ABB

ABB i-bus® KNX
WES/A 4.1.1
Weather Sensor Basic

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ABB i-bus® KNX   ABOUT THIS DOCUMENT

1   About this document

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.

1.2   Legal disclaimer

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1.3   Explanation of symbols

1.	Instructions in specified sequence and result
2.	
⇨	
▶	Individual actions
a)	Priorities
1)	Processes run by the device in a specific sequence
•	List level 1
–	List level 2

Tab. 1: Explanation of symbols

ABB i-bus® KNX   ABOUT THIS DOCUMENT

Notes and warnings are represented as follows in this manual:

DANGER
This symbol is a warning about electrical voltage and indicates high-risk hazards that will definitely result in death or serious injury unless avoided.

DANGER
Indicates high-risk hazards that will definitely result in death or serious injury unless avoided.

WARNING
Indicates medium-risk hazards that could result in death or serious injury unless avoided.

CAUTION
Indicates low-risk hazards that could result in slight or moderate injury unless avoided.

CAUTION
Indicates a risk of malfunctions or damage to property and equipment, but with no risk to life and limb.

Example
For use in application, installation and programming examples

ⓘ **Note**
For use in tips on use and operation

1.4   2D code

The packaging and the device are labeled with a 2D code. These codes are used for unique identification of the device and include the following information:
*   Link to the product page
*   Order number
*   Device serial number

The 2D codes can be read using any mobile device with an appropriate 2D code reader.

By scanning the 2D codes with the ABB Product Scanner, you can open additional digital services.

ABB i-bus® KNX   SAFETY

2   Safety

2.1   General safety instructions

▸ Protect the device against dirt and damage during transport, storage and operation.
▸ Ensure that water cannot penetrate into the device during transport, storage, operation, mounting, dismantling and maintenance.
▸ Operate the device only within the specified technical data.
▸ Mounting, installation, commissioning and maintenance must be carried out only by qualified electricians.
▸ Disconnect device from the supply of electrical power before mounting.

2.2   Qualification of the specialist personnel

Programming the device requires detailed specialist knowledge – particularly about the ETS commissioning software – through KNX training courses.

2.3   Proper use

The Weather Sensor Basic WES/A 4.1.1 is intended to be used to measure weather data (wind speeds, rain, brightness in four compass directions, twilight, temperature), date and time (via GPS) in a KNX environment.

Weather Sensor Basic WES/A 4.1.1 is matched with the ABB Weather Units.

ABB i-bus® KNX   PRODUCT OVERVIEW

3   Product overview

3.1   Device description

The device is a surface mounted (SM) device. The device is designed for wall or mast mounting.

The device can be used as a product in a KNX system.

The device is powered via Weather Unit WZ/S 1.3.1.2 (or subsequent types) and requires no additional auxiliary voltage. The power supply/data cable is connected to the pre-assembled connecting cable. After being connected to the Weather Unit and having the bus and supply voltage established, the Weather Sensor will begin sending weather data to the Weather Unit after no longer than 2 minutes.

3.2   Product name description

The table below lists the product name descriptions of all devices in the product family.

Abbreviation	Description		
WES	Weather Sensor		
/A	Surface mounting		
x.	4	=	4th generation
x.	1	=	Basic
x	x	=	Version number (x = 1, 2, etc.)

Tab. 2: Product name description

Abbreviation	Description		
WB	Wall Mounting		
/Z	Accessories		
x.	1	=	1st generation
x.	1	=	Basic
	2	=	IP 44
x	x	=	Version number (x = 1, 2, etc.)

Tab. 3: Product name description

Abbreviation	Description		
MA	Mast Mounting Adapter		
/Z	Accessories		
x.	1	=	1st generation
x.	50	=	Mast diameter
x	x	=	Version number (x = 1, 2, etc.)

Tab. 4: Product name description

3.3   Ordering details

Description	MB	Type	Order no.	Packaging unit [pcs.]	Weight (incl. packaging) [kg]
Accessories: Wall mounting basic	-	WB/Z 1.1.1	2CDG120088R0011	1	0.191
Weather Sensor Basic, SM	-	WES/A 4.1.1	2CDG120091R0011	1	0.298
Accessories: Wall mounting IP 44	-	WB/Z 1.2.1	2CDG120093R0011	1	0.210
Accessories: Mast Mounting Adapter, 50 mm	-	MA/Z 1.50.1	2CDG120094R0011	1	0.150

Tab. 5: Ordering details

ABB i-bus® KNX   PRODUCT OVERVIEW

3.4   Connections

The device has the following connections:
- 1 input for connecting the supply voltage (via the Weather Unit)
- 1 output for output of the measured values

3.4.1   Inputs

Terminal designation	Function
+	Power supply +24 V DC
-	Supply GND

Tab. 6: Inputs of Weather Sensor Basic WES/A 4.1.1

3.4.2   Outputs

Terminal designation	Function
A	DATA +
B	DATA -

Tab. 7: Outputs of Weather Sensor Basic WES/A 4.1.1

ABB i-bus® KNX   PRODUCT OVERVIEW

3.5   Product family

The product family described in this document includes the following devices:

Device type	Name	Features
WES/A 4.1.1	Weather Sensor Basic	Wind speed, rain, brightness in four compass directions, twilight, temperature, GPS
WB/Z 1.1.1	Wall Mounting	Accessories, Basic
WB/Z 1.2.1	Wall Mounting	Accessories, IP 44 connection housing
MA/Z 1.2.1	Mast Mounting Adapter	Accessories, 50 mm to 27 mm adapter

Tab. 8: Product family

ABB i-bus® KNX   PRODUCT OVERVIEW

3.5.1 Dimension drawing for Weather Sensor WES/A 4.1.1
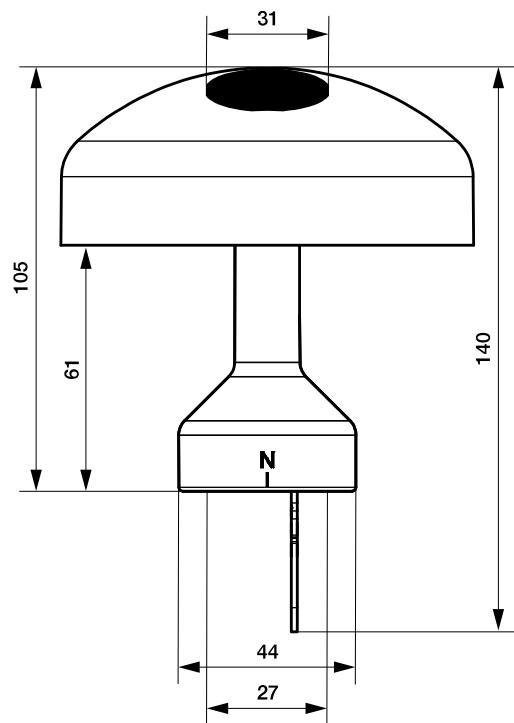
Fig. 1: Dimension drawing for Weather Sensor WES/A 4.1.1

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ABB i-bus® KNX   PRODUCT OVERVIEW

3.5.2   Dimension drawing for Weather Sensor WES/A 4.1.1 with Wall Mounting WB/Z 1.1.1

Fig. 2: Dimension drawing for Weather Sensor WES/A 4.1.1 with Wall Mounting WB/Z 1.1.1

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ABB i-bus® KNX   PRODUCT OVERVIEW
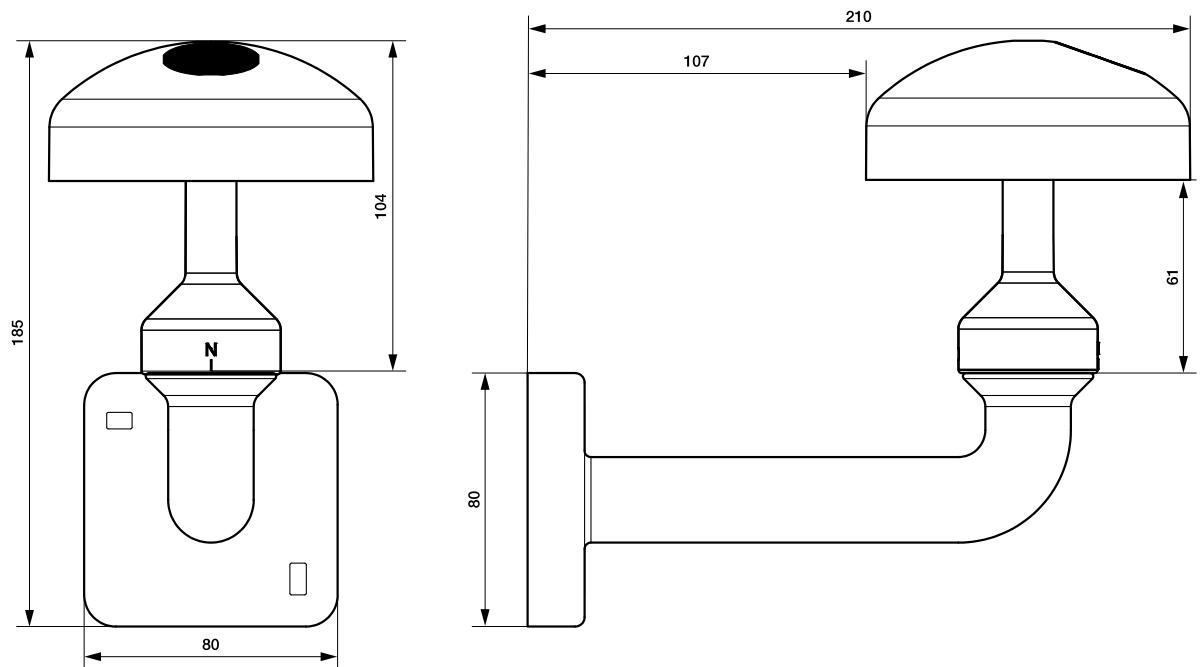
3.5.3   Dimension drawing for Weather Sensor WES/A 4.1.1 with Wall Mounting WB/Z 1.2.1

Fig. 3: Dimension drawing for Weather Sensor WES/A 4.1.1 with Wall Mounting WB/Z 1.2.1

ABB i-bus® KNX   PRODUCT OVERVIEW
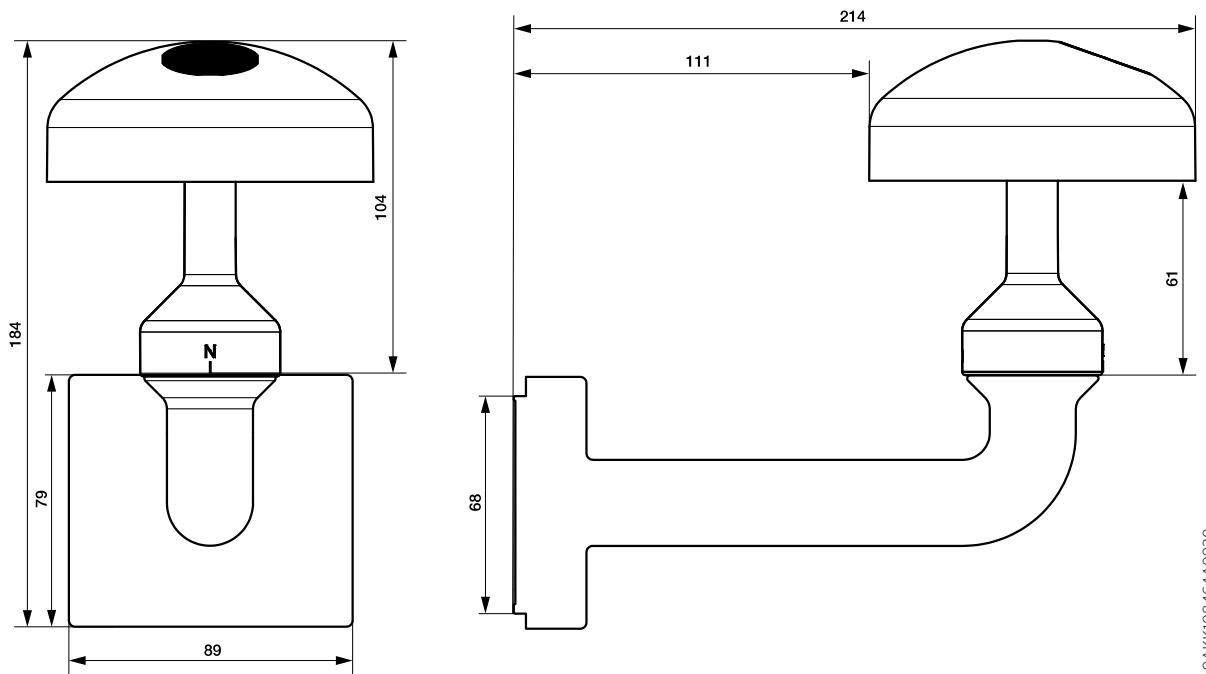
3.5.4   Dimension drawing for Weather Sensor WES/A 4.1.1 with Mast Mounting Adapter MA/Z 1.50.1

Fig. 4: Dimension drawing for Weather Sensor WES/A 4.1.1 with Mast Mounting Adapter MA/Z 1.50.1

ABB i-bus® KNX   PRODUCT OVERVIEW
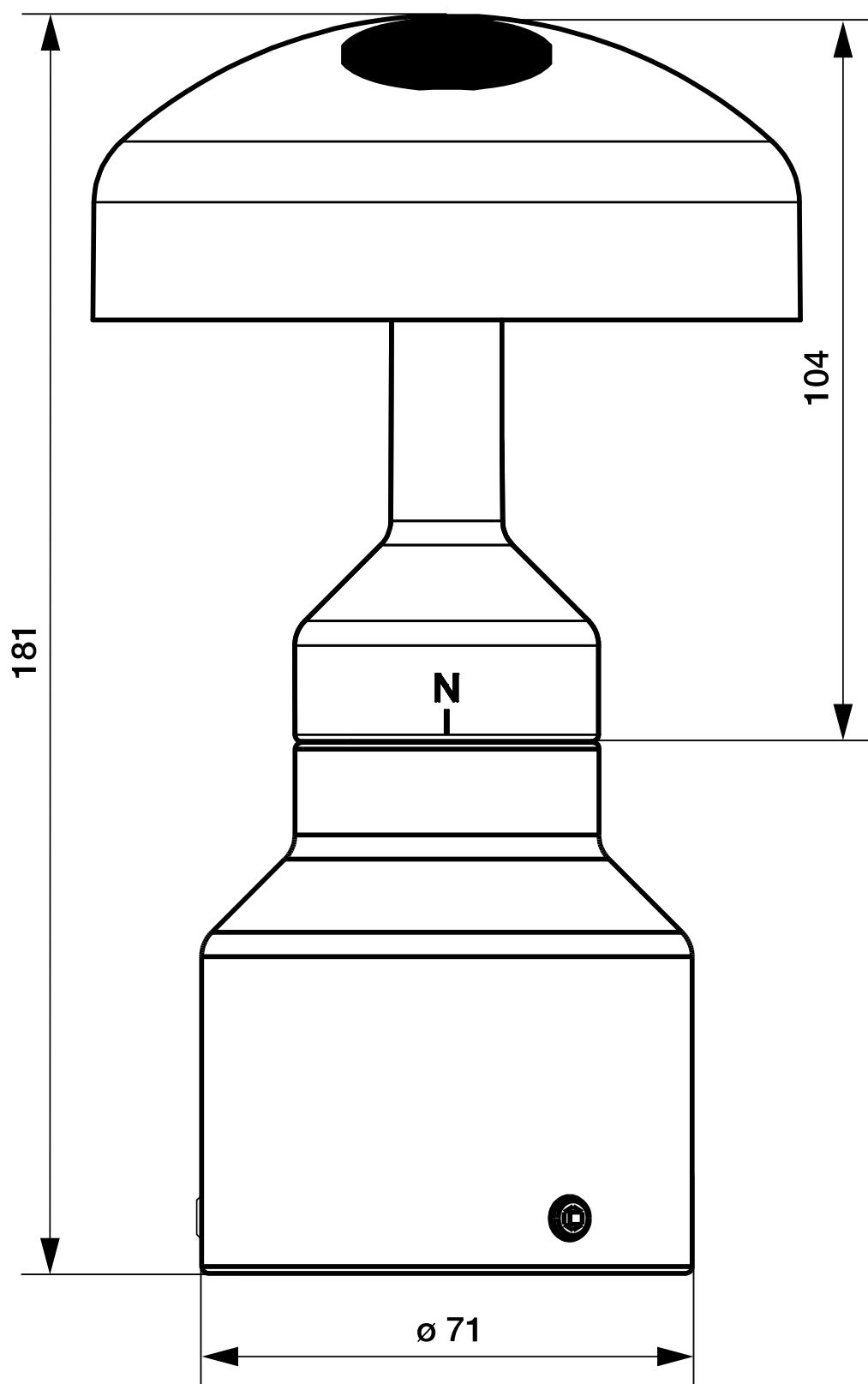
3.5.5   Connection diagram
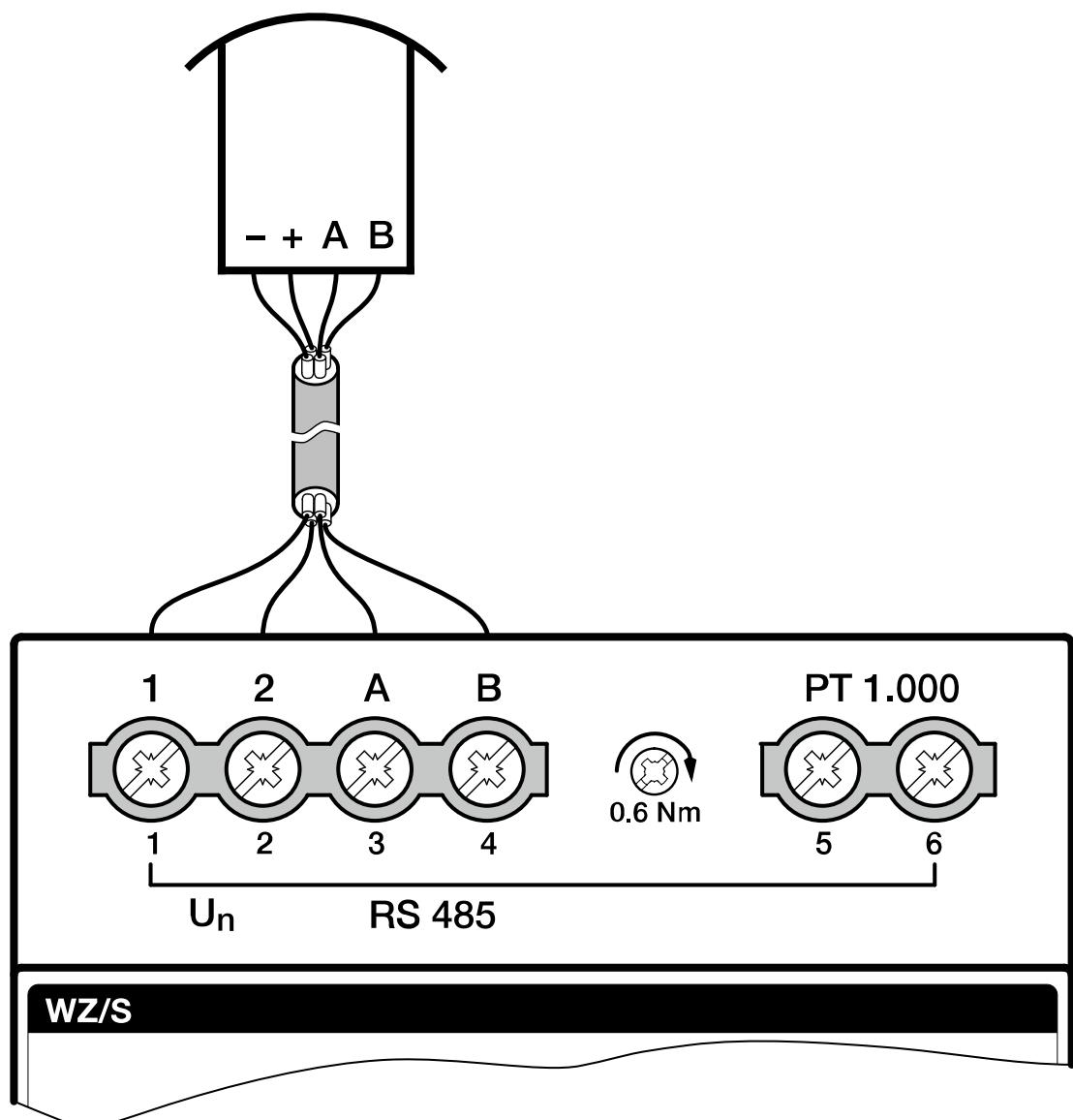
Fig. 5: Connection of Weather Sensor WES/A to Weather Unit WZ/S

WES/A terminal	Conductor color	WZ/S terminal
A (DATA +)	Red	A
B (DATA -)	Black	B
- (GND)	White	1
+ (24 V)	Yellow	2

ABB i-bus® KNX   PRODUCT OVERVIEW

3.5.6   Operating and display elements

> (i) **Note**
> This section is not relevant for these devices.

ABB i-bus® KNX   PRODUCT OVERVIEW

3.5.7 Technical data

3.5.7.1 General technical data

		WES/A 4.1.1
Device	Dimensions	105 × 102 × 102 mm (H x W x D)
	Weight	0.16 kg
	Mounting position	Horizontal
	Design	Surface mounting
	Degree of protection	IP 44
	Protection class	II
	Overvoltage category	III
	Overload protection	Yes
	Reverse voltage protection	Yes
	Short-circuit proof	Yes
	Pollution degree	2
	Mean service life (depending on installation type and location)	> 5 years
Mounting	Mounting type	Wall or mast mounting
	Mast inner diameter	21 mm
	Mast outer diameter	27 mm (50 mm with MA/Z1.50.1)
Cable length	Between Weather Sensor and Weather Unit, one way	≤ 100 m
Materials	Housing	Polycarbonate
	Housing color	Translucent white
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage	24 V DC +10 % / −30 %
	Current consumption	< 50 mA
Connections	Connection type, Weather Sensor	Plug-in terminal
	Cable length, pre-assembled connecting cable	270 mm with wire end ferrule
	Cable type, pre-assembled connecting cable	H05V-K, 4 × 0.5 mm²
Certificates and declarations	CE declaration of conformity	→ 9AKK108464A0567
	UKCA declaration of conformity	→ 9AKK108464A0568
Ambient condition	Operation	−30 … +70 °C
	Transport	−25 … +70 °C
	Storage	−25 … +70 °C
	Humidity	Non-condensing
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

ABB i-bus® KNX   PRODUCT OVERVIEW

3.5.7.2   **Weather sensors**

		WES/A 4.1.1
Temperature	Type	PT 1000
	Number of temperature sensors	1
	Temperature measuring range	−30 … +50 °C
	Resolution	0.1°C
	Accuracy	± 1 °C with laminar incident flow and wind speed > 2 m/s
Brightness	Type	Silicon sensor
	Number of brightness sensors	4 (0°, 90°, 180°, 270°)
	Brightness measuring range	0 … 100 klx
	Resolution	10 lx (0 … 1 klx); 50 lx (1 k … 2 klx); 100 lx (2 k … 20 klx); 500 lx (≥ 20 klx)
	Accuracy	± 200 lx at < 2 klx; ± 10 % at ≥ 2 klx
	Spectral range	475 … 650 nm
Twilight	Type	Silicon sensor
	Number of twilight sensors	1
	Twilight measuring range	0 … 1 klx
	Resolution	1 lx
	Accuracy	± 20 lx at < 100 lx; ± 20 % at ≥ 100 lx
Daylight	Day	≥ 10 lx
	Night	< 10 lx
Wind speed	Type	Thermal anemometer
	Number of wind sensors	1
	Wind speed measuring range	0 … 35 m/s
	Resolution	0.1 m/s
	Accuracy	± 5 % (± 1 m/s), RMS over 360°
Precipitation	Type	Ceramic, capacitance measurement
	Number of precipitation sensors	1
	Precipitation measuring range	1/0 (precipitation Yes/No)
	Heating power, dry sensor, condensation protection	0.1 W
	Heating power, wet sensor, drying phase	1.1 W
GPS	GPS type	Galileo
	Real Time Clock (RTC)	Yes, used in the µC

ABB i-bus® KNX   FUNCTIONAL OVERVIEW

4 Functional overview

4.1 Device functions

Weather Sensor Basic WES/A 4.1.1 records – primarily in the private sector – weather data (wind speed, rain, brightness in four compass directions, twilight, temperature), plus date and time (via GPS).

> ### ⓘ Note
> Measured values apply to the mounting location. Differences from other weather services are possible (e.g. due to local turbulence or air accumulation zones).

> ### ⓘ Note
> Weather Sensor Basic WES/A 4.1.1 is compatible with the ABB Weather Units from WZ/S 1.3.1.2.

> ### ⓘ Note
> Weather Unit WZ/S 1.3.1.2 can process only three measured brightness values. The measured value from brightness sensor 4 is ignored. If Weather Unit WZ/S 1.3.1.2 is used, the "N" marking must be aligned in the southern direction when the Weather Sensor is mounted on a mast. The measured values are evaluated as follows in the ETS application:
> - Brightness sensor 1 = Brightness at the center
> - Brightness sensor 2 = Brightness at the right
> - Brightness sensor 3 = Brightness at the left

ABB i-bus® KNX FUNCTIONAL OVERVIEW
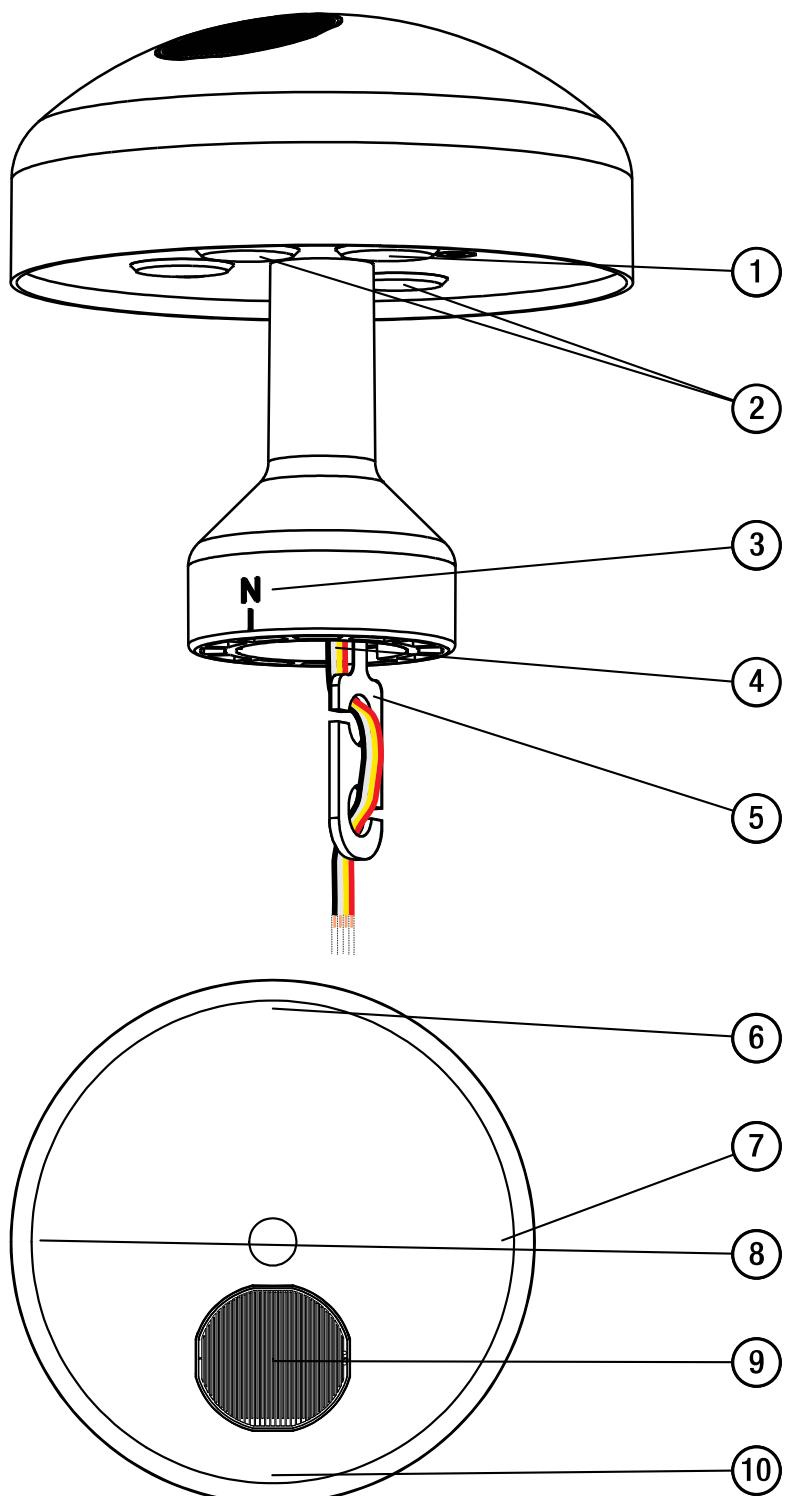
4.2 Device overview

Fig. 6: Device overview WES/A 4.1.1

—
Legend

1	Temperature sensor	**6**	Brightness sensor 4
2	Wind sensor	**7**	Brightness sensor 3
3	"N" marking	**8**	Brightness sensor 2
4	Pre-assembled connecting cable	**9**	Rain sensor
5	Strain relief	**10**	Brightness sensor 1

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ABB i-bus® KNX   MOUNTING AND INSTALLATION

5   Mounting and installation

5.1   Information about mounting

5.1.1   General information about mounting

- Mounting, installation, commissioning and maintenance must be carried out only by qualified electricians.
- Ensure that water cannot penetrate into the device during transport, storage, operation, mounting, dismantling and maintenance.
- Mount the device horizontally (pre-assembled connecting cable at the bottom).
- The device is translucent. Do not apply labels or write on the device.

The device is designed for the following mounting variants:
- Mounting on or at a mast
  – Direct mounting on a mast (pipe socket, pipe, boom, etc.) with 27 mm outer diameter.
  – Mounting with Mast Mounting Adapter MA/Z 1.50.1 on a mast (pipe socket, pipe, boom, etc.) with 50 mm outer diameter.
  – Mounting with Wall Mounting WB/Z 1.1.1 on a mast (pipe socket, pipe, boom, etc.).
- Wall mounting with Wall Mounting WB/Z 1.2.1 or WB/Z 1.1.1.

> **ⓘ Note**
> Wall Mounting WB/Z 1.2.1 contains an IP 44 connection housing. If Wall Mounting WB/Z 1.1.1 is used, a suitable connection type must be selected to guarantee the IP 44 degree of protection.

> **ⓘ Note**
> Aligning the Weather Sensor:
> - If the device is mounted on a mast, align the "N" marking toward the north.
>   – If the Weather Unit WZ/S 1.3.1.2 is used, align the "N" marking toward the south.
> - If the device is mounted on a wall, align the "N" marking away from the wall and toward the nearest compass direction.

5.1.2   Difference between wall and mast mounting

Some weather data can be measured reliably only when the device is mounted on a mast. If the on-site situation allows, mounting on or to a mast (pipe socket, pipe, boom, etc.) would be preferable to mounting on a wall.

> **Example**
> The wind speed can be measured much more reliably and accurately when the device is mounted on a mast. If the device is mounted on a wall, the wind might not flow directly onto the Weather Sensor or the wall could cause eddy currents.

ABB i-bus® KNX   MOUNTING AND INSTALLATION

5.1.3   Preparatory considerations

Check the following points before beginning the mounting work:
- Where can the Weather Sensor be fastened to or on the building?
- Can roof structures (such as exhaust pipes or chimneys) affect the Weather Sensor?
- Can the Weather Sensor be fastened to or on an existing mast (pipe socket, pipe, boom, etc.)? Are other accessories (e.g. Wall Mounting, Mast Mounting Adapter) required?
  - Can a mast (pipe socket, pipe, boom, etc.) be installed at a suitable location?
    If not: Can the Weather Sensor be installed at a suitable location using Wall Mounting WB/Z 1.2.1 or WB/Z 1.1.1?
- Are additional structures required for fastening?
- Is the cable routing from the Weather Unit to the Weather Sensor with a maximum cable length of 100 m ensured (e.g. cable routing in or on the building, UV protection for the cable)?
- Can the local lighting protection conditions be met?

Optimal mounting conditions:
- Exposed position at the highest point of the building
- At least 0.5 m clearance from roof structures when mounted on a mast
- Overvoltage and lightning protection considered for the building

Unfavorable mounting conditions
- In the shade of roof structures, trees, buildings, etc.
  - Lee zone, light reflections or shadows can influence the measured values
- In locations shielded from the wind and rain
- Near chimneys or exhaust air pipes
  - Exhaust gases and rainwater can react to form an acid that degrades the housing surface
- Near heat sources
- At locations that could falsify the measured results (e.g. due to reflected sunlight from windows)

5.1.4   Determining compass directions

1. Determine the compass direction ideally using a compass.
2. Observe the local declination (deviation between the direction of a magnetic needle and true north) due to interfering magnetic fields and magnetic field influences from iron parts and electrical cables.

5.2   Mounting on or at a mast

> ⓘ **Note**
> Ideally, the mast (inner diameter min. 21 mm) should be located at the highest point of the building. The Weather Sensor should be positioned so that it cannot be shaded and there is at least 50 cm of clearance all around it.
> The Weather Sensor can be mounted directly on a mast with an outer diameter of 27 mm. If a mast with an outer diameter of 50 mm is used, Mast Mounting Adapter MA/Z 1.50.1 will be required. If the Weather Sensor is to be mounted on the side of a mast, Wall Mounting WB/Z 1.1.1 will be required.

ABB i-bus® KNX   MOUNTING AND INSTALLATION

Mounting on a mast

1. Lay the power supply/data cable (J-Y(ST)Y 2x2x0.8) from the Weather Unit to the Weather Sensor. Cable length ≤ 100 m.
2. Lay the power supply/data cable in or on the mast. Pay attention to proper cable routing and strain relief in compliance with the regulations.
3. Strip insulation from the conductors of the power supply/data cable (6 mm).
4. Insert the strain relief into the strain relief hole in the sensor foot.
5. Guide the pre-assembled connecting cable through the strain relief.
6. Connect pre-assembled connecting cable and power supply/data cable → Connection diagram, Page 14. Observe installation specifications and IP 44 degree of protection. Ensure cables are routed properly in accordance with the regulations.
7. Place the Weather Sensor on the mast. Use Mast Mounting Adapter MA/Z 1.50.1 if necessary.
8. Aligning the Weather Sensor: If the Weather Unit WZ/S 1.3.1.2 is used, align the "N" marking toward the south. If a newer Weather Unit is used, align the "N" marking toward the north.
   Help for determining the compass direction → Determining compass directions, Page 21
9. Secure the Weather Sensor with the M4 hexagon socket head screw (max. 0.6 Nm).
10. Connect the power supply/data cable to the Weather Unit.
11. Connect Weather Unit WZ/S with bus (ABB i-bus®) and switch on the supply voltage.
⇨ The Weather Sensor is ready for operation and will begin sending weather data to the Weather Unit no later than after 2 minutes.

Mounting on the side of a mast using Wall Mounting WB/Z 1.1.1

1. Lay the power supply/data cable (J-Y(ST)Y 2x2x0.8) from the Weather Unit to the Weather Sensor. Cable length ≤ 100 m.
2. Insert the strain relief into the strain relief hole in the sensor foot.
3. Guide the pre-assembled connecting cable through the strain relief and Wall Mounting WB/Z 1.1.1.
4. Place the Weather Sensor on Wall Mounting WB/Z 1.1.1 and fix slightly with the M4 hexagon socket head screw.
5. Break out the diagonal predetermined breaking points on Wall Mounting WB/Z 1.1.1.
6. Break out the rear predetermined breaking points for mast mounting on Wall Mounting WB/Z 1.1.1.
7. Lay the power supply/data cable in or on the mast. Pay attention to proper cable routing and strain relief in compliance with the regulations.
8. Strip insulation from the conductors of the power supply/data cable (6 mm).
9. Connect pre-assembled connecting cable and power supply/data cable → Connection diagram, Page 14. Observe installation specifications and IP 44 degree of protection.
10. Fix Wall Mounting WB/Z 1.1.1 on the mast (with cable ties, mast clamps or other suitable fastening hardware). Ensure cables are routed properly in accordance with the regulations.
11. Aligning the Weather Sensor: If the Weather Unit WZ/S 1.3.1.2 is used, align the "N" marking toward the south. If a newer Weather Unit is used, align the "N" marking toward the north.
    Help for determining the compass direction → Determining compass directions, Page 21
12. Secure the Weather Sensor with the M4 hexagon socket head screw (max. 0.6 Nm).
13. Connect the power supply/data cable to the Weather Unit.
14. Connect Weather Unit WZ/S with bus (ABB i-bus®) and switch on the supply voltage.
⇨ The Weather Sensor is ready for operation and will begin sending weather data to the Weather Unit no later than after 2 minutes.

5.3 Mounting on a wall

> ⓘ **Note**
> The Wall mounting should be fastened on a facade facing south.

> ⓘ **Note**
> Wall Mounting WB/Z 1.2.1 contains an IP 44 connection housing. If Wall Mounting WB/Z 1.1.1 is used, a suitable connection type must be selected to guarantee the IP 44 degree of protection.

ABB i-bus® KNX MOUNTING AND INSTALLATION

Mounting with Wall Mounting WB/Z 1.2.1
1. Lay the power supply/data cable (J-Y(ST)Y 2x2x0.8) from the Weather Unit to the Weather Sensor. Cable length ≤ 100 m.
2. Insert the strain relief into the strain relief hole in the sensor foot.
3. Guide the pre-assembled connecting cable through the strain relief and upper part of Wall Mounting WB/Z 1.2.1.
4. Place the Weather Sensor on the upper part of Wall Mounting WB/Z 1.2.1 and fix slightly with an M4 hexagon socket head screw.
5. Hold lower part of Wall Mounting WB/Z 1.2.1 horizontally on the facade.
6. Mark bore holes on the building facade.
7. Drill holes at the drawn markings.
8. Insert wall anchors into the bore holes. Pay attention to the masonry structure and select suitable wall anchors.
9. Guide power supply/data cable into the lower part of Wall Mounting WB/Z 1.2.1.
10. Fix lower part of Wall Mounting WB/Z 1.2.1 in the bore holes. Select suitable screws. Ensure cables are routed properly in accordance with the regulations.
11. Strip insulation from the conductors of the power supply/data cable (6 mm).
12. Connect pre-assembled connecting cable and power supply/data cable → Connection diagram, Page 14. Observe installation specifications and IP 44 degree of protection.
13. Place upper part of Wall Mounting WB/Z 1.2.1 on the lower part and engage downward.
14. Aligning the Weather Sensor: Align the "N" marking away from the wall and toward the nearest compass direction.
    Help for determining the compass direction → Determining compass directions, Page 21
15. Secure the Weather Sensor with the M4 hexagon socket head screw (max. 0.6 Nm).
16. Connect the power supply/data cable to the Weather Unit.
17. Connect Weather Unit WZ/S with bus (**ABB i-bus®**) and switch on the supply voltage.
⇨ The Weather Sensor is ready for operation and will begin sending weather data to the Weather Unit no later than after 2 minutes.

Mounting with Wall Mounting WB/Z 1.1.1
1. Lay the power supply/data cable (J-Y(ST)Y 2x2x0.8) from the Weather Unit to the Weather Sensor. Cable length ≤ 100 m.
2. Insert the strain relief into the strain relief hole in the sensor foot.
3. Guide the pre-assembled connecting cable through the strain relief and Wall Mounting WB/Z 1.1.1.
4. Place the Weather Sensor on Wall Mounting WB/Z 1.1.1 and fix slightly with the M4 hexagon socket head screw.
5. Optional: Break out the diagonal predetermined breaking points on Wall Mounting WB/Z 1.1.1.
6. Hold Wall Mounting WB/Z 1.1.1 horizontally on the facade.
7. Mark bore holes on the building facade.
8. Drill holes at the drawn markings.
9. Insert wall anchors into the bore holes. Pay attention to the masonry structure and select suitable wall anchors.
10. Strip insulation from the conductors of the power supply/data cable (6 mm).
11. Connect pre-assembled connecting cable and power supply/data cable → Connection diagram, Page 14. Observe installation specifications and IP 44 degree of protection.
12. Fix Wall Mounting WB/Z 1.1.1 in the bore holes. Select suitable screws. Ensure cables are routed properly in accordance with the regulations.
13. Aligning the Weather Sensor: Align the "N" marking away from the wall and toward the nearest compass direction.
    Help for determining the compass direction → Determining compass directions, Page 21
14. Secure the Weather Sensor with the M4 hexagon socket head screw (max. 0.6 Nm).
15. Connect the power supply/data cable to the Weather Unit.
16. Connect Weather Unit WZ/S with bus (**ABB i-bus®**) and switch on the supply voltage.
⇨ The Weather Sensor is ready for operation and will begin sending weather data to the Weather Unit no later than after 2 minutes.

ABB i-bus® KNX   MOUNTING AND INSTALLATION

5.4 Replacing Weather Sensor WES/A 3.1 with Weather Sensor Basic WES/A 4.1.1

5.4.1 Tools

- Size 2 hexagon socket wrench
- Screwdrivers (possibly different sizes or versions for unscrewing the existing Wall mounting and fixing the new Wall mounting)
- Installation material for connecting the pre-assembled connecting cable and the existing Power supply/Data cable (observe the installation regulations and IP 44 degree of protection)
- Wall anchors and screws (observe properties of the masonry)
- Material for filling the existing bore holes in the facade
- Marking pen
- Electric drill and drill bit
- Optional:
  - Small needle-nosed pliers
  - Small spirit level
  - Insulation stripping tool
  - Side cutters

5.4.2 Replacing the Weather Sensor

> **ⓘ Note**
> Wall Mounting WB/Z 1.2.1 contains an IP 44 connection housing. If Wall Mounting WB/Z 1.1.1 is used, a suitable connection type must be selected to guarantee the IP 44 degree of protection.

ABB i-bus® KNX MOUNTING AND INSTALLATION

Using Wall Mounting WB/Z 1.2.1

1. Disconnect Weather Unit WZ/S from the electrical power supply and from the bus (ABB i-bus®).
2. Insert the strain relief into the strain relief hole in the sensor foot.
3. Guide the pre-assembled connecting cable through the strain relief and upper part of Wall Mounting WB/Z 1.2.1.
4. Place the Weather Sensor on the upper part of Wall Mounting WB/Z 1.2.1 and fix slightly with an M4 hexagon socket head screw.
5. Pull Weather Sensor WES/A 3.1 off the Wall Mounting.
6. Disconnect conductors from terminals A, B, 1 and 2 of the Wall Mounting.
7. Unscrew Wall Mounting from the wall.
8. If one of the existing bore holes is to be reused, fill the second fastening hole. Alternatively, fill both bore holes.
9. Place lower part of Wall Mounting WB/Z 1.2.1 over the mounting holes of the old Wall Mounting. Ensure that the Wall Mounting is horizontal and the power supply/data cable can be inserted into the Wall Mounting.
10. Mark bore holes on the building facade.
11. Drill holes at the drawn markings.
12. Insert wall anchors into the bore holes. Pay attention to the masonry structure and select suitable wall anchors.
13. Guide power supply/data cable into the lower part of Wall Mounting WB/Z 1.2.1.
14. Fix lower part of Wall Mounting WB/Z 1.2.1 in the bore holes. Select suitable screws. Ensure cables are routed properly in accordance with the regulations.
15. Connect pre-assembled connecting cable and power supply/data cable → Connection diagram, Page 14. Observe installation specifications and IP 44 degree of protection.
16. Place upper part of Wall Mounting WB/Z 1.2.1 on the lower part and engage downward.
17. Aligning the Weather Sensor: Align the "N" marking away from the wall and toward the nearest compass direction.
Help for determining the compass direction → Determining compass directions, Page 21
18. Secure the Weather Sensor with the M4 hexagon socket head screw (max. 0.6 Nm).
19. Connect Weather Unit WZ/S with bus (ABB i-bus®) and switch on the supply voltage.
⇨ The Weather Sensor is ready for operation and will begin sending weather data to the Weather Unit no later than after 2 minutes.

ABB i-bus® KNX   MOUNTING AND INSTALLATION

Using Wall Mounting WB/Z 1.1.1

1. Disconnect Weather Unit WZ/S from the electrical power supply and from the bus (ABB i-bus®).
2. Insert the strain relief into the strain relief hole in the sensor foot.
3. Guide the pre-assembled connecting cable through the strain relief and Wall Mounting WB/Z 1.1.1.
4. Place the Weather Sensor on Wall Mounting WB/Z 1.1.1 and fix slightly with the M4 hexagon socket head screw.
5. Pull Weather Sensor WES/A 3.1 off the Wall Mounting.
6. Disconnect conductors from terminals A, B, 1 and 2 of the Wall Mounting.
7. Unscrew Wall Mounting from the wall.
8. If one of the existing bore holes is to be reused, fill the second fastening hole. Alternatively, fill both bore holes.
9. Optional: Break out the diagonal predetermined breaking points on the Wall Mounting.
10. Place Wall Mounting WB/Z 1.1.1 over the mounting holes of the old Wall Mounting. Ensure that the Wall Mounting is horizontal and the power supply/data cable can be inserted into the Wall Mounting.
11. Mark bore holes on the building facade.
12. Drill holes at the drawn markings.
13. Insert wall anchors into the bore holes. Pay attention to the masonry structure and select suitable wall anchors.
14. Connect pre-assembled connecting cable and power supply/data cable → Connection diagram, Page 14. Observe installation specifications and IP 44 degree of protection.
15. Fix Wall Mounting WB/Z 1.1.1 in the bore holes. Select suitable screws. Ensure cables are routed properly in accordance with the regulations.
16. Aligning the Weather Sensor: Align the "N" marking away from the wall and toward the nearest compass direction.
Help for determining the compass direction → Determining compass directions, Page 21
17. Secure the Weather Sensor with the M4 hexagon socket head screw (max. 0.6 Nm).
18. Connect Weather Unit WZ/S with bus (ABB i-bus®) and switch on the supply voltage.
⇨ The Weather Sensor is ready for operation and will begin sending weather data to the Weather Unit no later than after 2 minutes.

ABB i-bus® KNX   MOUNTING AND INSTALLATION

5.4.3   Adapting ETS parameter assignment

> ⓘ **Note**
> Weather Sensor Basic WES/A 4.1.1 is compatible with the ABB Weather Units from WZ/S 1.3.1.2.

Weather Sensor WES/A 4.1.1 sends more accurate measured data than Weather Sensor WES/A 3.1. It can be expedient to adapt the parametrized thresholds of the Weather Unit.

> ⓘ **Note**
> Weather Unit WZ/S 1.3.1.2 can process only three measured brightness values. The measured value from brightness sensor 4 is ignored. If Weather Unit WZ/S 1.3.1.2 is used, the "N" marking must be aligned in the southern direction when the Weather Sensor is mounted on a mast. The measured values are evaluated as follows in the ETS application:
> *   Brightness sensor 1 = Brightness at the center
> *   Brightness sensor 2 = Brightness at the right
> *   Brightness sensor 3 = Brightness at the left

ABB i-bus® KNX   COMMISSIONING

6   Commissioning

6.1   Prerequisites for commissioning

To commission the device, the following prerequisites must be met:
- The device is mounted and aligned at a suitable location and is connected to the power supply/data cable → Information about mounting, Page 20.
- The power supply/data cable is connected to the Weather Unit.
- The Weather Unit is installed and has been commissioned.

> **ⓘ Note**
> See software information on the website → www.abb.com/knx.

6.2   Putting device into operation

- ▸ Switch on KNX voltage.
- ⇨ The Weather Sensor is ready for operation and will begin sending weather data to the Weather Unit no later than after 2 minutes.

ABB i-bus® KNX   PARAMETERS

7   Parameters

> (i) **Note**
>
> This section is not relevant for these devices.

ABB i-bus® KNX   GROUP OBJECTS

8   Group Objects

> ⓘ **Note**
> This section is not relevant for these devices.

ABB i-bus® KNX   OPERATION

9   Operation

ABB i-bus® KNX   MAINTENANCE AND CLEANING

10   Maintenance and cleaning

10.1   Maintenance

The devices are maintenance-free if used properly. In the event of damage, e.g. during transport and/or storage, repairs are not allowed to be carried out.

10.2   Cleaning

1. Disconnect devices from the electrical power supply before cleaning.
2. Clean dirty devices using a dry cloth or a slightly damp cloth.

ABB i-bus® KNX   REMOVAL AND DISPOSAL

11   Removal and disposal

11.1   Removal

1. Disconnect Weather Unit WZ/S from the electrical power supply and from the bus (ABB i-bus®)
2. Remove the Weather Sensor by loosening the M4 hexagon socket head screw
3. Pull the strain relief out of the foot of the Weather Sensor and disconnect the cable
4. Grasp the wire between your finger and thumb
5. Turn the wire and pull it out of the cable clamp. Repeat this step for all wires one after the other

11.2   Environment

Consider environmental protection.

Electrical and electronic devices must not be disposed of as domestic waste.

The device contains valuable resources that can be recycled. Therefore, please take the device to a suitable recycling center. All packaging materials and devices are provided with markings and test seals for proper disposal. Always dispose of packaging material and electrical devices or their components at collection points or disposal companies authorized for this purpose. The products comply with the statutory requirements, particularly the law on electrical and electronic equipment and the REACH regulation. (EU directive 2012/19/EU WEEE and 2011/65/EU RoHS) (EU REACH regulation and the law implementing the regulation (EC) no.1907/2006)

ABB i-bus® KNX   PLANNING AND APPLICATION

12 Planning and application

12.1 Priorities

> **ⓘ Note**
> This section is not relevant for these devices.

12.2 Basic knowledge

12.2.1 Recording weather data using Weather Sensor WES/A 4.1.1

Wind speed

The wind speed measurement is based on the hot-wire principle (hot-wire anemometry): the flow velocity is determined according to the rate of cooling of a heated wire by the air flow.

Two heated wind sensors are located at the underside of the housing. The temperature of the wind sensors is kept constant by a PID controller. When the air flow cools down the wind sensors, more energy must be supplied to keep the temperature of the wind sensors constant. The wind speed is determined based on the energy supply.

Rain

Rain detection is based on a capacity measurement: the capacity of the sensor surface changes when it is wet.

The sensor is mounted in the housing cover. An integrated heater regulates the sensor surface to a temperature that is higher than the ambient temperature. This higher temperature (approx. 2 K) prevents condensation from forming on the sensor surface.

When it rains, the heating power is increased and the sensor dries faster. The maximum temperature of the precipitation sensor is limited to 40 °C. The end of a rain event is detected when there are no capacity changes on the sensor and is output after a delay time of 2 minutes.

Brightness

Brightness measurement is performed using four silicon photosensors. The sensors are aligned at an elevation angle of 90° in the four compass directions. The elevation angle of 90° ensures that the incident angle of sunlight on the sensors and the front of the building is identical.

Twilight

Twilight refers to the non-directional scattering of light in the atmosphere that occurs during the smooth transition of brightness before sunrise and after sunset. The scattered remaining light from the sun is visible while the sun is below the horizon. The twilight value is calculated from the sum of the four measured values from the silicon photosensors.

Temperature

The temperature is measured using a digital temperature sensor. The temperature sensor is placed in the underside of the housing.

ABB i-bus® KNX   PLANNING AND APPLICATION

GPS receiver

The Weather Sensor has a GPS receiver on which the time, date and position of the Weather Sensor is received. The GPS receiver does not need to be aligned.

When receiving the signals from one satellite: Time has a level of accuracy of < 1 µs.

When receiving the signals from three satellites: Position has a level of accuracy of < 20 m

When receiving the signals from four satellites: Height, based on the WGS84 ellipsoid, has a level of accuracy of < 30 m

When the device is started, and at 03:05 a.m. every day, a satellite connection is established and the data is synchronized. Depending on the signal strength and the number of available satellites, the synchronization can take several minutes.

ABB i-bus® KNX   APPENDIX

13   Appendix

13.1   Scope of delivery

The device is supplied together with the following components:
- 1 x Weather Sensor Basic
- 1 x strain relief
- 1 x installation and operating instructions

ABB

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