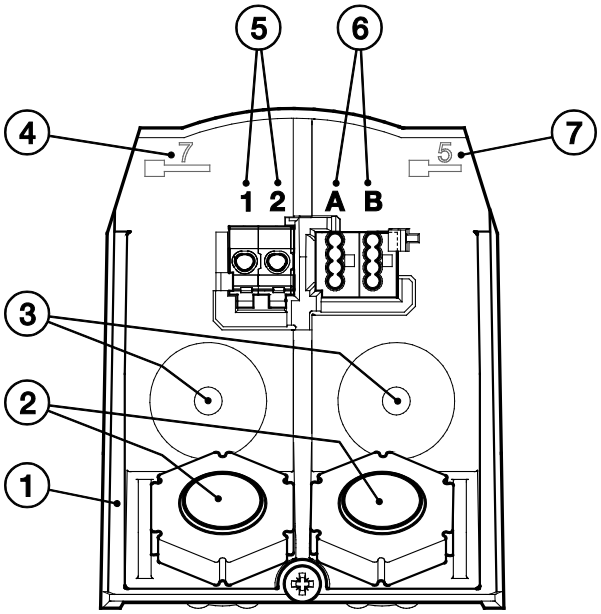

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1 Wall socket

2 Cable entry

3 Fixing

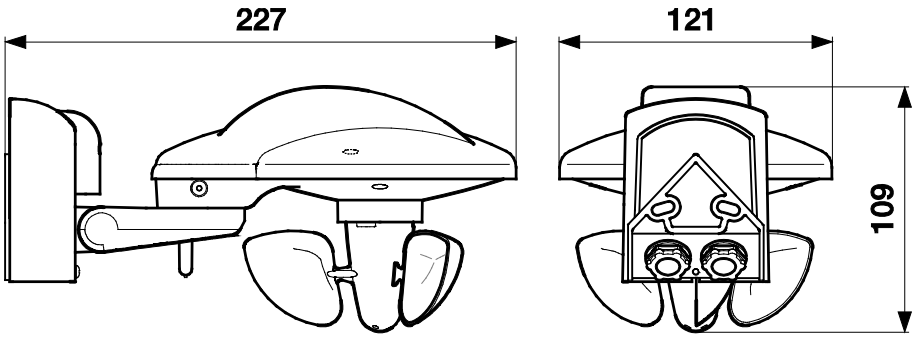
4 Wire stripping length for left terminal

5 Electrical supply

6 Data communication

7 Wire stripping length for right terminal

2.3.3 Dimension drawing of Weather Sensor

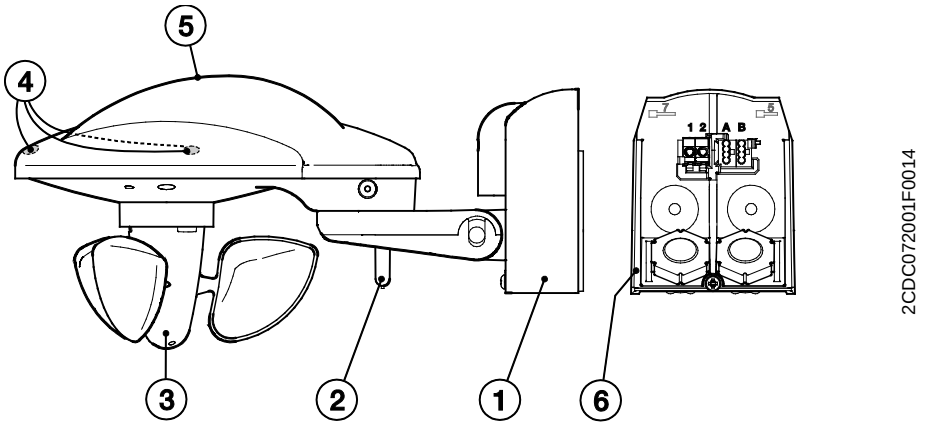


2.3.4 Location selection

Select a mounting position on the building where wind, rain and sun can be detected by the sensors without interference. No construction components may be mounted above the Weather Sensor from which water may drip onto the rain sensor after it has stopped raining or snowing. The Weather Sensor may not be obstructed by the shade of the building or, for example neighbouring buildings or trees. Clearance of at least 60 cm must remain under the Weather Sensor to allow for correct wind measurement and to prevent being snowed in during a snowfall.

Transmitters and disturbance fields of electrical loads (e.g. fluorescent lamps, illuminated and neon advertising, switching mode power supplies etc.) that interfere or prevent the reception of GPS signals should be considered in the planning phase.

The Weather Sensor with GPS must have an unobstructed path to the GPS satellites.



1 Socket
2 Temperature
3 Wind speed
4 Brightness sensors right, center, left
5 Rain sensor
6 Wall socket with cable entry and terminals

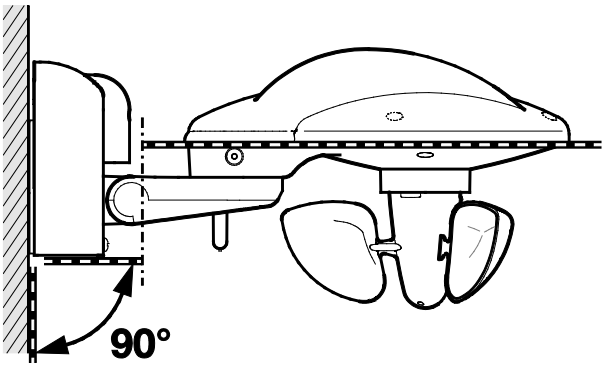
Attention

The rain sensor is hot during operation!
Danger of burns if touched.
Do not touch the rain sensor.

Note

Facade control is not possible with the Weather Unit WZ/S 1.3.1.2.
Please use the Weather Station WS/S for this.

The Weather Sensor WES/A 3.1 should be aligned horizontally to the facade, which is most oriented in a southerly direction (see illustration below). The Weather Sensor thus directly provides brightness values for the facades, provided that they are aligned at right angles to each other.



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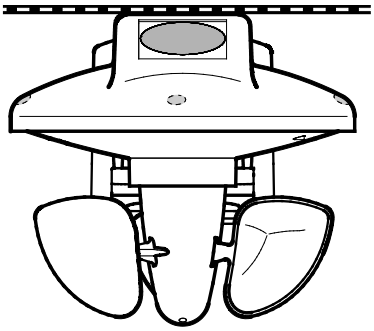

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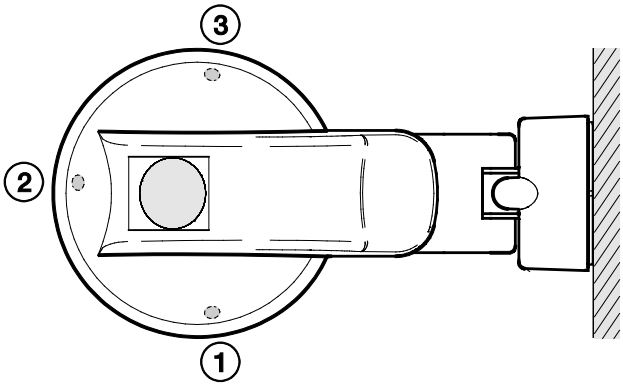


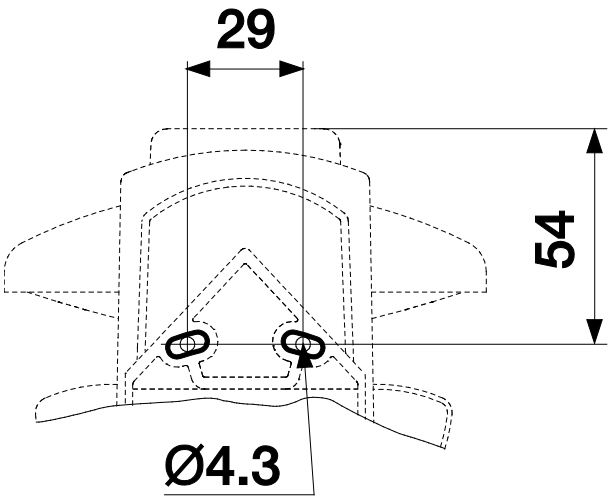
2CDC072030F0013

1 Brightness sensor left

2 Brightness sensor center

3 Brightness sensor right

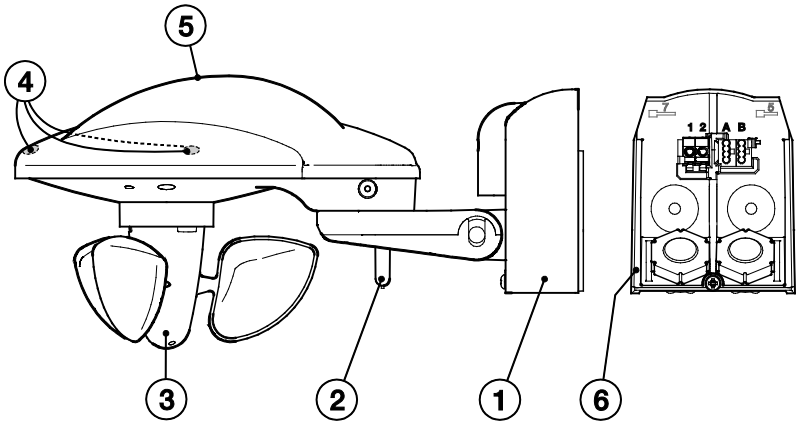
Drill template



2CDC072027F0013

Preparation for mounting

Disconnect the socket (1) of the Weather Sensor from the wall socket (6) by loosening the screw in the socket (1) slightly.



2CDC072001F0014

1 Socket

2 Temperature

3 Wind speed

4 Brightness sensors right, center, left

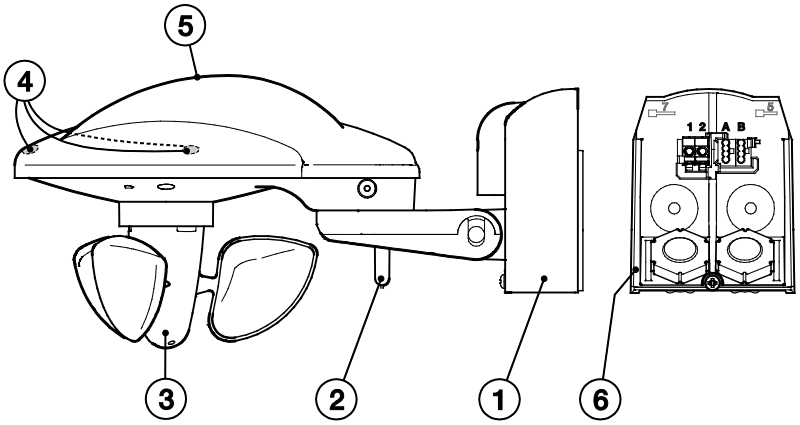
5 Rain sensor

6 Wall socket with cable entry and terminals

Note
Mounting and commissioning may only be carried out by electrical specialists. The appropriate standards, directives, regulations and specifications should be observed when planning and setting up electrical installations. • Protect the device from moisture, dirt and damage during transport, storage and operation. • Only operate the device within the specified technical data!

Mounting

Fasten the wall socket (6) vertically and horizontally.



2CDC072001F0014

1	Socket	**4**	Brightness sensors right, center, left
2	Temperature	**5**	Rain sensor
3	Wind speed	**6**	Wall socket with cable entry and terminals

Connection

Pass the cable for the power supply and data communication through the rubber seal on the underside of the wall socket (6) and connect the power cables (1/2) and data cables (A/B) to the terminals. Close the housing by pushing the socket (1) downwards over the wall socket (6) from above. Then tighten the screw in the socket.

Installation notes

Ensure that it is correctly connected. The terminal designations are located on the wall socket. The device is ready for operation after connection of the mains voltage to the Weather Unit.

Mounting

During mounting, care must be taken to ensure that the temperature sensor (2) is not damaged. It may take a few minutes before reception is established after voltage is applied. The LED will stop flashing and go off 10 minutes after switch-on.

- LED lit up permanently = Voltage is available
- LED flashing = Communication is taking place
- LED flashes 1x = Compatibility mode
- LED flashes 2x = New protocol

Cleaning

If devices become dirty, they can be cleaned using a dry cloth. Should a dry cloth not remove the dirt, the device can be cleaned using a slightly damp cloth and soap solution. Corrosive agents or solutions should never be used.

Maintenance

The Weather Sensor should be inspected regularly – at least twice a year – for dirt and contamination and must be cleaned if necessary. The sensor may cease to function if it is very dirty, a false rain signal may be received or the wind sensor may not function.

In the event of damage repairs should only be carried out by an authorized person (e.g. during transport or storage).

3 Commissioning

The *Weather Information/1* application and ETS Engineering Tool Software are used to parameterize the device. The application provides the device with a comprehensive and flexible range of functions. The standard settings allow simple commissioning. The functions can be extended if required.

In ETS, the application is located in the *Catalogs* window under *Manufacturers/ABB/Input/ Weather Unit*.

A maximum of 107 communication objects, 254 group addresses and 254 associations can be linked.

3.1 Properties and functions

The following are possible during faults:

The Weather Sensor no longer sends any values. Consequences:

- No output values are sent to the bus, neither sensor values, such as wind, rain, brightness, twilight, day/night, nor the output values of the *thresholds*.

  The values for the PT1000 are not affected by this and continue to be sent.

  With an ABB blind actuator, if cyclical monitoring is parameterized, the safety function in the Weather Unit causes the connected blinds/shutters to assume their preset safety position automatically after the end of the monitoring time.

Communication within the Weather Unit is disrupted. Consequences:

- No output values are sent to the bus, neither sensor values, such as wind, rain, brightness, twilight, day/night, nor the output values of the *thresholds*.

  With an ABB blind actuator, if cyclical monitoring is parameterized, the safety function in the Weather Unit causes the connected blinds/shutters to assume their preset safety position automatically after the end of the monitoring time.

The software in the Weather Sensor is frozen of the Weather Sensor is in update mode. Consequences:

- No output values are sent to the bus, neither sensor values, such as wind, rain, brightness, twilight, day/night, nor the output values of the *thresholds*.

  With an ABB blind actuator, if cyclical monitoring is parameterized, the safety function in the Weather Unit causes the connected blinds/shutters to assume their preset safety position automatically after the end of the monitoring time.

3.2 Overview

The following functions can be selected to suit the sensor type:

Data types of the output value	The output value can be sent as a 1-bit value [0/1], 1-byte value [0...+255], 2-byte value [0...+65,535] or as a 2-byte value [EIB floating point].
Output range	Predefined output range per sensor
Threshold	2 thresholds can be set, each with an upper and lower limit. The limits can be modified via the bus.
Logic functions	Logical connections such as AND and OR gates can be created. There are 4 inputs available per logic function. These can be linked with 2 external inputs. The inputs and outputs can be inverted.
Value memory	24 values per value memory can be stored in a ring buffer. The time is saved using radio receiver with each value.
GPS radio receiver	Data and time can be sent on the bus.

3.3 Parameters

The ETS Engineering Tool Software is used for parameterizing the device.

In ETS, the application is located in the *Catalogs* window under *Manufacturers/ABB/Input/Weather Unit*.

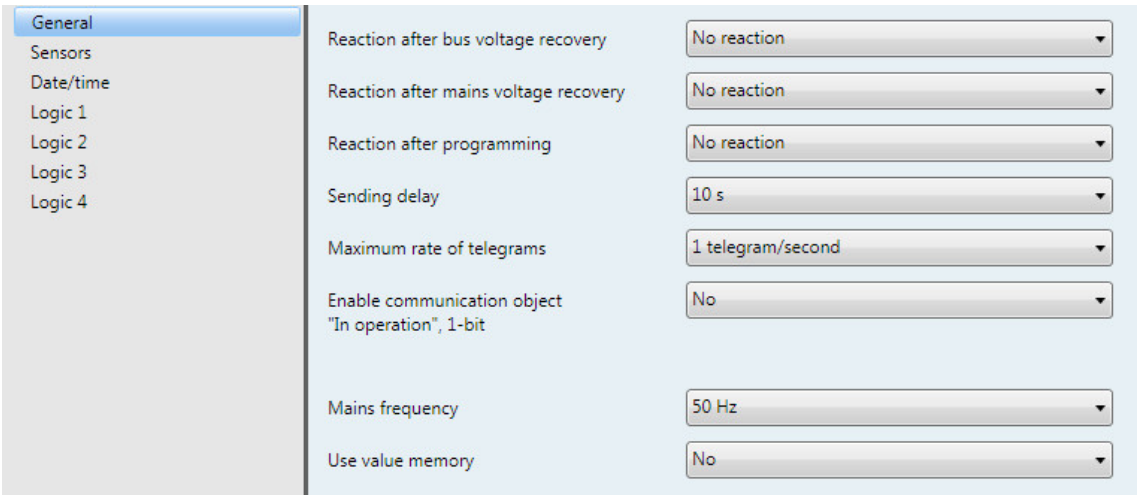
The following chapter describes the parameters of the device using the parameter window. Parameter windows are structured dynamically so that further parameters may be enabled depending on the parameterization and the function.

The default values of the parameters are underlined, e.g.:

Options: Yes
No

3.3.1 Parameter window *General*

Higher level parameters can be set in the *General* parameter window.



Reaction after bus voltage recovery
Reaction after mains voltage recovery
Reaction after programming

Options: No reaction
Send output values and thresholds immediately
Send output values and thresholds with a delay

The parameters are used for setting the reaction on bus voltage recovery, mains voltage recovery and after programming.

- *No reaction*: Send no values
- *Send output and thresholds immediately*: Send values immediately
- *Send output and thresholds with a delay*: Send values with a delay

The *Send delay* is set separately and applies to all three parameters.

How does the device react if bus voltage recovers before the mains voltage?

As the circuit is supplied with power from the mains voltage, it cannot react to the bus voltage recovery. The circuit cannot be activated.

If the mains voltage recovers and the bus voltage is already available then the reaction after mains voltage recovery is undertaken.

How does the device react if mains voltage recovers before the bus voltage?

Case 1: Option *Send output and thresholds immediately*

The telegrams are sent immediately. As the bus voltage is still absent, no telegrams are visible. Should the bus voltage then recover, the reaction in accordance with the setting of the option for bus voltage recovery is applied.

Case 2: Option *Send output and thresholds with a delay*

The reaction depends on the option for bus voltage recovery.

Option *No reaction*

The ongoing send delay is not interrupted.

Option *Send output and thresholds immediately*

The ongoing send delay is interrupted and sending is implemented immediately.

Option *Send output and thresholds with a delay*

The ongoing send delay is retriggered. Sending is undertaken after the new send delay time.

How does sending values function in the Weather Unit?

Generally, the send options of the individual sensors tend to overlap with the options that are possible for mains voltage recovery or programming.

Example
If the temperature sensor is parameterized to send cyclically every 5 seconds, it will do so after mains voltage recovery, regardless of the option selected for mains voltage recovery. As a direct contrast, the rain sensor that sends when there is a change may not send for weeks, provided that it does not rain during this time, because the object value has not changed.

With the options in parameter *Reaction after...*, it is possible after an event (mains voltage recovery, programming and bus voltage recovery) that the complete process map of the sensor (output values and thresholds) is either sent immediately or after a defined send delay. This ensures that all relevant information is guaranteed to be sent at least once after an event (e.g. for use by a visualization system).

Sending delay

Options: 1 s/2 s/3 s/5 s/10 s/20 s/30 s/50 s

The send delay determines the time after bus voltage recovery, mains voltage recovery and programming which must elapse before the telegrams should be sent from the Weather Unit to the bus.

When the device has been started, the following communication objects also send a telegram after the set delay:

- The communication object *In operation* is sent cyclically to the bus after the set interval.
- The communication object *Status byte* sends a status byte telegram.

Maximum rate of telegrams

Options: 1/2/3/5/10/20 telegrams/second

To control the bus load, it is possible to limit the maximum rate of telegrams per second with this parameter.

Enable communication object "In operation", 1-bit

Options: No
Yes

- *Yes*: The 1-bit communication object *In operation* is enabled.

  Dependent parameter:

  Send

  Options: Value 0
  Value 1

  Sending cycle time in s [1...65,535]

  Options: 1…60…65,535

  The time interval at which the communication object *In operation* cyclically sends a telegram is set here.

Note
After bus voltage recovery, the communication object sends its value after the set sending and switching delay time.

Mains frequency

Options: 50 Hz
60 Hz

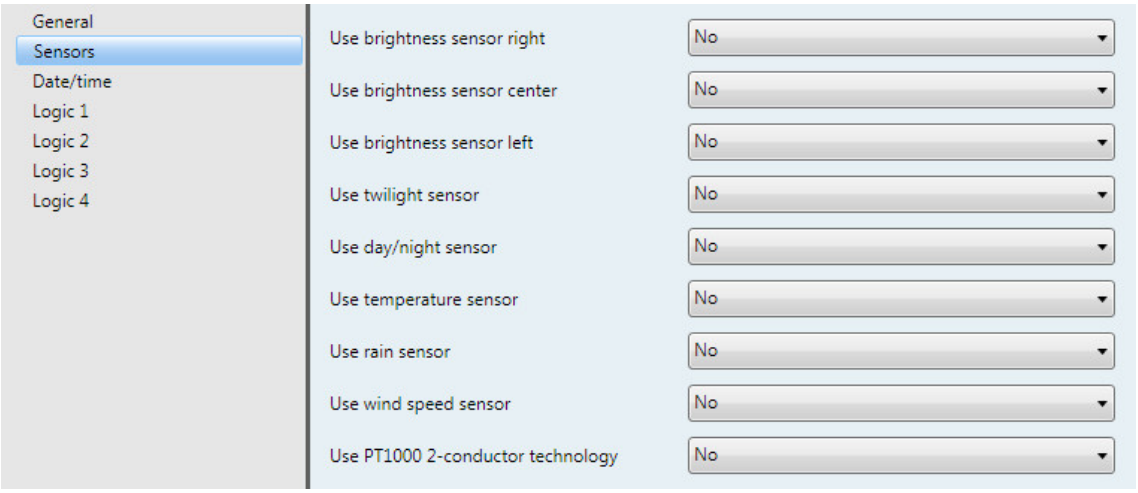
This parameter defines the mains frequency.

Use value memory

Options: No
Yes

With the selection *Yes*, the *value memories 1 to 4* become visible as independent parameter windows.

3.3.2 *Sensors* parameter window



Use brightness sensor right

Use brightness sensor center

Use brightness sensor left

Use twilight sensor

Use day/night sensor

Use temperature sensor

Use rain sensor

Use wind speed sensor

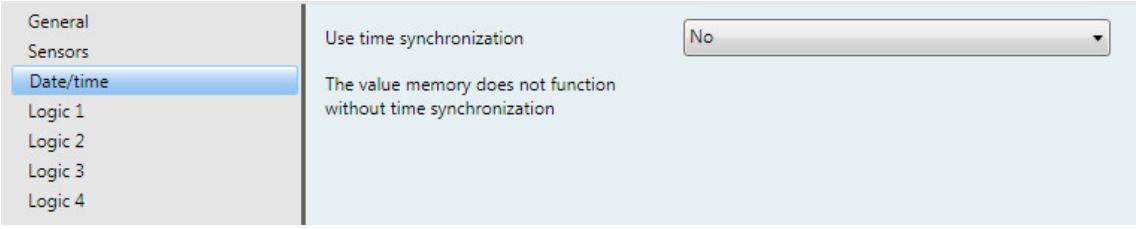
Use PT1000 2-conductor technology

Options: No
Yes

If *Yes* is selected, 5 parameter windows become visible for each sensor.

Attention
If, for the *Use rain sensor* parameter, the *Yes* option was selected, the device switches the sensor heating on. The sensor heating is switched off again if, for the *Use rain sensor* parameter, the *No* option is selected.

3.3.3 Parameter window *Date/Time*



Use time synchronization

Options: No
Yes

Note: The value memory does not function without time synchronization.

Selection option *Yes*:

Dependent parameters:

Connected sensor type

Options: WES/A 3.1 (with GPS receiver)
WES/A 2.1 (with GPS receiver)
WES/A 1.1 (with DCF receiver)

The parameters change depending on the sensor type selected.

An additional *Time format* parameter window appears with the sensors WES/A 2.1 and WES/A 3.1.

When the WES/A 1.1 is selected, it is possible to choose between different modes.

Further descriptions can be found in the following chapters:

3.3.3.1 Selection WES/A 3.1 (with GPS receiver)

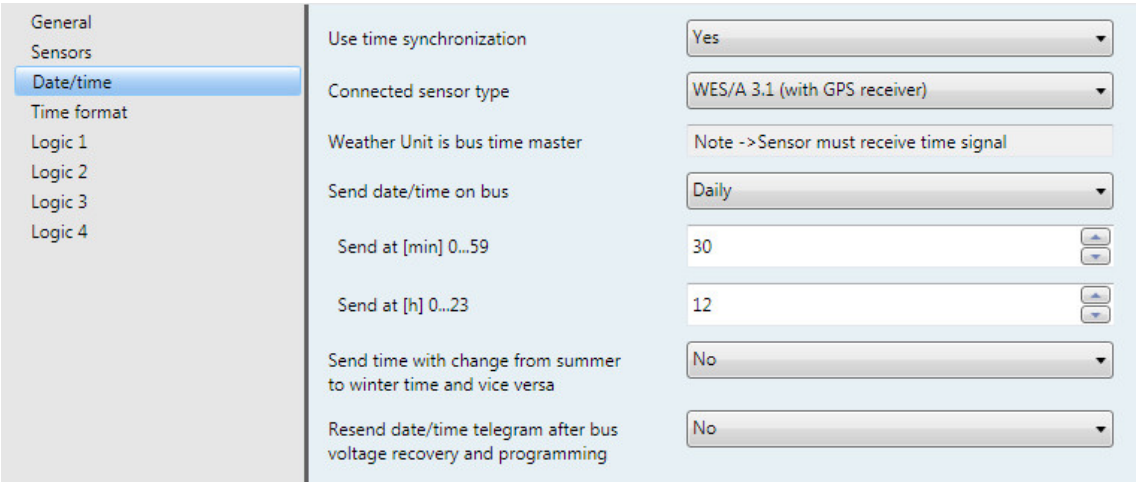
3.3.3.2 Selection WES/A 2.1 (with GPS receiver)

3.3.3.3 Selection WES/A 1.1 (with DCF receiver)
Operation mode Master (synchronization via sensor)

3.3.3.4 Selection WES/A 1.1 (with DCF receiver)
Operation mode Internal (synchronization via sensor)

3.3.3.5 Selection WES/A 1.1 (with DCF receiver)
Operation mode Slave (synchronization via sensor)

3.3.3.1 Selection *WES/A 3.1 (with GPS receiver)*



Weather Unit is bus time master

Note -> Sensor must receive time signal

To ensure that the Weather Unit can be used as a master, it is important to ensure that the time signal can be received.

The information can be read via the communication object *No time synchronization*.

Telegram value 0 = Time signal available

Telegram value 1 = No time signal available

Note
The telegram value 1 is sent if no valid time signal is received by the Weather Sensor within 24 hrs.

Send date/time on bus

Options: Daily/Hourly/Every minute

The send interval of the date and the time is set with this parameter.

Send at [min] 0...59

Options: 0…30…59

Send at [h] 0...23

Options: 0…12…23

With both of these parameters, the minute and hour when they should be sent *daily* are set.

With the *Hourly* option, only the parameter Send at [min] 0...59 appears.

With the *Every minute* option, the date and time are sent every minute.

Send time with change from summer to winter time and vice versa

Options: No
Yes

With the *Yes* option, the change from summer to winter time and vice versa the time is sent automatically.

Resend date/time telegram after bus voltage recovery and programming

Options: No
Yes

Selection option *Yes*:

Dependent parameter:

Repeat after

Options: 1 s/2 s/3 s/5 s/10 s/20 s/30 s/50 s

The parameter *Repeat after* determines the wait time after bus voltage recovery and programming until the Date / Time telegram is sent by the Weather Unit to the bus.

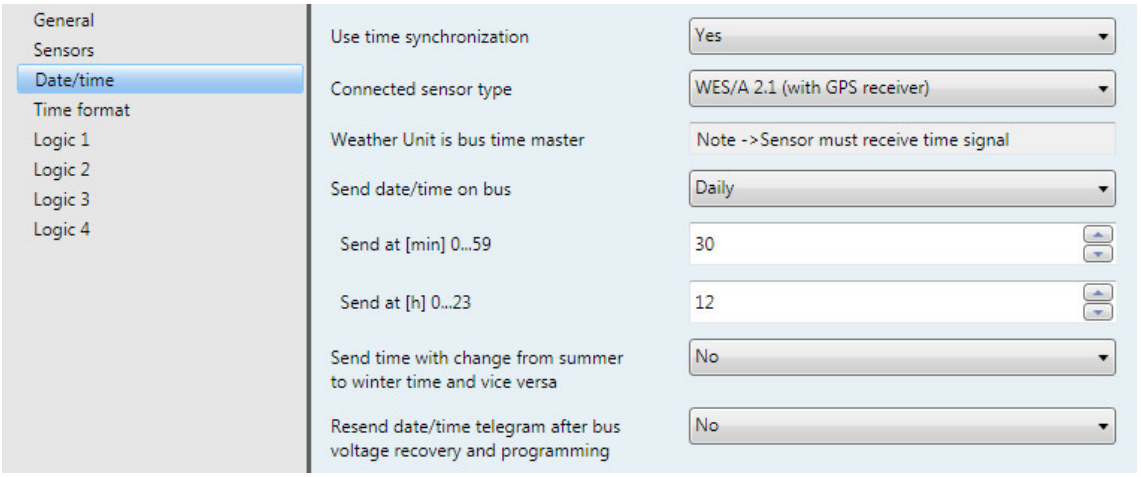
When is a valid Date / Time telegram sent on the bus?

Immediately after the Weather Unit is ready for operation and the Weather Sensor has received a valid GPS signal. Otherwise no signal is sent.

After the set time in the parameter *Repeat after*, a valid telegram for Date / Time is sent again.

Example
The time is set to 30 seconds. The bus voltage returns and a valid GPS signal is received from the Weather Sensor. The valid telegram is immediately sent for Date / Time without having to wait 30 seconds. After 30 seconds have elapsed, the telegram for Date / Time is sent again.

3.3.3.2 Selection *WES/A 2.1 (with GPS receiver)*



Weather Unit is bus time master

Note -> Sensor must receive time signal

To ensure that the Weather Unit can be used as a master, it is important to ensure that the time signal can be received.

The information can be read via the communication object *No time synchronization*.

Telegram value 0 = Time signal available

Telegram value 1 = No time signal available

Note
The telegram value 1 is sent if no valid time signal is received by the Weather Sensor within 24 hrs.

Send date/time on bus

Options: Daily/Hourly/Every minute

The send interval of the date and the time is set with this parameter.

Send at [min] 0...59

Options: 0…30…59

Send at [h] 0...23

Options: 0…12…23

With both of these parameters, the minute and hour when they should be sent *daily* are set.

With the *Hourly* option, only the parameter Send at [min] 0...59 appears.

With the *Every minute* option, the date and time are sent every minute.

Send time with change from summer to winter time and vice versa

Options: No
Yes

With the *Yes* option, the change from summer to winter time and vice versa the time is sent automatically.

Resend date/time telegram after bus voltage recovery and programming

Options: No
Yes

Selection option *Yes*:

Dependent parameter:

Repeat after

Options: 1 s/2 s/3 s/5 s/10 s/20 s/30 s/50 s

The parameter *Repeat after* determines the wait time after bus voltage recovery and programming until the Date / Time telegram is sent by the Weather Unit to the bus.

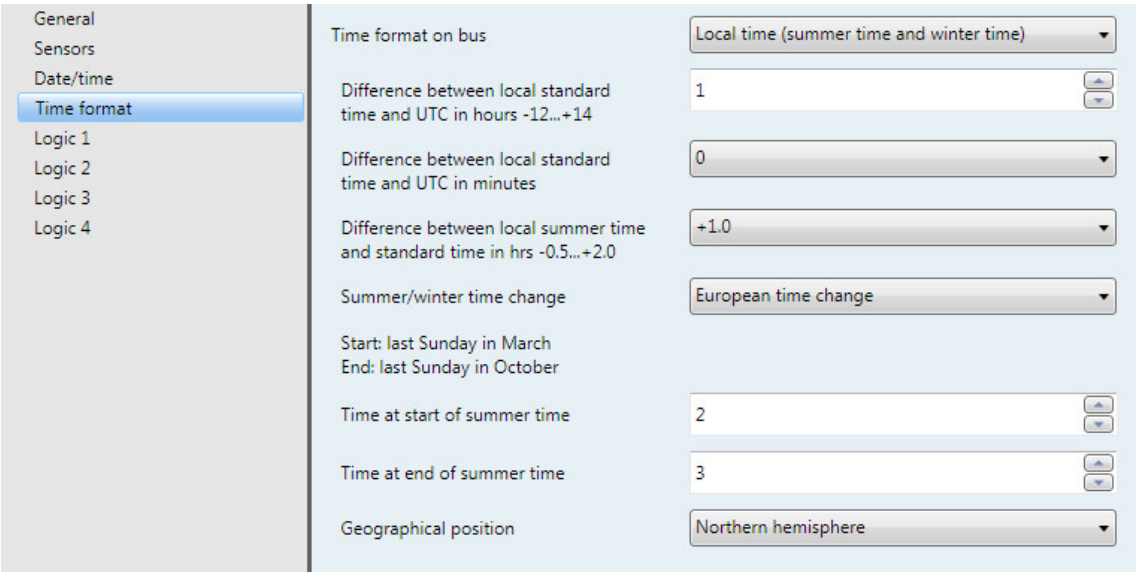
When is a valid Date / Time telegram sent on the bus?

Immediately after the Weather Unit is ready for operation and the Weather Sensor has received a valid GPS signal. Otherwise no signal is sent.

After the set time in the parameter *Repeat after*, a valid telegram for Date / Time is sent again.

Example
The time is set to 30 seconds. The bus voltage returns and a valid GPS signal is received from the Weather Sensor. The valid telegram is immediately sent for Date / Time without having to wait 30 seconds. After 30 seconds have elapsed, the telegram for Date / Time is sent again.

3.3.3.2.1 Parameter window *Time format*



Time format on bus

Options: UTC (Universal Time Coordinated)
Local time (summer time and winter time)
Local time (standard time)

This parameter sets the time that is used in the KNX system. If the option *Local time (standard time)* is selected, then two parameters for the difference between the local standard time and the UTC appear. If the option *Local time (summer time and winter time)* is selected, then the parameters *Difference between local standard time and UTC in minutes* and *Difference between local summer time and standard time in hrs -0.5...+2.0* appear.

For an overview of the time zones, see Appendix A.2 Time zones, p. 98.

Difference between local standard time and UTC in hours -12...+14

Options: -12…1…14

For setting the time zone (difference between local standard time and UTC in hours). The time zone can be taken from the table in the Appendix.

Difference between local standard time and UTC in minutes

Options: -45…0…45

For setting the time zone (difference between local standard time and UTC in hours). The time zone can be taken from the table in the Appendix.

Difference between local summer time and standard time in hrs -0.5...+2.0

Options: -0.5…+1.0…2.0

For setting the time difference between local summer time and standard time in hours.

Summer/winter time change

Options: European time change
North American time change
User-defined

This parameter sets the date of the change from summer time / winter time. If the option *European time change* is selected, then the summer/winter time change occurs on the last Sunday in March and the last Sunday in October.

If the option *North American time change* is selected, then the summer/winter time change occurs on the first Sunday in April and the first Sunday in October.

If the option *User defined* is selected, then the parameter windows *Summer/winter 1/2* and *Summer/winter 3/4* appear.

Time at start of summer time

Time at end of summer time

Options: 0…23

With these parameters, the exact time of the time change is defined.

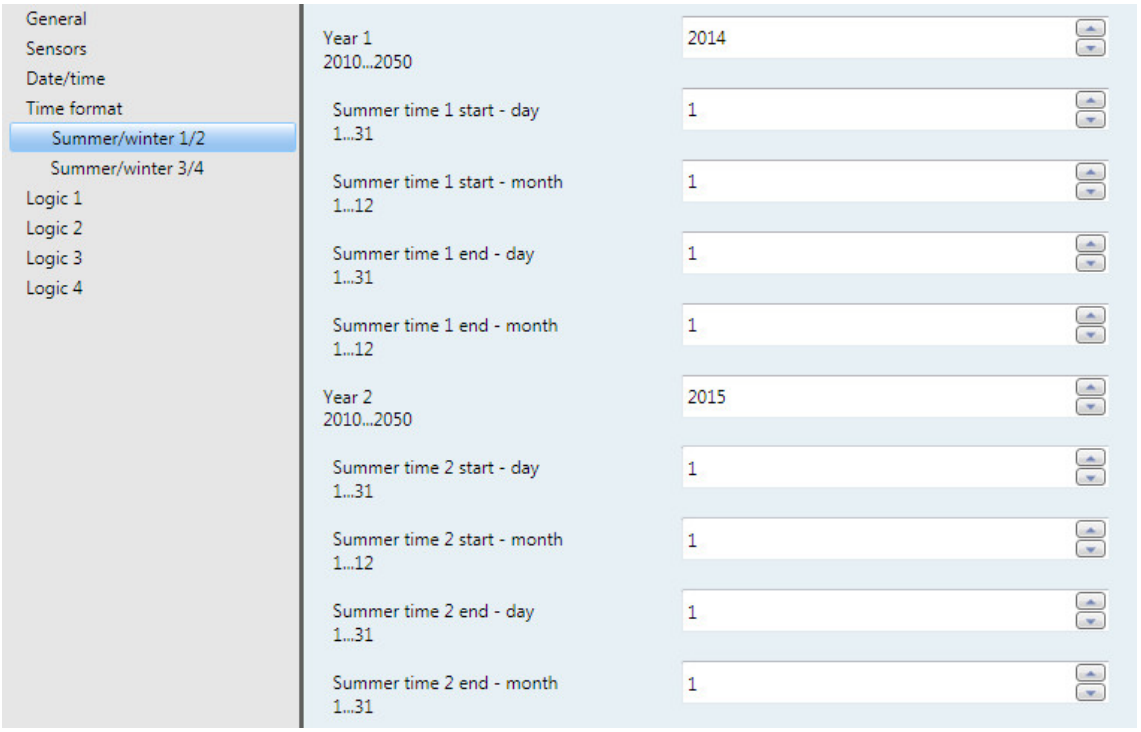
Geographical position

Options: Northern hemisphere
Southern hemisphere

This parameter defines the geographical position for exact determination of the time.

3.3.3.2.2 Parameter window *Summer/winter 1/2* and *Summer/winter 3/4*

These parameter windows are only visible if the option *User defined* is set for the parameter *Summer/winter time change*. Using both these parameter windows, a user defined switchover can be programmed for up to four years. As both of these parameter windows only differ by the set year, only one of them will be explained in more detail.



Year X
2010…2050

Options: 2010…2014…2050

To set the year for which the summer/winter time change is to be parameterized

Start of summer time X - Day
1...31

Options: 1…31

Start of summer time X - Month
1...12

Options: 1…12

End of summer time X - Day
1...31

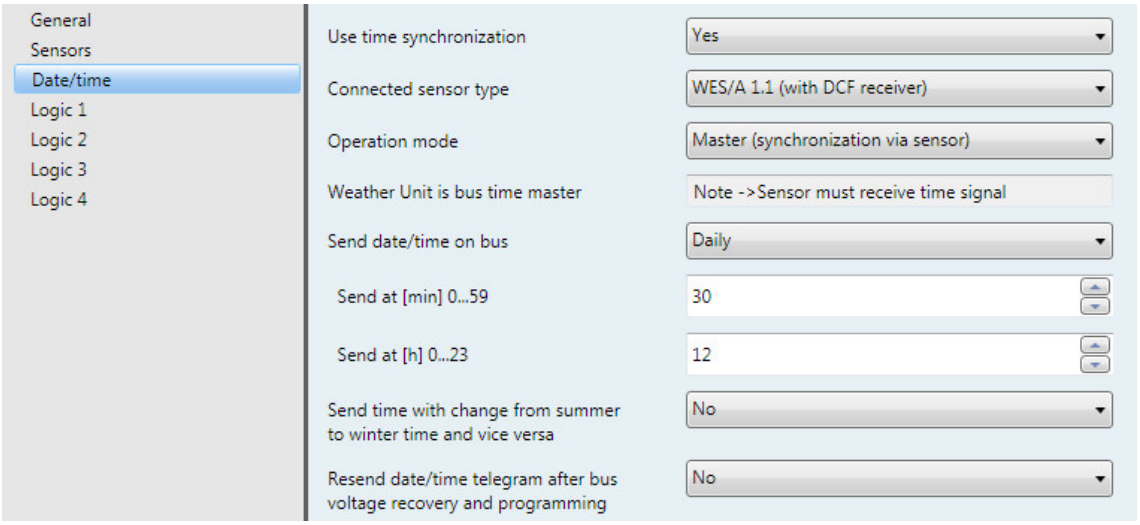
Options: 1…31

End of summer time X - Month
1...12

Options: 1…12

To set the day and month for the beginning and end of summer time

3.3.3.3 Selection *WES/A 1.1 (with DCF receiver)* Operation mode *Master (synchronization via sensor)*



Weather Unit is bus time master

Note -> Sensor must receive time signal

To ensure that the Weather Unit can be used as a master, it is important to ensure that the time signal can be received.

The information can be read via the communication object *No time synchronization*.

Telegram value 0: Time signal available

Telegram value 1: No time signal available

Note
The telegram value 1 is sent if no valid time signal is received by the Weather Sensor within 24 hrs.

Send date/time on bus

Options: Daily/Hourly/Every minute

The send interval of the date and the time is set with this parameter.

Send at [min] 0...59

Options: 0…30…59

Send at [h] 0...23

Options: 0…12…23

With both of these parameters, the minute and hour when they should be sent *daily* are set.

With the *Hourly* option, only the parameter Send at [min] 0...59 appears.

With the *Every minute* option, the date and time are sent every minute.

Send time with change from summer to winter time and vice versa

Options: No
Yes

With the *Yes* option, the change from summer to winter time and vice versa the time is sent automatically.

Resend date/time telegram after bus voltage recovery and programming

Options: No
Yes

Selection option *Yes*:

Dependent parameter:

Repeat after

Options: 1 s/2 s/3 s/5 s/10 s/20 s/30 s/50 s

The parameter *Repeat after* determines the wait time after bus voltage recovery and programming until the Date / Time telegram is sent by the Weather Unit to the bus.

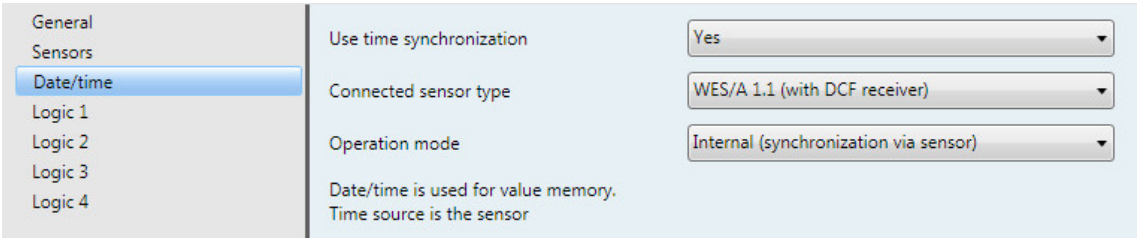
When is a valid Date / Time telegram sent on the bus?

Immediately after the Weather Unit is ready for operation and the Weather Sensor has received a valid DCF signal. Otherwise no signal is sent.

After the set time in the parameter *Repeat after*, a valid telegram for Date / Time is sent again.

Example
The time is set to 30 seconds. The bus voltage returns and a valid DCF signal is received from the Weather Sensor. The valid telegram is immediately sent for Date / Time without having to wait 30 seconds. After 30 seconds have elapsed, the telegram for Date / Time is sent again.

3.3.3.4 Selection *WES/A 1.1 (with DCF receiver)* Operation mode *Internal (synchronization via sensor)*



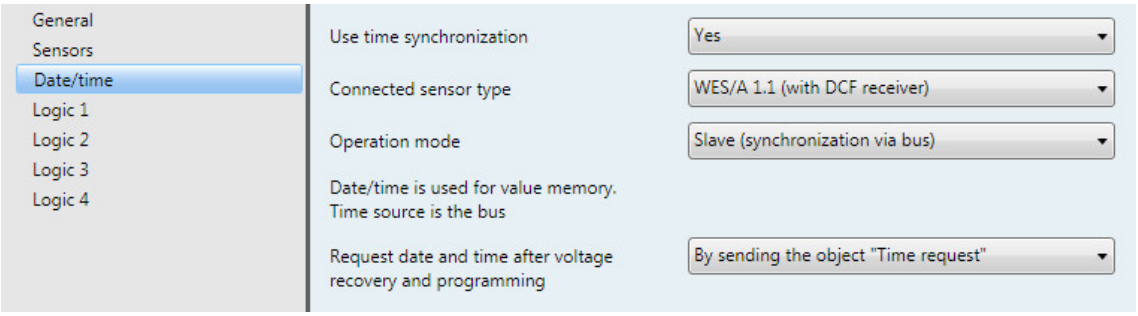
Operation mode

Options: Master (synchronization via sensor)
Internal (synchronization via sensor)
Slave (synchronization via bus)

Date/time is used for value memory.
Time source is the sensor.

Note
The value memory does not function without time synchronization.

3.3.3.5 Selection *WES/A 1.1 (with DCF receiver)* Operation mode *Slave (synchronization via sensor)*



Operation mode

Options: Master (synchronization via sensor)
Internal (synchronization via sensor)
Slave (synchronization via bus)

Date/time is used for value memory.
Time source is the bus.

Note
The value memory does not function without time synchronization.

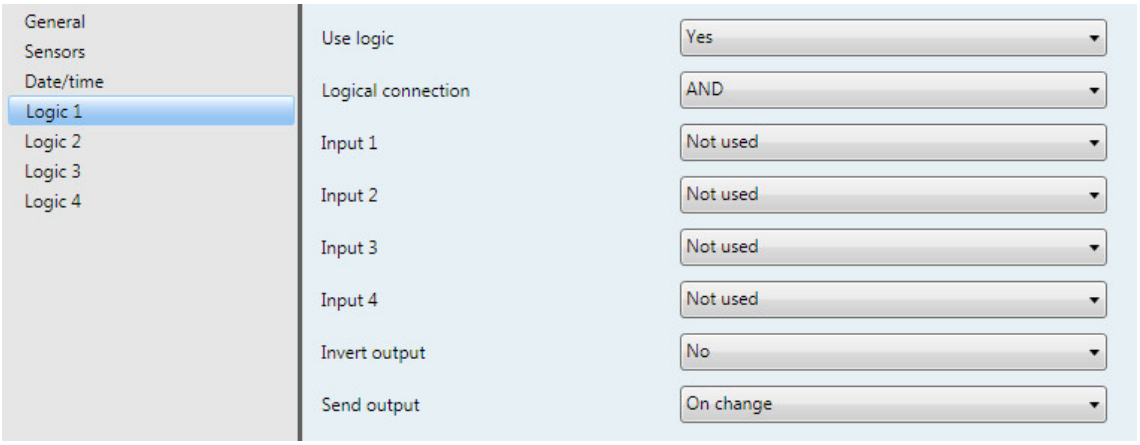
Request date and time after voltage recovery and programming

Options: Do not use
By telegram read request
By sending the object "Time request"

The request for the date and time after voltage recovery and programming is set with this parameter.

3.3.4 Parameter window *Logic 1*

In the following section, the parameters for Logic 1 are described, which also apply for Logic 2, 3 and 4.



Use logic

Options: No
Yes

This parameter is used to determine if Logic 1 is used. With the *Yes* selection, the communication object *Send output - Logic 1* appears.

Logical connection

Options: AND
OR

- *AND*: Logic as AND gate
- *OR*: Logic as OR gate

Note
Each logic input can be assigned to different group addresses. It is also possible to assign individual logic links to logical inputs. However, if a group address, which has been assigned to an internal function, is assigned to a logic input, then this group address shall have no function for the logic input.

Input 1...4

Options: Not used
Brightness right Threshold 1 fallen below*
Brightness right Threshold 1 exceeded*
Brightness right Threshold 2 fallen below*
Brightness right Threshold 2 exceeded*
…
Twilight Threshold x fallen below*
Twilight Threshold x exceeded*
Day/night Threshold x fallen below*
Day/night Threshold x exceeded*
Temperature Threshold x fallen below*
Temperature Threshold x exceeded*
Rain Threshold x fallen below*
Rain Threshold x exceeded*
Wind speed Threshold x fallen below*
Wind speed Threshold x exceeded*
PT1000 Threshold fallen below*
PT1000 Threshold x exceeded*
Communication object Input 1
Communication object Input 1 inverted
Communication object Input 2
Communication object Input 2 inverted

* This condition is "true", i.e. the logical value is 1, if the value is above or below the threshold, irrespective of whether the allocated threshold object sends a 0 or a 1 should the value be above or below a threshold.

Up to four different inputs can be assigned to logic 1 via these four parameters..

Two external inputs are available with the communication objects *Input 1* and *Input 2*.

Invert output

Options: No
Yes

The inversion of the output is defined via this parameter.

Send output

Options: On change
Cyclically
On change and cyclically

This parameter defines how the output should be sent.

- *On change*: Output sends on a change
- *On change and cyclically*: Output sends on a change and cyclically

Selection of *On change and cyclically* option:

Dependent parameters:

Output value is sent every

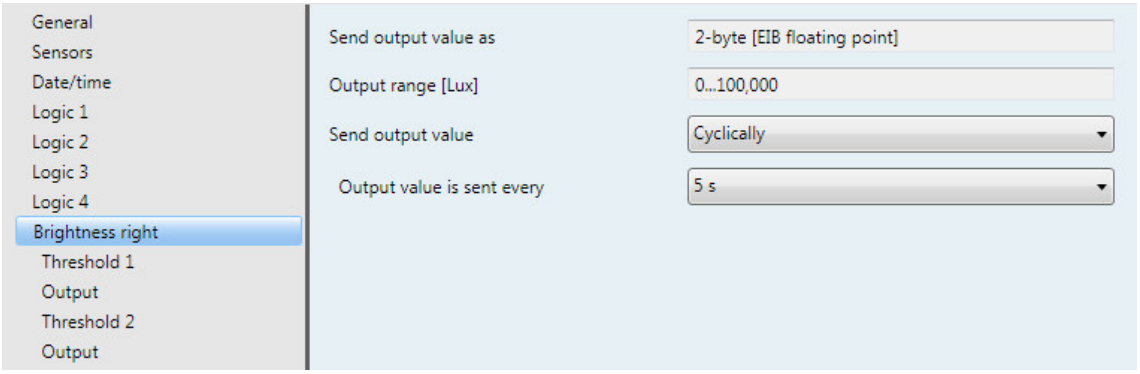
Options: 5/10/30 s
1/5/10/30 min
1/6/12/24 h

The interval for cyclical sending is set with this additional parameter.

3.3.5 Parameter window *Brightness right*

In the following, the parameters for the sensor *Brightness right* are described. The explanations also apply to the sensors *Brightness center* and *Brightness left*.

Note
The parameter windows for *Brightness right* are only active if, in the Sensors parameter window, p. 29, the *Yes* option was selected for the parameter *Use brightness sensor right*.



Send output value as

This parameter is fixed to *2-byte [EIB floating point]*.

What is the output value?

The output value defines the value, which the Weather Unit sends to the bus. The Weather Unit records a sensor value, converts it according to the set parameters and sends it to the bus.

Output range [Lux]

The output range is fixed to *0...100,000*.

Send output value

Options: On request
On change
Cyclically
On change and cyclically

This parameter defines how the output value should be sent.

- *On request*: Send output value on request

If the *On request* option is selected, the communication object *Request output value - Brightness right* appears.

As soon as a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Brightness right*.

- *On change*: Send output value after a change
- *Cyclically*: Send output value cyclically
- *On change and cyclically*: Send output value after a change and cyclically

Selection of option *On change*, *Cyclically* and *On change and cyclically*:

Dependent parameter:

Output value is sent every

Options: 5/10/30 s
1/5/10/30 min
1/6/12/24 h

The interval for cyclical sending is set with this additional parameter.

Output value is sent from a change of x Lux

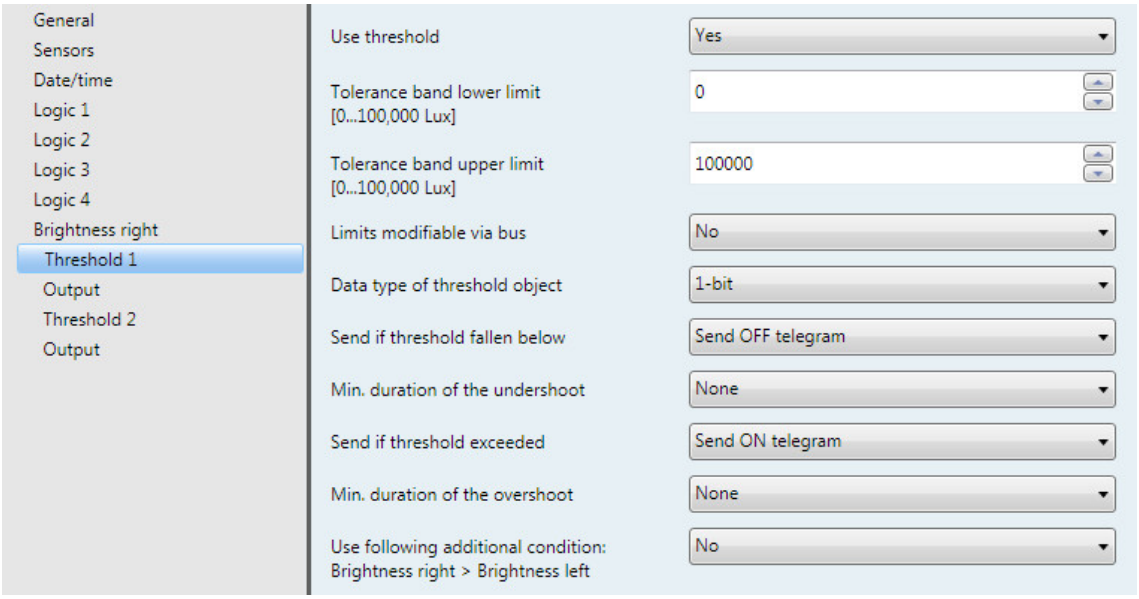
Options: 1,000…5,000…25,000

This parameter defines from which change in Lux the output value is to be sent.

With the option 5,000, the output value is sent after a change exceeding 5,000 Lux.

3.3.5.1 Parameter window *Brightness right - Threshold 1*

In the following section, the parameters for threshold 1 are described. These also apply to threshold 2.



Use threshold

Options: No
Yes

This parameter defines if threshold 1 should be used.

If *Yes* is selected, the communication object *Threshold – Brightness right Threshold 1* appears.

Tolerance band lower limit [0...100,000 Lux]

Options: 0...100,000

Tolerance band upper limit [0...100,000 Lux]

Options: 0...100,000

The upper and lower limit are set via these two parameters.

Note
If for example, the upper limit is set below the lower limit, the limits are not taken into consideration. The threshold is not processed and a telegram is not sent to the bus.

Limits modifiable via bus

Options: No
Yes

This parameter specifies whether the limits can be changed via the bus.

When *Yes* is selected, the communication objects *Modify – Brightness right Threshold 1 lower limit* and *Modify – Brightness right Threshold 1 upper limit* also appear.

Note
The value formats of these communication objects are the same as the format set in the Parameter window Brightness right, p. 44, under the parameter *Send output value as*. The values must be sent in the same format as the output value of the sensor.

Data type, threshold object

Options: 1-bit
1-byte [0...255]

If the *1-bit* option is set for the parameter *Data type of threshold object*, the following parameters appear:

Send if threshold fallen below

Options: Do not send a telegram
Send ON telegram
Send OFF telegram

Send if threshold exceeded

Options: Do not send a telegram
Send ON telegram
Send OFF telegram

- *Do not send a telegram*: There is no reaction
- *Send ON telegram*: Send telegram value 1
- *Send OFF telegram*: Send telegram value 0

Min. duration of the undershoot

Min. duration of the overshoot

Options: None
5/10/30 s
1/5/10/30 min
1/6/12/24 h

- *None*: Send threshold directly

With the further time options, a minimum duration can be selected. If the send condition reverts during the minimum duration, no telegrams are sent.

If the option *1-byte [0...255]* is set for the parameter *Data type of threshold object*, the following parameters appear:

Send if threshold fallen below [0...255]

Options: 0...255

Send if threshold exceeded [0...255]

Options: 0...255

A value of 0 to 255 can be entered in single steps.

Min. duration of the undershoot

Min. duration of the overshoot

Options: None
5/10/30 s
1/5/10/30 min
1/6/12/24 h

- *None*: Send threshold directly

With the further time options, a minimum duration can be selected. If the send condition reverts during the minimum duration, no telegram is sent.

Use following additional condition: Brightness right > Brightness left

Options: No
Yes

Selecting *Yes* in the parameter when the upper limit is exceeded also queries the condition whether *Brightness right* is greater than *Brightness left*.

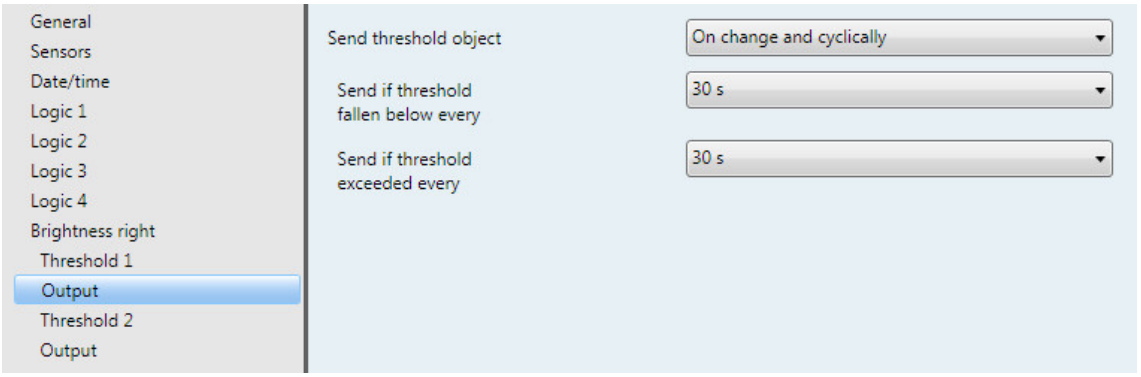
If the condition is fulfilled, it is assured that the sun is in the east, i.e. it is located on the left brightness side.

If the condition is not fulfilled, it is assured that the sun is in the west, i.e. it is located on the right brightness side.

Note
Facade control is not possible with the Weather Unit WZ/S 1.3.1.2. Please use the Weather Station WS/S for this.

3.3.5.2 Parameter window *Brightness right - Threshold 1 - Output*

The parameters for the output of threshold 1 are described in the following section. They also apply to the output of threshold 2.



Send threshold object

Options: On change
<u>On change and cyclically</u>

This parameter is used to specify the send reaction of the threshold object.

- *On change*: Threshold object sends on a change
- *On change and cyclically*: Threshold value object sends on a change and cyclically

Note
The threshold object is sent cyclically until the other value falls below or exceeds the other limit.

Selection of *On change and cyclically* option:

Dependent parameter:

Send if threshold fallen below every

Send if threshold exceeded every

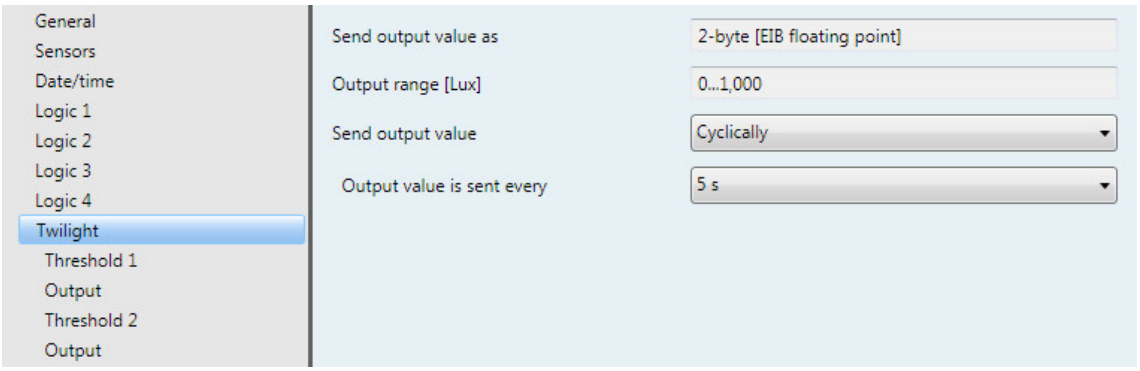
Options: 5 s/10 s/<u>30 s</u>/1 min/5 min/10 min/30 min/1 h/6 h/12 h/24 h

These two parameters are used to define the point at which cyclical sending should take place after if the lower limit is fallen below or the upper limit exceeded.

3.3.6 Parameter window *Twilight*

In the following section, the parameters presented and described are those that differ from the description of the sensor *Brightness right*.

Note
The parameter windows for the brightness sensor are only active if, in the Sensors parameter window, p. 29, the *Yes* option was selected in the *Use twilight sensor* parameter.



Send output value as

This parameter is fixed to *2-byte [EIB floating point]*.

What is the output value?

The output value defines the value, which the Weather Unit sends to the bus. The Weather Unit records a sensor value, converts it according to the set parameters and sends it to the bus.

Output range [Lux]

The output range is fixed to *0...1,000*.

Note
The twilight sensor only completes the change from night to day after 1 minute and 15 seconds.

Send output value

Options: On request
On change
Cyclically
On change and cyclically

This parameter defines how the output value should be sent.

- *On request*: Send output value on request

If the *On request* option is selected, the communication object *Request output value – Twilight* appears.

As soon as a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Twilight*.

- *On change*: Send output value after a change
- *Cyclically*: Send output value cyclically
- *On change and cyclically*: Send output value after a change and cyclically

Selection of option *On change*, *Cyclically* and *On change and cyclically*:

Dependent parameter:

Output value is sent every

Options: 5/10/30 s
1/5/10/30 min
1/6/12/24 h

The interval for cyclical sending is set with this additional parameter.

Output value is sent from a change of x Lux

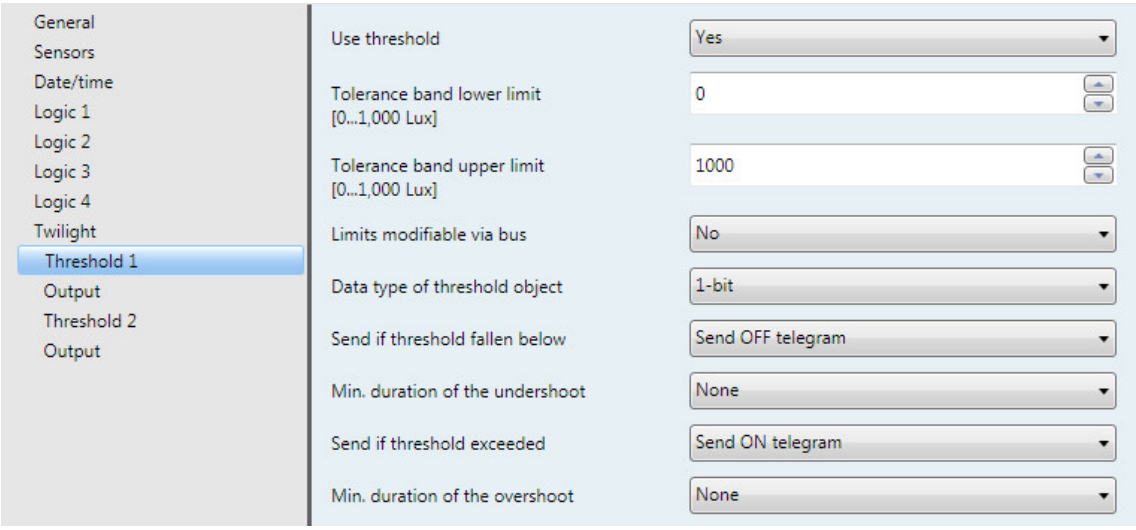
Options: 1…50…250

This parameter defines from which change in Lux the output value is to be sent.

With the option 50, the output value is sent after a change exceeding 50 Lux.

3.3.6.1 Parameter window *Twilight - Threshold 1*

In the following section, the parameters for threshold 1 are described. These also apply to threshold 2.



Use threshold

Options: No
Yes

This parameter defines if threshold 1 should be used.

If *Yes* is selected, the communication object *Threshold – Twilight Threshold 1* appears.

Tolerance band lower limit [0...1,000 Lux]

Options: 0...1,000

Tolerance band upper limit [0...1,000 Lux]

Options: 0...1,000

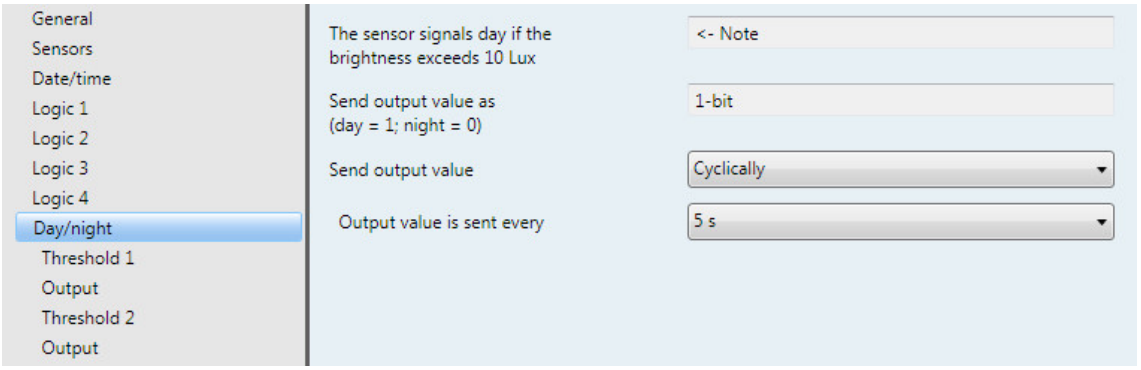
The upper and lower limit are set via these two parameters.

Note
For further parameter descriptions, refer to the *Brightness right* sensor description, see Parameter window Brightness right, p. 44.

3.3.7 Parameter window *Day/Night*

In the following section, the parameters presented and described are those that differ from the description of the sensor *Brightness right*.

Note
The parameter windows for the day/night sensor are only active if, in the Sensors parameter window, p. 29, the *Yes* option was selected for the *Use day/night sensor* parameter.



The sensor signals day if the brightness exceeds 10 Lux

<– Note

Send output value as (day = 1; night = 0)

This parameter preset to *1-bit*.

Note
For further parameter descriptions, refer to the *Brightness right* sensor description, see Parameter window Brightness right, p. 44.

Send output value

Options: On request
On change
Cyclically
On change and cyclically

This parameter defines how the output value should be sent.

- *On request*: Send output value on request

If the *On request* option is selected, the communication object *Request output value – Day/Night* appears.

As soon as a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Day/night*.

- *On change*: Send output value after a change
- *Cyclically*: Send output value cyclically
- *On change and cyclically*: Send output value after a change and cyclically

Selection of option *On change*, *Cyclically* and *On change and cyclically*:

Dependent parameter:

Output value is sent every

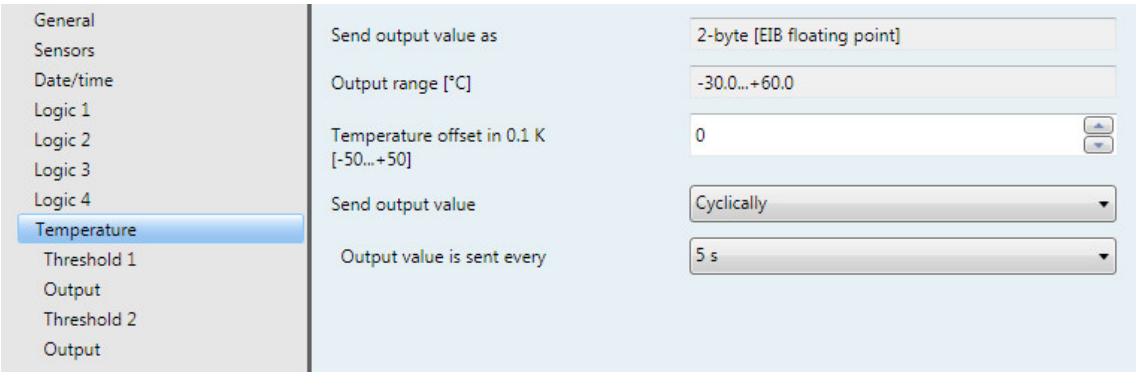
Options: 5/10/30 s
1/5/10/30 min
1/6/12/24 h

The interval for cyclical sending is set with this additional parameter.

3.3.8 Parameter window *Temperature*

In the following section, the parameters presented and described are those that differ from the description of the sensor *Brightness right*.

Note
The parameter windows for the temperature sensor are only active if, in the Sensors parameter window, p. 29, the *Yes* option was selected for the *Use temperature sensor* parameter.



Send output value as

This parameter is fixed to *2-byte [EIB floating point]*.

What is the output value?

The output value defines the value, which the Weather Unit sends to the bus. The Weather Unit records a sensor value, converts it according to the set parameters and sends it to the bus.

Output range [°C]

The output range is fixed to *-30.0...+60.0 °C*.

Temperature offset in 0.1 K [-50...+50]

Options: -50...0...+50

A maximum offset of ± 5 K (Kelvin) can be added to the recorded temperature with this parameter.

Note
By a calibration at the required operating point (e.g. with frost protection function +2 °C), the accuracy in the range ± 10°C at the operating point is enhanced to ± 1 °C.

Send output value

Options: On request
On change
Cyclically
On change and cyclically

This parameter defines how the output value should be sent.

- *On request*: Send output value on request

If the *On request* option is selected, the communication object *Request output value – Temperature* appears.

As soon as a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Temperature*.

- *On change*: Send output value after a change
- *Cyclically*: Send output value cyclically
- *On change and cyclically*: Send output value after a change and cyclically

Selection of option *On change*, *Cyclically* and *On change and cyclically*:

Dependent parameter:

Output value is sent every

Options: 5/10/30 s
1/5/10/30 min
1/6/12/24 h

The interval for cyclical sending is set with this additional parameter.

Output value is sent from a change of x * 0.1 °C

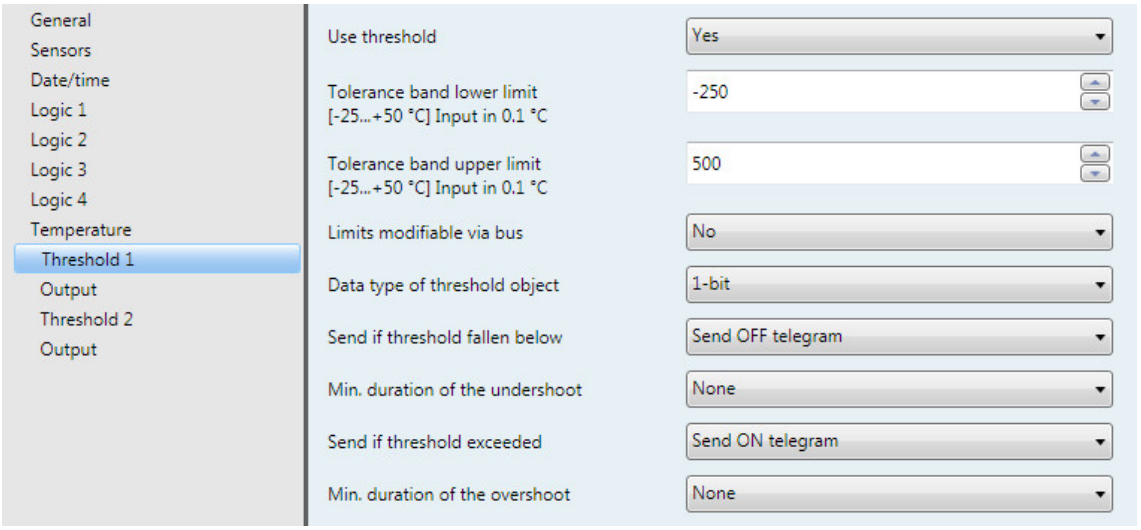
Options: 1…10…250

This parameter defines from which change in °C the output value is to be sent.

With the option 10, the output value is sent after a change exceeding 1 °C.

3.3.8.1 Parameter window *Temperature - Threshold 1*

In the following section, the parameters for threshold 1 are described. These also apply to threshold 2.



Use threshold

Options: No
Yes

This parameter defines if threshold 1 should be used.

If *Yes* is selected, the communication object *Threshold – Temperature Threshold 1* appears.

Tolerance band lower limit
[-25...+50 °C] Input in 0.1 °C

Options: -250...+500

Tolerance band upper limit
[-25...+50 °C] Input in 0.1 °C

Options: -250...+500

The upper and lower limits of the tolerance band are set via these two parameters.

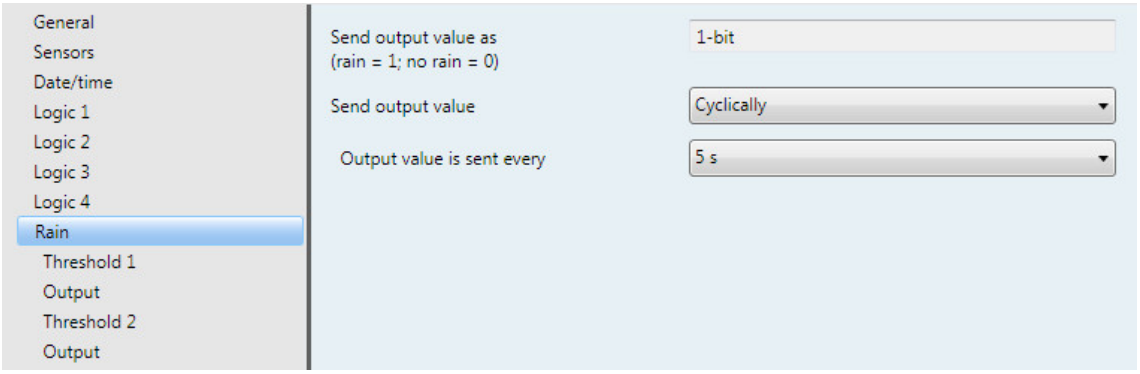
The entry is made in steps of 0.1 °C, i.e. an entry of 500 means 50 °C.

Note
For further parameter descriptions, refer to the *Brightness right* sensor description, see Parameter window Brightness right, p. 44.

3.3.9 Parameter window *Rain*

In the following, the parameters for the rain sensor are shown and described.

Note
The parameter windows for the rain sensor are only active if, in the Sensors parameter window, p. 29, the *Yes* option was selected for the *Use rain sensor* parameter.



Send output value as (rain = 1; no rain = 0)

This parameter preset to *1-bit*.

Note
After a rain alarm, the rain signal is output for about 6 minutes. The time is dependent on the possibility of how quickly drying can take place due to external influence.

Under certain conditions (temperature >= 40 °C and a humidity >= 90 %), it is possible that the rain sensor will indicate rain. This phenomenon is due to the physical characteristics of the rain sensor.

For this reason, automatic sensitivity switching is implemented in the rain sensor:

At above 32 °C, the sensitivity is reduced and,
at under 30 °C, increased again.

Send output value

Options: On request
On change
Cyclically
On change and cyclically

This parameter defines how the output value should be sent.

- *On request*: Send output value on request

If the *On request* option is selected, the communication object *Request output value – Rain* appears.

As soon as a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Rain*.

- *On change*: Send output value after a change
- *Cyclically*: Send output value cyclically
- *On change and cyclically*: Send output value after a change and cyclically

Selection of option *On change*, *Cyclically* and *On change and cyclically*:

Dependent parameter:

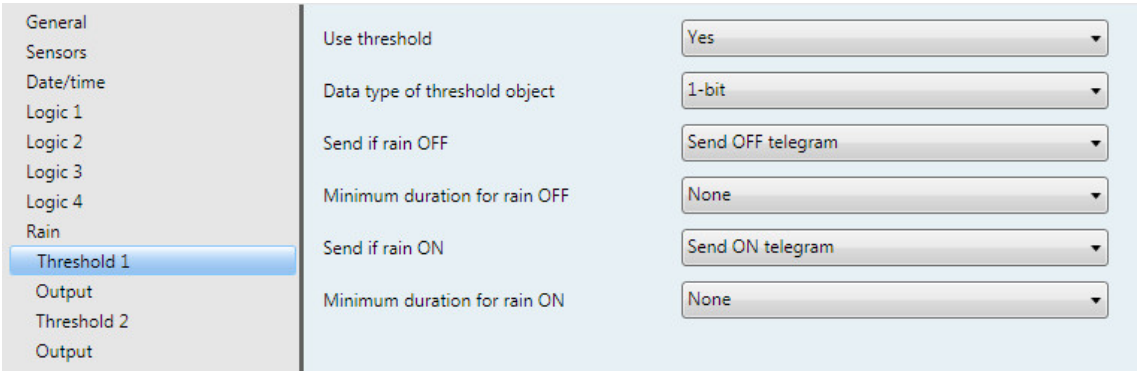
Output value is sent every

Options: 5/10/30 s
1/5/10/30 min
1/6/12/24 h

The interval for cyclical sending is set with this additional parameter.

3.3.9.1 Parameter window *Rain - Threshold 1*

In the following section, the parameters for threshold 1 are described. These also apply to threshold 2.



Use threshold

Options: No
Yes

This parameter defines if threshold 1 should be used.

If *Yes* is selected, the communication object *Threshold – Rain Threshold 1* appears.

Data type of threshold object

Options: 1-bit
1-byte [0...255]

If the *1-bit* option is set for the parameter *Data type of threshold object*, the following parameters appear:

Send if rain OFF

Options: Do not send a telegram
Send ON telegram
Send OFF telegram

Send if rain ON

Options: Do not send a telegram
Send ON telegram
Send OFF telegram

- *Do not send a telegram*: There is no reaction
- *Send ON telegram*: Send telegram value 1
- *Send OFF telegram*: Send telegram value 0

Minimum duration for rain OFF

Minimum duration for rain ON

Options: None
5/10/30 s
1/5/10/30 min
1/6/12/24 h

- *None*: Send threshold directly

With the further time options, a minimum duration can be selected. If the send condition reverts during the minimum duration, no telegram is sent.

Note
After a rain alarm, the rain signal is output for about 6 minutes. The time is dependent on the possibility of how quickly drying can take place due to external influence.

If the option *1-byte [0...255]* is set for the parameter *Data type of threshold object*, the following parameters appear:

Send if rain OFF [0...255]

Options: 0...255

Send if rain ON [0...255]

Options: 0...255

A value of 0 to 255 can be entered in single steps.

Minimum duration for rain OFF

Minimum duration for rain ON

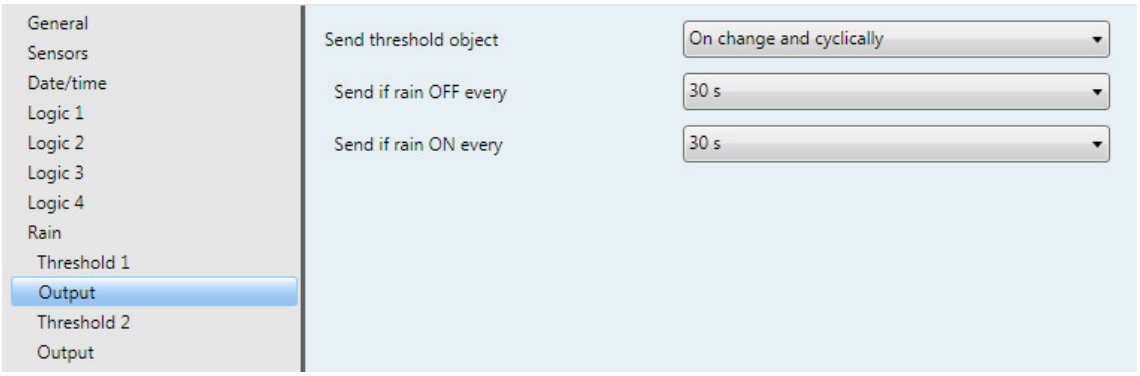
Options: None
5/10/30 s
1/5/10/30 min
1/6/12/24 h

- *None*: Send threshold directly

With the further time options, a minimum duration can be selected. If the send condition reverts during the minimum duration, no telegram is sent.

3.3.9.2 Parameter window *Rain - Threshold 1 - Output*

The parameters for the output of threshold 1 are described in the following section. They also apply to the output of threshold 2.



Send threshold object

Options: On change
On change and cyclically

This parameter is used to specify the send reaction of the threshold object.

- *On change*: Threshold object sends on a change
- *On change and cyclically*: Threshold value object sends on a change and cyclically

Note
The threshold object is sent cyclically until the other value falls below or exceeds the other limit.

Selection of *On change and cyclically* option:

Dependent parameter:

Send if rain OFF every

Send if rain ON every

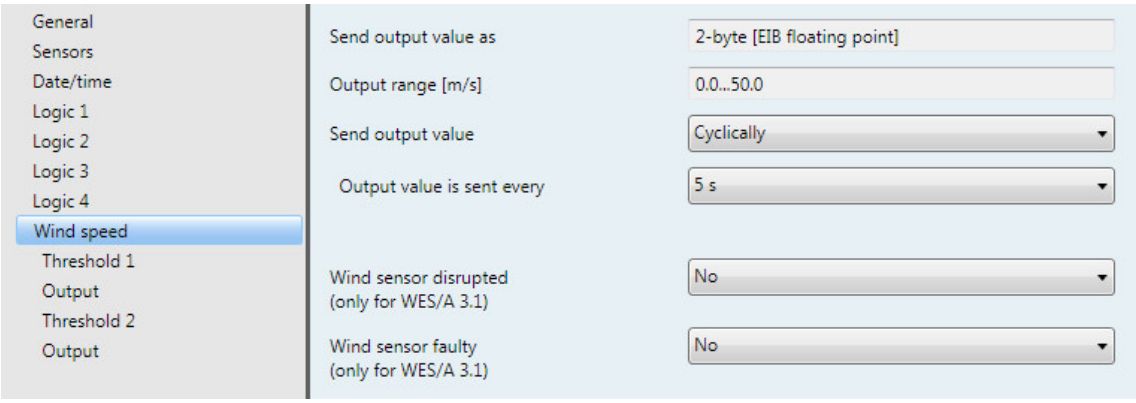
Options: 5 s/10 s/30 s/1 min/5 min/10 min/30 min/1 h/6 h/12 h/24 h

These two parameters are used to define the point at which cyclical sending should take place after if the lower limit is fallen below or the upper limit exceeded.

3.3.10 Parameter window *Wind speed*

In the following section, the parameters presented and described are those that differ from the description of the sensor *Brightness right*.

Note
The parameter windows for the wind speed sensor are only active if, in the Sensors parameter window, p. 29, the *Yes* option was selected for the *Use wind speed sensor* parameter.



Send output value as

This parameter is fixed to *2-byte [EIB floating point]*.

What is the output value?

The output value defines the value, which the Weather Unit sends to the bus. The Weather Unit records a sensor value, converts it according to the set parameters and sends it to the bus.

Output range [m/s]

The output range is fixed to *0.0...+50.0 m/s*.

Send output value

Options: On request
On change
Cyclically
On change and cyclically

This parameter defines how the output value should be sent.

- *On request*: Send output value on request

If the *On request* option is selected, the communication object *Request output value – Wind speed* appears.

As soon as a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Wind speed*.

- *On change*: Send output value after a change
- *Cyclically*: Send output value cyclically
- *On change and cyclically*: Send output value after a change and cyclically

Selection of option *On change*, *Cyclically* and *On change and cyclically*:

Dependent parameter:

Output value is sent every

Options: 5/10/30 s
1/5/10/30 min
1/6/12/24 h

The interval for cyclical sending is set with this additional parameter.

Output value is sent from a change of x * 0.1 m/s

Options: 1…10…250

This parameter defines from which change in m/s the output value is to be sent.

With the option 10, the output value is sent after a change exceeding 1 m/s.

Wind sensor disrupted
(only for WES/A 3.1)

Options: Yes
No

- *Yes*: If the *Yes* option is selected, the communication object *Wind sensor disrupted* appears.

  Dependent parameter:

  Monitoring time in h

  Options: 1…4…24

  The monitoring time is set via this parameter. If the recorded wind speed does not change during the set period of time, i.e. it is constantly recorded at, for example, 3 m/s for the duration, then the communication object *Wind sensor disrupted* is sent once with a "1" to the bus.

Wind sensor faulty
(only for WES/A 3.1)

Options: Yes
No

- *Yes: If the Yes option is selected, the communication object Wind sensor faulty appears.*

  Dependent parameter:

  Monitoring time in h

  Options: 1…24…96

  The monitoring time is set via this parameter. If the recorded wind speed does not change during the set period of time, i.e. it is constantly recorded at, for example, 3 m/s for the duration, then the communication object *Wind sensor faulty* is sent once with a "1" to the bus.

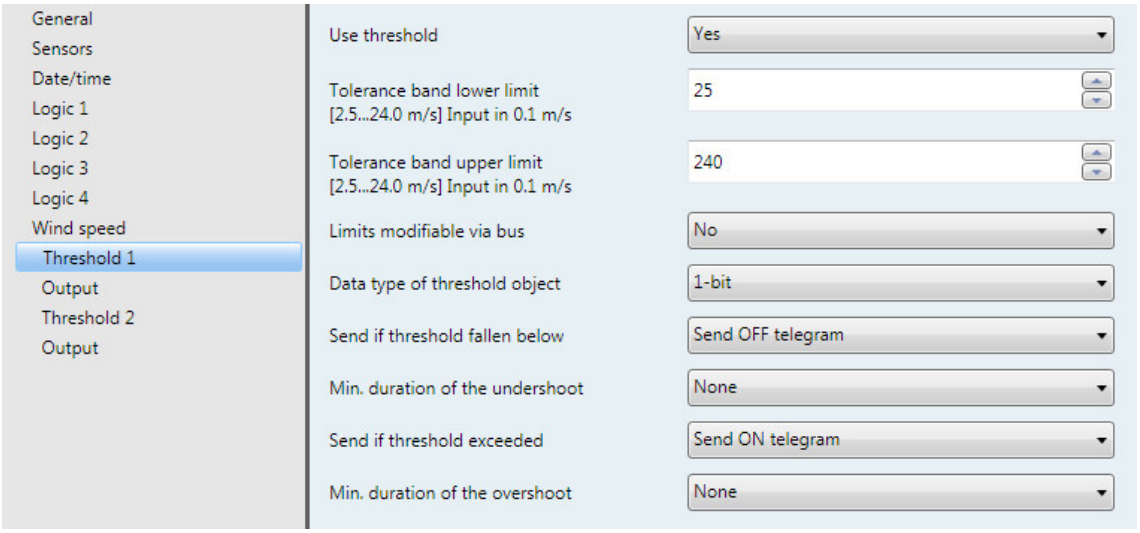
  The maximum output value of the wind sensor is also sent. This value is then used as the calculation basis for the thresholds.

Note
The monitoring period is restarted on operating and/or bus voltage recovery.

Note
When the contents of the communication objects *Wind sensor disrupted* and/or *Wind sensor faulty* are output, an evaluation of the parameterized monitoring time assumes a disruption or a fault. If wind conditions are poor (e.g. no wind during the parameterized monitoring period, unsuitable mounting location), then a disruption or a fault is signaled, even though the sensor is o.k. In these cases, the monitoring time should be increased or the parameters *Wind sensor disrupted* and/or *Wind sensor faulty* deactivated, as evaluation is not possible. In either case, an on-site check of the sensor for ease of movement and damage to the impeller should be performed.

3.3.10.1 Parameter window *Wind speed - Threshold 1*

In the following section, the parameters for threshold 1 are described. These also apply to threshold 2.



Use threshold

Options: No
Yes

This parameter defines if threshold 1 should be used.

If Yes is selected, the communication object *Threshold – Wind speed Threshold 1* appears.

Tolerance band lower limit
[2.5...24.0 m/s] Input in 0.1 m/s

Options: 25...240

Tolerance band upper limit
[2.5...24.0 m/s] Input in 0.1 m/s

Options: 25…240

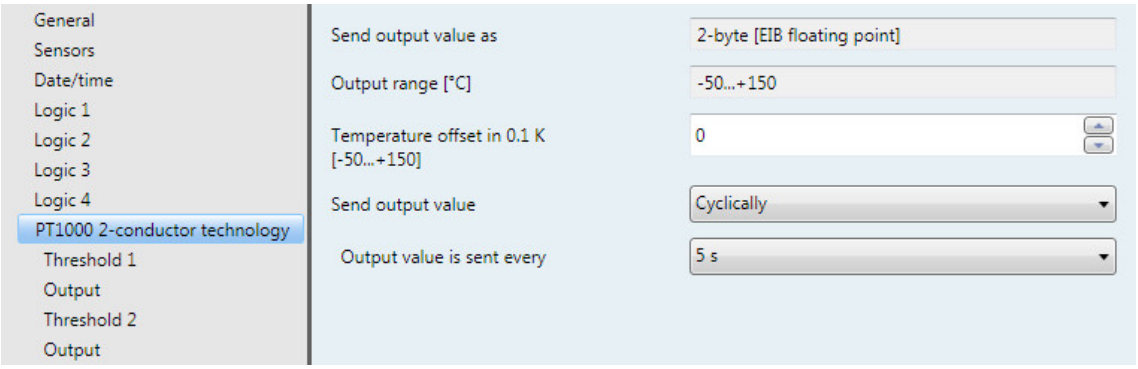
The upper and lower limit are set via these two parameters.

Note
For further parameter descriptions, refer to the *Brightness right* sensor description, see Parameter window Brightness right, p. 44.

3.3.11 Parameter window *PT1000 2-conductor technology*

The following section presents and describes the parameters of the PT1000 sensor.

Note
The parameter windows for the PT1000 sensor are only active if, in the Sensors parameter window, p. 29, the *Yes* option was selected for the *Use PT1000 2-conductor technology* parameter.



Send output value as

This parameter is fixed to *2-byte [EIB floating point]*.

What is the output value?

The output value defines the value, which the Weather Unit sends to the bus. The Weather Unit records a sensor value, converts it according to the set parameters and sends it to the bus.

Output range [°C]

The output range is fixed to *-50...+150 °C*.

Temperature offset in 0.1 K [-50...+150]

Options: -50...0...+150

A maximum offset of ± 15 K (Kelvin) can be added to the recorded temperature with this parameter.

Send output value

Options: On request
On change
Cyclically
On change and cyclically

This parameter defines how the output value should be sent.

- *On request*: Send output value on request

If the *On request* option is selected, the communication object *Request output value – PT1000* appears.

As soon as a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – PT1000*.

- *On change*: Send output value after a change
- *Cyclically*: Send output value cyclically
- *On change and cyclically*: Send output value after a change and cyclically

Selection of option *On change*, *Cyclically* and *On change and cyclically*:

Dependent parameter:

Output value is sent every

Options: 5/10/30 s
1/5/10/30 min
1/6/12/24 h

The interval for cyclical sending is set with this additional parameter.

Output value is sent from a change of * 0.1 °C

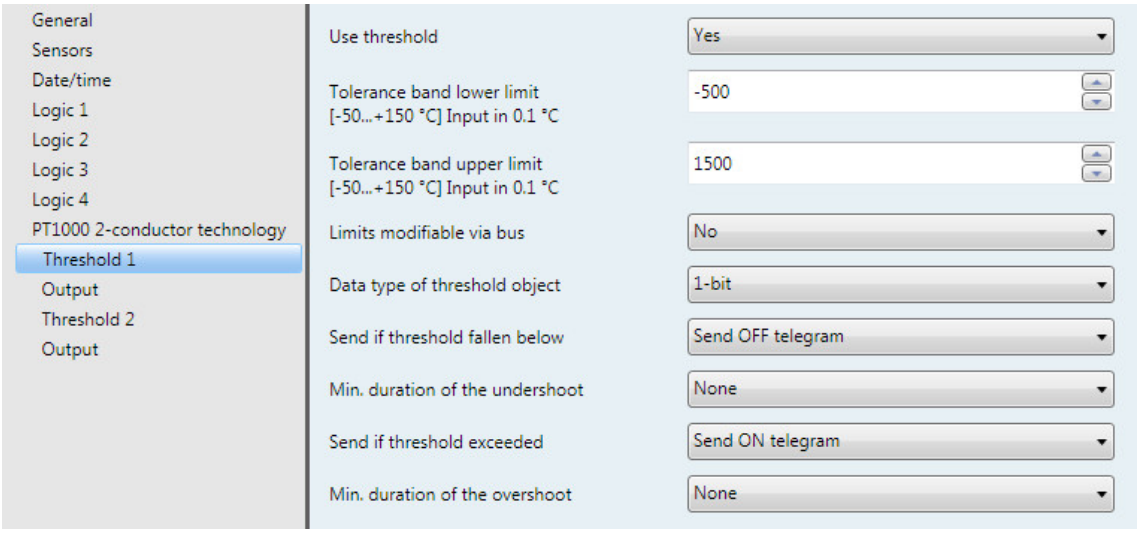
Options: 1…10…250

This parameter defines from which change in °C the output value is to be sent.

With the option 10, the output value is sent after a change exceeding 1 °C.

3.3.12 Parameter window *PT1000 2-conductor technology - Threshold 1*

In the following section, the parameters for threshold 1 are described. These also apply to threshold 2.



Use threshold

Options: No
Yes

This parameter defines if threshold 1 should be used.

If *Yes* is selected, the communication object *Threshold – PT1000 Threshold 1* appears.

Tolerance band lower limit [-50...+150 °C] Input in 0.1 °C

Options: -500…1,500

Tolerance band upper limit [-50...+150 °C] Input in 0.1 °C

Options: -500…1,500

The upper and lower limits of the tolerance band are set via these two parameters.

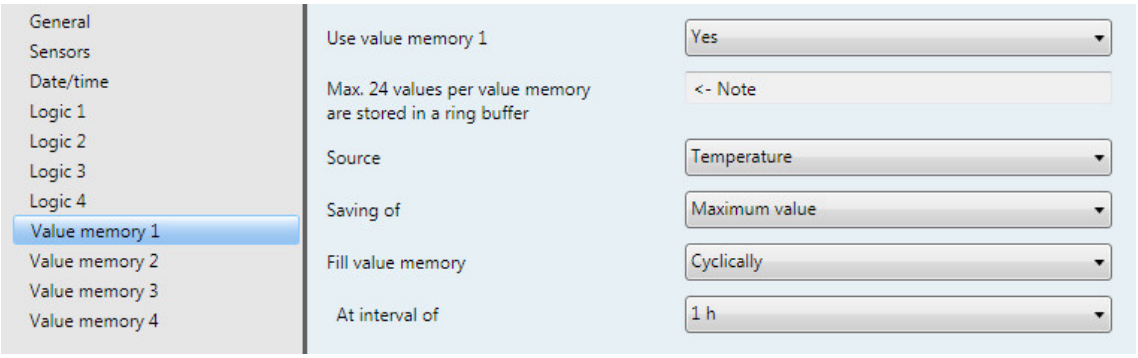
The entry is made in steps of 0.1 °C, i.e. an entry of 1500 means 150 °C.

Note
For further parameter descriptions, refer to the *Brightness right* sensor description, see Parameter window Brightness right, p. 44.

3.3.13 Parameter window *Value memory 1*

In the following, the parameters for *Value memory 1* are described. The explanations also apply for value memories 2, 3 and 4.

Note
The parameter windows for value memory 1 are only active if, in the Parameter window General, p. 26, the *Yes* option has been selected in the *Use value memory* parameter. The following values are lost with a mains voltage failure.



Use value memory 1

Options: No
Yes

This parameter defines if value memory 1 should be used. If *Yes* is selected, the communication object *Save value - Value memory 1* appears.

Max. 24 values per value memory are stored in a ring buffer

<– Note

Note
The values are saved in the 2-byte value [EIB floating point] and sent to the bus in the 2-byte value [EIB floating point]. The value memory can save up to 24 entries. If the value memory is already full during a memory process, the oldest entry will be overwritten.

The time is also saved for each saved value, although the seconds are not taken into account.

Example
An example: A value is saved at 12:41:30. The time in the value memory is thus 12:41:00.

Note
The value memory does not function without time synchronization.

Source

Options:
- Brightness right
- Brightness center
- Brightness left
- Twilight
- Temperature
- Wind
- PT1000 2-conductor technology

With this parameter, the sensor whose values are to be placed in the value memory are selected.

Note
Rain and Day/Night cannot be stored!

Saving of

Options: Measured value
Minimum value
Maximum value
Mean value

With this parameter, you can set if the average value, minimum value or maximum value is to be set.

- *Measured value*: The current measured value which is at the input at the time of saving is saved.
- *Minimum/maximum value*: The minimum/maximum value from the last save interval are saved. If, for example, hourly is selected, the minimum / maximum value of the last hour is saved.
- *Mean value*: The mean value of the last saving interval is saved. If, for example, every 10 minutes is selected, the average value of the 10 minutes hour is saved.

Fill value memory

Options: On request
Cyclically

This parameter defines how the value memory is to be filled.

- *On request*: Fill value memory on request. One value is stored per request. The time interval between 2 requests must be >= 1 s.

Selection option *Cyclically*:

Dependent parameter:

At interval of

Options: 10 min
30 min
1 h

With this parameter, the interval at which a value should be stored is set.

The starting point for saving the values always commences on the hour, i.e. for example, if the selection 10 min is made, saving will commence at xx:00 and the next value will be saved at xx:10, etc.

If, for example, the application program of the Weather Unit is loaded into the device at 08:20, the parameter Fill value memory is set to cyclically at an interval of 10 min, the first value will be transferred commencing on the hour at 09:00 followed by the second at 09:10, etc.

Using the option *1 h*, it is possible to save a daily cycle.

3.3.13.1 Reading value memory

Number	Name	Object Function	Length	C	R	W	T	U
98	Value memory selection	Memory number	1 Byte	C	-	W	-	-
99	Value memory feedback on selection	Number of values in memory	1 Byte	C	R	-	T	-
100	Value memory read request	Time and value	1 bit	C	-	W	-	-
101	Value memory response	Time	3 Byte	C	R	-	T	-
102	Value memory response	Value	2 Byte	C	R	-	T	-

The value memory can only be read out via the communication objects. The saved value is sent on the bus in 2-byte format [EIB floating point].

Selection

The value memory 1 to 4 is selected via the communication object *Memory number – Select memory value*.

Feedback

On the communication object *Number of values in memory – Memory value feedback on selection*, the maximum number of saved values for the selected value memory is sent automatically.

Note
If a non-existent value memory (0, 5…255) or a non-active value memory is selected, the communication object *Number of values in memory – Memory value feedback on selection* responds with the value 255.

Send first value and time

After selection of the value memory, the first saved value and the respective time are sent automatically to the communication objects *Time – Value memory response* and *Value – Value memory response*.

Send further values and times

Further values and times can be requested via the communication object *Time and value – Value memory read request*.

After a successful read request, the saved time is sent to the communication object *Time – Value memory response* and the saved value is sent to the communication object *Value – Value memory response*. With a 1, reading is forwards, whilst, with 0, reading is backwards.

Note
If, at the time of the request, only 8 of the 24 memory elements are used and the first 8 values have been requested, the first saved value will again be displayed at the next read request. The values in the memory can only be overwritten, they cannot be deleted.

Flowchart

1	Selection	1, 2, 3 or 4 (0, 5…255 or non-activated value memory)
2	Feedback	0…24 (value 255 = value memory not available)
3	First value Corresponding time	Sent automatically Sent automatically
4	Read request	Read out further values and time Read telegram 1 forwards Read telegram 0 backwards

3.4 Communication objects

3.4.1 Summary of communication objects

No.	Function	Name	Data Point Type (DPT)	Length	Flags				
					C	R	W	T	U
0	In operation	General	1.002	1-bit	x	x		x	
1	Status byte measurement	General	Non DPT	1 byte	x	x		x	
2	Status byte sensors	General	Non DPT	1 byte	x	x		x	
3	Sensor failure	General	1.011	1-bit	x	x		x	
4	No time synchronization	General	1.011	1-bit	x	x		x	
5	Sensor in programming mode	General	1.011	1-bit	x	x		x	
6	PT1000 Meas. val. out of range	General	1.011	1-bit	x	x		x	
7	Internal communication error	General	1.011	1-bit	x	x		x	
8	Bright. sens. right disrupted (HL = Brightness)	General	1.011	1-bit	x	x		x	
9	Bright. sens. center disrupted (HL = Brightness)	General	1.011	1-bit	x	x		x	
10	Bright. sens. left disrupted (HL = Brightness)	General	1.011	1-bit	x	x		x	
11	Twilight sensor disrupted	General	1.011	1-bit	x	x		x	
12	Day/night sensor disrupted	General	1.011	1-bit	x	x		x	
13	Not assigned								
14	Not assigned								
15	Wind sensor disrupted	General	1.011	1-bit	x	x		x	
16	Wind sensor faulty	General	1.011	1-bit	x	x		x	
17	Send	Date (Master operating mode)	11.001	3 byte	x	x		x	
	Received	Date (Slave operating mode)	11.001	3 byte	x		x		x
18	Send	Time (Master operating mode)	10.001	3 byte	x	x		x	
	Received	Time (Slave operating mode)	10.001	3 byte	x		x		x
19	Received	Time request (Master operating mode)	1.001	1-bit	x			x	
	Send	Time request (Slave operating mode)	1.001	1-bit	x			x	

No.	Function	Name	Data Point Type (DPT)	Length	Flags				
					C	R	W	T	U
20	Output value	Brightness right	9.004	2 byte	x	x		x	
21	Request output value	Brightness right	1.017	1-bit	x		x		
22	Threshold	Brightness right Threshold 1	Variable	Variable	x	x		x	
23	Modify	Brightness right Threshold 1 lower limit	9.004	2 byte	x	x		x	
24	Modify	Brightness right Threshold 1 upper limit	9.004	2 byte	x	x		x	
25	Threshold	Brightness right Threshold 2	Variable	Variable	x	x		x	
26	Modify	Brightness right Threshold 2 lower limit	9.004	2 byte	x	x		x	
27	Modify	Brightness right Threshold 2 upper limit	9.004	2 byte	x	x		x	
28	Output value	Brightness center	9.004	2 byte	x	x		x	
29	Request output value	Brightness center	1.017	1-bit	x		x		
30	Threshold	Brightness center Threshold 1	Variable	Variable	x	x		x	
31	Modify	Brightness center Threshold 1 lower limit	9.004	2 byte	x	x		x	
32	Modify	Brightness center Threshold 1 upper limit	9.004	2 byte	x	x		x	
33	Threshold	Brightness center Threshold 2	Variable	Variable	x	x		x	
34	Modify	Brightness center Threshold 2 lower limit	9.004	2 byte	x	x		x	
35	Modify	Brightness center Threshold 2 upper limit	9.004	2 byte	x	x		x	
36	Output value	Brightness left	9.004	2 byte	x	x		x	
37	Request output value	Brightness left	1.017	1-bit	x		x		
38	Threshold	Brightness left Threshold 1	Variable	Variable	x	x		x	
39	Modify	Brightness left Threshold 1 lower limit	9.004	2 byte	x	x		x	
40	Modify	Brightness left Threshold 1 upper limit	9.004	2 byte	x	x		x	
41	Threshold	Brightness left Threshold 2	Variable	Variable	x	x		x	
42	Modify	Brightness left Threshold 2 lower limit	9.004	2 byte	x	x		x	
43	Modify	Brightness left Threshold 2 upper limit	9.004	2 byte	x	x		x	

No.	Function	Name	Data Point Type (DPT)	Length	Flags				
					C	R	W	T	U
44	Output value	Twilight	9.004	2 byte	x	x		x	
45	Request output value	Twilight	1.017	1-bit	x		x		
46	Threshold	Twilight Threshold 1	Variable	Variable	x	x		x	
47	Modify	Twilight Threshold 1 lower limit	9.004	2 byte	x	x		x	
48	Modify	Twilight Threshold 1 upper limit	9.004	2 byte	x	x		x	
49	Threshold	Twilight Threshold 2	Variable	Variable	x	x		x	
50	Modify	Twilight Threshold 2 lower limit	9.004	2 byte	x	x		x	
51	Modify	Twilight Threshold 2 upper limit	9.004	2 byte	x	x		x	
52	Output value	Day/night	1.001	1-bit	x	x		x	
53	Request output value	Day/night	1.017	1-bit	x		x		
54	Threshold	Day/night Threshold 1	Variable	Variable	x	x		x	
55	Not assigned								
56	Not assigned								
57	Threshold	Day/night Threshold 2	Variable	Variable	x	x		x	
58	Not assigned								
59	Not assigned								
60	Output value	Temperature	9.001	2 byte	x	x		x	
61	Request output value	Temperature	1.017	1-bit	x		x		
62	Threshold	Temperature Threshold 1	Variable	Variable	x	x		x	
63	Modify	Temperature Threshold 1 lower limit	9.001	2 byte	x	x		x	
64	Modify	Temperature Threshold 1 upper limit	9.001	2 byte	x	x		x	
65	Threshold	Temperature Threshold 2	Variable	Variable	x	x		x	
66	Modify	Temperature Threshold 2 lower limit	9.001	2 byte	x	x		x	
67	Modify	Temperature Threshold 2 upper limit	9.001	2 byte	x	x		x	
68	Output value	Rain	1.001	1-bit	x	x		x	
69	Request output value	Rain	1.017	1-bit	x		x		
70	Threshold	Rain Threshold 1	Variable	Variable	x	x		x	
71	Not assigned								
72	Not assigned								
73	Threshold	Rain Threshold 2	Variable	Variable	x	x		x	
74	Not assigned								
75	Not assigned								

No.	Function	Name	Data Point Type (DPT)	Length	Flags				
					C	R	W	T	U
76	Output value	Wind speed	9.005	2 byte	x	x		x	
77	Request output value	Wind speed	1.017	1-bit	x		x		
78	Threshold	Wind speed Threshold 1	Variable	Variable	x	x		x	
79	Modify	Wind speed Threshold 1 lower limit	9.005	2 byte	x	x		x	
80	Modify	Wind speed Threshold 1 upper limit	9.005	2 byte	x	x		x	
81	Threshold	Wind speed Threshold 2	Variable	Variable	x	x		x	
82	Modify	Wind speed Threshold 2 lower limit	9.005	2 byte	x	x		x	
83	Modify	Wind speed Threshold 2 upper limit	9.005	2 byte	x	x		x	
84	Output value	PT1000	9.001	2 byte	x	x		x	
85	Request output value	PT1000	1.009	1-bit	x		x		
86	Threshold	PT1000 Threshold 1	Variable	Variable	x	x		x	
87	Modify	PT1000 Threshold 1 lower limit	9.001	2 byte	x	x		x	
88	Modify	PT1000 Threshold 1 upper limit	9.001	2 byte	x	x		x	
89	Threshold	PT1000 Threshold 2	Variable	Variable	x	x		x	
90	Modify	PT1000 Threshold 2 lower limit	9.001	2 byte	x	x		x	
91	Modify	PT1000 Threshold 2 upper limit	9.001	2 byte	x	x		x	

No.	Function	Name	Data Point Type (DPT)	Length	Flags				
					C	R	W	T	U
92	Send output	Logic 1	1.002	1-bit	x	x		x	
93	Send output	Logic 2	1.002	1-bit	x	x		x	
94	Send output	Logic 3	1.002	1-bit	x	x		x	
95	Send output	Logic 4	1.002	1-bit	x	x		x	
96	Input 1	Logic	1.002	1-bit	x		x		x
97	Input 2	Logic	1.002	1-bit	x		x		x
98	Memory number	Value memory selection	5.010	1 byte	x		x		
99	Number of values in memory	Value memory feedback on selection	5.010	1 byte	x	x		x	
100	Time and value	Value memory read request	1.017	1-bit	x		x		
101	Time	Value memory response	10.001	3 byte	x	x		x	
102	Value	Value memory response	Variable	2 byte	x	x		x	
103	Save value	Value memory 1	1.003	1-bit	x		x		
104	Save value	Value memory 2	1.003	1-bit	x		x		
105	Save value	Value memory 3	1.003	1-bit	x		x		
106	Save value	Value memory 4	1.003	1-bit	x		x		

3.4.2 Communication objects *General*

No.	Function	Object name	Data type	Flags
0	**In operation**	**General**	**1-bit** **DPT 1.002**	**C, R, T**

This communication object is active if, in the Parameter window General, p. 26, the parameter *Enable communication object "In operation" 1-bit* has been selected with *Yes* option.

If the communication object is active, it sends a telegram with the value 1 cyclically. This communication object is sent once when the device is started and then cyclically sent after the set send delay.

The presence of the Weather Unit can be monitored with this communication object.

No.	Function	Object name	Data type	Flags
1	**Status byte measurement**	**General**	**1 byte** **Non DPT**	**C, R, T**

The communication object is used to determine if the weather sensor has failed. A communication fault has occurred between the Weather Unit and Weather Sensor, if:

Bit sequence 76543210

Bit 7: Internal calibration (status of self calibration)
- 0: Calibration completed
- 1: Calibration running

Bit 6: PT1000 Meas. val. out of range
- 0: PT1000 measurement is OK
- 1: PT1000 measurement out of range

Bit 5: Communication to slave (communication with slave is disrupted; possibly no mains voltage)
- 0: Communication is OK
- 1: Communication is disrupted

Bit 4: Communication with the Weather Sensor (communication between WZ/S and sensor)
- 0: Communication OK
- 1: No communication established

Bit 3: Sensor mode (if the sensor is in boot mode, there is no sensor communication)
- 0: Sensor application running
- 1: Sensor running in boot mode

Bit 2: No valid time information (WZ/S and sensor have not yet been synchronised)
- 0: Time available
- 1: No time available

Bit 1: No time synchronization (sensor has no signal or sensor communication with WZ/S is disrupted), time may deviate
- 0: Time synchronization available
- 1: No time synchronization available

Bit 0: No DCF or GPS signal (sensor has no signal or sensor communication with WZ/S is disrupted)
- 0: DCF or GPS signal available
- 1: No DCF or GPS signal available

The communication object is sent with changes and can be read via the ValueRead command. This communication object is sent once automatically when the device is started after the set send delay.

The Appendix contains a Value table of communication object Status byte – Measurement, p. 107.

The value of the status byte is zero if everything functions perfectly.

No.	Function	Object name	Data type	Flags
2	**Status byte sensors**	**General**	**1 byte** **Non DPT**	**C, R, T**

The communication object is used to determine if the sensors of the WES/A 3.1 are disrupted.

Even if individual sensors in the application have not been enabled, the contents or individual bits in this communication object are updated. This means that, for example, a faulty sensor is always shown in the display.

The status bits of the individual sensors are set to 1 when the appropriate sensor is disrupted, is in programming mode or communication to the Weather Sensor is disrupted.

Bit sequence 76543210

Bit 7: Wind sensor faulty
- 0: Not faulty
- 1: Faulty

Bit 6: Wind sensor disrupted
- 0: Not disrupted
- 1: Disrupted

Bit 5: Not assigned

Bit 4: Day/night sensor disrupted
- 0: Not disrupted
- 1: Disrupted

Bit 3: Twilight sensor disrupted
- 0: Not disrupted
- 1: Disrupted

Bit 2: Brightness sensor left disrupted
- 0: Not disrupted
- 1: Disrupted

Bit 1: Brightness sensor center disrupted
- 0: Not disrupted
- 1: Disrupted

Bit 0: Brightness sensor right disrupted
- 0: Not disrupted
- 1: Disrupted

The Appendix contains a Table of values of communication object Status byte - Sensor, p. 108.

The value of the status byte is zero if everything functions perfectly.

No.	Function	Object name	Data type	Flags
3	**Sensor failure**	**General**	**1-bit** **DPT 1.011**	**C, R, T**
The communication object is used to determine if the weather sensor has failed. Telegram value: 0 = Weather sensor has not failed 1 = Weather sensor has failed This communication object must always be read out and displayed to ensure that, if the Weather Sensor fails, the downstream systems, e.g. blinds, can be protected.				
4	**No time synchronization**	**General**	**1-bit** **DPT 1.011**	**C, R, T**
This communication object is active if, in the parameter window *Date/Time*, in the parameter *Operating mode*, the following options are selected: • *Master (synchronization via sensor)* • *Internal (synchronization via sensor)* • *Slave (synchronization via bus)* Telegram value: 0 = Time synchronization available 1 = No time synchronization available **Note** After successful commissioning of the Weather Unit and Weather Sensor, the communication object *No time synchronization* should be read out. This verifies if the radio receiver can receive a valid DCF signal. With good reception, the sensor will require about 2-3 minutes to synchronize to the signal.				
5	**Sensor in programming mode**	**General**	**1-bit** **DPT 1.011**	**C, R, T**
This communication object is set when the Weather Sensor is in boot mode. It is retracted if the update was successful and the application of the sensor is running. Telegram value: 0 = Sensor not in programming mode 1 = Sensor in programming mode				
6	**PT1000 Meas. val. out of range**	**General**	**1-bit** **DPT 1.011**	**C, R, T**
If the PT1000 sensor is activated in the ETS application, then this communication object is set if there is an error. An error could be, for example, a cable break, a short-circuit or an incorrectly connected sensor. Telegram value: 0 = PT1000 is ok 1 = PT1000 Meas. val. out of range				
7	**Internal communication error**	**General**	**1-bit** **DPT 1.011**	**C, R, T**
If the internal communication between the Master Controller of the WZ/S and the measurement unit is disrupted, then this communication object is set. If this communication object is displayed, then the LEDs can no longer be activated and the measured values of the PT1000 no longer transmitted. Telegram value: 0 = No internal communication error 1 = Internal communication error				

No.	Function	Object name	Data type	Flags
8	**Bright. sens. right disrupted** (HL = Brightness)	**General**	**1-bit** **DPT 1.011**	**C, R, T**
This communication object is sent when the measured value has remained constant for 24 hours. The period of 24 hours cannot be changed in the settings of the application. Telegram value: 0 = Not disrupted 1 = Disrupted				
9	**Bright. sens. center disrupted** (HL = Brightness)	**General**	**1-bit** **DPT 1.011**	**C, R, T**
This communication object is sent when the measured value has remained constant for 24 hours. The period of 24 hours cannot be changed in the settings of the application. Telegram value: 0 = Not disrupted 1 = Disrupted				
10	**Bright. sens. left disrupted** (HL = Brightness)	**General**	**1-bit** **DPT 1.011**	**C, R, T**
This communication object is sent when the measured value has remained constant for 24 hours. The period of 24 hours cannot be changed in the settings of the application. Telegram value: 0 = Not disrupted 1 = Disrupted				
11	**Twilight sensor disrupted**	**General**	**1-bit** **DPT 1.011**	**C, R, T**
This communication object is sent when the measured value has remained constant for 24 hours. The period of 24 hours cannot be changed in the settings of the application. Telegram value: 0 = Not disrupted 1 = Disrupted				
12	**Day/night sensor disrupted**	**General**	**1-bit** **DPT 1.011**	**C, R, T**
This communication object is sent when the measured value has remained constant for 24 hours. The period of 24 hours cannot be changed in the settings of the application. Telegram value: 0 = Not disrupted 1 = Disrupted				
13	**Not assigned**			
14	**Not assigned**			

No.	Function	Object name	Data type	Flags
15	**Wind sensor disrupted**	**General**	**1-bit** **DPT 1.011**	**C, R, T**

This communication object is sent when the measured value has remained constant, for example for 4 hours. If there is an operating and/or bus voltage recovery, the timer will begin counting from the beginning.

Telegram value: 0 = Not disrupted
1 = Disrupted

Note

If there is no change in value during the monitoring time, i.e. a value of, for example, 3 m/s is recorded constantly, then the maximum output value is sent to the bus.

Note

When the contents of the communication objects *Wind sensor disrupted* and/or *Wind sensor faulty* are output, an evaluation of the parameterized monitoring time assumes a disruption or a fault.

If wind conditions are poor (e.g. no wind during the parameterized monitoring period, unsuitable mounting location), then a disruption or a fault is signaled, even though the sensor is o.k.

In these cases, the monitoring time should be increased or the parameters *Wind sensor disrupted* and/or *Wind sensor faulty* deactivated, as evaluation is not possible.

In either case, an on-site check of the sensor for ease of movement and damage to the impeller should be performed.

No.	Function	Object name	Data type	Flags
16	**Wind sensor faulty**	**General**	**1-bit** **DPT 1.011**	**C, R, T**

This communication object is sent when the measured value has remained constant, for example for 24 hours. If there is an operating and/or bus voltage recovery, the timer will begin counting from the beginning.

Telegram value: 0 = Not faulty
1 = Faulty

Note

If an error occurs on the Wind Sensor WES/A 3.1, this communication object is switched on and, at the same time, the output value set to 50 m/s.

As soon as the error has been eliminated, the current wind speed is displayed.

3.4.3 Communication objects *Date/Time* and WES/A 1.1 in the operating mode *Master*

No.	Function	Object name	Data type	Flags
17	**Send**	**Date**	**3 byte DPT 11.001**	**C, R, T**
This communication object is used to send the date to the bus.				
18	**Send**	**Time**	**3 byte DPT 10.001**	**C, R, T**
This communication object is used to send the time to the bus.				
19	**Received**	**Time request**	**1-bit DPT 1.001**	**C, T**
This communication object is used to receive the time request. Telegram value: 1 = Received 0 = Not received				

3.4.4 Communication objects *Date/Time* WES/A 1.1 operating mode *Slave*

No.	Function	Object name	Data type	Flags
17	**Received**	**Date**	**3 byte DPT 10.001**	**C, W, U**
This communication object is used to receive the date.				
18	**Received**	**Time**	**3 byte DPT 11.001**	**C, W, U**
This communication object is used to receive the time.				
19	**Send**	**Time request**	**1-bit DPT 1.001**	**C, T**
The communication object is used to request the date/time after a bus voltage recovery and programming. Telegram value: 1 = Send 0 = Do not send				

3.4.5 Communication objects *Brightness right*

No.	Function	Object name	Data type	Flags
20	**Output value**	**Brightness right**	**2 byte** **DPT 9.004**	**C, R, T**
This communication object is used to send the output value to the bus.				
21	**Request output value**	**Brightness right**	**1-bit** **DPT 1.017**	**C, W**
This communication object appears if the output value *On request* is to be sent If a 1 is received at this communication object, the communication object *Output value - Brightness right* sends the current value once.				
22	**Threshold**	**Brightness right** **Threshold 1**	**Variable** **DPT variable**	**C, R, T**
As soon as the set threshold is exceeded or below the limit, it is possible to send the following value: 1-bit value [0/1] DPT 1.001 1-byte value [0...+255] DPT 5.010 The object value depends on the parameter *Data type of threshold object* (1-bit, 1-byte). The parameter can be found in the parameter window *Brightness right – Threshold 1* (for a description, see Parameter window Brightness right - Threshold 1, p. 46).				
23 **24**	**Modify** **Modify**	**Brightness right** **Threshold 1** **lower limit** **Brightness right** **Threshold 1** **upper limit**	**2 byte** **DPT 9.004**	**C, R, T**
The upper and lower limits of threshold 1 can be changed via the bus. The modified threshold limits are saved on a bus or mains voltage failure. Only after a renewed download of the application are the threshold limits overwritten. **Important** The lower limit should be selected to be lower than the upper limit.				
25	**Threshold**	**Brightness right** **Threshold 2**	**Variable** **DPT variable**	**C, R, T**
As soon as the set threshold is exceeded or below the limit, it is possible to send the following value: 1-bit value [0/1] DPT 1.001 1-byte value [0...+255] DPT 5.010 The object value depends on the parameter *Data type of threshold object* (1-bit, 1-byte). The parameter can be found in the parameter window *Brightness right – Threshold 2* (for a description, see Parameter window Brightness right - Threshold 1, p. 46).				
26 **27**	**Modify** **Modify**	**Brightness right** **Threshold 2** **lower limit** **Brightness value right** **Threshold 2** **Upper limit**	**2 byte** **DPT 9.004**	**C, R, T**
The upper and lower limits of threshold 2 can be changed via the bus. The modified threshold limits are saved on a bus or mains voltage failure. Only after a renewed download of the application are the threshold limits overwritten. **Important** The lower limit should be selected to be lower than the upper limit.				

3.4.6 Communication objects *Brightness center*

No.	Function	Object name	Data type	Flags
28…35		**Brightness center**	**2 byte DPT 9.004**	**C, R, T**
See communication objects 20...27				

3.4.7 Communication objects *Brightness left*

No.	Function	Object name	Data type	Flags
36…43		**Brightness left**	**2 byte DPT 9.004**	**C, R, T**
See communication objects 20...27				

3.4.8 Communication objects *Twilight*

No.	Function	Object name	Data type	Flags
44…51		**Twilight**	**2 byte DPT 9.004**	**C, R, T**
See communication objects 20...27				

3.4.9 Communication objects *Day/Night*

No.	Function	Object name	Data type	Flags
52	**Output value**	**Day/night**	**1-bit** **DPT 1.001**	**C, R, T**
This communication object is used to send the output value to the bus. The output value is fixed to 1 bit. Telegram value: 1 = Day 0 = Night				
53	**Request output value**	**Day/night**	**1-bit** **DPT 1.017**	**C, W**
This communication object appears if the output value *On request* is to be sent If a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Day/Night*.				
54	**Threshold**	**Day/night** **Threshold 1**	**Variable** **DPT variable**	**C, R, T**
As soon as the set threshold is exceeded or below the limit, it is possible to send the following value: 1-bit value [0/1] DPT 1.001 1-byte value [0...+255] DPT 5.010 The object value depends on the parameter *Data type of threshold object* (1-bit, 1-byte). The parameter can be found in the parameter window *Day/night – Threshold 1* (for a description, see Parameter window Brightness right - Threshold 1, p. 46).				
55…56	**Not assigned**			
57	**Threshold**	**Day/night** **Threshold 2**	**Variable** **DPT variable**	**C, R, T**
See communication object 54				
58…59	**Not assigned**			

3.4.10 Communications objects *Temperature*

No.	Function	Object name	Data type	Flags
60	**Output value**	**Temperature**	**2 byte** **DPT 9.001**	**C, R, T**
This communication object is used to send the output value to the bus. The output value is fixed to 2 bytes.				
61	**Request output value**	**Temperature**	**1-bit** **DPT 1.017**	**C, W**
This communication object appears if the output value *On request* is to be sent If a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Temperature*.				
62	**Threshold**	**Temperature** **Threshold 1**	**Variable** **DPT variable**	**C, R, T**
As soon as the set threshold is exceeded or below the limit, it is possible to send the following value: 1-bit value [0/1] DPT 1.001 1-byte value [0...+255] DPT 5.010 The object value depends on the parameter *Data type of threshold object* (1-bit, 1-byte). The parameter can be found in the parameter window *Temperature – Threshold 1* (for a description, see Parameter window Brightness right - Threshold 1, p. 46).				
63 **64**	**Modify** **Modify**	**Temperature** **Threshold 1** **lower limit** **Temperature** **Threshold 1** **upper limit**	**2 byte** **DPT 9.001**	**C, R, T**
The upper and lower limits of threshold 1 can be changed via the bus. The modified threshold limits are saved on a bus or mains voltage failure. Only after a renewed download of the application are the threshold limits overwritten. The data type of these communication objects has a fixed setting to 2 bytes. **Important** The lower limit should be selected to be lower than the upper limit.				
65	**Threshold**	**Temperature** **Threshold 2**	**Variable** **DPT variable**	**C, R, T**
See communication object 62				
66 **67**	**Modify** **Modify**	**Temperature** **Threshold 2** **lower limit** **Temperature** **Threshold 2** **upper limit**	**2 byte** **DPT 9.001**	**C, R, T**
See communication objects 63 and 64				

3.4.11 Communication objects *Rain*

No.	Function	Object name	Data type	Flags
68	**Output value**	**Rain**	**1-bit** **DPT 1.001**	**C, R, T**
This communication object is used to send the output value to the bus. The output value is fixed to 1 bit. Telegram value: 0 = No rain 1 = Rain				
69	**Request output value**	**Rain**	**1-bit** **DPT 1.017**	**C, W**
This communication object appears if the output value *On request* is to be sent If a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Rain*.				
70	**Threshold**	**Rain** **Threshold 1**	**Variable** **DPT variable**	**C, R, T**
As soon as the set threshold is exceeded or below the limit, it is possible to send the following value: 1-bit value [0/1] DPT 1.001 1-byte value [0...+255] DPT 5.010 The object value depends on the parameter *Data type of threshold object* (1-bit, 1-byte). The parameter can be found in the parameter window *Rain – Threshold 1* (for a description, see Parameter window Brightness right - Threshold 1, p. 46).				
71…72	**Not assigned**			
73	**Threshold**	**Rain** **Threshold 2**	**Variable** **DPT variable**	**C, R, T**
See communication object 70				
74…75	**Not assigned**			

3.4.12 Communication objects *Wind speed*

No.	Function	Object name	Data type	Flags
76	**Output value**	**Wind speed**	**2 byte** **DPT 9.005**	**C, R, T**
This communication object is used to send the output value to the bus.				
77	**Request output value**	**Wind speed**	**1-bit** **DPT 1.017**	**C, W**
This communication object appears if the output value *On request* is to be sent If a 1 is received at this communication object, the current output value is sent once to the communication object *Output value – Wind speed*.				
78	**Threshold**	**Wind speed** **Threshold 1**	**Variable** **DPT variable**	**C, R, T**
As soon as the set threshold is exceeded or below the limit, it is possible to send the following value: 1-bit value [0/1] DPT 1.001 1-byte value [0...+255] DPT 5.010 The object value depends on the parameter *Data type of threshold object* (1-bit, 1-byte). The parameter can be found in the parameter window *Wind speed – Threshold 1* (for a description, see Parameter window Brightness right - Threshold 1, p. 46).				
79 **80**	**Modify** **Modify**	**Wind speed** **Threshold 1** **lower limit** **Wind speed** **Threshold 1** **upper limit**	**2 byte** **DPT 9.005**	**C, R, T**
The upper and lower limits of threshold 1 can be changed via the bus. The modified threshold limits are saved on a bus or mains voltage failure. Only after a renewed download of the application are the threshold limits overwritten. **Important** The lower limit should be selected to be lower than the upper limit.				
81	**Threshold**	**Wind speed** **Threshold 2**	**Variable** **DPT variable**	**C, R, T**
See communication object 78				
82 **83**	**Modify** **Modify**	**Wind speed** **Threshold 2** **lower limit** **Wind speed** **Threshold 2** **upper limit**	**2 byte** **DPT 9.005**	**C, R, T**
See communication objects 79 and 80				

3.4.13 Communication objects *PT1000*

No.	Function	Object name	Data type	Flags
84	**Output value**	**PT1000**	**2 byte** **DPT 9.001**	**C, R, T**
This communication object is used to send the output value to the bus. The output value is fixed to 2 bytes.				
85	**Request output value**	**PT1000**	**1-bit** **DPT 1.009**	**C, W**
This communication object appears if the output value *On request* is to be sent If a 1 is received at this communication object, the current output value is sent once from the communication object *Output value – PT1000*.				
86	**Threshold**	**PT1000** **Threshold 1**	**Variable** **DPT variable**	**C, R, T**
As soon as the set threshold is exceeded or fallen below, it is possible to send the following values: 1-bit value [0/1] EIS 1 DPT 1,001 1-byte value [0...+255] EIS 6 DPT 5,001 The object value depends on the parameter *Data type of threshold object* (1-bit, 1-byte). The parameter can be found in the parameter window *PT1000 2-conductor technology – Threshold 1* (for a description, see Parameter window Brightness right - Threshold 1, p. 46).				
87 **88**	**Modify** **Modify**	**PT1000** **Threshold 1** **lower limit** **PT1000** **Threshold 1** **upper limit**	**Variable** **DPT 9.001**	**C, R, T**
The upper and lower limits of threshold 1 can be changed via the bus. The data type and communication objects depend on the set data type of the communication object *Output value – PT1000*. **Important** The lower limit should be selected to be lower than the upper limit.				
89	**Threshold**	**PT1000** **Threshold 2**	**Variable** **DPT variable**	**C, R, T**
See communication object 86				
90 **91**	**Modify** **Modify**	**PT1000** **Threshold 2** **lower limit** **PT1000** **Threshold 2** **upper limit**	**Variable** **DPT variable**	**C, R, T**
See communication objects 87 and 88				

3.4.14 Communication objects *Logic 1, 2, 3 and 4*

No.	Function	Object name	Data type	Flags
92	**Send output**	**Logic 1**	**1-bit** **DPT 1.002**	**C, R, T**
The logical result of logic 1 is sent with this communication object.				
93 **94** **95**	**Send output** **Send output** **Send output**	**Logic 2** **Logic 3** **Logic 4**	**1-bit** **DPT 1.002**	**C, R, T**
See communication object 85				
96 **97**	**Input 1** **Input 2**	**Logic** **Logic**	**1-bit** **DPT 1.002**	**C, W, U**
Both of these communication objects can be used as external inputs for the internal logic. If a telegram with the value 0 or 1 is received on these communication objects, the internal logic is assigned the value 0 or 1.				

3.4.15 Communication objects *Value memory*

No.	Function	Object name	Data type	Flags
98	**Memory number**	**Value memory**	**1 byte** **DPT 5.010**	**C, W**
This communication object is used to select the value memory. The output value is fixed to 1 bit. Telegram value: 1 = Value memory 1 2 = Value memory 2 3 = Value memory 3 4 = Value memory 4 If a non-existent value memory (0, 5…255) or a non-active value memory is selected, the communication object *Number of values in memory – Memory value feedback on selection* responds with the value 255.				
99	**Number of values in memory**	**Value memory** **Feedback on response**	**1 byte** **DPT 5.010**	**C, R, T**
With the communication object, the maximum number of saved values for the selected value memory is transferred.				
100	**Time and value**	**Value memory** **Read request**	**1-bit** **DPT 1.017**	**C, W**
This communication object is used to read out the saved values from the selected value memory. The output value is fixed to 1 bit. Telegram value: 1 = Read forwards 0 = Read backwards				
101	**Time**	**Value memory** **Response**	**3 byte** **DPT 10.001**	**C, R, T**
After a successful read request, the saved time of this communication object is sent on the bus.				
102	**Value**	**Value memory** **Response**	**2 byte** **DPT variable**	**C, R, T**
After a successful read request, the saved value is sent on the bus in this communication object. If a non-existent value memory (0, 5…255) or a non-active value memory is selected, the communication object *Number of values in memory – Memory value feedback on selection* responds with the value 255.				
103	**Save value**	**Value memory 1**	**1-bit** **DPT 1.003**	**C, W**
This communication object is only visible if, in the parameter *Fill value memory*, the *On request* option has been selected. With this communication object, values can be saved on request. Consecutive requests within 1 s are evaluated as one request.				
104 **105** **106**	**Save value** **Save value** **Save value**	**Value memory 2** **Value memory 3** **Value memory 4**	**1-bit** **DPT 1.003**	**C, W**
See communication object 103				

4 Planning and application

4.1 Weather Unit

The Weather Unit WZ/S 1.3.1.2 can be used wherever installations need to be protected against weather or monitored. The recorded data can, for example, be displayed on a visualization terminal. The user is thus informed about the weather conditions.

The following sensors are used to protect, monitor and control a building:

- Twilight sensor for switching external and interior lighting systems on and off and for targeted use as an energy-saving measure through the detection of the sunrise and sunset
- Brightness sensor for window blind control (if necessary, a direction-dependent brightness sensor for controlling several facades and for lighting control)
- Rain sensor for protecting awnings, roller blinds and shutters as well as fanlights
- Temperature sensor for regulating heating, air conditioning systems and ventilation systems
- Wind speed sensor to protect blind systems

4.2 Weather Sensor

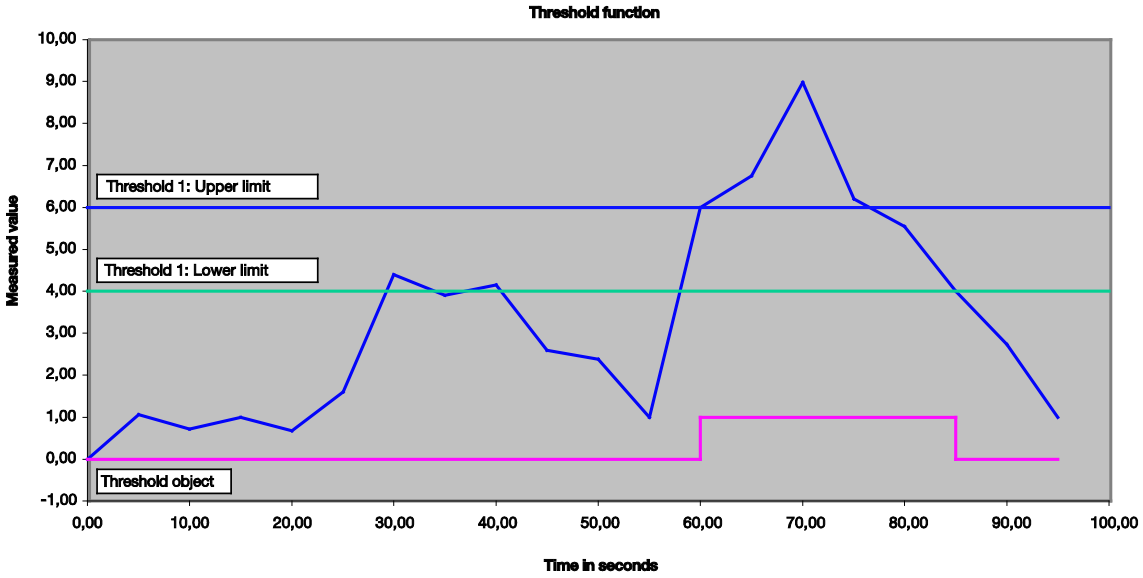
When planning a Weather Unit with the Weather Sensor, specific requirements should be taken into account and checked on site:

- Where can the Weather Sensor be fixed on the building, e.g. on roof structures?
- Can the Weather Sensor be "disrupted" by the structures, e.g. by an extraction system?
- Is the mounting and installation position of the weather sensor free of shadows, e.g. caused by a tree?
- Are additional items required for fixing?
- Is an installation of the cables on the building guaranteed?
- Is the cable routing from the Weather Unit to the Weather Sensor mechanically sound, e.g. are the cables protected from UV rays?
- The local lightning protection conditions must be taken into consideration during mounting.

Note
The points above are a selection of the criteria required to mount the Weather Sensor, and are not comprehensive. Further descriptions can be found in chapter 2 Device technology.

4.3 Description of the threshold function

How does the threshold function work?



In the example diagram above, it can be seen that the measured value begins "somewhere", in this example with a 0 value. The communication object for *Threshold 1* has the value 0 and is sent cyclically as per application settings.

As long as the measured value does not exceed the upper limit of the threshold 1, the communication object *Threshold 1* will remain at value 0.

As soon as the measured value exceeds the upper limit of the threshold value 1, the communication object *Threshold 1* will change value to 1.

The communication object *Threshold 1* will remain 1, until the measured value once again falls below the lower limit of the threshold 1.

A Appendix

A.1 Scope of delivery

Weather Unit

The Weather Unit WZ/S 1.3.1.2 is supplied with the following parts. Please check the items received using the following list.

- 1 (one) unit WZ/S 1.3.1.2, Weather Unit, 1-fold, MDRC
- 1 (one) set of installation and operating instructions
- 1 (one) bus connection terminal (red/black)

Weather Sensor

The weather sensor WES/A 3.1 is supplied with the following parts. Please check the items received using the following list.

- 1 (one) unit WES/A 3.1, Weather Sensor, SM
- 1 (one) set of installation and operating instructions
- 1 (one) pack with 2 screws and 2 anchors
- 1 (one) pack with 2 washers

A.2 Time zones

Egypt	UTC + 2 hours
Equatorial Guinea	UTC + 1 hour
Ethiopia	UTC + 3 hours
Afghanistan	UTC + 4.5 hours
Albania	UTC + 1 hour
Algeria	UTC + 1 hour
American Virgin Islands	UTC – 4 hours
Angola	UTC + 1 hour
Anguilla	UTC – 4 hours
Antigua and Barbuda	UTC – 4 hours
Argentina	UTC – 3 hours
Armenia	UTC + 3 hours
Aruba	UTC – 4 hours
Azerbaijan	UTC + 4 hours
Australia	
Western Australia	UTC + 8 hours
Northern Territory	UTC + 9.5 hours
South Australia	UTC + 9.5 hours
Queensland	UTC + 10 hours
New South Wales	UTC + 10 hours
Australian Capital Territory	UTC + 10 hours
Victoria	UTC + 10 hours
Tasmania	UTC + 10 hours
Bahamas	UTC – 5 hours
Bahrain	UTC + 3 hours
Bangladesh	UTC + 6 hours
Barbados	UTC – 4 hours
Belarus	UTC + 2 hours
Belgium	UTC + 1 hour
Benin	UTC + 1 hour
Bermuda	UTC – 4 hours
Bolivia	UTC – 4 hours
Bosnia & Herzegovina	UTC + 1 hour
Botswana	UTC + 2 hours

Brazil	
Western Brazil	UTC – 5 hours
Central Brazil	UTC – 4 hours
Coastal states incl. Minas Gerais, Goias and Capital	UTC – 3 hours
British Virgin Islands	UTC + 4 hours
Brunei Darussalam	UTC + 9 hours
Bulgaria	UTC + 2 hours
Burkina Faso	UTC
Burundi	UTC + 2 hours
Chile	UTC – 4 hours
PR China	UTC + 8 hours
Costa Rica	UTC – 6 hours
Côte d'Ivoire	UTC
Curação	UTC – 4 hours
Denmark	UTC + 1 hour
Germany	UTC + 1 hour
Dominican Republic	UTC – 4 hours
Djibouti	UTC + 3 housr
Ecuador	UTC – 5 hours
El Salvador	UTC – 6 hours
Eritrea	UTC + 3 hours
Estonia	UTC + 2 hours
Fiji	UTC + 12 hours
Finland	UTC + 2 hours
France	UTC + 1 hour
Gabon	UTC + 1 hour
Gambia	UTC
Georgia	UTC + 4 hours
Ghana	UTC
Grenada	UTC – 4 hours
Greece	UTC + 2 hours
United Kingdom	UTC
Guatemala	UTC – 6 hours
Guinea	UTC
Guinea-Bissau	UTC
Guyana	UTC – 3 hours

Haiti	UTC – 5 hours
Honduras	UTC – 6 hours
Hong Kong, Special Administration Region	UTC + 8 hours
India	UTC + 5.5 hours
Indonesia	
West	UTC + 7 hours
North & Central	UTC + 8 hours
East	UTC + 9 hours
Iran	UTC + 3.5 hours
Ireland	UTC
Iceland	UTC
Israel	UTC + 2 hours
Italy	UTC + 1 hour
Jamaica	UTC – 5 hours
Japan	UTC + 9 hours
Yemen	UTC + 3 hours
Jordan	UTC + 2 hours
Serbia & Montenegro	UTC + 1 hour
Cayman Islands	UTC – 5 hours
Cambodia	UTC + 7 hours
Cameroon	UTC + 1 hour
Canada	
Pacific Standard Time	UTC – 8 hours
Mountain Standard Time	UTC – 7 hours
Central Standard Time	UTC – 6 hours
Eastern Standard Time	UTC – 5 hours
Atlantic Standard Time	UTC – 4 hours
Newfoundland	UTC – 3.5 hours
Cape Verde	UTC – 1 hour
Kazakhstan	
Western Kazakhstan	UTC + 5 hours
Eastern Kazakhstan	UTC + 6 hours
Qatar	UTC + 3 hours
Kenya	UTC + 3 hours
Kyrgyzstan	UTC + 5 hours
Colombia	UTC – 5 hours
Comoros	UTC + 3 hours

Congo (Dem. Rep.)	
East	UTC + 2 hours
West	UTC + 1 hour
Congo (PR)	UTC + 1hour
Korea (DPRK)	UTC + 9 hours
Korea (Rep.)	UTC + 9 hours
Croatia	UTC + 1 hour
Cuba	UTC – 5 hours
Kuwait	UTC + 3 hours
Laos	UTC + 7 hours
Lesotho	UTC + 2 hours
Latvia	UTC + 2 hours
Lebanon	UTC + 2 hours
Liberia	UTC
Libya	UTC + 2 hours
Liechtenstein	UTC + 1 hour
Lithuania	UTC + 1 hour
Luxembourg	UTC + 1 hour
Macao	UTC + 8 hours
Madagascar	UTC + 3 hours
Malawi	UTC + 2 hours
Malaysia	UTC + 8 hours
Mali	UTC
Malta	UTC + 1 hour
Morocco	UTC
Mauritania	UTC
Mauritius	UTC + 4 hours
FYR Macedonia	UTC + 1 hour
Mexico	
Quintana Roo	UTC – 5 hours
Baja California Norte	UTC – 6 hours
Baja California Sur	UTC – 7 hours
Sonora	UTC – 7 hours
Sinaola	UTC – 7 hours
Nayarit	UTC – 7 hours
Central and Western Mexico	UTC – 8 hours
Moldova	UTC + 2 hours

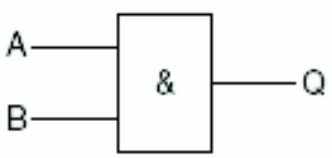
Mongolia	
Western Mongolia	UTC + 7 hours
Central Mongolia	UTC + 8 hours
Eastern Mongolia	UTC + 9 hours
Montserrat	UTC – 4 hours
Mozambique	UTC + 2 hours
Myanmar	UTC + 6.5 hours
Namibia	UTC + 2 hours
Nepal	UTC + 5.75 hours
New Zealand	UTC + 12 hours
Nicaragua	UTC – 6 hours
Netherlands	UTC + 1 hour
Niger	UTC + 1 hour
Nigeria	UTC + 1 hour
Norway	UTC + 1 hour
Austria	UTC + 1 hour
Oman	UTC + 4 hours
Pakistan	UTC + 5 hours
Palestinian Territories	UTC + 2 hours
Panama	UTC – 5 hours
Papua New Guinea	UTC + 10 hours
Paraguay	UTC – 4 hours
Peru	UTC – 5 hours
Philippines	UTC + 8 hours
Poland	UTC + 1 hour
Portugal	UTC
Puerto Rico	UTC – 4 hours
Réunion Island	UTC + 4 hours
Rwanda	UTC + 2 hours
Romania	UTC + 2 hours
Russia	
European Region	UTC + 3 hours
Smaller areas on the Central Volga	UTC + 4 hours
Ural region and parts of Western Siberia	UTC + 5 hours
Western and parts of Central Siberia	UTC + 6 hours
Parts of Central Siberia	UTC + 7 hours
Parts of Eastern Siberia	UTC + 8 hours
Parts of Eastern Siberia and parts of the Far East	UTC + 9 hours
Parts of the Far East	UTC + 10 hours
Parts of the Far East	UTC + 11 hours
Parts of the Far East	UTC + 12 housr

Zambia	UTC + 2 hours
Saudi Arabia	UTC + 3 hours
Sweden	UTC + 1 hour
Switzerland	UTC + 1 hour
Senegal	UTC
Seychelles	UTC + 4 hours
Sierra Leone	UTC
Zimbabwe	UTC + 2 hours
Singapore	UTC + 8 hours
Slovak Republic	UTC + 1 hour
Slovenia	UTC + 1 hour
Somalia	UTC + 3 hours
Spain	UTC + 1 hour
Sri Lanka	UTC + 5.5 hours
St. Kitts and Nevis	UTC – 4 hours
St. Lucia	UTC – 4 hours
St. Vincent and the Grenadines	UTC – 4 hours
Sudan	UTC + 2 hours
South Africa	UTC + 2 hours
Surinam	UTC – 3.5 hours
Swaziland	UTC + 2 hours
Syria	UTC + 2 hours
Tajikistan	UTC + 5 hours
Taiwan	UTC + 8 hours
Tanzania	UTC + 3 hours
Thailand	UTC + 7 hours
Togo	UTC
Trinidad and Tobago	UTC – 4 hours
Chad	UTC + 1 hour
Czech Republic	UTC + 1 hour
Turkey	UTC + 2 hours
Tunisia	UTC + 1 hour
Turkmenistan	UTC + 5 hours
Uganda	UTC + 3 hours
Ukraine	UTC + 2 hours
Hungary	UTC + 1 hour
Uruguay	UTC – 3 hours

USA	
Hawaii-Aleutian Standard Time	UTC – 10 hours
Alaska Standard Time	UTC – 9 hours
Pacific Standard Time	UTC – 8 hours
Mountain Standard Time	UTC – 7 hours
Central Standard Time	UTC – 6 hours
Eastern Standard Time	UTC – 5 hours
Atlantic Standard Time	UTC – 4 hours
Uzbekistan	UTC + 5 hours
Venezuela	UTC – 4 hours
United Arab Emirates	UTC + 4 hours
Vietnam	UTC + 7 hours
Central African Republic	UTC + 1 hour
Cyprus	UTC + 2 hours
Cyprus (Turkish-administered section)	UTC + 2 hours

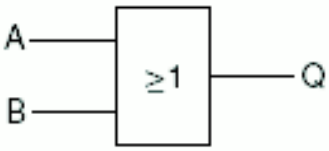
A.3 Truth table for logical operations

AND



A	B	Q
0	0	0
1	0	0
0	1	0
1	1	1

OR



A	B	Q
0	0	0
1	0	1
0	1	1
1	1	1

The logic gates and tables above describe the input and output states for 2 inputs. For multiple inputs, the tables must be extended accordingly.

A.4 Wind speeds overview

Wind speed (Beaufort)	m/s		km/h		Nodes (nm/h)		mi/h		ft/min	
	from	up to	from	up to	from	up to	from	up to	from	up to
0	0	0	0	0	0	0	0	0	0	0
1	0.3	1.5	1	5	1	3	1	4	59	295
2	1.6	3.3	6	11	4	6	4	7	315	650
3	3.4	5.4	12	19	7	10	8	12	669	1,063
4	5.5	7.9	20	28	11	15	12	18	1,083	1,555
5	8	10.7	29	38	16	21	18	25	1,575	2,106
6	10.8	13.8	39	49	22	27	25	32	2,126	2,717
7	13.9	17.1	50	61	28	33	32	38	2,736	3,366
8	17.2	20.7	62	74	34	40	39	47	3,386	4,075
9	20.8	24.4	75	87	41	47	47	55	4,094	4,803
10	24.5	28.4	88	102	48	55	55	64	4,823	5,591
11	28.5	32.6	103	117	56	63	64	73	5,610	6,417
12	32.7	36.9	118	132	64	72	74	83	6,437	7,264
13	37	41.4	133	149	73	80	85	93	7,283	8,150
14	41.5	46.1	149	165	81	90	94	104	8,169	9,075
15	46.2	50.9	166	183	90	99	104	114	6,094	10,020
16	51	56	184	201	99	109	114	126	10,039	11,024
17	56		202		109		126		11,024	

A.5 Value table of communication object *Status byte – Measurement*

Bit No.		7	6	5	4	3	2	1	0
8-bit value	Hexadecimal	Internal calibration	PT1000 Meas. val. out of range	Communication with the slave is disrupted	Communication with the Weather Sensor	Sensor faulty	No valid time information	No time synchr.	No DCF or GPS signal
0	00								
1	01								■
2	02							■	
3	03							■	■
4	04						■		
5	05						■		■
6	06						■	■	
7	07						■	■	■
8	08					■			
9	09					■			■
10	0A					■		■	
11	0B					■		■	■
12	0C					■	■		
13	0D					■	■		■
14	0E					■	■	■	
15	0F					■	■	■	■
16	10				■				
17	11				■				■
18	12				■			■	
19	13				■			■	■
20	14				■		■		
21	15				■		■		■
22	16				■		■	■	
23	17				■		■	■	■
24	18				■	■			
25	19				■	■			■
26	1A				■	■		■	
27	1B				■	■		■	■
28	1C				■	■	■		
29	1D				■	■	■		■
30	1E				■	■	■	■	
31	1F				■	■	■	■	■
32	20			■					
33	21			■					■
34	22			■				■	
35	23			■				■	■
36	24			■			■		
37	25			■			■		■
38	26			■			■	■	
39	27			■			■	■	■
40	28			■		■			
41	29			■		■			■
42	2A			■		■		■	
43	2B			■		■		■	■
44	2C			■		■	■		
45	2D			■		■	■		■
46	2E			■		■	■	■	
47	2F			■		■	■	■	■
48	30			■	■				
49	31			■	■				■
50	32			■	■			■	
51	33			■	■			■	■
52	34			■	■		■		
53	35			■	■		■		■
54	36			■	■		■	■	
55	37			■	■		■	■	■
56	38			■	■	■			
57	39			■	■	■			■
58	3A			■	■	■		■	
59	3B			■	■	■		■	■
60	3C			■	■	■	■		
61	3D			■	■	■	■		■
62	3E			■	■	■	■	■	
63	3F			■	■	■	■	■	■
64	40		■						
65	41		■						■
66	42		■					■	
67	43		■					■	■
68	44		■				■		
69	45		■				■		■
70	46		■				■	■	
71	47		■				■	■	■
72	48		■			■			
73	49		■			■			■
74	4A		■			■		■	
75	4B		■			■		■	■
76	4C		■			■	■		
77	4D		■			■	■		■
78	4E		■			■	■	■	
79	4F		■			■	■	■	■
80	50		■		■				
81	51		■		■				■
82	52		■		■			■	
83	53		■		■			■	■
84	54		■		■		■		
85	55		■		■		■		■

Bit No.		7	6	5	4	3	2	1	0
8-bit value	Hexadecimal	Internal calibration	PT1000 Meas. val. out of range	Communication with the slave is disrupted	Communication with the Weather Sensor	Sensor faulty	No valid time information	No time synchr.	No DCF or GPS signal
86	56		■		■		■	■	
87	57		■		■		■	■	■
88	58		■		■	■			
89	59		■		■	■			■
90	5A		■		■	■		■	
91	5B		■		■	■		■	■
92	5C		■		■	■	■		
93	5D		■		■	■	■		■
94	5E		■		■	■	■	■	
95	5F		■		■	■	■	■	■
96	60		■	■					
97	61		■	■					■
98	62		■	■				■	
99	63		■	■				■	■
100	64		■	■			■		
101	65		■	■			■		■
102	66		■	■			■	■	
103	67		■	■			■	■	■
104	68		■	■		■			
105	69		■	■		■			■
106	6A		■	■		■		■	
107	6B		■	■		■		■	■
108	6C		■	■		■	■		
109	6D		■	■		■	■		■
110	6E		■	■		■	■	■	
111	6F		■	■		■	■	■	■
112	70		■	■	■				
113	71		■	■	■				■
114	72		■	■	■			■	
115	73		■	■	■			■	■
116	74		■	■	■		■		
117	75		■	■	■		■		■
118	76		■	■	■		■	■	
119	77		■	■	■		■	■	■
120	78		■	■	■	■			
121	79		■	■	■	■			■
122	7A		■	■	■	■		■	
123	7B		■	■	■	■		■	■
124	7C		■	■	■	■	■		
125	7D		■	■	■	■	■		■
126	7E		■	■	■	■	■	■	
127	7F		■	■	■	■	■	■	■
128	80	■						■	
129	81	■							■
130	82	■						■	
131	83	■						■	■
132	84	■					■		
133	85	■					■		■
134	86	■					■	■	
135	87	■					■	■	■
136	88	■				■			
137	89	■				■			■
138	8A	■				■		■	
139	8B	■				■		■	■
140	8C	■				■	■		
141	8D	■				■	■		■
142	8E	■				■	■	■	
143	8F	■				■	■	■	■
144	90	■			■				
145	91	■			■				■
146	92	■			■			■	
147	93	■			■			■	■
148	94	■			■		■		
149	95	■			■		■		■
150	96	■			■		■	■	
151	97	■			■		■	■	■
152	98	■			■	■			
153	99	■			■	■			■
154	9A	■			■	■		■	
155	9B	■			■	■		■	■
156	9C	■			■	■	■		
157	9D	■			■	■	■		■
158	9E	■			■	■	■	■	
159	9F	■			■	■	■	■	■
160	A0	■		■					
161	A1	■		■					■
162	A2	■		■				■	
163	A3	■		■				■	■
164	A4	■		■			■		
165	A5	■		■			■		■
166	A6	■		■			■	■	
167	A7	■		■			■	■	■
168	A8	■		■		■			
169	A9	■		■		■			■
170	AA	■		■		■		■	
171	AB	■		■		■		■	■

Bit No.		7	6	5	4	3	2	1	0
8-bit value	Hexadecimal	Internal calibration	PT1000 Meas. val. out of range	Communication with the slave is disrupted	Communication with the Weather Sensor	Sensor faulty	No valid time information	No time synchr.	No DCF or GPS signal
172	AC	■		■		■	■		
173	AD	■		■		■	■		■
174	AE	■		■		■	■	■	
175	AF	■		■		■	■	■	■
176	B0	■		■	■				
177	B1	■		■	■				■
178	B2	■		■	■			■	
179	B3	■		■	■			■	■
180	B4	■		■	■		■		
181	B5	■		■	■		■		■
182	B6	■		■	■		■	■	
183	B7	■		■	■		■	■	■
184	B8	■		■	■	■			
185	B9	■		■	■	■			■
186	BA	■		■	■	■		■	
187	BB	■		■	■	■		■	■
188	BC	■		■	■	■	■		
189	BD	■		■	■	■	■		■
190	BE	■		■	■	■	■	■	
191	BF	■		■	■	■	■	■	■
192	C0	■	■						
193	C1	■	■						■
194	C2	■	■					■	
195	C3	■	■					■	■
196	C4	■	■				■		
197	C5	■	■				■		■
198	C6	■	■				■	■	
199	C7	■	■				■	■	■
200	C8	■	■			■			
201	C9	■	■			■			■
202	CA	■	■			■		■	
203	CB	■	■			■		■	■
204	CC	■	■			■	■		
205	CD	■	■			■	■		■
206	CE	■	■			■	■	■	
207	CF	■	■			■	■	■	■
208	D0	■	■		■				
209	D1	■	■		■				■
210	D2	■	■		■			■	
211	D3	■	■		■			■	■
212	D4	■	■		■		■		
213	D5	■	■		■		■		■
214	D6	■	■		■		■	■	
215	D7	■	■		■		■	■	■
216	D8	■	■		■	■			
217	D9	■	■		■	■			■
218	DA	■	■		■	■		■	
219	DB	■	■		■	■		■	■
220	DC	■	■		■	■	■		
221	DD	■	■		■	■	■		■
222	DE	■	■		■	■	■	■	
223	DF	■	■		■	■	■	■	■
224	E0	■	■	■					
225	E1	■	■	■					■
226	E2	■	■	■				■	
227	E3	■	■	■				■	■
228	E4	■	■	■			■		
229	E5	■	■	■			■		■
230	E6	■	■	■			■	■	
231	E7	■	■	■			■	■	■
232	E8	■	■	■		■			
233	E9	■	■	■		■			■
234	EA	■	■	■		■		■	
235	EB	■	■	■		■		■	■
236	EC	■	■	■		■	■		
237	ED	■	■	■		■	■		■
238	EE	■	■	■		■	■	■	
239	EF	■	■	■		■	■	■	■
240	F0	■	■	■	■				
241	F1	■	■	■	■				■
242	F2	■	■	■	■			■	
243	F3	■	■	■	■			■	■
244	F4	■	■	■	■		■		
245	F5	■	■	■	■		■		■
246	F6	■	■	■	■		■	■	
247	F7	■	■	■	■		■	■	■
248	F8	■	■	■	■	■			
249	F9	■	■	■	■	■			■
250	FA	■	■	■	■	■		■	
251	FB	■	■	■	■	■		■	■
252	FC	■	■	■	■	■	■		
253	FD	■	■	■	■	■	■		■
254	FE	■	■	■	■	■	■	■	
255	FF	■	■	■	■	■	■	■	■

Empty = Value 0
■ = Value 1, applicable

A.6 Table of values of communication object *Status byte - Sensor*

Bit No.		7	6	5	4	3	2	1	0
8-bit value	Hexadecimal	Wind sensor faulty	Wind sensor disrupted*	Not assigned	Day/night sensor disrupted	Twilight sensor disrupted	Brightness sensor left disrupted	Brightness sensor center disrupted	Brightness sensor right disrupted
0	00								
1	01								■
2	02							■	
3	03							■	■
4	04						■		
5	05						■		■
6	06						■	■	
7	07						■	■	■
8	08					■			
9	09					■			■
10	0A					■		■	
11	0B					■		■	■
12	0C					■	■		
13	0D					■	■		■
14	0E					■	■	■	
15	0F					■	■	■	■
16	10				■				
17	11				■				■
18	12				■			■	
19	13				■			■	■
20	14				■		■		
21	15				■		■		■
22	16				■		■	■	
23	17				■		■	■	■
24	18				■	■			
25	19				■	■			■
26	1A				■	■		■	
27	1B				■	■		■	■
28	1C				■	■	■		
29	1D				■	■	■		■
30	1E				■	■	■	■	
31	1F				■	■	■	■	■
32	20			■					
33	21			■					■
34	22			■				■	
35	23			■				■	■
36	24			■			■		
37	25			■			■		■
38	26			■			■	■	
39	27			■			■	■	■
40	28			■		■			
41	29			■		■			■
42	2A			■		■		■	
43	2B			■		■		■	■
44	2C			■		■	■		
45	2D			■		■	■		■
46	2E			■		■	■	■	
47	2F			■		■	■	■	■
48	30			■	■				
49	31			■	■				■
50	32			■	■			■	
51	33			■	■			■	■
52	34			■	■		■		
53	35			■	■		■		■
54	36			■	■		■	■	
55	37			■	■		■	■	■
56	38			■	■	■			
57	39			■	■	■			■
58	3A			■	■	■		■	
59	3B			■	■	■		■	■
60	3C			■	■	■	■		
61	3D			■	■	■	■		■
62	3E			■	■	■	■	■	
63	3F			■	■	■	■	■	■
64	40		■						
65	41		■						■
66	42		■					■	
67	43		■					■	■
68	44		■				■		
69	45		■				■		■
70	46		■				■	■	
71	47		■				■	■	■
72	48		■			■			
73	49		■			■			■
74	4A		■			■		■	
75	4B		■			■		■	■
76	4C		■			■	■		
77	4D		■			■	■		■
78	4E		■			■	■	■	
79	4F		■			■	■	■	■
80	50		■		■				
81	51		■		■				■
82	52		■		■			■	
83	53		■		■			■	■
84	54		■		■		■		
85	55		■		■		■		■

Bit No.		7	6	5	4	3	2	1	0
8-bit value	Hexadecimal	Wind sensor faulty	Wind sensor disrupted*	Not assigned	Day/night sensor disrupted	Twilight sensor disrupted	Brightness sensor left disrupted	Brightness sensor center disrupted	Brightness sensor right disrupted
86	56		■		■		■	■	
87	57		■		■		■	■	■
88	58		■		■	■			
89	59		■		■	■			■
90	5A		■		■	■		■	
91	5B		■		■	■		■	■
92	5C		■		■	■	■		
93	5D		■		■	■	■		■
94	5E		■		■	■	■	■	
95	5F		■		■	■	■	■	■
96	60		■	■					
97	61		■	■					■
98	62		■	■				■	
99	63		■	■				■	■
100	64		■	■			■		
101	65		■	■			■		■
102	66		■	■			■	■	
103	67		■	■			■	■	■
104	68		■	■		■			
105	69		■	■		■			■
106	6A		■	■		■		■	
107	6B		■	■		■		■	■
108	6C		■	■		■	■		
109	6D		■	■		■	■		■
110	6E		■	■		■	■	■	
111	6F		■	■		■	■	■	■
112	70		■	■	■				
113	71		■	■	■				■
114	72		■	■	■			■	
115	73		■	■	■			■	■
116	74		■	■	■		■		
117	75		■	■	■		■		■
118	76		■	■	■		■	■	
119	77		■	■	■		■	■	■
120	78		■	■	■	■			
121	79		■	■	■	■			■
122	7A		■	■	■	■		■	
123	7B		■	■	■	■		■	■
124	7C		■	■	■	■	■		
125	7D		■	■	■	■	■		■
126	7E		■	■	■	■	■	■	
127	7F		■	■	■	■	■	■	■
128	80	■							
129	81	■							■
130	82	■						■	
131	83	■						■	■
132	84	■					■		
133	85	■					■		■
134	86	■					■	■	
135	87	■					■	■	■
136	88	■				■			
137	89	■				■			■
138	8A	■				■		■	
139	8B	■				■		■	■
140	8C	■				■	■		
141	8D	■				■	■		■
142	8E	■				■	■	■	
143	8F	■				■	■	■	■
144	90	■			■				
145	91	■			■				■
146	92	■			■			■	
147	93	■			■			■	■
148	94	■			■		■		
149	95	■			■		■		■
150	96	■			■		■	■	
151	97	■			■		■	■	■
152	98	■			■	■			
153	99	■			■	■			■
154	9A	■			■	■		■	
155	9B	■			■	■		■	■
156	9C	■			■	■	■		
157	9D	■			■	■	■		■
158	9E	■			■	■	■	■	
159	9F	■			■	■	■	■	■
160	A0	■		■					
161	A1	■		■					■
162	A2	■		■				■	
163	A3	■		■				■	■
164	A4	■		■			■		
165	A5	■		■			■		■
166	A6	■		■			■	■	
167	A7	■		■			■	■	■
168	A8	■		■		■			
169	A9	■		■		■			■
170	AA	■		■		■		■	
171	AB	■		■		■		■	■

Bit No.		7	6	5	4	3	2	1	0
8-bit value	Hexadecimal	Wind sensor faulty	Wind sensor disrupted*	Not assigned	Day/night sensor disrupted	Twilight sensor disrupted	Brightness sensor left disrupted	Brightness sensor center disrupted	Brightness sensor right disrupted
172	AC	■		■		■	■		
173	AD	■		■		■	■		■
174	AE	■		■		■	■	■	
175	AF	■		■		■	■	■	■
176	B0	■		■	■				
177	B1	■		■	■				■
178	B2	■		■	■			■	
179	B3	■		■	■			■	■
180	B4	■		■	■		■		
181	B5	■		■	■		■		■
182	B6	■		■	■		■	■	
183	B7	■		■	■		■	■	■
184	B8	■		■	■	■			
185	B9	■		■	■	■			■
186	BA	■		■	■	■		■	
187	BB	■		■	■	■		■	■
188	BC	■		■	■	■	■		
189	BD	■		■	■	■	■		■
190	BE	■		■	■	■	■	■	
191	BF	■		■	■	■	■	■	■
192	C0	■	■						
193	C1	■	■						■
194	C2	■	■					■	
195	C3	■	■					■	■
196	C4	■	■				■		
197	C5	■	■				■		■
198	C6	■	■				■	■	
199	C7	■	■				■	■	■
200	C8	■	■			■			
201	C9	■	■			■			■
202	CA	■	■			■		■	
203	CB	■	■			■		■	■
204	CC	■	■			■	■		
205	CD	■	■			■	■		■
206	CE	■	■			■	■	■	
207	CF	■	■			■	■	■	■
208	D0	■	■		■				
209	D1	■	■		■				■
210	D2	■	■		■			■	
211	D3	■	■		■			■	■
212	D4	■	■		■		■		
213	D5	■	■		■		■		■
214	D6	■	■		■		■	■	
215	D7	■	■		■		■	■	■
216	D8	■	■		■	■			
217	D9	■	■		■	■			■
218	DA	■	■		■	■		■	
219	DB	■	■		■	■		■	■
220	DC	■	■		■	■	■		
221	DD	■	■		■	■	■		■
222	DE	■	■		■	■	■	■	
223	DF	■	■		■	■	■	■	■
224	E0	■	■	■					
225	E1	■	■	■					■
226	E2	■	■	■				■	
227	E3	■	■	■				■	■
228	E4	■	■	■			■		
229	E5	■	■	■			■		■
230	E6	■	■	■			■	■	
231	E7	■	■	■			■	■	■
232	E8	■	■	■		■			
233	E9	■	■	■		■			■
234	EA	■	■	■		■		■	
235	EB	■	■	■		■		■	■
236	EC	■	■	■		■	■		
237	ED	■	■	■		■	■		■
238	EE	■	■	■		■	■	■	
239	EF	■	■	■		■	■	■	■
240	F0	■	■	■	■				
241	F1	■	■	■	■				■
242	F2	■	■	■	■			■	
243	F3	■	■	■	■			■	■
244	F4	■	■	■	■		■		
245	F5	■	■	■	■		■		■
246	F6	■	■	■	■		■	■	
247	F7	■	■	■	■		■	■	■
248	F8	■	■	■	■	■			
249	F9	■	■	■	■	■			■
250	FA	■	■	■	■	■		■	
251	FB	■	■	■	■	■		■	■
252	FC	■	■	■	■	■	■		
253	FD	■	■	■	■	■	■		■
254	FE	■	■	■	■	■	■	■	
255	FF	■	■	■	■	■	■	■	■

Empty = Value 0
■ = Value 1, applicable
* only in combination with WES/A 3.1

A.7 Order details

Short description	Designation	Order No.	bbn 40 16779 EAN	Weight 1 pc. [Kg]	Packaging [pcs.]
WZ/S 1.3.1.2	Weather Unit, 1-fold, MDRC	2CDG110184R0011	**92 8977**	0.2	1
WES/A 3.1	Weather Sensor, SM	2CDG120046R0011	**92 8939**	0.17	1

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