

TOUCH SCREEN WEATHER STATION (WIND AND AIR PRESSURE) WS-3502

Operation Manual

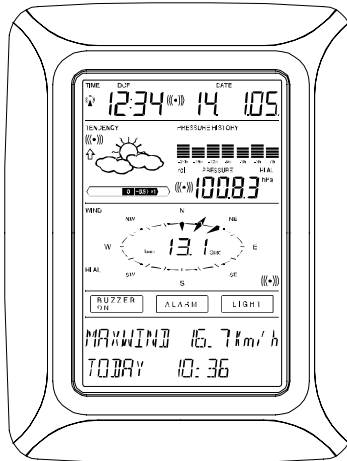


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Important Note:



Before inserting batteries into the units, please carefully read the operation manual.

The shipping content of the Touch Screen Weather Station WS-3502 includes a Base Station (Receiver), a Relay Transmitter (433 MHz Transmitter), one Wind Sensor, the respective Connecting Cables, an AC/DC Mains Adapter and a PC Software Package on CD-ROM.

The Base Station is equipped with a Touch Screen LCD Monitor and allows the display of a vast variety of time and weather data thanks to a comprehensive menu (from top to bottom):

- Radio Controlled Time (Time)
- Calendar (Date)
- Weather Forecast (Tendency)
- Air Pressure and Air Pressure History (Pressure, Pressure History)
- Wind

Furthermore on the information text display (located at the bottom of the LCD), a number of additional data can be set up.

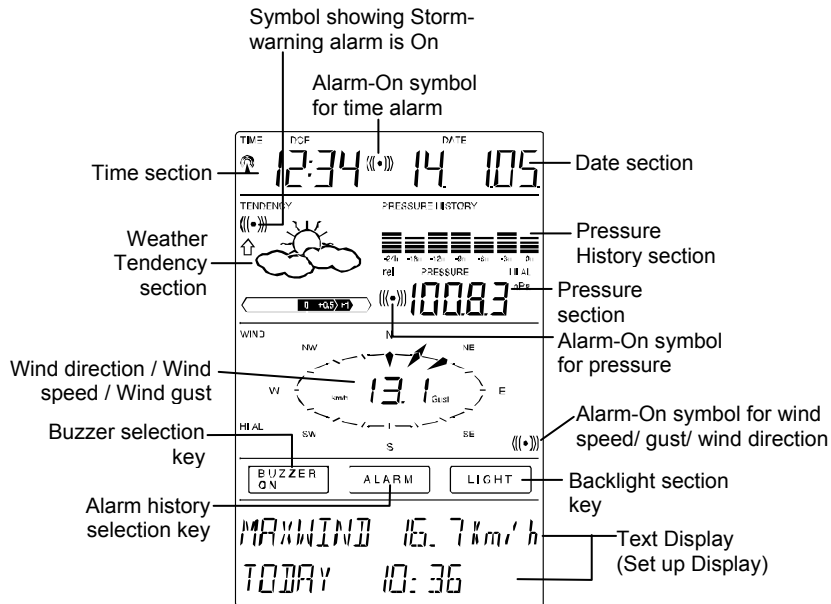
Note:

On the information text display, The max and min of current air pressure, wind speed, and the maximum wind gust will be shown from time to time. In case the set up menu is selected, the information in the text display will be temporarily replaced by the menu operating steps.

As an important feature, the Weather Station allows by means of the cable and software included the readout of all measured time and weather data in the form of complete history data sets, their processing and graphic presentation on a PC as well as their publication on Internet Web Sites.

2 Important Touch Screen Operating Notes generally applicable

- All actions and functions of the Weather Station are activated on the Touch Screen by slightly touching (**not pressing!**) the switching areas appearing in star (*) symbols (only in the text section at the bottom of the LCD) or the displayed values.
- In all modes, the setting of functions, values and units is performed by use of the switching areas *ON* or *OFF*, *UP* or *DOWN* or by direct unit selection.
- Advancing to any next menu step with *NEXT*, leaving or terminating all respective modes with *EXIT*.
- Every programming step activated by touching a switching area on the Touch Screen is being acknowledged by an acoustic signal (with buzzer switched ON).
- If during any process previously activated by use of the Touch Screen no further action is activated for about 30 seconds the active process is automatically terminated and switched back to the normal display mode (automatic time out).



Note: The presence of the "Alarm-On icon" in the section means that the particular alarm has been enabled.

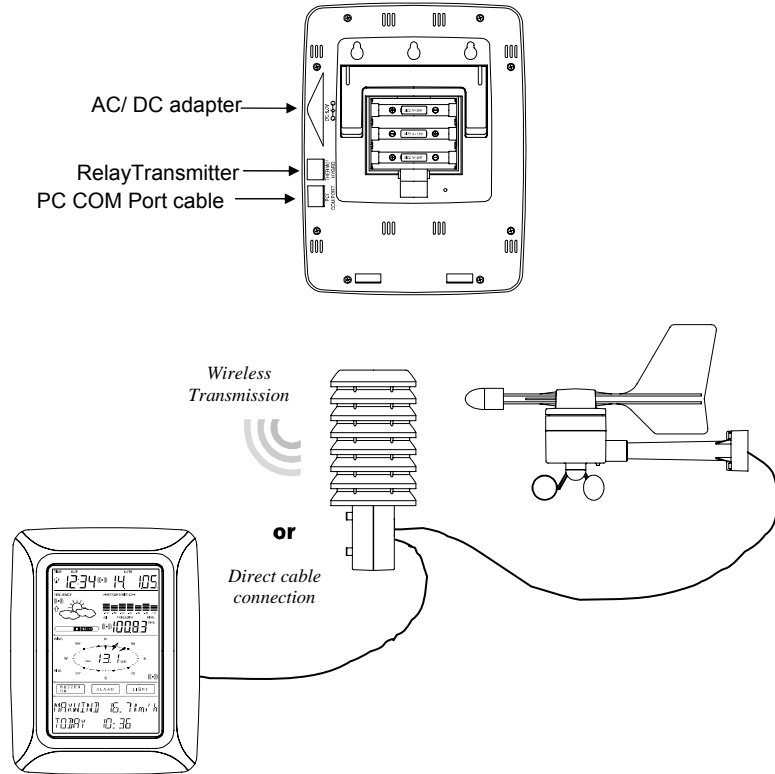
3 Putting into Operation

At first it is to decide whether battery supply or mains supply (AC/DC mains adapter included) will be used to operate the system. Both methods allow the connection of the Relay Transmitter and Base Station by cable or by 433 MHz radio signal.

Note: When putting the Weather Station into operation it is important to carry out in close proximity (e.g. on a table) a complete wiring and set up of the system in the configuration of its prospective use. This step will lead to test all components for correct

operation before placing and mounting them at their final destinations.

3.1 Wiring the System



Independently of the final power supply mode, the fixed cable of the Wind Sensor has first to be connected to the Relay Transmitter by plugging it into the marked receptacle.

The direct cable connection of Relay Transmitter and Base Station can be used in the following cases:

- the flexibility of 433 MHz radio transmission is not needed
- data transmission absolutely free of any environmental interferences is wanted.

3.2 Power Supply

The provision of power to the Weather Station can be performed by using batteries or by AC/DC mains adapter.

3.2.1 Batteries:

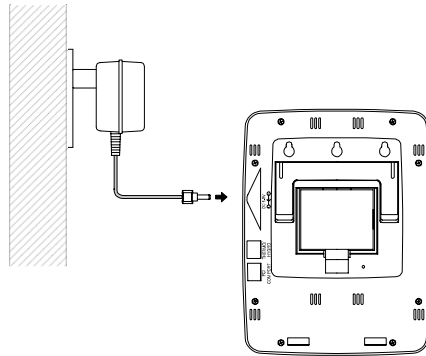
- First insert two Type C 1.5 V batteries into the battery compartment of the Relay Transmitter.
- Immediately following this insert three Type AA 1.5V batteries into the battery compartment of the Touch Screen Weather Station.



Please help in the preservation of the environment and return used batteries to an authorized depot.

3.2.2 AC/DC Mains Adapter:

- First insert two Type C 1.5 V batteries into the battery compartment of the Relay Transmitter.
- Immediately following this connect the AC/DC mains adapter to the Base Station and then plug it into a regular mains outlet.



Note: In both cases, it is important to respect this order of succession since the transmitter will send an identification code which has to be received and stored by the Base Station within the first few minutes of operation.

After doing this, full operation of the entire Weather Station System is ensured.

3.2.3 Cable Connection:

One further feature of the direct cable connection mentioned in Item 3.1 above is that in case of AC/DC adapter operation, power is provided not only to the Base Station but to the Relay Transmitter as well by just this AC/DC adapter.

Note: System operation with cable connection while at the same time providing power to the Base Station solely by batteries is not recommended because of the considerably higher power consumption. The batteries may however remain in the unit for emergency supply in case of a power failure.

A change from cable operation to 433 MHz radio transmission or vice versa is possible in any case since the Weather Station will recognize this change and will automatically switch to the appropriate operating mode.

3.3 System Start

After inserting the batteries respectively connecting the AC/DC adapter the LCD of the Weather Station will for a few seconds display all LCD segments for checking.

Immediately after this, the unit will enter the so called play mode during which for about 15 minutes all measured and received weather data are being switched through, updated and displayed. During this time period there will be no reception of the DCF77 time information.

Note: The play mode phase allows the user of the Weather Station to check all cables for correct connection and all components for correct operation. The latter will be possible by manually turning the wind-gauge, moving the weather-vane, etc.

After completing the play mode, the Touch Screen Weather Station will automatically switch to the normal display mode from which all further settings can be carried out by the user. At this point of time the unit will also automatically start reception of the DCF77 time information.

Important Note:

Reception of the radio-controlled time information will only take place after completion of the play mode (approx. 15 minutes). In case the user wants to start the system without waiting for completion of the play mode it can be terminated prematurely by touching the TIME display once in the upper left corner of the LCD.

Prior to manual setting or reception of radio-controlled time information there will be no recording of weather history data.

3.4 Placement

After the Weather Station has been checked for correct operation with regard to the above points and found fit, the mounting of the system components can take place. It must be ensured however that all components work properly together at their chosen mounting or standing locations. If e.g. there appear to be problems with the 433 MHz radio transmission they can mostly be overcome by slightly moving the mounting locations.

Note: Commonly the radio communication between receiver and transmitter in the open field reaches distances of max. 100 metres approximately, provided there are no interfering obstacles such as buildings, trees, vehicles, high voltage lines, etc.

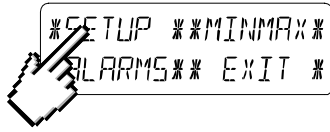
Radio interferences as they are created by PC screens, radios or TV sets can in bad cases entirely cut off radio communication. Please take this into consideration when choosing standing or mounting locations.

4 Setting Up:

Note: Because of the default settings already determined by the

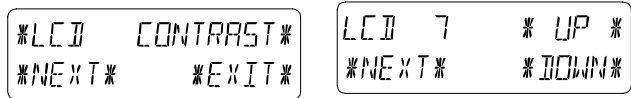
manufacturer, it may not be necessary for the majority of users to carry out – apart from the Relative Air Pressure (see further down) - any further basic settings. Changes however can easily be made if desired.

For basic settings the following menu is started by touching the Touch Screen in the center of the text display (last two lines on the LCD). Touching the *SETUP* display will enter the setup mode.

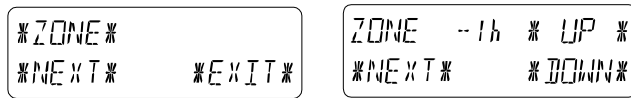


The basic settings can now be performed in the following order:

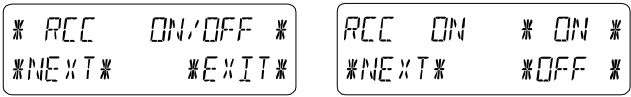
LCD Contrast → Contrast can be set in 8 steps from 0 to 7 (Default 4).



Time Zone → Time Zones can be set in the range from -12 to +12 hours (Default 0 hours for Central Europe).



DCF77 Radio Controlled Clock (RCC) → ON/OFF. In setting "OFF" the clock is operating as a normal Quartz clock (Default RCC ON).



12/24 hour Time Display Format (Default 24 h Format).

```
12/24 h  MODE *  
*NEXT*   *EXIT*
```

```
24 h     * 12h *  
*NEXT*   * 24h *
```

Units

- Wind Speed Display (Wind) in km/h, mph, m/s, knots or Beaufort (Default km/h).

```
WIND km/h * UP *  
*NEXT*   *DOWN*
```

- Air Pressure (Press) in hPa or inHg (Default hPa).

```
PRESS hPa * hPa *  
*NEXT*   * inHg *
```

Relative Air Pressure (Rel. Pressure) → To be set to the locally valid reference air pressure with regard to the local height above sea level (Default 1013,0 hPa).

```
* REL PRESSURE *  
*NEXT*   *EXIT*
```

```
1013.0hPa * UP *  
*NEXT*   *DOWN*
```

Weather Tendency (Tendency) → Setting to a definite switching threshold (2 hPa to 4 hPa) for a change in display of weather icons (Default 3 hPa).

```
* TENDENCY *  
*NEXT*   *EXIT*
```

```
3 hPa * UP *  
*NEXT*   *DOWN*
```

Storm Warning (Storm) → Setting to a definite switching threshold for storm warning display at a decrease of air pressure from 3 hPa to 9 hPa over 6 hours (Default 5 hPa).

```
*STORM WARNING *  
*NEXT* *EXIT*
```

```
5 hPa *UP*  
*NEXT* *DOWN*
```

Activate/Deactivate storm warning alarm with *ON* / *OFF* resp. (Default OFF).

```
WARNING OFF*ON*  
*NEXT* *OFF*
```

Relearn Mode (Relearn Tx) → Allows newly recognize the outdoor transmitter (e.g. after a battery change in the transmitter) without the necessity of a comprehensive re-setup of all system components → Acknowledge with *CONFIRM*.

```
*RELEARN TX *  
*NEXT* *EXIT*
```

```
* CONFIRM *  
*NEXT*
```

Default Settings (Factory Reset) → Allows to clear all weather data in non-volatile buffer memory (EEPROM) and to reset of all set and/or stored values to the factory settings set prior to shipment → Acknowledge with *CONFIRM*.

```
*FACTORY RESET *  
*EXIT*
```

```
* CONFIRM *  
*EXIT*
```

```
FACTORY RESET  
IN PROGRESS
```

```
REMOVE BATTERY
```

Note:

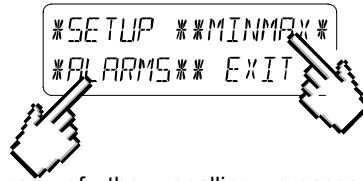
It will take 5 minutes for the factory reset process. During this period, the text "Factory Reset In Progress" will be shown. After the reset process is finished, the LCD will switch off and the text "Remove Battery" will be displayed. Remove the battery and perform system start again. See "3 - Putting into Operation" paragraph.

Leaving the basic settings procedure (Setup Mode) with *EXIT*.

5 Display of stored Min/Max Values and Alarm Value Settings

Named values are in each case upon recall being simultaneously displayed and flashing in their respective display sections.

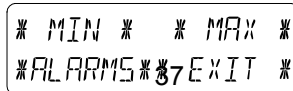
To recall named measuring and alarm values the menu shown below will have to be activated by touching the Touch Screen in the center of the text display section (last two lines at the bottom of the LCD). The display of the values is started by touching the displays *MINMAX* or *ALARMS*.



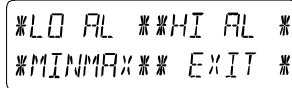
The continuance of the recalling process is essentially self-explanatory.

With *MINMAX* the below shown menu step is activated, which in return leads to the displays of the stored Min/Max values by use of *MIN* / *MAX* resp., which on their part again can be directly selected.

Note: During individual displays of the stored Min/Max values the top line of the LCD screen will automatically display the time and date of their storage.



The following menu item will appear by touching the display *ALARMS* and will similarly to the last described step lead through *LO AL* resp. *HI AL* to the displays of the set low resp. high alarm values, which on their part again can be directly selected.



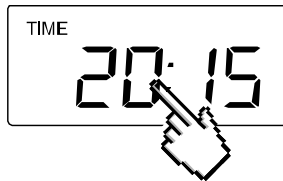
Because of the constant access to the respective opposite menu item *MINMAX* resp. *ALARMS* it is moreover possible at any time to toggle between the MIN/MAX and ALARMS value displays. Any action can immediately be terminated by touching *EXIT*.

6 Radio Controlled DCF77 Clock

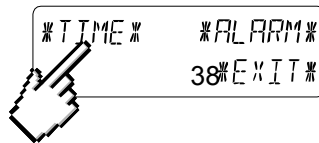
The Radio Controlled DCF77 Clock is normally controlled by the radio signal of the DCF77 time code transmitter and will thus set time and date automatically. Under bad reception conditions however both can be set manually as follows:

Setting the Time

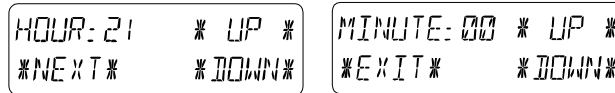
The action is started by touching the time display in the TIME section of the Touch Screen.



Start *TIME* in the menu section (last two lines on the LCD).

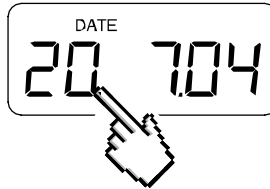


Set the hours and minutes. Leave the mode with *EXIT* or wait for automatic time-out.

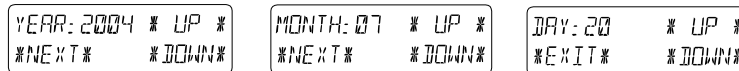


Setting the Date

The action is started by touching the date display in the DATE section of the Touch Screen.



Set the year, month and date of day. Leave the mode with *EXIT*.



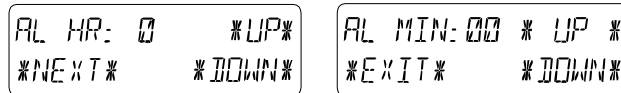
Note: By twice touching the DATE section the display will toggle between the following:

- Date in DD.MM.YY format (24 hour time format) or Date in MM.DD.YY format (12 hour time format)
- Weekday (in English abbreviation), Date of Day, Month (24 hour format) or Weekday, Month, Date of Day (12 hour time format)
- Seconds
- Set Wake-up Alarm Time

Setting of Wake-up Alarm

The action is started by touching the time display in the TIME section. Start *ALARM* in the menu section (last two lines on the LCD).

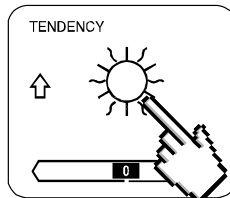
Set hours and minutes of the wake-up time. Leave the mode with *EXIT*.



Note: The wake-up alarm is activated/deactivated by twice touching the TIME section. Here the alarm symbol ((•)) will show or disappear after *EXIT* (or automatic time-out).

7 Weather Tendency

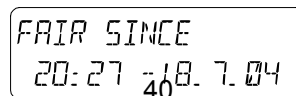
Call up the tendency display by touching the weather symbol in the TENDENCY section.



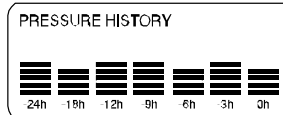
The text section (last two lines on the LCD) will show since when (with time and date) the weather condition corresponds to the currently displayed weather symbol Sunny, Fair (Cloudy with sunny intervals) or Rainy.

Note:

- Up and down arrows indicate the weather tendency
- Advanced storm warning is displayed by Rainy symbol with a flashing down arrow
- Every minute, when a new pressure reading is obtained, this value is compared to pressure readings from last 2 hours and the biggest resulting difference is displayed in the difference barometer.



8 Air Pressure History (Pressure History)



The air pressure history shows the progress of the air pressure over a time period of 24 or 72 hours in the form of a 7-step bar graph, where the length of the utmost right bar represents the current air pressure and the remaining bars show the progress of the air pressure with regard to the current air pressure.

Note: The time resolution of the bar graph can be changed from fine (0 to -24 h) to coarse (0 to -72 h) and back by once touching the PRESSURE HISTORY section.

9 Operating and Setting of the following Functions:

- Air Pressure (Pressure), Relative and Absolute
- Wind Speed, Wind Gust

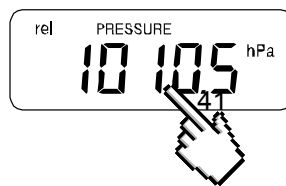
Important Note!

Since the operating procedures in all measurements are identical, the various functions of the weather station will be explained once here by the following example of "Air Pressure".

9.1 Air Pressure

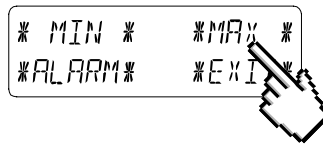
Example for Activating the Displays of Stored Maximum Values

Call up the menu on the text section by touching the PRESSURE section. (Similarly, if you want to check the wind measurements, the WIND section shall be touched.)

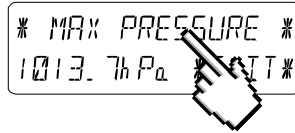


Start with *MAX* in the menu section.

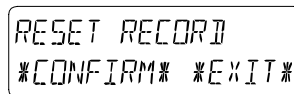
Note: Display of the stored minimum values is from here possible through *MIN* as in this example.



Display of stored value. Proceed with *MAX PRESSURE*.



Resetting of the displayed value to the current value with *CONFIRM*. Without resetting advance with *EXIT*.



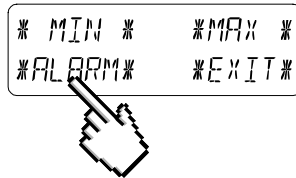
End of Example

Example for Setting of Alarms by means of the HI Alarms

In this example the setting up of Pressure high/ low alarm will be demonstrated. (Or similarly touching the WIND SECTION to set the High / Low wind speed or wind gust alarm. When the display is showing wind speed, touching the wind section will advance to the menu for setting wind speed alarm. On the other hand, if the wind section is exhibiting wind gust, touching the wind section will advance to the menu for setting wind gust alarm – only high wind gust alarm is provided.)

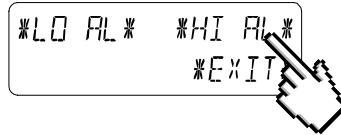
First, touch the Pressure section.

Then touch the *ALARM* key in the menu section.

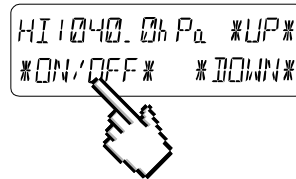


Proceed with *HI AL* in the menu section.

(Similarly, setting of the LO alarms is here possible by touching the *LO AL* key in this example.)



Adjusting the high alarm value with the key *UP* or *DOWN*.
Proceed with *ON/OFF*.



Activate or deactivate the alarm with *ON* or *OFF* key.
Terminate with *EXIT* key.



Note: Activation or deactivation of the alarm (Display or deletion of the ((•))) symbol) only pertains to the respective presently displayed value.

End of Example

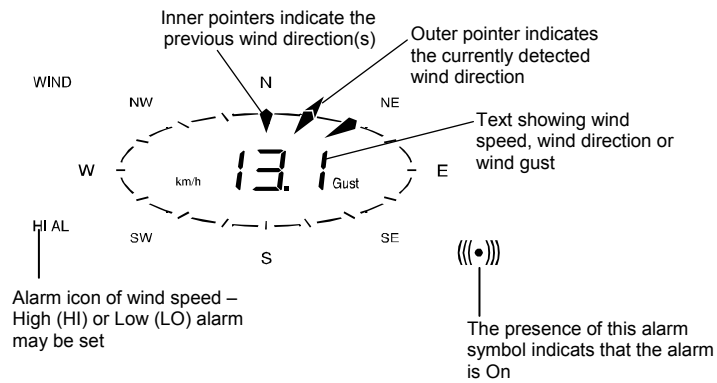
Note: Twice touching the PRESSURE section toggles the displays of the Relative (rel) and Absolute (abs) air pressure value.
All setting and display facilities only pertain to the respective presently displayed value.

10 Additional Information to the Wind Function

Note: By twice touching the WIND section the display will toggle between the following:

- Wind Speed
- Wind Direction (Abbreviations of the compass card descriptions)
- Wind Direction (Degrees)
- Wind Gust

All setting and display facilities only pertain to the respective presently displayed value.

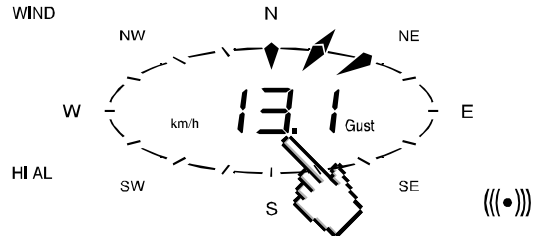


12.1 Operating and Setting of Wind Direction Function

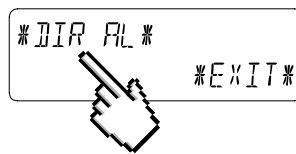
Apart from high or low alarm of the wind speed, the wind direction alarm is available on the WS-3502.

Note: On the other hand, alarm for wind gust is also available.

When the Wind display is showing the wind direction, touch the center of Wind section once. (Or if the Wind display is showing the wind speed, first touch the wind section center twice to display the wind direction. Then touch once to advance to the wind direction menu.)

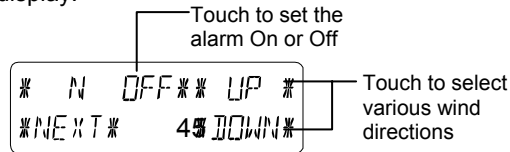


Then the below wind direction menu will be shown in text display. Proceed with *DIR AL* key at the text display:



In the following menu, up to 16 separate alarms can be activated (depending on the basic set up clockwise around the compass card from N via NNE to NNW, or from 0° via 22.5° to 337.5°, in 22.5° increments).

Here the wind direction can be selected with *UP* or *DOWN* and switched ON or OFF with *(Wind Direction) ON/OFF* in the upper left part of the menu display.



Activation or deactivation of each respective wind direction alarm can also be done with the *ON* or *OFF* key in the menu step shown below.



The image shows a rectangular LCD display with a black border. The text on the screen is arranged in two lines. The first line reads "DIR ALM OFF *ON*" and the second line reads "*EXIT*" followed by "*OFF*" on the right side.

Leave the setting mode with *EXIT*.

11 Operating and Setting of EL Backlight (Light), Buzzer and Alarm History Functions

11.1 EL Backlight (Light)

For better readability of the LCD the EL backlight can be switched ON or OFF by once touching the LIGHT section. If ON is selected, the backlight will be switched on for approximately 15 seconds every time any one of the LCD sections is being touched.

The switching condition (Enabled/Disabled) is shown in the text section for about 30 seconds.

Note: In case the Touch Screen Weather Station is battery operated the repeated use of the EL backlight will result in a considerable decrease of battery lifetime. It is thus recommended to either operate the Weather Station with the included AC/DC adapter or entirely deactivate the EL backlight (see above).

11.2 Buzzer

The buzzer for the acoustic acknowledgement or alarm signals of the Weather Station can be switched ON or OFF by touching the BUZZER section.

The switching condition ON or OFF is displayed directly in the

BUZZER section as well as for about 30 seconds in the text section (Enabled/Disabled).

11.3 Alarm History (Alarm)

Touch the ALARM display in the WIND section, then touch *NEXT* to display all the set and activated alarms, numbered and sorted according to the time of appearance (outside the wake-up alarm) since their last modification.

Here for every respective alarm the time and date of appearance can be displayed by touching *ALARM*.

12 PC Connection

As an important feature exceeding the mere display on the Touch Screen, the Weather Station allows the read-out of all measured and displayed time and weather data in the form of complete history data sets on a PC.

12.1 Data Storage

For a comprehensive weather history the Base Station allows the internal storage of up to 1750 complete sets of weather data with time and date. These data sets are being stored in non-volatile ring buffer memory (EEPROM) and will not be lost even in case of an interruption of power supply (e. g. change of batteries).

In case the memory capacity of the Weather Station is exhausted the oldest data sets stored will be overwritten by the new ones entered.

12.2 Data Recall

The weather data stored can only be read out, processed and displayed by means of a PC. Also the settings of the storing intervals from 1 minute to 24 hours for the storage of data sets can only be performed by means of a PC.

12.3 Connections and Software

The wiring between Weather Station and PC takes place by means of an included COM port cable. Furthermore the "Heavy Weather Pro" software package also included in the shipping contents must be

installed on the PC.

This software allows the display of all current weather data with graphic symbols. It further allows the display, storage and printing of history data sets, whose volume exceeding the maximum 1750 data sets of the Weather Station is only limited by the capacity of the PC's main memory.

Furthermore the present weather data can be tied on to web sites by means of the "Web Publisher" software. History data can be displayed as diagrams and graphs by means of the "Heavy Weather Pro" software.

Important note:

For further details to the "PC Connection" and "Program utilisation" topics, please see the "Help" File (under the Question mark button in menu bar) of the Heavy Weather Program.

(The temperature, humidity and rain measurements are not applicable to the model WS-3502.)

Prior to manual setting or reception of DCF radio-controlled time information there will be no recording of weather history data.

13 Technical Data

13.1 Outdoor Data:

Transmission Range in Open Field: 100 m max.

Wind

Wind Speed range: 0 to 180 km/h (0 to 50 m/s or 0 to 111.8mph)

Units: km/h, m/s, mph, Beaufort (bft) or knots.

Resolution: 0.1 km/h (0.1m/s or 0.1 mph or 0.1 knots)

Wind Direction: Graphic Resolution at 22.5 Degrees

Pressure

Air Pressure range: Relative: 920 to 1080 hPa (27.17 to 31.90 inHg)

Absolute: 300 to 1099 hPa (8.86 to 32.45 inHg)

Resolution: 0.1 hPa or 0.01 inHg

13.2 Data Transmission by 433 MHz Signal and cable:

Wind measure intervals: 128 s (for Wind Factor <10 km/h, here no Wind Gust display) or 32 s (for Wind Factor ≥10 km/h, here Wind Gust display)
If the base station does not receive data after 5 successive attempts, "- -" will be shown and the communication period will be changed to 10 min.

Air pressure measure intervals: 20 s

13.3 Time Alarm:

Alarm Duration: about 120 seconds

13.4 Power Supply:

Base Station:

Batteries: 3 x 1.5 V Batteries Type AA, IEC LR6 (Alkaline Batteries recommended, Life Cycle without EL backlight approximately 1 year. When batteries require replacement for the base station, the low battery indicator will light up on the LCD.)

or Mains Voltage: AC/DC Adapter INPUT 230VAC / 50Hz (use only the included Mains Adapter. Recommended for PC Connection and frequent use of EL Backlight)

Relay Transmitter:

Batteries: 2 x 1.5 V Batteries Type C, IEC LR14 (Alkaline Batteries recommended, Life Cycle approximately 1 year)

or Power provided via Cable from the Base Station by using the AC/DC Adapter

Wind sensor: powered by RelayTransmitter

13.5 PC Connection:

Wiring: COM Port Cable (included)

Data Processing: by use with PC only
Software: "Heavy Weather Pro" (included)
Storage Intervals: 1 min through 24 h, settable
Data Volume:
Base Station: 1750 Data sets max. in Ring Buffer EEPROM
PC: wrt capacity of PC

13.6 Dimensions (L x W x H):

Base Station: 142 x 32.3 x 185 mm
Relay Transmitter : 79.4 x 89.8 x 189.3 mm
Wind Sensor: 250 x 277.6 x 77.9 mm

14 LIABILITY DISCLAIMER:

- The electrical and electronic wastes contain hazardous substances. Disposal of electronic waste in wild country and/or in unauthorized grounds strongly damages the environment.
- Please contact your local or/and regional authorities to retrieve the addresses of legal dumping grounds with selective collection.
- All electronic instruments must from now on be recycled. User shall take an active part in the reuse, recycling and recovery of the electrical and electronic waste.
- The unrestricted disposal of electronic waste may do harm on public health and the quality of environment.
- As stated on the gift box and labeled on the product, reading the "User manual" is highly recommended for the benefit of the user. This product must however not be thrown in general rubbish collection points.
- The manufacturer and supplier cannot accept any responsibility for any incorrect readings and any consequences that occur should an inaccurate reading take place.
- This product is designed for use in the home only as indication of the temperature.
- This product is not to be used for medical purposes or for public information.
- The specifications of this product may change without prior notice.

- This product is not a toy. Keep out of the reach of children.
- No part of this manual may be reproduced without written authorization of the manufacturer.



R&TTE Directive 1999/5/EC

Summary of the Declaration of Conformity : We hereby declare that this wireless transmission device does comply with the essential requirements of R&TTE Directive 1999/5/EC.