

# Operating Manual



# Weather Station WS 300 PC-US



Please read these operating manual completely and thoroughly before start up and save it for future reference. Please hand-over the operating manual as well when you hand-over the device to other persons for use.



The climate and weather data sensors mentioned in these instructions are not included in the scope of delivery of the weather station. These items are to be commissioned and operated according to the respectively provided operating manual.

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We reserve the right to make changes due to technical advancements without prior notice.

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## 1. Introduction

Dear customer,  
thank you for purchasing this product.

**The product has been EMC-tested and meets the requirements of the applicable national regulations. Read the respective FCC information as well.**

In order to maintain this status and to ensure safe and long-term operation, you as the user must know the information in these operating manual!



At this time, we would like to bring your attention to the correct sequence of the procedures for starting up the product. Observe the installation information in these operating manual as well as the information on interferences to the radio transmission between the sensors and the base station as well.

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### 1.1. Intended usage

The PC weather station WS 300 PC-US creates the interface between the radio weather sensors that are received by this weather station and a PC.

The following radio sensors can be used:

- Pool temperature sensor S 300PT-US (water temperature)
- Combination sensor KS 300-2US (temperature, humidity, wind velocity, rain quantity)
- Combination sensor KS 200US (temperature, humidity, wind velocity)
- Temperature and humidity sensor ASH 2200-1US (temperature and humidity)

A total of up to 9 of these sensors can be addressed on the base station (e.g. 1 x KS 300-2US + 8 other sensors).

A temperature, humidity and barometric pressure sensor is also integrated in the base station for measuring the inside temperature, humidity and the barometric pressure.

The weather station stores all of the weather data that is recorded in non-volatile memory.

Reading the data and configuring the WS 300 PC-US is done through an integrated USB interface and a standard PC with operating system Microsoft Windows® XP/2000.

The weather station has its own display, on which the two selected measurement values, the weather forecast and the capacity of the memory in the device are shown. The respective software reads the recorded data, displays it in various, selected modes, permits the detailed evaluation and the archiving of the weather data.

The manufacturer assumes no responsibility for incorrect displays or measurement values or any results thereof.

The product is intended for private use; it is neither suitable for medical purposes nor for public information.

The components of this product are not toys. Install all components out of the reach of children.

This product is operated with batteries. All external sensors transmit their data to the base station via radio signals in the 433-MHz band (range of up to 300 ft with no obstacles).



Using the unit for any other purpose than that described above can lead to damaging the product and other hazards are also possible.

Read these operating manual carefully and thoroughly, they contain much important information for setting up, defining and operating the product.

## 2. Scope of delivery

- Weather station WS 300 PC-US
- Plastic stand
- USB cable
- CD-ROM with driver and software "Weather Prof 2007"
- Operating Manual

## 3. Symbol descriptions



An exclamation mark in a triangle indicates an important notice in these operating manual, which demands your attention.



The "Hand" symbol is found next to an operational tip or note on operation.

## 4. Features and functions

### 4.1. General function

The PC weather station WS 300 PC-US creates the interface between the radio weather sensors that are received by this weather station (see chapter 2) and a PC.

### 4.2. Data logger, USB interface

The weather station receives the data of the radio weather sensors and stores up to 3200 data records in non-volatile memory (data logger).

- The memory interval can be adjusted with a resolution of 1 min. in a range from 5 min. to 60 min.
- Reading the data as well as configuring the WS 300 PC-US is done through the integrated USB interface.
- A firmware update can be done through the USB interface as well.

### 4.3. Internal sensors

The WS 300 PC-US is equipped with internal sensors for temperature, relative humidity and barometric pressure, which means that no additional inside sensors are required for this weather station.

### 4.4. Display

The weather station has its own display, on which

- two selected measurement values,
  - the weather forecast and
  - the capacity of the data memory in the device
- are displayed. This selection of the measurement value can be done with three buttons on the unit, without the PC.

### 4.5. Software

The respective software reads the recorded data, displays it in various, selected modes, permits the detailed evaluation and the archiving of the weather data.



The software description is not included in these operating manual, this description is found on the provided software CD.

## Safety information



**If there are damages that have been caused by non-observance of the information in these operating manual, the guarantee is void. We do not assume any liability for resulting damage!**

**We will assume no liability for personal injuries or damage to property caused by improper handling according to the guidelines in these operating manual or the non-observance of the safety information. The guarantee is void in such cases!**

Dear customer, the following safety and hazard information does not only serve as protection for your health, but for protecting the device as well. Please read the following points carefully:

- The weather station is only suitable for dry, inside rooms. Do not place the unit in direct sunlight, next to heat sources, cold, humidity or wet areas.
- For reasons of safety and certification (CE), the product is not to be modified, rebuilt or changed in any way.
- Do not leave the packaging material unattended. Plastic bags/ sheets can become a dangerous toy in the hands of children.
- Handle the product carefully - any force, impact or dropping the product from any height may damage it.

## 6. Battery and environmental information

- Batteries do not belong in the hands of children.
- Make sure that the battery is inserted the right way.
- Do not leave batteries laying around, they have been known to be swallowed by children and pets. If a battery is swallowed, visit your Doctor immediately.
- Contact with batteries that are dead or damaged can cause skin irritation.  
Use protective gloves in this case.
- Ensure that batteries do not short-circuit or get thrown in the fire.  
There is a danger of explosion!
- Never take a battery apart!
- Never attempt to charge normal batteries.  
There is a danger of explosion!
- If not used for any length of time (e.g. when in storage), remove the batteries to avoid damages caused by leaking, etc.

## 7. Preparations for operation, start up



**Please note:**

**Always make sure all external sensors are up and running (batteries inserted) and then the base station.**

**If you do not stick that sequence, the base station may not be able to recognize the external sensors!**

Basically, we recommend that you try out the external sensors in a room before installing them outside. The distance between the base station and the external sensors should be at least 2 m to avoid interference. If you determine that e.g. one of the external sensors is not being received after the installation, it is not possible to be absolutely sure that the radio reception is insufficient (and the external sensor is not faulty).

**By performing a functionality test first, you will save yourself the extra time and effort of troubleshooting.**



## 7.1. Starting up the base station

- Open the battery compartment on the rear of the base station.
- Insert three batteries (LR6/Mignon/AA), ensuring proper polarity, in the battery compartment. The preferred batteries are alkaline batteries.



Using rechargeable batteries is possible but the operating duration will be shorter because of the lower voltage/capacity.

- Close the battery compartment again.
- After inserting the batteries, all segments of the LC display will appear temporarily and then the version number of the firmware.
- The base station then activates the synchronization mode for 10 minutes.  
"Sync" appears on the display and a counter, which counts the 10 minutes down, is shown underneath.



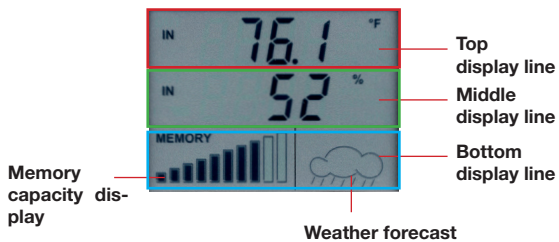
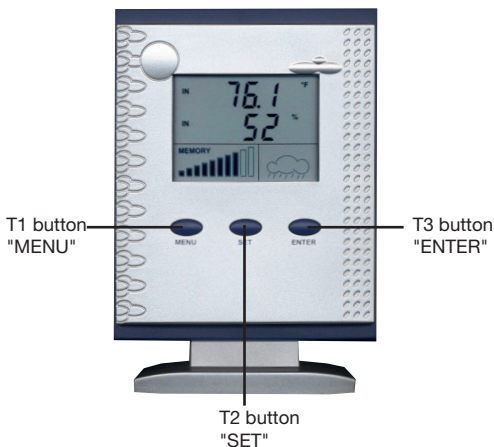
### **Please note:**

**During the synchronization, no access to the USB interface of the weather station is possible.**

**The synchronization cannot be interrupted. Please wait until the procedure is ended automatically after 10 minutes.**

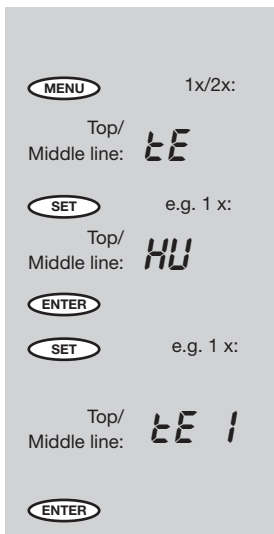
- **After the synchronization process is complete, the defined measurement values and a weather forecast symbol appears on the display. The inside temperature and the barometric pressure is displayed with the factory settings.**
- The base station can either be hung on the wall (the respective hanger eye-slot is located on the rear of the device) or will also stand on a level surface on the stand.
- If you want to use the desk stand, insert the two small claws of the stand into the brackets under the battery compartment and pivot the desk stand forward until the two other claws of the stand latch into the openings on the underside of the display unit.

## 8. Operating and display elements



## 9. Operation/display on the device

The display has two universal display areas in the top and middle display line, on which the selected weather data can be displayed. The assignment is done with the three operating push-buttons.



### 9.1. Assigning a measurement value to the display

- Press the "Menu" button one time or two times. The sensor type that is currently defined is now shown (see Set-up below) in the first or second display line.
- Select the desired sensor type by pressing the "SET" button one or more times.
- Confirm the selection by pressing the "Enter" button.
- If Temperature or Humidity is selected as the sensor type, press the "SET" button one or more times to select the desired sensor (see Sensor Address Set-up below. The example to the left shows sensor address 1 as the selection)
- Confirm the selection again by pressing the "Enter" button.

#### Sensor types:

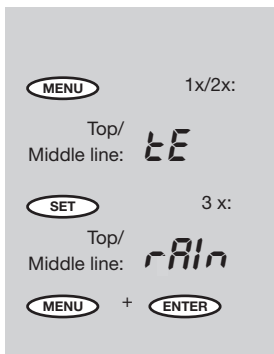
tE	Temperature
HU	Humidity
PrEs	Barometric pressure

#### Sensor addresses:

0	Inside sensor
1...8	ASH 2200-1US (addressable)
9	Combi sensor KS 300-2



When one of the external sensors is selected, "OUT" is shown in the respective display line, when an inside sensor is selected "IN" is shown.



US

rAIn Total rain quantity

or KS200 US

SPEE Wind velocity

## 9.2. Resetting the total rain quantity

- Set the display to the total rain quantity message as shown in 9.1.
- To reset the total rain quantity, press the "Menu" and "Enter" buttons at the same time.

## 9.3. Weather forecast display

- On the right-hand side of the bottom part of the display, a weather forecast symbol appears forecasting the predicted prevailing weather for the next 12-24 hours.



Please ensure that the precision of the weather forecast is at approx. 70% with the observed barometric pressure. Deviations are normal.

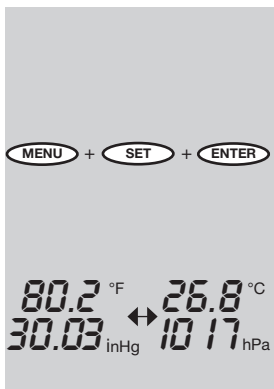
## 10.4. Memory capacity display

- A bar graph is shown in the lower left-hand side in the bottom display line. The more that the bar is dark, the more memory that is being used.
- If the memory is 90% full, the display begins to flash. The data should be read using the "Weather Prof 2007" software as soon as possible.



Please ensure that no more (current) data is saved when the memory is full. All of the data saved to that point in time is retained.

## 10. Configuration



### Display unit settings

You can select measurement values according to the American or European standards for the display unit.

- Press buttons "MENU", "SET" and "ENTER" at the same time to switch between the units for temperature, humidity, wind velocity, barometric pressure and rain quantity.

The example at the side shows switching the temperature display in the top display line and the barometric pressure display in the middle display line.

#### American standard:

Temperature:	°F
Humidity:	%
Wind velocity:	mph
Barometric pressure:	inHg
Rain quantity:	inch

#### European standard:

Temperature:	°C
Humidity:	%
Wind velocity:	km/h
Barometric pressure:	hPa
Rain quantity:	mm

## 11. Software installation

The following system prerequisites apply for operating the "Weather Prof 2007" software:

- Operating system MS Windows 2000/XP
- Min. 1 GHz clock frequency
- Min. 256 MB RAM
- approx. 150 MB available hard disc space for the program
- approx. 100 MB available hard disc space for the database
- The file system must be formatted with NTFS (Standard option)
- The Windows-Installer-Service must be installed (Standard option)

The provided USB cable with connector type A and Mini-B, 5-pole connector is required for connecting to a USB port on the PC.

- Connect the weather station to the USB port of the computer with a USB cable.
- Insert the provided CD-ROM into the CD drive of your computer.
- A start screen appears, which describes the four steps of the set-up procedure.
- Follow these instructions, step for step until the installation is complete. Observe the instructions on the CD-ROM as well.
- The "Weather Prof 2007" program is then started via the Desktop or the through the program menu.
- The program description can be found in the help menu under "Manual".

## 12. Firmware update

A firmware update for the main controller of the WS 300 PC-US can be started with the provided software via the USB interface of the weather station.

- Start the Update program (Menu "Tools", Menu point "Firmware update") in the "Weather Prof 2007" program and follow the program instructions.



If the update procedure is started by accident, it can be aborted right up until step 5.

If the update mode has also been activated on the device according to the instructions from the software, the weather station must be separated from the USB for a few seconds and the batteries are to be removed from the device.


The function of the device is not affected in this case, it continues to work with the previous firmware after starting operation again.

## 13. Changing the batteries



Depending on which batteries or rechargeable batteries you use, the interval for changing them is different. High quality alkaline batteries are longer lasting, rechargeable batteries or cheap zinc-carbon batteries must be changed much more often.

### 13.1. Base station

The low-battery symbol appears on the display (  ), the batteries are to be replaced with new ones.

To avoid losing any data in this case, the WS 300 PC-US should be connected with the running PC via the USB cable while changing batteries.

- Always replace the complete set of batteries.
- Do not mix full with "half-full" batteries.
- Always use batteries of the same type and the same manufacturer.

- Do not mix batteries with rechargeable batteries.
- As mentioned previously, rechargeable batteries can be used but the time between charging is much shorter than the life-span of good batteries.
- Follow the procedures described in chapter 7.1 for changing the batteries.



After changing batteries, the battery symbol will continue to be displayed for up to 15 minutes.

### 13.2. Combination sensor, external sensors, pool sensor

If the display for the respective sensor is missing for more than 24 hours, the batteries are to be replaced for new ones as described in the respective operating manual.



Check for whether there is a fault in the radio transmission and whether this may be the cause of the missing data transmission. This will also cause the display to disappear from the display of the base station.

The cause could be e.g. a metal object in the signal path (e.g. parked vehicle).



**Observe all safety information in these operating manual!**

Problem	Help in solving problems
No reception	<ul style="list-style-type: none"> <li>• The distance between the base station and external sensors is too great. Move the location of the external sensors.</li> <li>• Obstacles or shielding materials are blocking the radio reception. Change the location of the external sensors and the base station.</li> <li>• The batteries in the external sensors are weak or dead. Try installing new batteries in the external sensors.</li> <li>• Another transmitter on the same or neighboring frequency is disrupting the radio signals of the external sensors. This can be e.g. wireless headphones, wireless speakers or other devices.</li> </ul>



Problem	Help in solving problems
Continued: No reception	<p>These products are not normally running continually; the radio reception can e.g. be just fine the following day, which makes the search for the cause that much harder.</p> <p>If possible, set other devices to a different frequency, which may resolve the reception problems with the weather station.</p>
Interfering with other devices by the external sensors	<ul style="list-style-type: none"> <li>• The external sensors send their external sensor data to the base station approx. every 3 minutes for a duration of 0.1 second (100 ms). During this short time period, interference may be caused on other devices.</li> </ul> <p>As an example, a short interference can be heard in wireless headphones every 3 minutes.</p>
Problems with synchronization	<ul style="list-style-type: none"> <li>• When the batteries are inserted in the external sensors and the base station (precisely maintain this sequence!!), these devices are put in synchronization mode.</li> </ul> <p>A data telegram is set out every 4 seconds, which accelerates the recognition and external sensor reporting to the base station.</p> <p>In order to force a new synchronization, remove the batteries from the base station and the external sensors. Wait at least 60 seconds before inserting the batteries in the external sensors and then into the base station (follow this sequence precisely - first batteries in all existing external sensors and then in the base station).</p> <p>This will cause all values/data that the base station has stored (e.g. minimum values, maximum values, temperature limit values) to be lost.</p> <ul style="list-style-type: none"> <li>• Before putting your external sensors e.g. in the garden, perform a functionality test as described in the beginning of chapter 7.</li> </ul>

## 15. Transmission range

The range of transmission for the radio signals to the base station is up to 300 ft in optimal conditions. This is often referred to as the "Free-field range".



This ideal allocation (e.g. base station and external sensor on a smooth, even area with no trees, houses, etc.) is almost never achieved in reality.

Normally, the base station is set up in the house, the combination sensor in the garden and other outside sensors e.g. in the neighboring building (e.g. in an aviary) or garage.

### **The transmission distance can be greatly reduced by:**

- Walls, steel concrete floors
- Coated/gas-filled insulated glass
- Vehicles
- trees, bushes, earth, rock
- Proximity to metallic and conductive objects (e.g. radiator)
- Proximity to the human body
- Broadband interference, e.g. in residential areas (DECT telephone, cell-phones, wireless headsets, wireless speakers, other radio weather stations, baby-phone, etc.)
- Proximity to electric motors, transformers, power supplies, computer
- Proximity to poorly shielded or computers with the covers removed or other electrical devices



Since the characteristics of every location are different, a definite reception range cannot be guaranteed.

If the base station is not receiving data from a pool sensor, combination sensor or any other external sensors (even with new batteries), the distance between the external sensor and the base station should be decreased, change the location.

**Observe the information provided in chapters 7 and 14 of these operating manual**

## 16. Maintenance and cleaning

### 16.1. General

Perform a regular inspection of the technical safety of the product, e.g. damaged housing.

If you are sure that operation poses a threat of danger, the product is to be taken out of operation and made so that accidental operation is impossible. Remove the batteries.

The product poses a threat of danger if

- the device shows visible damage,
- the device no longer functions and
- after longer period of storage under unfavorable conditions or
- after severe transport conditions.

**Before cleaning or maintaining the device, make sure that you follow the following safety information:**



Remove the batteries before cleaning, maintenance or start up.

There are no parts inside the product that can be service by the customer; the housing is not to be opened. Repairs are only to be completed by technicians qualified for working with the respective dangers and with the respective certifications.

### 16.2. Cleaning the base station

Dust can be removed easily with a vacuum cleaner and with a clean soft brush. Hold the opening of the vacuum cleaner up close to the base station (contact can cause scratches, do not touch!) and remove the dust with a brush. The dust that is loosened will be removed by the vacuum cleaner.

To clean the outside of the product, a soft, dry and lint-free cloth can be used.

For heavier dirt, the cloth can be dampened slightly with warm water.

Do not use aggressive cleaning agents or chemical solutions since it can affect the housing or even the functionality.

## 17. Operation



**Observe all safety information in these operating manual!**

### **General**

The product is not to be opened or dismantled (with the exception of that work described in these operating manual). There are no parts that require maintenance inside the product.

Falling from even low heights will damage the product.

### **Base station**

Avoid the following adverse environmental conditions for base station operation:

- Wet or overly high humidity
- Extreme cold or heat
- Direct sunlight
- Dust or combustible gasses, vapors or solvents
- heavy vibrations
- strong magnetic fields, as close to machines or loudspeakers

Do not use the product after sudden introduction into a cold or warm room. The condensation caused in this case can damage the product.

**Wait until the base station has adjusted to the room temperature. This can take several hours.**

The set-up location should be chosen so that the base station stands securely and cannot fall over - Danger of injury.

Valuable furniture or furniture with surfaces that scratch easily should be protected from damage with a suitable covering before setting up the base station on top of them.

## 18. Disposal

### 18.1. General

Dispose of the device according to the applicable legal regulations!

## 19. Technical specifications

Inside temperature measurement range: 32°F to 140°F (0°C to +59.9°C)

Outside temperature measurement range (KS300-2US):

-21.8°F to 175.8°F (-29.9 °C to +79.9°C)

Resolution: ..... 0.1 °F

Relative humidity measuring range: ..... 0 % - 99 %

Resolution: ..... 1 %

Rain quantity: ..... 0 to 39.33 inch (0 to 999 mm)

Wind velocity: ..... 0 to 124 mph (0 to 200 km/h)

Transmission frequency:..... 433.92 MHz

Free-field range: ..... up to 300 ft (see chapter 15)

Power supply: ..... 3 x 1.5 V AA/LR6/Mignon

PC port: ..... USB 1.1, Mini-B, 5-pole

Operating temperature range: ..... 32 °F to 122 °C

Display area (W x H): ..... 2.2 x 1.6 inch

Dimensions (W x H x D):

4.1 x 5.7 x 2.2 inch (with stand)

4.1 x 5 x 1.3 inch (without stand)

## 20. FCC information

FCC ID: RNT-WS300PCUS

Changes or modifications not expressly approved in writing by eQ-3 Limited may void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The internal antenna used for this mobile transmitter must provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.



