TOUCH SCREEN WEATHER STATION
MODEL WS-3600

Operation Manual

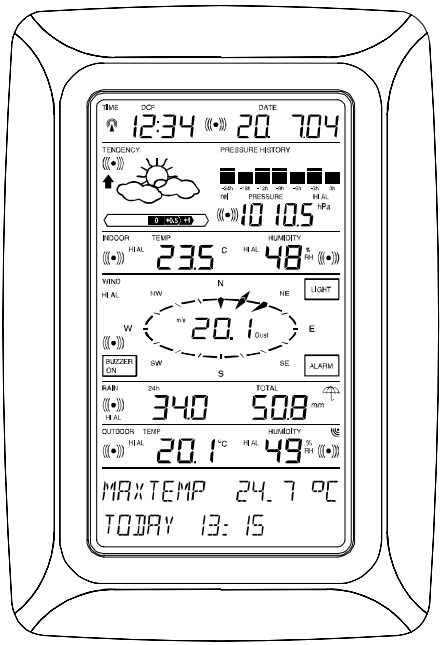


Table of Contents

1 General

The shipping contents of the Touch Screen Weather Station WS-3600 include a Base Station (Receiver), a Thermo-Hygro Sensor (433 MHz Transmitter), one each Rain Sensor and 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 by use of comprehensive menu control the display of a vast variety of time and weather data (from top to bottom):

- Radio Controlled Time (Time)
- Calendar (Date)
- Weather Forecast (Tendency)
- Air Pressure and Air Pressure History (Pressure, Pressure History)
- Indoor Temperature and Humidity (Indoor Temp, Humidity)
- Wind
- Rain (Rain)
- Outdoor Temperature and Humidity (Outdoor Temp, Humidity)

Furthermore the display of a number of additional data can be realised by use of certain switching combinations (see further down).

Note: In case the menu is used all these indications are temporarily replaced by the menu steps directly operable from the text section.

As an important feature exceeding the display on the LCD Monitor the Weather Station allows by cable and software the readout of all measured and displayed time and weather data in form of complete history data sets, their processing and graphic presentation on a PC as well as their tie on to Internet Web Sites.

2 Important Touch Screen Operating Notes generally applicable

- All actions and functions of the Weather Station are started 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 respectively.
- The setting of functions, values and units is in all modes performed by use of the switching areas *ON* or *OFF*, *UP* or *DOWN* or by direct unit selection.
- Advancing to any next respective 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 20 seconds the active process is automatically terminated and switched back to the normal display mode (automatic time out).

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 Thermo-Hygro Sensor and Base Station by cable or by 433 MHz radio signal.

Note: When putting the Weather Station into operation it is important to tentatively perform in close proximity (e. g. on a table) a complete wiring and setup of the system in the configuration of its prospective use. This measure serves to test all components for correct function before placing and mounting them at their final destinations.

3.1 Wiring the System

Independent of the final operating mode at first the fixed cables of the Rain Sensor and the Wind Sensor have to be connected

to the Thermo-Hygro Sensor by plugging them into their respectively marked receptacles.

The direct cable connection of Thermo-Hygro Sensor and Base Station can be used in case that

- the flexibility of 433 MHz radio transmission is not needed and
- 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 use of batteries, by AC/DC mains adapter or - optionally - by direct cable connection.

3.2.1 Batteries:

- Firstly insert three Type AA 1.5 V batteries into the battery compartment of the Thermo-Hygro-Sensor.
- Immediately following this insert two Type C 1.5 V batteries into the battery compartment of the Touch Screen Weather Station.

3.2.2 AC/DC Mains Adapter:

- Firstly also insert three Type AA 1.5 V batteries into the battery compartment of the Thermo-Hygro-Sensor.
- 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 observe this order of succession since the Sensor 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 Thermo-Hygro Sensor 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 due to 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 possible display 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 function. The latter will be possible by manually turning the wind-gauge, moving the weather-vane, tilting the rain sensor to hear the impact of the internally moving seesaw, 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 performed by the user. At this point of time the unit will also automatically start reception of the DCF77 time information.

Note: In case the user wants to start the system without waiting for completion of the play mode it can be terminated prematurely by once touching the TIME display in the upper left corner of the LCD.

3.4 Placement

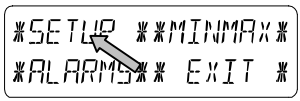
After the Weather Station has been checked for correct function with regard to the above points and found fit, the mounting of the system components can take place. It must be ensured however that all components work properly together at their chosen mounting or standing locations. If e. g. there appear 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 at least 100 meter providing that 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:

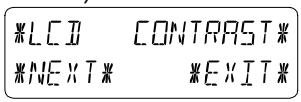
Note: Because of the default settings already determined by the manufacturer it may not be necessary for the majority of users to perform - outside possibly the Relative Air Pressure (see further down) - any further basic settings. Changes however can easily be realized if desired.

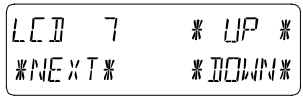
For basic settings the following menu is started by touching the Touch Screen in the center of the text display (last two lines on the LCD). Touching the display *SETUP* will enter the setup mode.



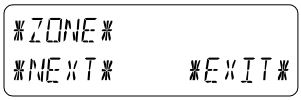
The basic settings can now be performed in the following successive order:

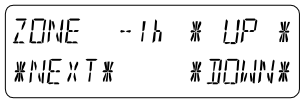
LCD Contrast → Contrast can be set in 8 steps from 0 to 7 (Default 4).



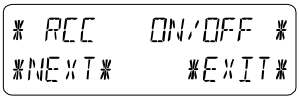


Time Zone → Time Zones can be set in the range from -12 to +12 hours (Default 0 hours for Central Europe).

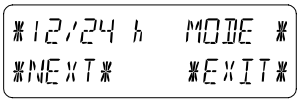


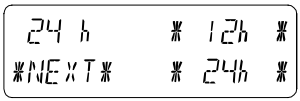


DCF77 Radio Controlled Clock (RCC) → ON/OFF. In setting "OFF" the clock is operating as a normal Quartz clock (Default RCC ON).



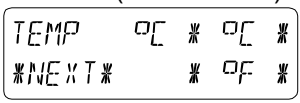
12/24 hour Time Display Format (Default 24 h Format).

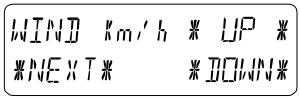




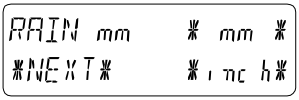
Units

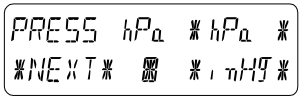
- Temperature Display (Temp) in °C or °F (Default °C).
- Wind Speed Display (Wind) in km/h, mph, m/s, knots or Beaufort (Default km/h).



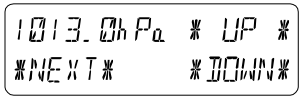


- Rain Amount Display (Rain) in mm or inch (Default mm).
- Air Pressure (Press) in hPa or inHg (Default hPa).



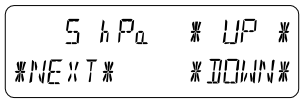


Relative Air Pressure (Rel. Pressure) → To be set to the locally valid reference air pressure with regard to the local height above sea level (Default 1013,3 hPa).

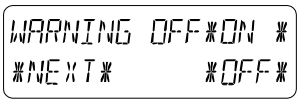


Weather Tendency (Tendency) → Setting to a definite switching threshold (2 hPa to 4 hPa) for a change in display of weather icons (Default 3 hPa).

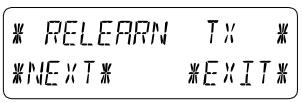
Storm Warning (Storm) → Setting to a definite switching threshold for storm warning display at a decrease of air pressure from 3 hPa to 9 hPa over 6 hours (Default 6 hPa).



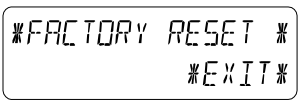
Activate/Deactivate storm warning alarm with *ON* / *OFF* resp. (Default ON).



Relearn Mode (Relearn Tx) → Allows to 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*.



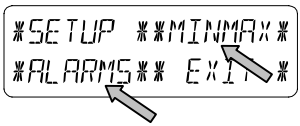
Default Settings (Factory Reset) → Allows the reset of all set and/or stored values to the factory settings set prior to shipment → Acknowledge with *CONFIRM*.



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

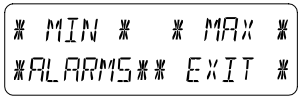
5 Display of stored Min/Max Values and Alarm Value Settings

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* resp.

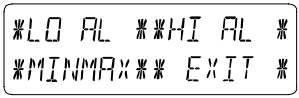


The continuance of the recalling process is essentially self-explanatory.
With *MINMAX* the below shown menu step is activated, which in return leads to the displays of the stored Min/Max values by use of *MIN* / *MAX* resp., which on their part again can be directly selected.

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 upon touching the display *ALARMS* and will analog 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 through *EXIT*.

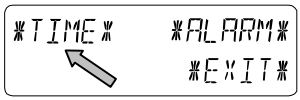
6 Radio Controlled DCF77 Clock

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:

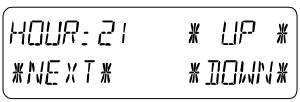
Setting the Time

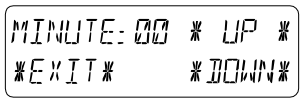
The action is started by touching the time display in the TIME section of the Touch Screen.

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



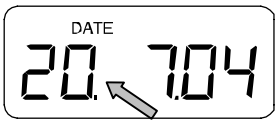
Set the hours and minutes. Leave the mode with *EXIT* or wait for automatic time-out.



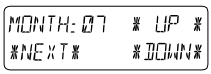


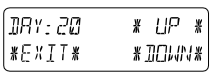
Setting the Date

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 *NEXT*.



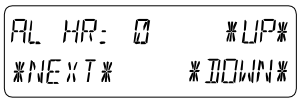


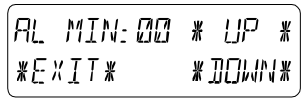
Note: By twice touching the DATE section the display will toggle between the following:

- Date in DD.MM.YY format
- Weekday (Engl. abbrev.), Date of Day, Month
- 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*.

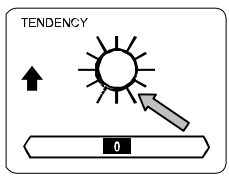




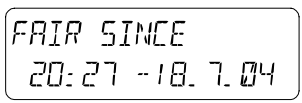
Note: The wake-up alarm is activated/deactivated by twice touching the TIME section. Here the alarm symbol (((•))) will show or disappear after *EXIT* (or automatic time-out).

7 Weather Tendency

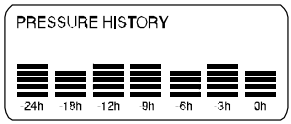
Call up the tendency display by touching the weather symbol in the TENDENCY section.



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



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 form of a 7-step bar graph, where the length of the utmost right bar represents the present air pressure and the remaining bars show the progress of the air pressure with regard to the present 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
- **Indoor Temperature** (Indoor Temp)
- **Indoor Humidity** (Indoor Humidity)
- **Outdoor Temperature** (Outdoor Temp), **Wind Chill**, **Dew Point**
- **Outdoor Humidity** (Outdoor Humidity)
- **Wind Speed**, **Wind Gust**

Important Note!
Since operating procedures and settings are identical all steps to be carried out on the Touch Screen Weather Station for above functions shall be explained only once by means of the following example "Air Pressure".

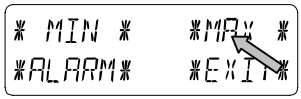
9.1 Air Pressure (Pressure)

Example for Activating the Displays of Stored Maximum Values

Call up the menu on the text section by touching the PRESSURE section.

Start with *MAX* in the menu section.

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



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

Resetting of the displayed value to the present value with *CONFIRM*.

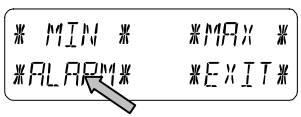
Without resetting advance with *EXIT*.

End of Example

Example for Setting of Alarms by means of the HI Alarms

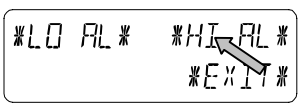
As in the example above here too call up the menu on the text section by touching the PRESSURE section.

Start with *ALARM* in the menu section.



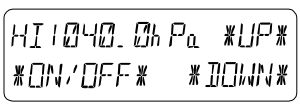
Proceed with *HI AL* in the menu section.

Note: Setting of the LO alarms is from here possible through *LO AL* analog to this example.



Setting of high alarm value with *UP* or *DOWN*.

Proceed with *ON/OFF*.



Activate or deactivate the alarm with *ON* or *OFF*.

Terminate with *EXIT*.

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

10 Operating and Setting of Function Rain

Note: Besides the direct setting of the units for the rain amount in the basic setup procedure there is the possibility to toggle between the following displays by twice touching the left part of the RAIN section:

- Rain amount of the last hour
- Rain amount of the last 24 hours
- Rain amount of the last week
- Rain amount of the last month

Note: The rain amounts of the last week and of the last month do not represent the amounts collected up to the present point of time but those of the last complete week or the last complete month respectively.
All setting and display facilities only pertain to the respective presently displayed value.

Important Note!
Operation and settings of the function Rain are essentially corresponding to the ones described in Item 9 above. Therefore a short description of the trivial differences with regard to Item 9 should be sufficient.

- Since in the display function Rain the display of minimum rain values is unnecessary, the menu does not offer the item *MIN* but *MAX* only to display the various maximum rain amounts.

- Since because of the above no minimum alarms are necessary the menu will upon activating *ALARM* avoid Hi AL resp. LO AL selection and immediately proceed to the HI alarm setting as already described in Item 9 above.

Note: The setting facility for the alarms is only offered during display of the rain amounts of the last hour resp. the one of the last 24 hours. Since for the rain amounts of the last week resp. the last month no exact definition for the alarm time is possible the alarm function has been omitted.

- When touching the display TOTAL in the RAIN section the total rain amount accumulated since the last deletion is displayed. This can be erased through *RAIN TOTAL*, followed by *CONFIRM*.

11 Additional Information to Function Outdoor Temperature (Outdoor Temp)

Note: By twice touching the OUTDOOR section the display will toggle between the following:
- Outdoor Temperature (Outdoor Temp)
- Wind Chill
- Dew Point

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

12 Additional Information to Function Wind

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)

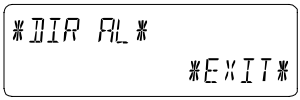
- Wind Gust

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

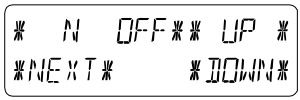
12.1 Operating and Setting of Function Wind Direction

In the display function Wind Direction the display of minimum or maximum values is unnecessary. There is however the possibility to realize wind direction alarms.

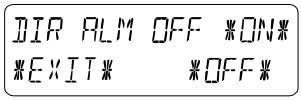
Start the menu in the text section by touching the center of the WIND section.
Proceed with *DIR AL*.



In the following menu up to 16 separate alarms can be realized (depending on the basic setup clockwise around the compass card from N via NNE etc. through NNW or from 0° via 22.5° etc. through 337.5°). 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 every respective wind direction alarm with *ON* or *OFF* in the menu step shown below.



Leaving the mode with *EXIT*.

13 Operating and Setting of Functions EL Backlight (Light), Buzzer and Alarm in the WIND Section

13.1 EL Backlight (Light)

For better readability of the LCD the EL backlight can be switched ON or OFF by once touching the LIGHT section. In condition ON the backlight will be switched on for approximately

20 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 20 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 on the included AC/DC adapter or entirely deactivate the EL backlight (see above).

13.2 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 20 seconds in the text section (Enabled/Disabled).

13.3 Alarm

Upon touching the ALARM display in the WIND section will – numbered and sorted according to the time of appearance – with *NEXT* all those set and activated alarms (outside the wake-up alarm) be displayed that have reached an alarm condition since their last deletion.
Here for every respective alarm the time and date of appearance can be displayed by touching *ALARM*.

14 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 form of complete history data sets on a PC.

14.1 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.

14.2 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 12 hours for the storage of data sets can only be performed by means of a PC.

14.3 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 3600“ software package also included in the shipping contents must be installed on the PC.
This software allows the display of all present 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 “Weather Review“ software.
For further details to the subject “PC Connection“ please see the Help File on the installation disk.

15 Technical Data

15.1 Outdoor Data:

Transmission Range in Open Field:	100 m max.
Measuring Intervals Outdoor Data:	every 20 s
Temperature Range:	-40 °C to +59.9 °C (Display “OFL” outside this range)
Resolution:	0.1 °C
Measuring Range Rel. Humidity:	1% to 99%
Resolution:	1%

Rain Volume Display:	0 to 999.9 mm (1 hr, 24 hrs.) 0 to 2500 mm (last week, last month) 0 to 9999 mm (total volume)
Resolution:	0.5 mm
Wind Speed	0 to 180 km/h or 1 to 50 m/s
Resolution:	0.1 m/s
Wind Direction:	Graphic Resolution 22,5 Degrees, Numeric Resolution Character Format

15.2 Data Transmission by 433 MHz Signal:

Measuring Intervals Thermo-Hygro Sensor:
128 s (at Wind Factor ≤10 km/h) or
32 s (at Wind Factor >10 km/h, here also Wind Gust display)
10 Min.(if the Base Station does not receive any data after 5 successive attempts all displays outside the rain amount are "---")

15.3 Data Transmission by Cable:

Measuring Intervals Thermo-Hygro Sensor: ..... 32 s

15.4 Indoor Data:

Measuring Intervals Indoor Data:	every 20 s
Temperature Range:	-9.9 °C to +59.9°C (Display "OFL" outside this range)
Resolution:	0.1 °C
Measuring Range Rel. Humidity:	1% to 99%
Resolution:	1%
Measuring Range Air Pressure:	300 hPa to 1099 hPa
Resolution:	0.1 hPa

Alarm Duration: ..... about 2 minutes

15.5 Power Supply:

Base Station:

Batteries: .....3 ea. 1.5 V Batteries Type AA, IEC LR6 (Alkaline Batteries recommended, Life Cycle without EL backlight appr. 1 year)

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**)

Thermo-Hygro-Sensor:

Batteries: .....2 ea. 1.5 V Batteries Type C (Alkaline Batteries recommended, Life Cycle appr. 2.5 years)

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

15.6 PC Connection:

Wiring: ..... COM Port Cable (included)

Data Processing:.....by PC only

Software: .....“Heavy Weather Pro 3600“ (included)

Storage Intervals:.....1 min through 12 h, settable

Data Volume:

Base Station:.....1750 Data Sets max. in Ring Buffer EEPROM

PC: .....Volume of Main Memory max.

15.7 Dimensions:

Base Station:.....225 x 155 x 35 mm

Thermo-Hygro-Sensor: .....136 x 73 x 71,5 mm

Rain Sensor:.....140 x 137 x 70 mm
Wind Sensor:.....291 x 197 x 60 mm

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.