

User Manual

# Wi-Fi Weather Station WeatherScreen PRO



Please read these operating instructions completely before installing and starting-up the device. Also keep these instructions for future reference. If you hand over the device to other people for usage, hand over these operating instructions as well.

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**Note: The operating instructions can also be found here: [www.dnt.de](http://www.dnt.de)**

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DNT00000B-04/2021, Version 1.0

## 1. Description and Function

The high-quality Wi-Fi weather station with solar transmitter and TFT display combines a clear display of all relevant weather and indoor climate data with extensive storage and visualization options. In addition, it is possible to upload the weather data via WiFi into weather portals, making them available to other users. The weather station offers a weather forecast function with easy-to-understand weather symbols including a thunderstorm warning function.

### Outdoor sensor with solar panel

The solar-powered transmitter (battery-supported) transfers the measurement data from the sensors to the base station. Radio ranges of up to 100 m are possible in the free field.

The sensor cyclically (every 16 seconds) sends the data for temperature, humidity, wind speed/direction, brightness, UV-index to the base station.

### Expendable room climate sensor system

The weather station can receive and evaluate the data from up to nine room climate sensors (1x master sensor included in delivery, 8x optional sensors DNT000005) every 60 seconds. The indoor climate sensors record air humidity and room temperature. The master sensor also records air pressure.

### Data transmission to weather portals

Using an easy-to-set-up account, you can register the weather station on various internet weather portals. The weather data may then be uploaded to these portals via WiFi. It will thus become available to you on mobile devices or to other users in the portal.

### Comprehensive data analysis

In addition to the clear presentation of all relevant weather data, extensive tabular and graphical data displays (graphical displays with zoom function) are possible. Special colour displays allow temperature and humidity data areas to be recognized from a distance.

- High-quality WiFi weather station with 17.78 cm colour TFT display (7")
- Indoor climate detection with up to nine indoor climate sensors (1x master sensor, 8x optional sensors)
- Upload function for weather portals (e.g. Weather Underground and Weathercloud)
- Integrated solar panel for powering the wireless outdoor sensor, with battery support
- Sensors for precipitation, wind speed/direction, indoor/outdoor air humidity, air pressure, indoor/outdoor temperature, illuminance/UV-index
- WiFi connection with smartphone/mobile device via free weather portal apps
- Weather data recording with selectable intervals, tabular and graphical evaluation
- Main display in two background versions (dark/light display mode) for:
  - Wind speed with gust display in m/s, km/h, knot, mp/h, bft, ft/s, m/s
  - Wind direction: wind rose and tendency/fluctuation in ° or Himmelsrichtung
  - Time, date, alarm functions
  - UV-index, illuminance in Lux, W/m<sup>2</sup> or fc
  - Precipitation: 1 h / 24 h / 1 week / 1 month / total since last reset, graphic display of hourly rainfall in mm or inch

- Graphical weather forecast: based on changes in air pressure
- Air pressure: absolute/relative in hPa, inHg or mmHg, trend indicator
- Temperature display in °C or °F, range display by colour ring
- Indoor temperature: -10 to +60 °C
- Outdoor temperature: -40 to +60 °C
- Display of perceived temperature and dew point
- Indoor and outdoor air humidity (10–99 % rH), range display by colour ring
- Moon phase display, sun movement display with SA/SU
- Alarm: thunderstorm warning, temperature, humidity, perceived temperature, dew point, rain, wind speed, air pressure, gust of wind
- MIN/MAX value displays with time stamp
- Possibility of calibration in comparison with reference measuring devices
- Clock functions: 12-/24-hour display, perpetual calendar, adjustable time zone, alarm
- Suitable for table installation and wall mounting
- Battery-supported (2x AA/Mignon) outdoor combi sensor with integrated solar panel; Station (display) via 5 Vdc power supply unit; Master room climate sensor (2x AA/Mignon)/ battery life: up to 1 year

#### **Intended use**

The weather station is intended for local weather monitoring.

The outdoor sensor records the temperature, humidity, wind speed, wind direction, light intensity, UV-index and the amount of precipitation. With up to nine room climate sensors, the station also records room temperature and humidity. The master sensor also records air pressure. The data can be evaluated via a WiFi connection and an internet weather portal, even on mobile devices.

Any other use is not in accordance with the intended purpose and leads to exclusion of warranty and liability. This also applies to conversions and changes.

#### **Scope of delivery:**

- Weather station WeatherScreen PRO
- Outdoor combi sensor
- Power adapter
- Master room climate sensor
- Mast mounting material (no mast is included)
- User manual

## 2. Safety, Application and Disposal Instructions



Used to label safety information or to draw attention to particular dangers and risks



### Note

Used to indicate additional information or important information.

- Do not leave packaging material lying around carelessly. Plastic foils/bags, polystyrene parts etc. could become a dangerous toy for children.
- The devices are not toys. Keep out of reach of children.
- Avoid heavy mechanical stress such as pressure or vibration.
- Only clean the device with a dry linen cloth. In case of heavy soiling, the cloth may be slightly damp. We recommend regular cleaning of the outdoor combi sensor. Do not use solvent-based cleaning agents for cleaning. Make sure that no moisture gets inside the device.
- The outdoor combi sensor should be cleaned regularly.
- The display device and the room climate sensors may only be operated in dry interior rooms and only with the batteries listed in the technical data.
- Remove empty batteries immediately to prevent leakage and consequential damage. Use only batteries of the recommended type for replacement.
- Do not expose the device to extreme and sudden temperature fluctuations, as this will cause the display information to change quickly and thus impair the accuracy of the measured values.



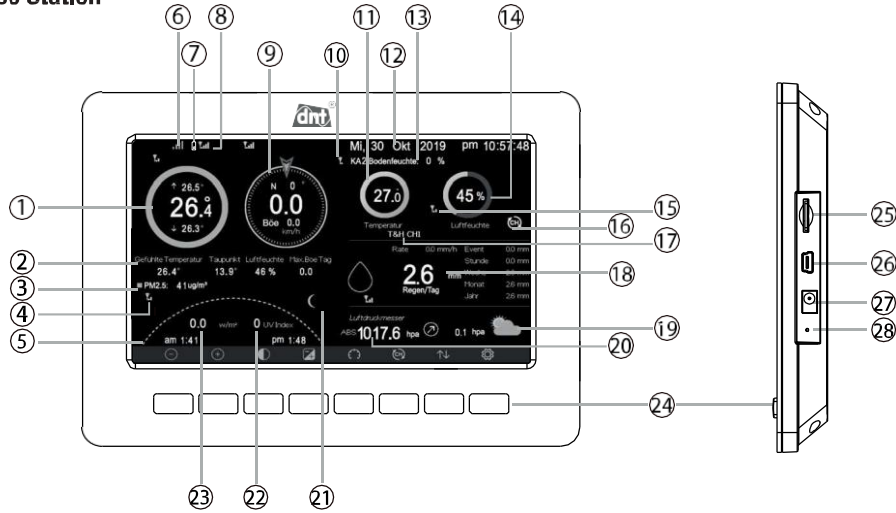
When installing the combination weather sensor, observe necessary lightning protection in case the sensor is exposed, e.g. attached to a building, gable, mast etc. If necessary, consult a qualified electrician for the correct implementation of the lightning protection. When mounting at a higher height, e.g. on a roof or mast, ensure adequate personal security to prevent accidents! Please also note the location selection in the "Assembly" chapter.

**We accept no liability for damage to property or personal injury caused by improper handling or failure to observe the safety instructions and operating instructions. In such cases, all warranty claims expire! We do not accept liability for future damages.**

**Do not open the device. Do not attempt to repair it. Do not make any modifications or changes. This will invalidate the warranty. We do not accept liability for further damages.**

### 3. Overview, Description

#### Base Station



- 1 – Outdoor temperature, maximum daily value, minimum daily value
- 2 – Windchill, dew point, outdoor humidity, highest daily gust
- 3 – Particulate matter concentration (currently not available)
- 4 – Field strength indicator for particulate matter sensor (currently not available)
- 5 – Sunrise/Sunset (only after setting the location settings)
- 6 – WiFi field strength display
- 7 – Battery status display
- 8 – Radio connection indicator to the sensor with signal quality
- 9 – Wind strength, wind direction, gusts of wind
- 10 – Field strength indicator for soil moisture sensor (currently not available)
- 11 – Temperature display of current indoor sensor
- 12 – Date/Time
- 13 – Soil moisture sensor (not recorded in this example)
- 14 – Air humidity display of current indoor sensor
- 15 – Field strength display of current indoor sensor
- 16 – Display for cyclic indoor sensor query
- 17 – Display of the currently displayed indoor sensor
- 18 – Rain quantity display
- 19 – Forecast icon
- 20 – Air pressure display with trend
- 21 – Moon phase display
- 22 – UV-index display
- 23 – Solar radiation values
- 24 – Control buttons
- 25 – Micro-SD card slot for manufacturer firmware updates
- 26 – USB port for manufacturer firmware updates
- 27 – Power supply connector
- 28 – Reset button

### Indoor climate sensor/indoor sensor

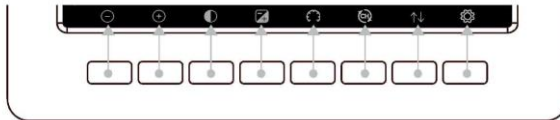











The indoor sensor displays room temperature and humidity, alternatively air pressure for the master sensor.

The optional sensors (DNT000005) are addressable. The set address is displayed.

If the battery charge drops, this is indicated by the corresponding symbol shown on the display. After the beginning of the battery empty symbol the data can still be transmitted for about 1–2 days before the device fails.

### Control buttons

















Button	Base Functions
	Reduce screen brightness
	Increase screen brightness
	Display backlight on/off when automatic system is activated (see 5.5)
	Toggle display between light and dark background
	Air pressure display toggle between absolute and relative air pressure
	Switch channel display between indoor climate/indoor sensors: Factory setting: Display 1: master sensor; display CH1...CH8: optional sensors Display:  automatic switching between the sensors.
	Selection of the display pages for recorded data
	Select for settings

### Colour displays and symbols











#### Temperature display:

Depending on the temperature range in which the current value is located, it is shown with a different colour marking (colour ring).

Range	Ring	Range	Ring
under -23,3 °C (-10 °F)		10 to 15,6 °C (50 to 60 °F)	
-23,3 to -17,8 °C (-10 to 0 °F)		15,6 to 21,1 °C (60 to 70 °F)	
-17,8 to -12,2 °C (0 to 10 °F)		21,1 to 26,7 °C (70 to 80 °F)	
-12,2 to -6,7 °C (10 to 20 °F)		26,7 to 32,2 °C (80 to 90 °F)	
-6,7 to -1,1 °C (20 to 30 °F)		32,2 to 37,8 °C (90 to 100 °F)	
-1,1 to 4,4 °C (30 to 40 °F)		37,8 to 43,3 °C (100 to 110 °F)	
4,4 to 10 °C (40 to 50 °F)		>43,3 °C (>110 °F)	

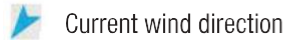
#### Air humidity display:

Depending on the current humidity range, the current value is shown with a different colour marking (colour ring).

Range	Ring	Range	Ring
0 % (no signal)		50 to 60 %	
1 to 10 %		60 to 70 %	
10 to 20 %		70 to 80 %	
20 to 30 %		80 to 90 %	
30 to 40 %		90 to 99 %	
40 to 50 %		100% 100 %	



**Wind direction display:**



Current wind direction



Average wind direction for the past ten minutes

**Precipitation display for the last hour (in mm):**

Quantity (mm)	Symbol	Quantity (mm)	Symbol
0		>15,2 to 20,3	
>0 to 5,08		>20,3 to 25,4	
>5,08 to 10,2		>25,4 to 30,5	
>10,2 to 15,2		>30,5 to 35,5	

**Weather forecast, thunderstorm warning:**

The weather forecast is created after the air pressure curve over 24 to 48 hours has been evaluated, see the respective explanation. Longer rise = fair weather; longer fall = tendency towards bad weather (rain/windy to stormy).

Sunny/Clear	Cloudy	Covered	
Air pressure rises over time	Air pressure rises slightly	Air pressure falls slightly	
Rainfall	Stormy	Snowfall	Blizzard
Air pressure drops over longer time	Air pressure drops quickly	Air pressure drops over longer time	Air pressure drops quickly



For a more accurate weather forecast, the weather station needs a longer running time of at least one month.

**Storm warning**

Appears when the dew point of 21.1 °C is exceeded = danger of a thunderstorm.

Note: When the outside temperature is below 0 °C and the forecast is rainy or stormy the display console shows a snowfall or blizzard symbol.

**Moon phases:**

On days when there is a full or a new moon, the corresponding symbol is displayed:

Moon phase	Symbol	Moon phase	Symbol	Moon phase	Symbol	Moon phase	Symbol
Day 1		Day 8		Day 15		Day 22	
Day 2		Day 9		Day 16		Day 23	
Day 3		Day 10		Day 17		Day 24	
Day 4		Day 11		Day 18		Day 25	
Day 5		Day 12		Day 19		Day 26	
Day 6		Day 13		Day 20		New moon	
Day 7		Day 14		Day 21			

The moon phases from day 1 to day 13 (full moon) are referred to as waxing moon, days 14 to 26 (new moon) as waning moon.

**Rain display:**

The rain display shows various accumulated and measured values and thus offers one comprehensive overview of the precipitation situation.

**Rain/day:**

Shows the total precipitation for the day (reset at 00:00).

**Rate:**

Is the precipitation of 10 minutes (one measurement per minute) calculated over one hour.

**Event:**

Is the amount of rain since the last rain began. Is reset if less than 1 mm of rain falls in 24 hours or no rain has been detected for an hour.

**Week:**

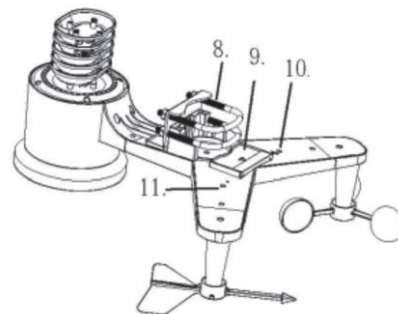
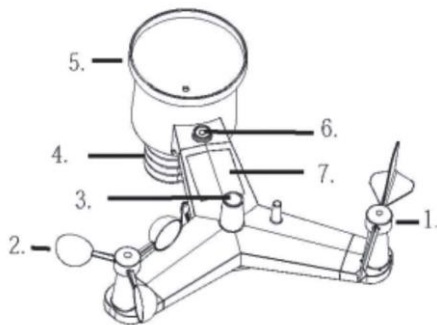
Is the precipitation from Sunday 00:00 to Sunday 23:59 the next week.

**Month:**

If the precipitation is one month, it is reset on the 1st of the month.

**Year:**

If the precipitation is one year, it is reset on the 1st of the set month „rainy season“.

**Wireless outdoor combi sensor**

- 1 - Wind vane
- 2 - Anemometer
- 3 - UV/light sensor
- 4 - Temperature/humidity sensor
- 5 - Rain sensor
- 6 - Spirit level
- 7 - Solar cell
- 8 - Mast clamps

- 9 - Battery compartment
- 10 - Reset button
- 11 - LED indicator\*\*

\*\* lights up for 4 s when the sensor is started and flashes briefly with every transmission (approx. every 16 s).

## 4. Preparation for Operation and Assembly

### Note:

Before you assemble the combi sensor at its location, test whether there is a sufficient radio connection between the combi sensor and the base station all day. Avoid the influence of buildings, trees etc., e.g. due to their own temperature radiation (distance from walls, roofs etc. at least 1.52 m), shading or location in areas protected from wind or rain and from irrigation systems etc. As a rule for the distance to buildings: distance = 4x (building height minus mounting height of the sensor).

### Free field distance (line of sight) 100 m max.!

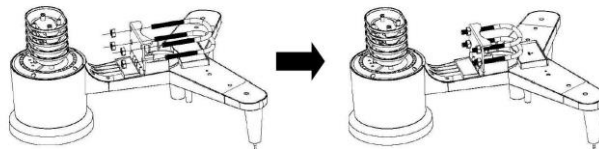
For the first start-up, place the combi sensor and the base station in a room at least 3 m apart in order to achieve a first secure synchronization. When inserting the batteries or connecting the power supply, follow the following sequence: first insert the batteries in the combi sensor, then connect the power supply to the base station.



Please note the information on lightning protection and occupational safety in chapter 2!

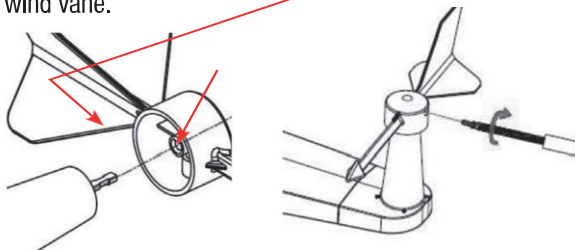
### Mount mast clamps

- Insert the supplied mast clamps into the carrier plate at the underside of the sensor and fix the mast clamps with the bolts. Perform this step at the beginning of the assembly to avoid problems and damage later, in case you must place the fully assembled sensor on the wind vane and anemometer.

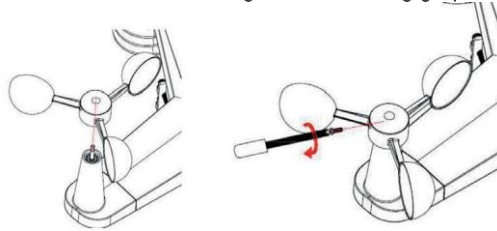


### Mount the wind vane and anemometer

- Place the wind vane on the boom and tighten the locking screw. The four main wind directions are marked here. Place the wind vane in accordance with these markings, so that the tip points in the direction of the embossed north marking. Do not attach the wind vane by force. The axis contains a flat area that must correspond to the flattening in the hole in the wind vane. Then tighten the locking screw.
- Test the free movement of the wind vane.

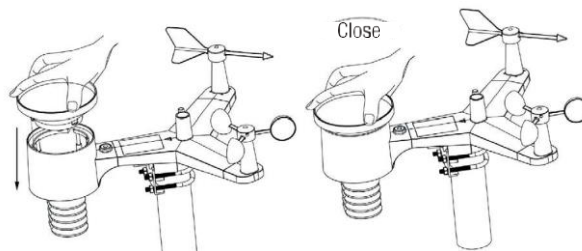


- Place the anemometer on the opposite side of the cantilever according to the following graphics and tighten the locking screw.
- Test the free movement of the anemometer.



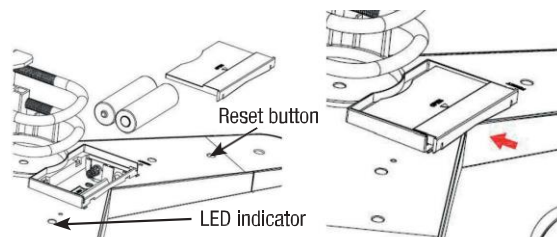
#### Installation of the rain sensor

- Place the collecting funnel on the sensor and turn it clockwise until it engages.



#### Insert batteries, reset the sensor

- Open the battery compartment by sliding it on and insert two mignon batteries (AA/LR6) with the correct polarity, according to the polarity marking in the battery compartment.
- Close the battery compartment again. Make sure that it is pushed in as far as it will go and that the seal lies cleanly in its groove to prevent moisture from entering.



- After inserting the batteries, the LED indicator (11) next to the battery compartment lights up continuously for 4 s. If this is not the case, check whether the batteries are inserted with the correct polarity. If the LED indicator does not light up, carry out a reset (see also error notes in chapter 14).



**Note:** Use only high-quality batteries to ensure safe operation, especially in colder weather. We recommend using lithium batteries.

**Under no circumstances may rechargeable batteries be used. These cannot guarantee permanently stable operation.**

### Reset the sensor

- To do this, press the reset button (10) next to the battery compartment with a pointed object (e.g. open paper clip) for 3 s.
- Then, take the batteries out of the battery compartment and insert them again after approx. one minute. During this time, also cover the solar cell (7), e.g. with a dark cloth.
- Reinsert the batteries, remove the cover from the solar cell and check that it starts properly – the LED indicator must light up permanently for approx. 4 s and then light up briefly with each transmission process (approx. every 16 s).

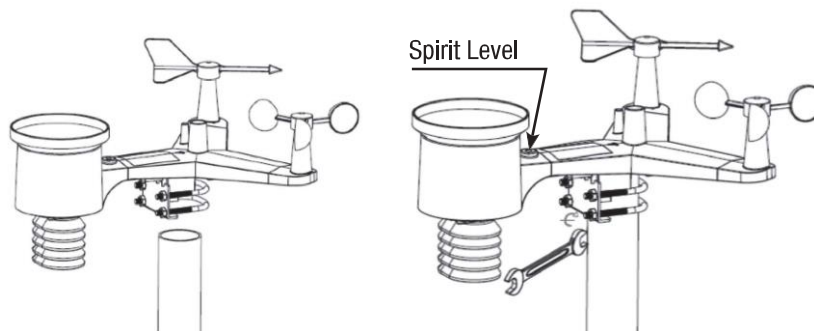


#### Note:

If the combi sensor was previously synchronized with the base station, this synchronization must be carried out again after a reset, see chapter 5.1.

### Mount the combi sensor on the mast

- A mast with a diameter between 25 and 50 mm and a flat top is to be used (the mast is not included in the scope of delivery).
- Before mounting the combi sensor on the mast, synchronize it with the base station as described in the following section 5.1. For this purpose, a distance of approx. 3 m between the base station and the combi sensor should be maintained in order to achieve reliable synchronization.
- Attach the mast to a suitable support.
- Place the combi sensor with the mast shafts on the mast and initially fasten the sensor by hand-tightening the nuts. Make sure that the mast head is seated in the recess provided by the sensor.
- Check the exact alignment of the sensor again according to the directional imprint and the level (important for rain and wind direction display). Following this, tighten the nuts of the mast lights



## Put the radio temperature/humidity sensors into operation

### 1. Master sensor (supplied sensor)

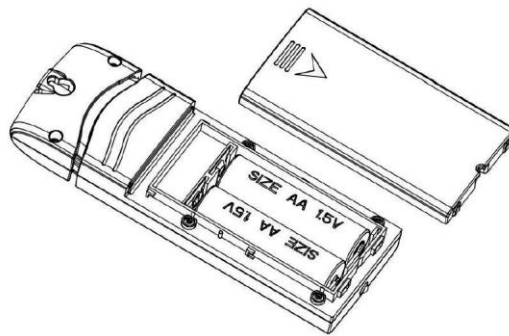
- Open the battery compartment on the back of the device and insert to Mignon/AA/LR6 batteries with the correct polarity, according to the polarity marking in the battery compartment.



#### Note:

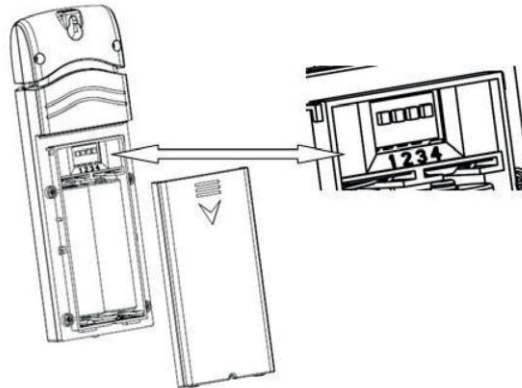
Use only high-quality batteries to ensure safe operation, especially in colder weather. We recommend using lithium batteries.

**Under no circumstances may rechargeable batteries be used. These cannot guarantee permanently stable operation.**

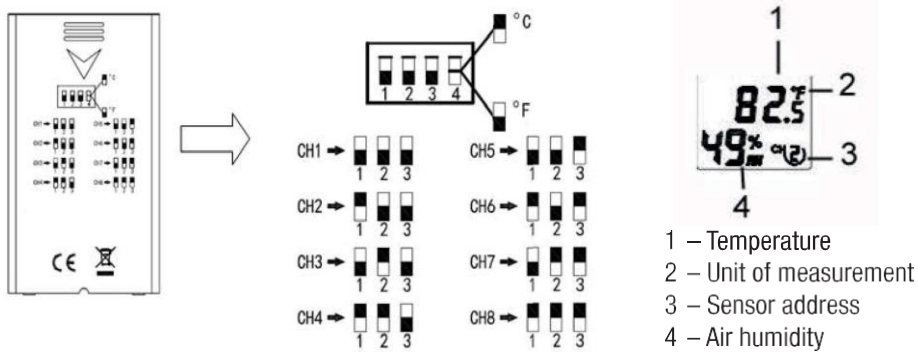


### 2. Additional sensor (optional sensor DNT000005)

- You can integrate up to eight additional sensors in the system.
- Open the battery compartment at the back of the device. There are four DIP switches above the battery compartment:



- Before inserting the batteries, use these DIP switches to configure the addressing (switches 1 to 3) and the unit of measurement setting for the temperature display (switch 4).
- You will find a setting table on the outside of the battery compartment cover. Use DIP switches 1 to 3 to install a free address in the system. Assign an individual address to each eight possible sensors. An address duplication leads to a false display.
- Also set the desired temperature unit.

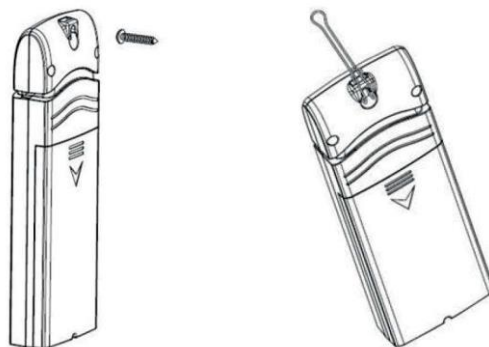


- Insert two Mignon/AA/LR6 batteries with the correct polarity, according to the polarity marking in the battery compartment.
- The sensors will now show the recorded data and its address on the display.
- Instead of using an address, the sensor's location may be created and displayed in plain text in the weather station, see chapter 5.4.



**Note:**

- Do not place the sensors in a place where they will be exposed to heat radiation, e.g. to heating, sunlight or drafts.
- The sensor is intended only for indoor usage or usage in outside areas protected from the weather, e.g. in a garden shed.
- You can hang the sensor on a screw, nail or small hook or ribbon, as shown below.
- The sensor must be suspended or set up vertically in order to not impair the radio range.
- The DCF reception of the additional sensors (DNT000005) cannot be processed by the Weather-Screen PRO.



## 5. Commissioning, Device Set-up/Settings

### 5.1. Sync devices

- First, as described above, insert two Mignon / AA / LR6 batteries with the correct polarity in the battery compartment of the combi sensor. The red LED on the sensor lights up for 4 s after inserting batteries.
- Equip all room climate sensors with batteries, as described in the previous chapter.
- Following this, connect the base station into a 230 V main socket.
- Place the two devices at a distance of approx. 3 m from each other, so that they can synchronize.
- The base station automatically receives the data from the combi sensor for the first 3 minutes.
- The first attempt to receive takes up to 3 minutes. Do not press any buttons on the base station during this time. This would interrupt the synchronization process. If the data from the outdoor sensor appears on the display, and the signal strength is shown on the reception symbol, the synchronization is complete. In addition, a message about version, frequency and ID of the weather station appears on the information display.




#### Information on reception, see also chapter 12

The distance between the combi sensor, radio climate sensors, and the base station may not exceed 100 m. This applies to a direct line of sight. Obstacles such as planting, buildings, walls etc. reduce the range. Under no circumstances may large metal objects, metal walls etc. be located between the sensor and the base station, as these can cause a total loss of reception.

Do not operate the base station in the immediate vicinity of computers, monitors, televisions, and switching power supplies. These can significantly interfere with reception.

- Weather data is received every 16 s.
- If reception is not possible several times in a row, this is indicated in the corresponding display field where „—“ will be displayed. A new search for the sensors then takes place for 3 minutes.

### 5.2. Set-up/settings, main page

- Press the button  to get into the setting mode. The corresponding buttons contain the following base functions:



**SELECT/+,** select the unit or increase the highlighted value.



**SELECT/-,** select the unit or reduce the highlighted value.



**Right arrow key:** selection of the next digit on the right.



**Left arrow key:** selection of the next digit on the left.



**Up arrow key:** selection of the next option upwards.





**Arrow key down:** selection of the next option downwards.



**Set button:** selection of the next subpage for the settings.



**Return button:** return to the basic display or from submenus to the settings.



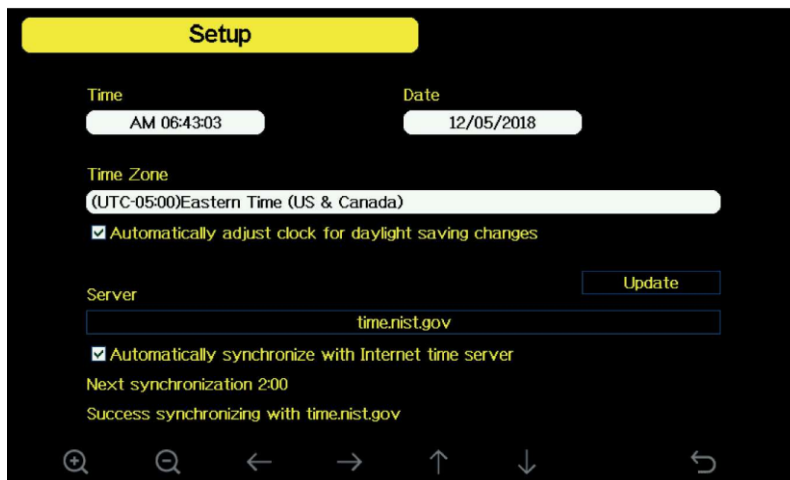
#### Note on setting the menu language:

- We recommend setting your own language first to make the set-up easier.
- To do this, press the button after selecting the settings menu (see above) until you get to the “Factory” menu. Use the arrow keys to select / the “Language” option and set it using the select buttons / on your language of choice.
- Afterwards, go back with the Return key key and choose the set-up menu again.
- First, set the basic settings (white fields) in the set-up/settings menu: the time format, the date format, display units, rain season\*, storage interval, and the basic setting of the display background with the arrow keys / as well as with the select buttons / .




- \* Rain season: the current month's setting is the basis for the calculation of the annual amount of rain as well as MAX/MIN values. With the default setting "January", the counting starts on January 1st, 12 AM.

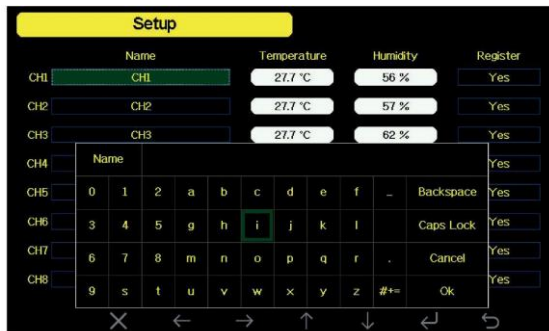
### 5.3. Set the date/time



















- Press the button on the set-up/settings page ↓. "Date and Time" is now highlighted.
- Open the time setting page with one of the buttons ⌚/🕒.
- Use the arrow keys to move through the individual setting fields. The position that can be set is highlighted in red and may be configured with the ⌚/🕒 buttons.
- Set the time zone for your country and activate the automatic setting of daylight savings time.
- If the device is integrated into a WiFi network, you can set the automatic time update via an internet server under "Server" by activating the "Automatic synchronization" option. With „Update“, you can call up the time manually from the time server. The period until the time data is queried again and a message of successful synchronization with the time server appear below. If the registered WiFi cannot be reached, an error message appears.










#### 5.4. Configure/Add room climate sensors


- Press the button on the set-up/settings page  until the field "Multi-channel sensor" is reached and highlighted. Select it with the buttons   and you will reach the set-up/setting menu for the room climate sensors.
- Here you can give each sensor a name, e.g. the location, and enter new sensors:

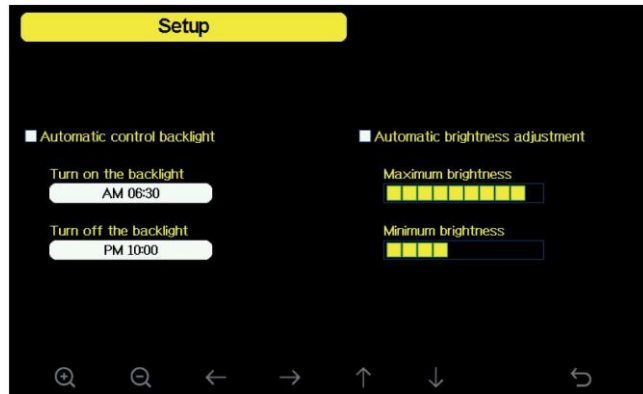



- Use the arrow keys to choose   the desired channel (its name field is highlighted) and select the keypad for entering the name using these buttons:  .
- Here, you can select the desired character with the arrow keys and transfer it to the name field above the input field by pressing the enter key  to confirm.  
With „Backspace“ , you can delete characters in the name field.  
With „Caps Lock“ , you can choose between big and small characters.  
With „Cancel“ , you can go back without saving any changes to the name.  
With „OK“ , you can confirm the name, so it will be saved as the channel name.
- To register a new sensor, use the arrow keys   in the column "Registration" and select the channel that you previously set on the relevant sensor (see chapter 4).
- With the select buttons  , you can call up the query "Register new sensor Channel X?"/ select the „Yes/No“ option via arrow keys   followed by a confirmation by the use of the select buttons/keys  .
- Use the Return key  to return to the settings menu.

#### 5.5. Settings menu "Backlight"





- On the set-up/settings page, press the down button  until the field "Backlight" is reached and highlighted. Select it with the buttons  . This will lead you to the set-up/settings menu for display lighting.
- Here, you can set the automatic display switch by entering the switch-on and switch-off times on the left and then activating the timer (set the checkmark at "Automatic control backlight" with the buttons  .
- On the right, you can adjust the display's brightness automatically in accordance with the ambient brightness (check „Automatic brightness" with the   buttons). You may also set the maximum/minimum brightness.

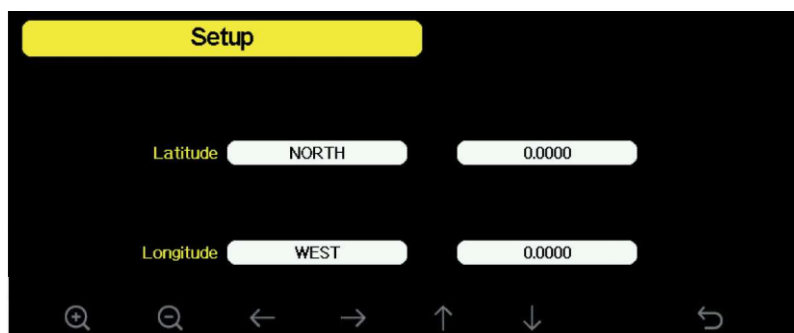
- With the Return key , you can return to the settings menu.



- If the automatic display switching is activated, you can press the following button  at any time as long as the display is switched on to turn the display off. It will then automatically switch on again at the programmed switch time.

#### 5.6. Set longitude/latitude (location)

- Press the button on the set-up/settings page  until the field "Longitude/Latitude" is reached and highlighted. Select it with the buttons / . This will take you to the set-up/setting menu for your location.
- Select the hemisphere setting here and configure the longitude and latitude of your location. You may, for example, find this data on the compass or GPS app of your smartphone, in your car navigation system or at: <http://www.fwiegleb.de/geodat.html>. The entry of two decimals is sufficiently precise. The location data is needed to determine the local sunrise/sunset times.
- With the return key , you can return to the settings menu.



#### 5.7. Display background

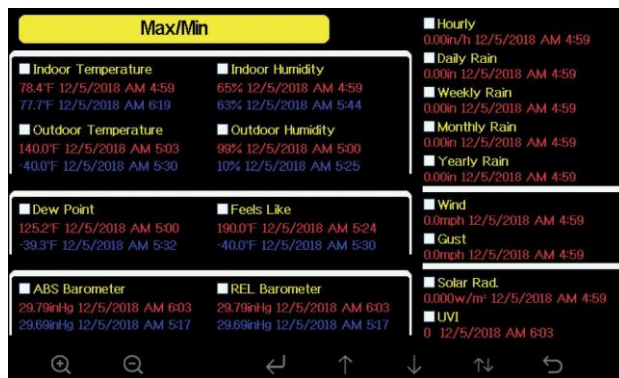
In the background menu, you can choose between a display with a dark or a light background.

## 6. Data Storage, History Function

- From the main view, you can use the button to consecutively call up all pages with saved weather data.

### 6.1. MAX/MIN values

- From the main view, press the key once. You will get to the view of the stored MAX/MIN data of all relevant weather data:



You can delete the data displayed here from the memory and thus start a new recording period.

To do this, proceed as follows:

- Select the desired display field with the arrow keys and activate it with the buttons (Checkmarks).
- Following this, choose an appearing query dialogue with the Enter key .
- With the arrow keys , select the desired option "Yes/No" followed by a confirmation via select buttons . The current time with the first measured value will now appear in the relevant memory field.
- With the return key , you can return to the main view.

### 6.2. View/Delete data storage

- On the main view: if you press the button twice, you will reach the view with the saved weather data:

No	Time	Indoor Temperature (°F)	Indoor Humidity (%)	Outdoor Temperature (°F)	Outdoor Humidity (%)	Dew Point (°F)	Feels Like (°F)	Wind (mph)
889	12/5/2018 AM 6:40	77.7	65	68.9	47	47.8	68.9	2.5
890	12/5/2018 AM 6:45	77.7	65	68.9	47	47.8	68.9	2.5
891	12/5/2018 AM 6:50	77.7	65	68.9	47	47.8	68.9	2.5
892	12/5/2018 AM 2:40	77.9	65	68.9	47	47.8	68.9	2.5
893	12/5/2018 AM 2:45	77.9	65	68.9	47	47.8	68.9	2.5
894	12/5/2018 AM 2:50	77.9	65	68.9	47	47.8	68.9	2.5
895	12/5/2018 AM 2:55	77.9	65	68.9	46	47.3	68.9	2.5
896	12/5/2018 AM 3:00	77.9	65	68.9	46	47.3	68.9	2.5
897	12/5/2018 AM 3:05	77.9	65	68.9	46	47.3	68.9	2.5
898	12/5/2018 AM 3:10	77.9	65	68.9	46	47.3	68.9	2.5
899	12/5/2018 AM 3:15	77.9	65	68.9	46	47.3	68.9	2.5
900	12/5/2018 AM 3:20	77.9	64	68.9	46	47.3	68.9	2.5
901	12/5/2018 AM 3:25	77.9	65	68.9	46	47.3	68.9	2.5
902	12/5/2018 AM 3:30	78.1	65	68.9	46	47.3	68.9	2.5
903	12/5/2018 AM 3:35	78.6	65	68.9	46	47.3	68.9	2.5
904	12/5/2018 AM 3:40	78.6	65	68.9	46	47.3	68.9	2.5

- After some recording time, the saved data includes several pages, which you can scroll through using the arrow keys **↑/↓**. The recording interval can be changed in the set-up/settings page (see 5.2).
- Since not all data columns of a display line fit into the view, you can call up the other columns with the arrow keys **←/→** and thus scroll horizontally within the table.
- With the key **☰**, you can, after a query dialogue (with the arrow keys **↑/↓**), select Yes/No and confirm with the Select buttons **Ⓚ/Ⓛ**. This way, you may delete the entire data memory.
- With the key **☰**, you can select a specific display page in a query dialog.
- With the arrow keys **←/→**, you can select the position to be set in the page number. With the select button **Ⓚ/Ⓛ** you may set the selected position, and with the arrow keys **↑/↓**, you can select whether the set page should be selected (OK) or the query should be left without changes (Cancel).
- Confirm with the select keys **Ⓚ/Ⓛ**. The display will jump back to the selected page (if OK) or the previously displayed page (if cancelled).

Time	Indoor Temperature (°F)	Indoor Humidity (%)	Outdoor Temperature (°F)	Outdoor Humidity (%)	Dew Point (°F)	Feels Like (°F)
12/5/2018 AM 5:13	78.4	65	24.8	54	10.4	24.8
12/5/2018 AM 5:18	78.4	65	59.0	73	50.4	59.0
12/5/2018 AM 5:23	78.4	65	87.8	89	84.2	111.7
12/5/2018 AM 5:28	78.4	65	123.8	19	69.8	123.8
12/5/2018 AM 5:33				89	-39.3	-22.0
12/5/2018 AM 5:38				58	0.1	12.2
12/5/2018 AM 5:43				74	33.4	41.0
12/5/2018 AM 5:48				95	77.2	78.8
12/5/2018 AM 5:52				24	67.6	113.0

View data on page 1 to 171

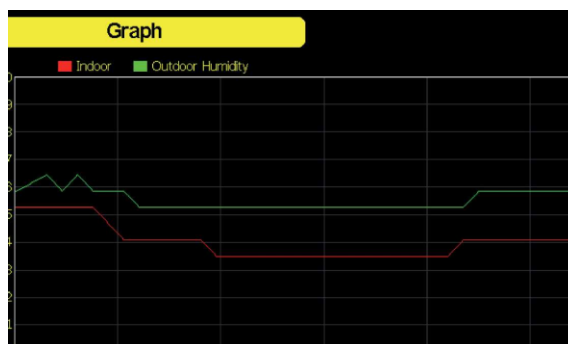
00171

Ok
Cancel



- With the return key **↵**, you can return to the main view.

### 6.3. Graphic progress display











- In the main view, press the key **↑↓** three times to get to the graphic progress display of the saved weather data:



- With the key **Ⓚ**, you can switch the display for different periods (last 12/24/48/72 hours) and zoom the last hours.

- With the key  you can subsequently call up the individual data types.
- With the return key , you can return to the main view.

#### 6.4 Display additional Sensors

- In normal display mode, press the button  four times to enter quick review mode.
- If you have optional sensors such as for example, if you purchase the multi-channel temperature and humidity sensor, their data can be viewed all at once on the quick overview screen.
- Press  or  to select the setting field/name of the sensor. The current name of the sensor is highlighted in green. Press the  or  key to bring up the keypad and enter the desired sensor name. Press , , ,  to open the desired character and press  to confirm the character.

Press  to return to the Quick Review page.






Press  the button to initiate the menu.

T&H CH1	T&H CH2	T&H CH3	T&H CH4	T&H CH5	T&H CH6	T&H CH7	T&H CH8
21.5 °C	23.8 °C	20.6 °C	19.8 °C	20.4 °C	22.4 °C	21.7 °C	22.8 °C
43 %	45 %	46 %	49 %	45 %	36 %	43 %	41 %

#### 6.5 Data Logger









- Format a microSD card (max. 32 GB) on a computer to the FAT32 format.
- After inserting the microSD card, the station automatically begins to write data to the card.
- The data interval can be set between 1–240 minutes in the settings in the “Interval” menu.
- To use the data, the microSD card is removed from the station and can then be read in by a PC
- The station provides the data in .csv format.

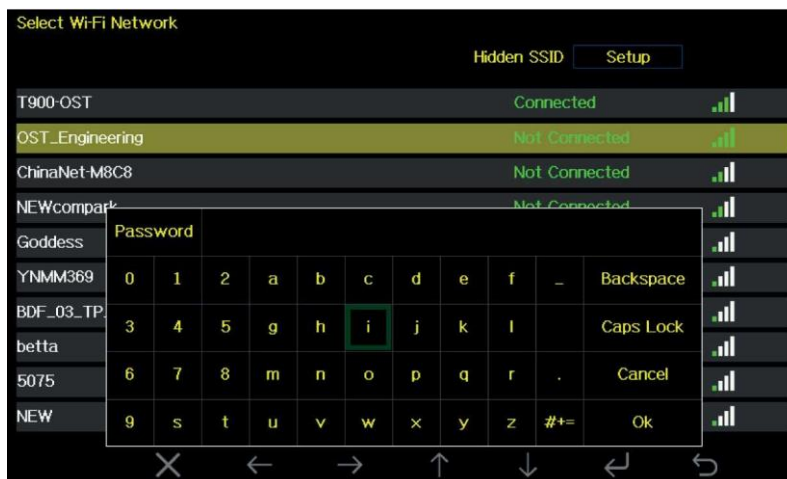
## 7. WiFi Connection

- Registration in a wireless network is necessary in two cases: if you want to synchronize the current time with a time server and if you want to publish your weather data in an internet weather portal, e.g. to be able to query your data remotely via smartphone later.
- The WiFi registration takes place via the “Set-up/settings” page, which you can access from the main display with the set-up button .
- Utilising the arrow keys  / , you can navigate to the option “WiFi search“ and select it via the buttons  . You will be shown the received wireless networks in the area (2.4 GHz). 5 GHz networks are not supported.
- Under “Hidden SSID“, you will find the SSID, password and connection status of the device’s last connection.





### Note on storing the WiFi access data

- If you sell the device or decide to dispose of it, you should delete the saved WiFi data to prevent unauthorized access to your wireless network.
- Use the arrow keys  /  and the Enter key  to choose your WiFi and the dialogue for entering the network password appears.
- Use the arrow keys to select the desired character and accept it with the Enter key  in the password field above the input field.  
With “Backspace“ (or key X)  you can delete characters in the password field.  
With “Caps Lock“ , you can choose between upper and lower case.  
With “Cancel“ , you can return without making any changes.  
With “OK“ , you confirm the entered password. You can now check the complete WiFi setting under “Hidden SSID“.





- With the Return key , you can return to the main view.
- If the WiFi connection is correct, the associated field strength display will appear  on the upper left side of the display.
- You may now also check the correct connection to a time server (see 5.3).

## 8. Internet Publishing of Weather Data

You can transfer the weather station data via WiFi and your router to weather portals on the Internet and access them worldwide via mobile devices:

Ecowitt weather (<https://www.ecowitt.net>):

- Free weather server that supports a large number of weather stations.
- Weather Underground (WeatherUnderground.com):  
This weather data host, operated by “The Weather Channel” and IBM, enables the sending and retrieval of weather data as well as detailed data analysis.
- WeatherCloud (<https://weathercloud.net/>): Free worldwide weather observation network.
- WOW ([www.WeatherObservationWebsite.com](http://www.WeatherObservationWebsite.com)): British weather service website.

### Requirements

- Base station and combi sensor must function and communicate in a stable manner.
- There must be a stable WiFi connection between the weather station and router.
- The combi sensor must be located outside, so that no corrupted data is sent to the weather portal.  
Your data is used in public and must therefore be authentic. Before connecting to the weather portal, delete all data from the data storage, so that incorrect data, which are, for example, caused by movements during sensor assembly in the rain sensor, will not be transmitted.

## 9. Integration of Weather Underground

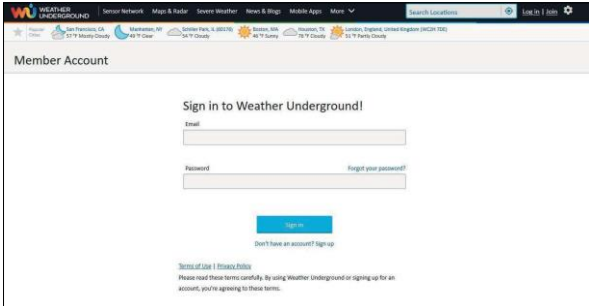
### Step 1)

Establish a WiFi connection with your WeatherScreen PRO base station according to the operating instructions.

### Step 2)

Visit the website:

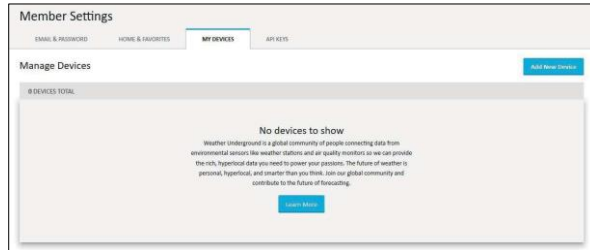
[www.wunderground.com](http://www.wunderground.com)  
and register for free by clicking on “Join” using your email address and a freely selectable password.



The screenshot shows the Weather Underground website's sign-in page. At the top, there is a navigation bar with links for "Home", "Server Network", "Maps & Radar", "Current Weather", "News & Blog", "Mobile Apps", and "More". Below the navigation bar, there is a "Member Account" section. The main heading is "Sign in to Weather Underground!". There are two input fields: "Email" and "Password". Below the "Password" field, there is a link that says "Forgot your password?". A blue "Sign In" button is centered below the input fields. Below the button, there is a link that says "Don't have an account? Sign up". At the bottom of the form, there is a "Terms of Use | Privacy Policy" link and a small disclaimer: "Please read these terms carefully. By using Weather Underground or signing up for an account, you're agreeing to these terms."

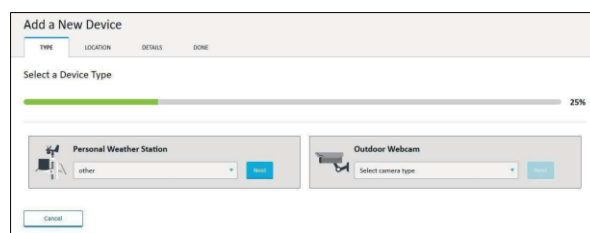
### Step 3)

After you have successfully registered, select the “My Devices” menu in your Member Settings.



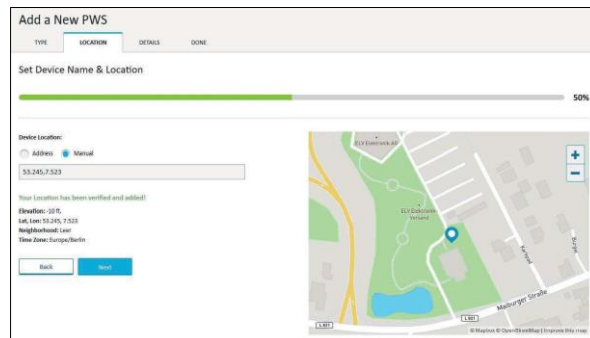
### Step 4)

Add a new device via „Add New Device“. To do this, select the type „other“ as PWS (Personal Weather Station) and click on „Next“.



### Step 5)

Fill in the information about the new station.



First, indicate where the station is, so that it is correctly displayed on the map. Next, the required information must be entered in the fields („required“ must be entered!).

- 1 Name: Name of the station (e.g. dnt WeatherScreen PRO)
- 2 Elevation: Height of the station to sea level (is calculated from the position).
- 3 Device Hardware: Is taken over from step 1 of the device system
- 4 Height Above Ground: Height of the weather station from the ground (in feet; 1ft is approx. 0.3m)
- 5 Surface Type: Indicates the underground on which the station is located

## 6 Associate Webcam:

If a webcam is aimed at this station and it is also linked in WU, it can be linked in this way.

The gray box asks you to agree whether your transmitted weather data may be used by WU to optimize forecasts. This can be approved (Accept) or rejected (Deny).

The screenshot shows the 'Add a New PWS' form with the 'DETAILS' tab selected. A progress bar at the top indicates 75% completion. The form contains the following fields:

- Name (Required):** 1. A text input field with the placeholder 'Give Your Device a Name'.
- Surface Type:** 5. A dropdown menu.
- Elevation (Required):** 2. A text input field containing '-10'.
- Associate Webcam:** 6. A dropdown menu with the option 'Select WebCams'.
- Device Hardware (Required):** 3. A dropdown menu with the option 'other'.
- Height Above Ground:** 4. A text input field with the placeholder 'ft. Above Ground'.

Below the form is a privacy notice section with the heading 'You Make Our Forecasts More Accurate, We Respect Your Privacy'. It contains a paragraph of text and a link 'Learn more about how we take your privacy seriously'. At the bottom of this section are two radio buttons: 'I Accept' (selected) and 'I Deny'.

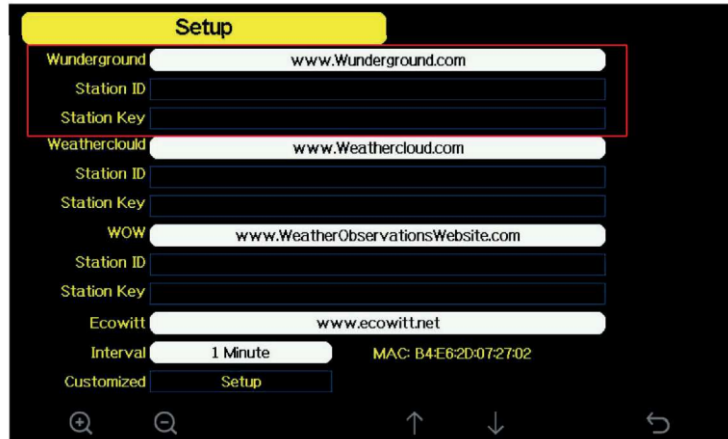
## Step 6)

After entering all the data, WU will now provide you with a station ID and a station key, which must be entered in the WeatherScreen PRO display station in the „Weather Server“ menu.

The screenshot shows the 'Add a New PWS' form with the 'DONE' tab selected. A progress bar at the top indicates 100% completion. The form displays the following information:

- Registration Complete!**
- Congratulations!** Your personal weather station is now registered with Weather Underground.
- Enter the information below to your weather station software.
- Your PWS: [Device Name]
- Station ID: [Station ID]
- Station Key: [Station Key]
- Configure Your Software
- View Station

- Now enter the data in the base station.
- To do this, go to the set-up / settings page  and select the „Weather server“ option there.
- Now you get to the set-up page for the weather server:



- The four weather servers are already entered here, you only have to enter the respective access data and the transmission interval (1 to 240 minutes) according to the service specifications. If no instructions are given, use "1 minute".
- To do this, select the service and the respective line for station ID and station key with the arrow keys **↑**/**↓** and open the input area with the **⊞**/**⊟** keys.
- Here you select the desired character with the arrow keys and accept it by confirming with the Enter key **↵**.  
 With „Backspace“ (or key X)/**⌫** you can delete characters in the ID / key field.  
 With „Caps Lock“/**⌫** you can choose between upper and lower case.  
 With „Cancel“/**⌫** you go back without accepting previous entries.  
 With „OK“/**⌫** confirm the entered data, these will now be adopted in the settings.



- Press the Return key **↵** to return to the main display.

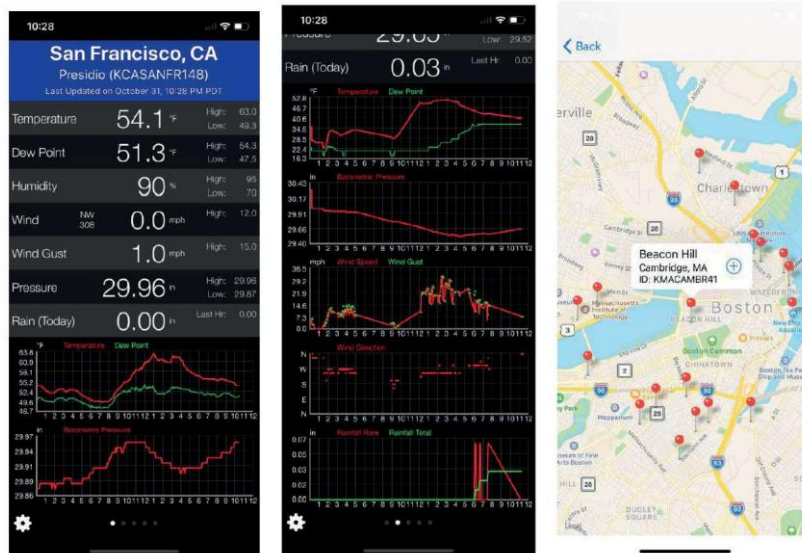
A successful connection of the weather station to Weather Underground is indicated by the corresponding WU symbol on the weather station in the upper left corner. The station is now displayed as online on the WU page. Attention: This process can take a few minutes!



Once paired, the WeatherScreen PRO's weather data can be accessed from any location by searching for the generated station ID on the Weather Underground website or the Weather Underground app.

Integration example: May/2020

- Other iOS apps are e.g. WS View, WunderStation, PWS Monitor or WunderMap. The following example shows the PWS Monitor app:




### *Weather Underground-App for Android*

Download the „Weather Underground“ app from Google Play store. You can use this app properly after you have entered in the station ID.

- Another usable Android app is WS Tool.
- Register your station with the Wunderground station ID here as well.



### *Setup other weather portals*

- The establishment of access and the transmission of data for other Weather portals are similar to the setup at Wunderground: You register as a new member and log in to the station, receive a confirmation email and the station ID and password / key.
- Enter the data received on the set-up page for the weather server under the relevant station. Note the assignment because the portals expect different data formats.
- With the return key  you return to the main display.
- Then go to the corresponding weather portal via a browser like Wunderground, log in there with your access data (station ID) and you will see your weather data if the connection is correct.
- Please note that the changeover between metric and imperial units of measurement must be made in the weather portal, as almost all weather portals automatically have imperial units of measurement.

## 10. Integration of WeatherCloud

**Step 1)** Establish a WiFi connection with your WeatherScreen PRO base station according to the operating instructions.

### **Step 2)**

Visit the website  
[www.weathercloud.net](http://www.weathercloud.net)  
and register for free by clicking on “Sign up” using your user name, email address and a freely selectable password.

Join Weathercloud

Username

Email

Password

Sign up

By clicking Sign up, you agree to our [Terms of Service](#) and [Privacy Policy](#).

Already a Weathercloud member? [Sign in](#)

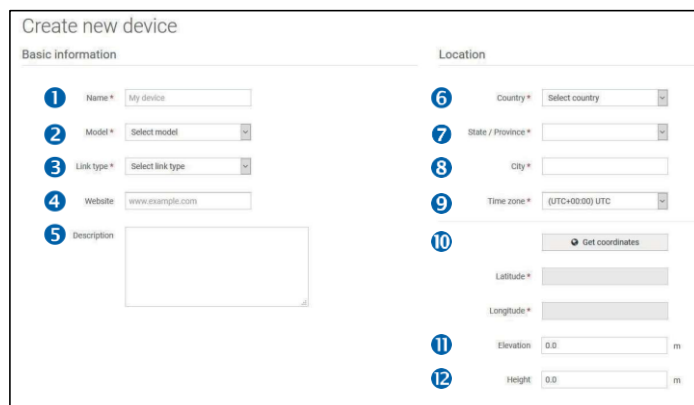
### Step 3)

After activating the confirmation email through WeatherCloud, log in with your account. Then select "Create device" to create the new weather station.



### Step 4)

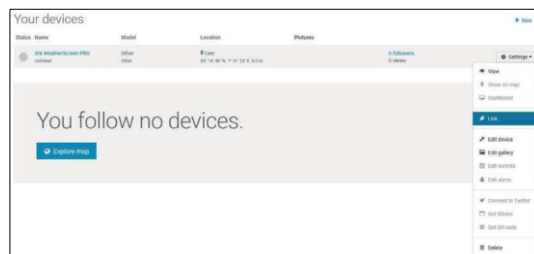
Enter all required information about your weather station here (marked with a \*). Select the type „other“ as the model and confirm by clicking on „Create“.

A screenshot of a "Create new device" form. The form is divided into two columns: "Basic information" and "Location".  
Under "Basic information":  
1. Name\*: Input field with "My device".  
2. Model\*: Dropdown menu with "Select model".  
3. Link type\*: Dropdown menu with "Select link type".  
4. Website: Input field with "www.example.com".  
5. Description: Text area.  
Under "Location":  
6. Country\*: Dropdown menu with "Select country".  
7. State / Province\*: Dropdown menu with "Select state/province".  
8. City\*: Input field.  
9. Time zone\*: Dropdown menu with "(UTC+00:00) UTC".  
10. Get coordinates: Button with a location pin icon.  
11. Elevation: Input field with "0.0" and "m".  
12. Height: Input field with "0.0" and "m".

- 1 Name: Name for the device
- 2 Model: Type of station (here: „other“)
- 3 Link Type: Not relevant
- 4 Website: Website with information about the weather station can be stored here
- 5 Description: Description of the weather station
- 6 Country: Country in which the station is located
- 7 State/Province: State in which the station is located
- 8 City: Next city
- 9 Time zone: Time zone in which the station is located
- 10 Get coordinates: Opens the wizard for determining the longitude and latitude
- 11 Elevation: Height of the location above sea level
- 12 Height: Height at which the station is set up

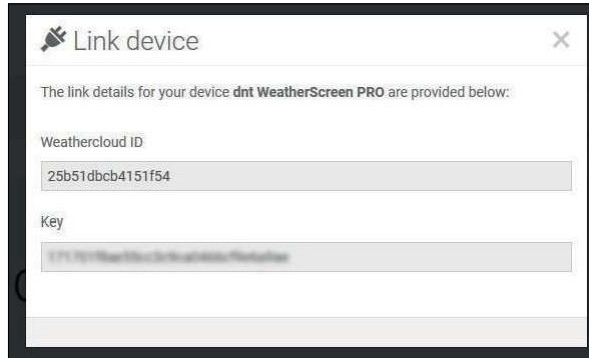
### Step 5)

After creating the weather station, click on „Settings“ and then on „Link“.



**Step 6)**

Enter the ID and key shown into the display station of WeatherScreen PRO.



A successful connection of the weather station to WeatherCloud is indicated by the green check mark and the time stamp of the connection to the WeatherCloud. Attention: This process can take a few minutes!

Status	Name	Model	Location	Pictures	
	dnt WeatherScreen PRO May 15, 2020, 9:18 AM	Other Other	Leer 53°14'40"N 7°31'22"E 0.0 m		0 followers 4 views 

Integration example: May/2020

## 11. Integration of Ecowitt Weather

**Step 1)** Establish a WiFi connection with your WeatherScreen PRO base station according to the operating instructions.

**Step 2)**

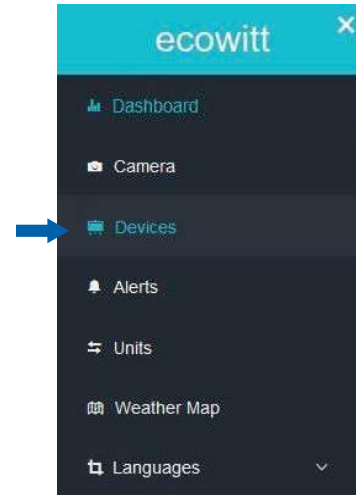
Visit the website [www.ecowitt.net](http://www.ecowitt.net)  
Register for free using your Email address and assign a password.



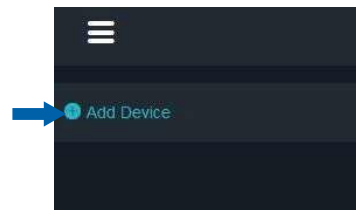


### Step 3)

Select menu on the top left and select „Devices“.



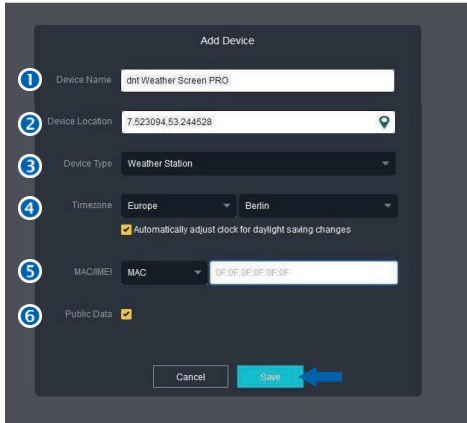
**Step 4)** Add a new device via „Add Device“.



### Step 5)

Fill in the information for the new station and click on „Save“.

- 1 **Device Name:** defines the display name of the weather station (important if several stations are in use)
- 2 **Device Location:** Longitude and latitude (important for the position on the WeatherMap; see menu)
- 3 **Device Type:** The WeatherScreen PRO is a weather station (Type: WeatherStation)
- 4 **Timezone:** Set your time zone here. **IMPORTANT:** The time zone on Ecowitt.net and the display station must match (e.g. Berlin)!
- 5 **MAC/IMEI:** Enter the MAC address of your display station here. This item can be found in the display station.
- 6 **Public Data:** Check this box if you want to make your data available to other Ecowitt users in the WeatherMap. If the check mark is removed, your weather station will not be shown on the map.



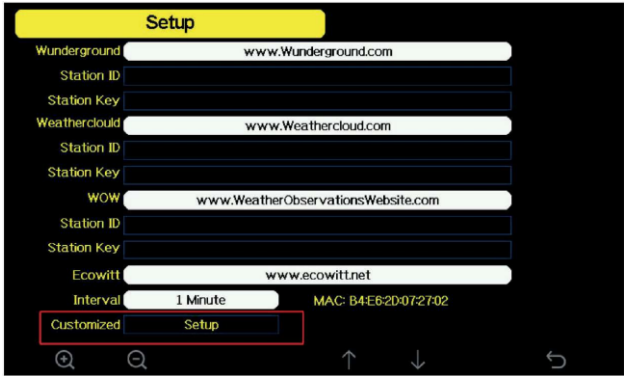
After a few minutes, the first values from your weather station should be displayed on the page and generate a clear dashboard. Over time, graphs develop, which can be selected in different time ranges. These are displayed below the tiles.



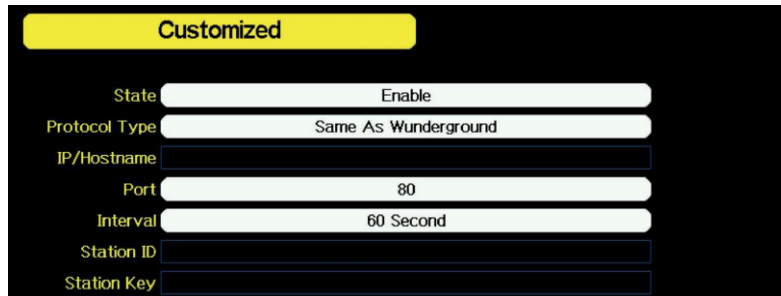
Integration example: May / 2020

**Custom weather server**

- Very experienced users can also set up their own weather server access in the set-up for the weather portals, which directly evaluates the data output by the weather station. The menu item “Adjust / Customized” at the bottom of the weather server set-up is used for this.



- You get to the input page for your own data:



- The weather server to be supplied with the data should be able to process the same data format as Wunderground or Ecowitt, these data formats are output by the station. Select this accordingly.
- Then enter the access data for the weather server and define the transmission interval.

#### General error notes on publishing on weather portals

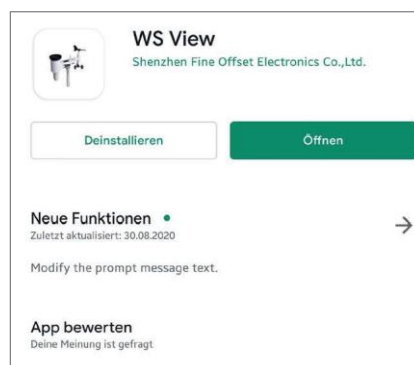
- If you cannot call up any current weather data from the weather portal, check the time / date and time zone on the weather station for exact information.
- If you cannot connect to the weather portal, check the firewall of your internet router. The weather station sends the data via port 80, this is only editable for the user-defined Weather server. Do not connect the station into a guest WiFi, this is not supported by the system.
- When logging into the weather portals, do not use any special characters as the first character in your password. Otherwise there will be malfunctions at Wunderground. This is a limitation of the portals.

## 12. Update WiFi-Module

*When you have integration problems with weather servers (e.g. WeatherCloud)*

### Step 1)

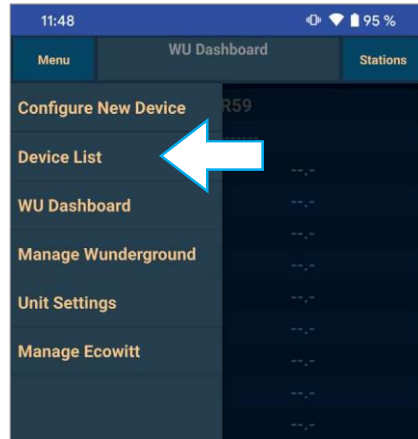
Download the „WS View“ app from your app store (iOS and Android).



**Step 2)**

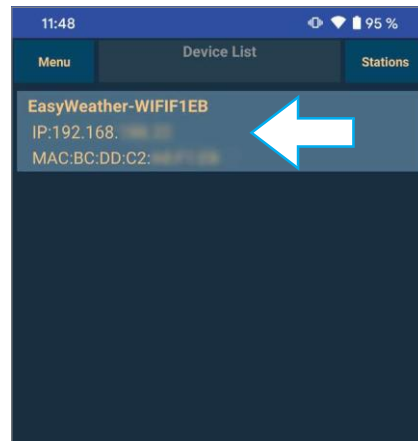
Open the WSView app, go to the menu and select "Device List".

**Make sure beforehand that both the smartphone and the weather station are integrated in the same WiFi (2.4 GHz).**



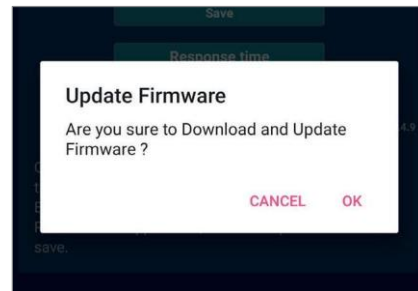
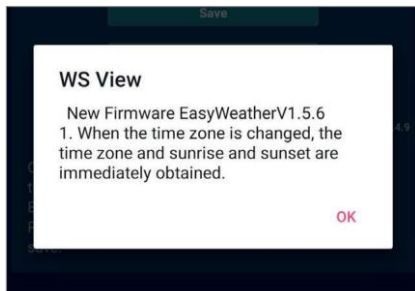
**Step 3)**

Select your weather station. Please compare the MAC address with that of your station - to be found in the settings of your WeatherScreen PRO.



**Step 4)**

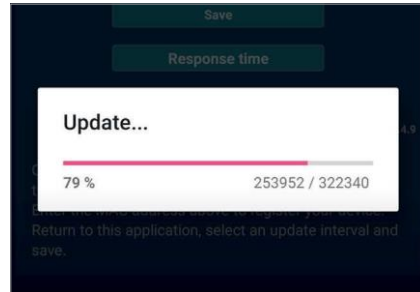
When you select the station, you will be automatically informed of a possible update. Confirm the following instructions for updating the module.



**Note:** If the update window does not appear, check whether the smartphone and the weather station are connected to the same 2.4 GHz WiFi network.

**Step 5)**

The App is doing the update. No further settings are required on the station. Do not, under any circumstances, unplug the WeatherScreen PRO from it's power source.

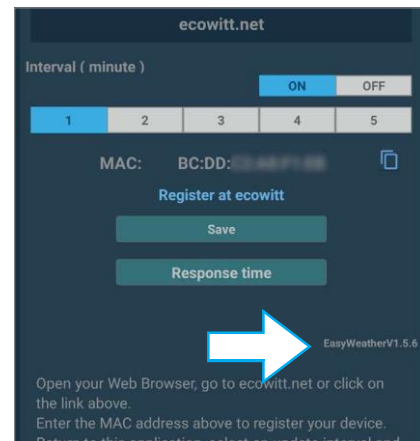


**Step 6)**

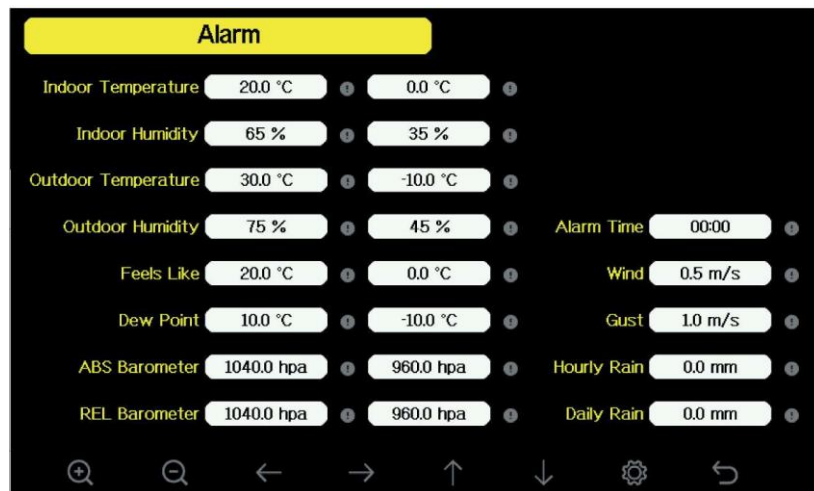
Finished! Check the firmware version of the WiFi module "Wi-Fi Firmware" on the "Display information" page in the station and restart the station once.

**Note:**

The WiFi firmware version after the update is „EasyWeatherV1.5.6“ - (January 2021)



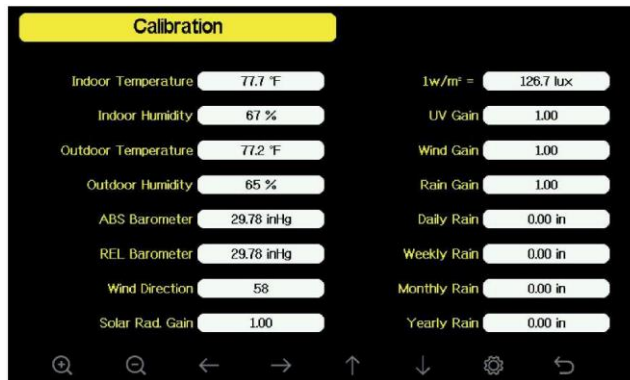
### 13. Alert Functions



- To get from the main display to the “Settings” page, use the button . Press once more to reach the page “Alarm”.
- Use the arrow keys / to select the desired entry. It will appear with a yellow background and a note about the adjustable range.
- With the arrow keys / you can select the entry that you wish to adjust (including a pre-sign for temperatures). With the select keys / you change the value in the entry.
- To activate or deactivate the alarm, use the arrow keys / to reach the right-hand dot with the exclamation mark and activate/deactivate it using the select keys / . An activated option will be red. A deactivated option will turn grey. An activated option also appears in the main display.
- With the return key you can go back to the main view.
- If an alarm value occurs, an alarm signal sounds for two minutes and the value concerned or the associated display flashes.
- You can stop the alarm by pressing any key.

## 14. Calibration

- The weather station is calibrated at the factory. It may be adjusted for the individual weather data if required. This calibration should only be carried out if highly precise reference instruments or values are available.



- Head to the “Settings” page by leaving the main view. For this purpose, use the settings button twice to get to the “Calibration” page.
- Use the arrow keys here / to select the desired entry. It will appear with a yellow background and a note about the adjustable range.
- With the arrow keys / you can select the entry you wish to adjust (including a pre-sign for temperatures). With the select keys / you change the value within the entry.
- By using the return key , you can return to the main view.

### Notes on the calibration parameters and sources of error

Offset: adjust the value using the reference. Gain: adjustment by comparison or calculation

Parameter	Calibration	Basic Setting	Typical Calibration Source
Temperature	Offset	Factory setting	Comparative thermometer with thermal liquid (Mercury/Alcohol/Spirit) <sup>(1)</sup>
Air Humidity	Offset	Factory setting	Psychrometer (Aspirations / Spin / Sling-) <sup>(2)</sup>
Air Pressure absolute	Offset	Factory setting	Calibrated reference barometer
Air pressure relative	Offset	Factory setting	Public measuring point, e.g. Weather service (Internet) or referenced weather service from the nearest airport <sup>(3)</sup>
Wind direction	Offset	Factory setting	Compass/GPS <sup>(4)</sup>
Solar radiation/UV	Gain	1.00	Calibrated laboratory solar radiation sensor Calibrated UV sensor
1 w/m <sup>2</sup>	Gain	126,7 lux	Conversion factor lux in w/m <sup>2</sup> with consideration of the wavelength <sup>(5)</sup>
Wind	Gain	1.00	Calibrated wind sensor <sup>(6)</sup>
Rain	Gain	1.00	Sight glass rain gauge with calibrated scale and with an opening of at least 10,16 cm (4") <sup>(7)</sup>

<sup>(1)</sup> Common mistake: too close proximity to heat sources, also too close to the floor/subsurface, near house walls etc. A shaded area is ideal for a comparison measurement with a reference thermometer. The comparison time should be at least 3 hours before reading the values. Only use calibrated thermometers or those with mercury or alcohol filling as a reference. Temperature data from weather portals etc. are also not suitable for calibration. Firstly, their sources are unknown. Secondly, their update rate may be insufficient.

<sup>(2)</sup> The air humidity is difficult to measure with electronic sensors, which is why the basic accuracy is 5 %, depending on the basic accuracy of the sensor used or its production batch, aging, and contamination. Only a professional psychrometer should be used for calibration.

<sup>(3)</sup> In meteorology, a distinction is made between absolute air pressure and relative air pressure. The former is the real air pressure at the respective location. The latter is the air pressure corrected at sea level as a worldwide reference air pressure (1013.25 hPa). The absolute air pressure drops with the height of the location above sea level (e.g. Zugspitze: 693 hPa). With the correction factor based on sea level, the relative air pressure is now comparable to other locations and can be used for the weather forecast for a specific area. It is, however, higher than absolute air pressure. If the relative air pressure at the location rises above 1013 hPa, one speaks of high pressure. If it falls below 1013 hPa, one speaks of low pressure. A calibrated reference barometer is required to calibrate the absolute air pressure. To calibrate the relative air pressure, a timely value from an official measuring point in an immediate environment is sufficient, e.g. from a weather service.

- <sup>(4)</sup> Must only be corrected if the sensor was not set up exactly on the wind vane holder according to the cardinal directions, see chapter 4.
- <sup>(5)</sup> The conversion factor on factory settings is based on the factor for bright sunlight of 126,7 lux per  $\text{w/m}^2$ . This is matched to the spectral sensitivity of the human eye. For other applications, e.g. if the value is to be used for photovoltaic applications or the assessment of plant growth, other spectral sensitivity ranges apply. The display must be adjusted accordingly.
- <sup>(6)</sup> Wind speed is highly dependent on ambient conditions and the location. Therefore, it is difficult to calibrate. In this case, the rule of thumb for the distance to buildings or other high obstacles is: distance = 4x (building height minus mounting height of the sensor). Installation on a roof, in particular, can be critical due to the widely differing wind pressure conditions (upwind, downward wind, suction, distractions by chimneys nearby, trees etc.). For example, suction and shading effects on a flat roof can cause the display of a much too slow wind speed as well as if the station is in the lee (currently facing away from the wind) of a pointed roof or chimney.  
Bearing wear on the anemometer can also cause falsifying effects over long periods.  
An exact calibration is only possible in direct comparison with a calibrated anemometer and under absolutely the same and constant flow velocity of the air.
- <sup>(7)</sup> The rain flow meter is calibrated with factory settings based on the funnel diameter. The counting rocker tilts every 0.1 mm and emits a counting pulse.  
A correction can be made with a sight glass rain gauge with a calibrated scale and with an opening of at least 10.16 cm (4").  
You can enter a standard value for rain quantity counts over longer periods (e.g. you can read it at a weather station in the same or nearby place via the internet portal) if the weather station was not in operation over one of the listed intervals (daily / weekly / monthly / annually) in order to continue collecting the concrete data at the location itself from this base.










#### Further notes

- Please note that weather forecasts are highly location dependent. Especially in places that undergo rapid weather changes, e.g. certain mountainous regions, valleys etc., there are swift changes in air pressure. In such locations, the weather forecast display of the weather station can only work to a limited extent.  
Since the weather forecast is based solely on the air pressure trend over 24 to 48 hours, the weather forecast can only be about 70 % accurate. Professional weather services use other means, such as weather radars, computer weather models, and detailed geographic data for accurate forecasting.
- The station or sensors are calibrated at the factory. Technical wear of sensors, e.g. in the case of humidity sensors, can lead to deviations after a long period of operation. However, only calibrate your station if you can use a calibrated (laboratory) measuring device.
- Never calibrate your sensors based on data from third parties such as the radio, internet, newspaper, etc. The weather station has the task of recording the data precisely at its location.
- The sensor for the UV index can deliver falsified results over time due to varying solar radiation. If you wish to use it professionally, it must be calibrated every 2 to 3 months using a calibrated UV measuring device.



## 15. Operating Settings, Reset to Factory Settings

You can make a number of adjustments to the settings here:

- Register the combi sensor and additional room sensors again, see chapter 4.
  - Deletion of the weather data memory (can also be implemented via “Restore factory settings”).
  - Deletion of the MIN/MAX memory.
  - Automatic deletion of the MIN/MAX memory every day at 00:00:00. If this option is set to “Off”, the MIN/MAX values since commissioning or last manual deletion will be displayed.
  - Restore factory settings.
  - Store saved data on a microSD card (inserted microSD card required).
  - View device information.
- 
- Head to the „settings” page by leaving the main view, using the settings key . Press the settings key  twice to get to the “Operation settings/Factory” page.
  - Here, use the arrow keys / to select the desired entry. It appears with a yellow background.
  - Using the select keys / and the arrow keys / you can choose the desired option.
  - With the return key , you can return to the main view.

## 16. Firmware-Update

- Copy the update file (user.bin) into the basic directory of a microSD memory card.
- Disconnect the WeatherScreen PRO from the power supply. Insert the newly prepared microSD memory card into the corresponding memory card slot of the WeatherScreen PRO. Restore the power supply to the station. The update window appears automatically and installs the new firmware update.
- Do not interrupt the power supply or the connection to the data storage device used during the update.
- After a successful update you can use the device as usual and view the new firmware version in the menu „Operating settings / Display information / Firmware revision number“.

## 17. General Information on Radio Reception

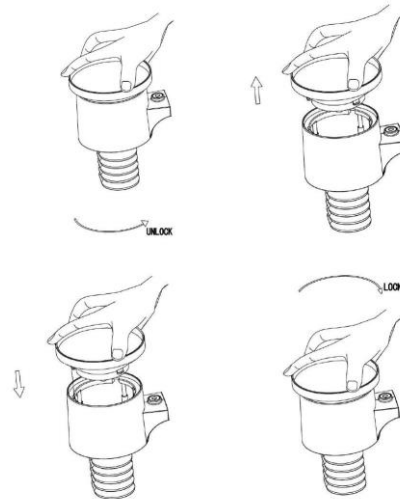
- The radio transmission is implemented by means of a non-exclusive transmission path, which is why interference from neighbouring devices cannot be prevented in all cases.
- Further interferences (EMI) can be caused by switching operations, electric motors or defective electrical devices.
- The range in buildings can differ significantly from that in the open field. In addition to the transmitting power and the receiving properties of the receivers, environmental factors such as air humidity play an important role in addition to structural conditions on site. Any wall or obstacle can cause signal attenuation. For example, an uncoated glass pane can already cause a signal attenuation of up to 15 %, a brick wall up to 40 %, concrete up to 80 %, and a metallic obstacle up to 100 %.

- Even a minimal change of location of a disturbing or disturbed device can lead to improvements in reception in the event of disruptions.
- Other radio transmitters in the 868 MHz ISM band can temporarily interfere with data reception. The reception is usually available again at one of the next transmissions.

## 18. Care and Maintenance

- Only clean the device with a soft, dry linen cloth. In the case of heavy soiling, the cloth can be slightly damp. Do not clean the device with cleaning agents containing solvents! The device must then be carefully dried with a cloth after cleaning.
- Make sure that no moisture gets inside the device. Check that the seal on the outside transmitter is properly seated in the battery compartment.
- If dust has settled in the openings of the sensor cover, remove it with a vacuum cleaner or blow it out with low pressure.
- Check the rain sensor and the light sensor as well as the solar cell for dirt deposits every 3 months. Remove them with a damp cloth or blow out the chamber with low air pressure. Clean the rain sensor every 3 months as follows:

1. Turn the funnel anti-clockwise and remove it.
2. Clean the funnel and rocker with a damp cloth and, if necessary, a brush.
3. In case of insect infestation, spray funnel and seesaw with an insecticide.



4. Put the funnel back on and turn it clockwise until it clicks into place.

- As a precaution, replace the batteries in all sensors every 1 to 2 years to avoid sudden battery leakage and damage to the sensor.
- If the sensor is operated in a harsh environment, check the battery status every 3 months. We recommend applying an electronic contact spray on the battery contacts when checking or changing the battery.
- To prevent icing or snow deposits, we recommend spraying the top of the combination sensor with silicone spray during winter.

## 19. Faults and Errors

Problem	Lösung
No reception of the thermal/hygro sensors.  (Dashes in the display)	<ul style="list-style-type: none"> <li>- Too far away from the base station (free field 100 m max.) or shielding obstacles such as metal parts, walls, reinforced cellar ceilings etc.</li> <li>- It can help to move the sensor slightly in the room to establish a connection.</li> <li>- Observe the notes on radio reception in chapters 4 &amp; 12.</li> <li>- Insert new batteries and register the sensor again, see chapter 11.</li> <li>- Position the base station away from sources of interference, e.g. computers, electrical machines, other radio transmitters etc.</li> </ul>
The combi sensor is not received	<ul style="list-style-type: none"> <li>- Sources of error such as the above. Try to reduce the distance of the base station to the sensor and exclude sources of interference.</li> <li>- Check whether the transmitter LED on the bottom of the sensor (see chapter 4) lights up every 16 s. If not, restart the sensor with a reset (see chapter 4) and register it again at the base station (see chapter 11).</li> <li>- If the fault persists, restart the base station by pressing the reset button (for location, see chapter 3) with a pointed object, remove the power supply plug from the base station, hold down the reset button and plug in the power supply plug again. After this, release the reset button and wait for the station to start.</li> </ul>
Too high or too low temperature values.	<ul style="list-style-type: none"> <li>- Observe the location selection information in chapter 4 and do not install sensors near heat sources. Do not place the outdoor sensor near heat radiating or reflecting walls etc.</li> <li>- Too low temperature values can occur if the sensor is in the cooling air flow from fans or air conditioners.</li> </ul>
Absolute air pressure does not match the information from weather services for your location.	<ul style="list-style-type: none"> <li>- Make sure that the absolute pressure is shown for comparison, not the relative air pressure.</li> <li>- Calibrate the air pressure sensor according to chapter 10.</li> </ul>
Rain gauge shows rain despite drought.  Wind vane always falls in the same position during no or light wind.	<ul style="list-style-type: none"> <li>- Check whether the combi sensor is mechanically stable. It must not move and must be installed exactly in line with the integrated spirit level.</li> <li>- Check whether the rain gauge's seesaw is in the bearings on both sides.</li> </ul>
Data is not transferred to a weather portal.	<ul style="list-style-type: none"> <li>- Check whether the password and the station ID are correct.</li> <li>- Observe the general error messages at the end of chapter 8.</li> </ul>
No WIFI connection	<ul style="list-style-type: none"> <li>- Check the WLAN settings according to chapter 7.</li> </ul>

## 20. Technical Specifications

### Temperature:

Indoor climate sensor:..... -10° to +60 °C with 0,1 °C resolution

Combi sensor:..... -40 to +60 °C with 0,1 °C resolution, accuracy ±1 °C

### Air humidity:

Indoor air humidity:..... 10–99 % with 1 % resolution

Outdoor air humidity: ..... 10–99 % with 1 % resolution, accuracy ±5 %

### Air pressure:

Measuring range:..... 300–1100 hPa with 0,1 hPa resolution

Accuracy:..... ±3 hPa 700–1100 hPa

**Rain:**Amount of rain: ..... 0–9999 mm, Accuracy  $\pm 10\%$ 

Resolution: ..... 0,3/1 mm (to / from rain amount of 1000 mm)

**Wind:**

Wind speed: ..... 0–50 m/s

Accuracy: .....  $\pm 1$  m/s or  $\pm 10\%$  (up / from 5 m/s)**Illuminance/UV index:**

Measuring range: ..... 0–200.000 Lux

Accuracy: .....  $\pm 15\%$ 

UV index: ..... 0–15

**Data transmission:**

Transmission frequency: ..... 868-MHz-range

Sending range: ..... up to 100 m (free field)

Measurement / transmission interval outside / inside: ..... 16/60 s

Alarm duration: ..... 120 s

**Power supply:**

Display device: ..... 5Vdc (power supply)

Combination sensor: ..... 2x 1,5-V-Battery, Type Mignon AA, IEC LR6 / solar cell

Indoor climate sensor: ..... 2 x 1,5-V-Battery, Type Mignon AA, IEC LR6

**Dimensions (W x H x D):**

Base station: ..... 195 x 140 x 20 mm

Combi sensor ..... 400 x 150 x 300 mm

Indoor climate sensor: ..... 41 x 121 x 17 mm

**21. Power supply details**

	Value and accuracy	Unit
Manufacturer Name	Dongguan Guanjin Electronics Technologx Co., Ltd.	–
Model Identifier	K05B050100G	–
Input Voltage	100–240	V
Input AC frequency	50/60	Hz
Output voltage	5,0	V
Output current	1,0	A
Output power	5,0	W
Average active efficiency	76.33	%
No-load power consumption	0.044	W

## 22. Appendix

### *Wind strength scale (Beaufort)*

Wind speed	Beaufort	Description
0 to 1 km/h	0	Windless
1 to 5 km/h	1	Light wind
5 to 11 km/h	2	Light breeze
12 to 19 km/h	3	Weak wind
20 to 28 km/h	4	Moderate wind
29 to 38 km/h	5	Fresh wind
39 to 49 km/h	6	Strong wind
50 to 61 km/h	7	Stiff wind
62 to 74 km/h	8	Stormy wind
75 to 88 km/h	9	Storm
89 to 102 km/h	10	Strong storm
103 to 117 km/h	11	Hurricane-like storm
>118 km/h	12	Hurricane