

# WS-9020U 915MHZ INTELLIGENT WEATHER STATION

## Instruction Manual

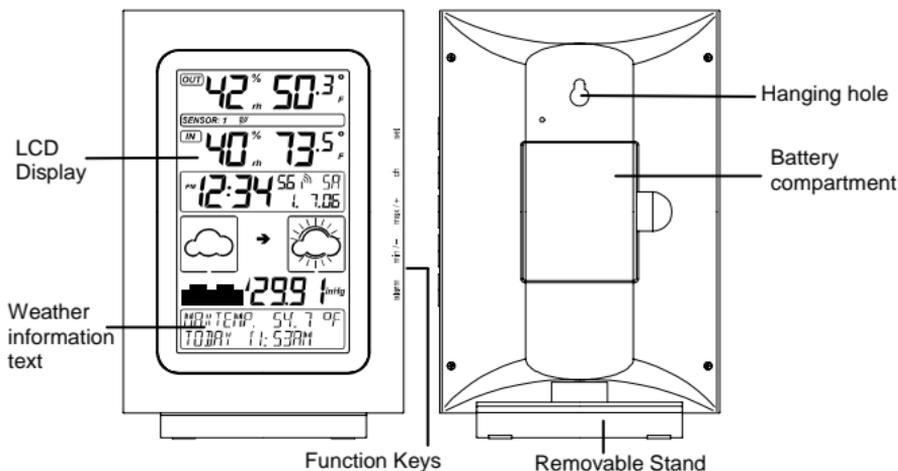
This product offers:



**INSTANT TRANSMISSION** is the state-of-the-art new wireless transmission technology, exclusively designed and developed by LA CROSSE TECHNOLOGY. **INSTANT TRANSMISSION** offers you an immediate update (every 4 seconds!) of all your outdoor data measured from the sensors: Chart the weather as it happens!

## FEATURES

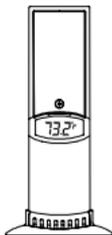
### INTELLIGENT WEATHER STATION



- Immediate update (every 4 seconds!) of all your outdoor data measured from the sensors (note: 4 second may vary while updating)
- WWVB Radio-controlled time with manual setting option
- WWVB reception ON/OFF (user selectable)

- 12/24 hour time display
- Time zone option  $\pm 12$  hours
- Calendar display (weekday, date, month, year)
- Weather forecasting with 4 weather icons and weather tendency indicator
- Temperature display in  $^{\circ}\text{F}/^{\circ}\text{C}$
- Humidity display as RH%
- Indoor temperature and humidity display with MIN/MAX and time/date of recording
- Outdoor temperature and humidity display with MIN/MAX and time/date of recording
- Low/High outdoor temperature alarm
- Relative air pressure unit in hPa or inHg
- Air pressure tendency indicator for last 12h (bar graph format)
- "Intelligent" weather information display
- Can receive up to 3 remote sensors
- LCD contrast selectable
- Low battery indicator
- Display in 5 languages selectable: English, German, French, Italian and Spanish
- Wall mounting or free standing

## REMOTE TEMPERATURE/HUMIDITY SENSOR



- Remote transmission of outdoor temperature and humidity to the intelligent weather station by 915 MHz signal
- Weather resistant casing
- Wall mounting case
- Mount in a sheltered place. Avoid direct rain and sun.

## QUICK SET-UP GUIDE

**Hint: Use good quality Alkaline Batteries and avoid rechargeable batteries.**

1. Have the intelligent weather station and remote temperature/humidity sensor 3 to 5 feet apart.
2. Batteries should be out of both the intelligent weather station and remote temperature/humidity sensor units for 10 minutes.
3. Place the batteries into the **remote temperature/humidity sensor** first and then into the **intelligent weather station**.
4. **DO NOT PRESS ANY BUTTONS FOR 15 MINUTES.**

In this time the intelligent weather station and remote temperature/humidity sensor will begin to communicate with each other and the display will show the temperature/humidity, outdoor temperature/humidity. If the intelligent weather station does not display all information after the 15 minutes, please retry the set up as stated above. After all information has been displayed for 15 minutes you can place your sensors outdoors and set your time.

### **Important Notes on Set-up and Operation**

- The remote temperature/humidity sensor should be placed in a dry, shaded area.
- Fog and mist will not harm your remote temperature/humidity sensor but direct rain must be avoided.
- The remote temperature sensor should be placed in a dry, shaded area. The remote temperature sensor has a range of 330 feet. Keep in mind that the 330 feet is in open air with no obstructions and that radio waves DO NOT curve around objects. Actual transmission range will vary depending on what is in the path of the signal. Each obstruction (roof, walls, floors, ceilings, thick trees, etc.) will effectively cut signal range in half.

**Example:** A wireless weather station receiver with a 330 feet range is mounted on an interior wall, so that the signal has to pass through one interior wall, one exterior wall, and across the 10 foot width of the room between the 2 walls. The first wall will reduce the range to 165 feet, and the second wall will reduce the range to 87 feet. Factoring in the 10 foot room, this leaves a maximum of 77 feet of remaining signal range.

This allowance is typically enough for a frame wall with non-metallic siding; however certain materials can reduce range even further. Metal siding, stucco, and some types of glass can reduce signal range by as much as  $\frac{3}{4}$  or more, compared to the  $\frac{1}{2}$  reduction typical of most obstructions. It is possible to receive a signal through these materials, however maximum range will be much less due to their tendency to absorb or reflect a much larger portion of the sensor's signal.

- The remote temperature/humidity sensor transmits a signal every 4 seconds – with variations during updating periods. After the batteries have been installed, the intelligent weather station will search for the signal for the duration of 45 seconds. If there is no temperature or humidity reading in the OUTDOOR LCD after 5 minutes, make sure the units are within range of each other, or repeat the battery installation procedure.

- If a button is pressed before the intelligent weather station receives the signal from the remote temperature/humidity sensor, you will need to follow the battery installation procedure again.

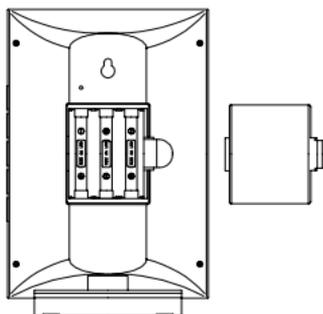
To complete the set up of your new wireless intelligent weather station after the 5 minutes have passed, please follow the steps in the “Manual Settings” section.

**Note:**

If the outdoor sensor signal reception is not successful on the first frequency of 915MHz for 45 seconds, the frequency is changed to 920MHz, and the learning is tried for another 45 seconds. If it is still not successful the reception is tried for 45 seconds on 910MHz. This will also be done during re-synchronization.

## BATTERY INSTALLATION

### INTELLIGENT WEATHER STATION

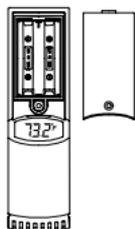


The intelligent weather station uses 3 x AA (alkaline recommended) batteries. When the batteries need to be replaced the low battery symbol will appear on the LCD (or replace the batteries annually). To install and replace the batteries, please follow the steps below:

1. Remove the cover.
2. Insert batteries observing the correct polarity (see battery compartment marking).

3. Replace battery cover.

### REMOTE TEMPERATURE/HUMIDITY SENSOR



The remote temperature/humidity sensor uses 2 x AA (alkaline recommended) batteries. To install and replace the batteries, please follow the steps below:

1. Remove the battery cover at the front side with a small screwdriver.
2. Insert the batteries, observing the correct polarity (see battery compartment marking).
3. Replace the battery cover on the unit.

**Note:**

When changing the batteries in any of the units, all units need to be reset by following the “Quick Set Up Guide” procedures. This is because

a random security code is assigned by the sensor at start-up, and this code must be received and stored by the intelligent weather station in the first few minutes of power being supplied to it.

### **BATTERY CHANGE:**

It is recommended to replace the batteries in all units on an annual basis to ensure optimum accuracy of these units.



**Please participate in the preservation of the environment.  
Return used batteries to an authorized facility.**

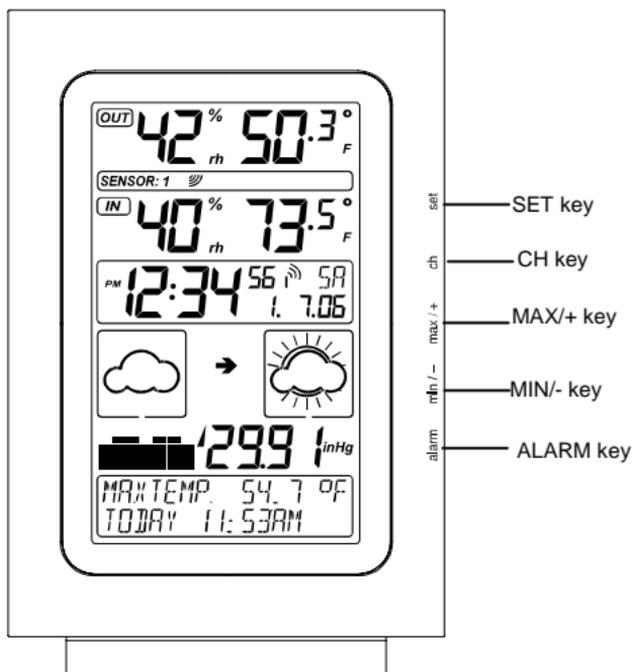
### **ABOUT WWVB (Radio Controlled Time)**

The NIST (National Institute of Standards and Technology—Time and Frequency Division) WWVB radio station is located in Ft. Collins, Colorado, and transmits the exact time and date signal continuously throughout the United States at 60 kHz. The signal can be received up to 2,000 miles away through the internal antenna in the intelligent weather station. However, due to the nature of the Earth's Ionosphere, reception is very limited during daylight hours. The intelligent weather station will search for a signal every night when reception is best. The WWVB radio station derives its signal from the NIST Atomic clock in Boulder, Colorado. A team of atomic physicists is continually measuring every second, of every day, to an accuracy of ten billionths of a second per day. These physicists have created an international standard, measuring a second as 9,192,631,770 vibrations of a Cesium-133 atom in a vacuum. For more information on the atomic clock and WWVB please see the NIST website at <http://www.boulder.nist.gov/timefreq/stations/wwvb.htm>.

## FUNCTION KEYS

### Intelligent weather station:

The intelligent weather station has 5 easy to use function keys on the right side of the unit.



#### SET key

- Press and hold the key to enter manual setting modes: LCD contrast, 12/24 hour time display, time zone, daylight saving time ON/OFF, manual time setting, calendar, WWVB ON/OFF, °F/°C temperature unit, pressure unit, relative pressure setting and language display
- Confirm weather alarm in the setting mode
- Reset individual MIN/MAX temperature/humidity record
- Turn weather alarm off when sounding

**!<deleted bullet>!**

#### CH key (Channel key)

- Select channel 1, 2, or 3 (if more than 1 sensor is used)
- Exit setting mode
- Detect/Re-detect sensor's signal for all channels
- Turn weather alarm off when sounding

**MAX/+ key**

- Display MAX indoor / outdoor temperature and humidity records with time of recording
- Increase all values in manual setting modes
- Increase the weather alarm values
- Turn weather alarm off when sounding
- Reset max/min record

**MIN/- key**

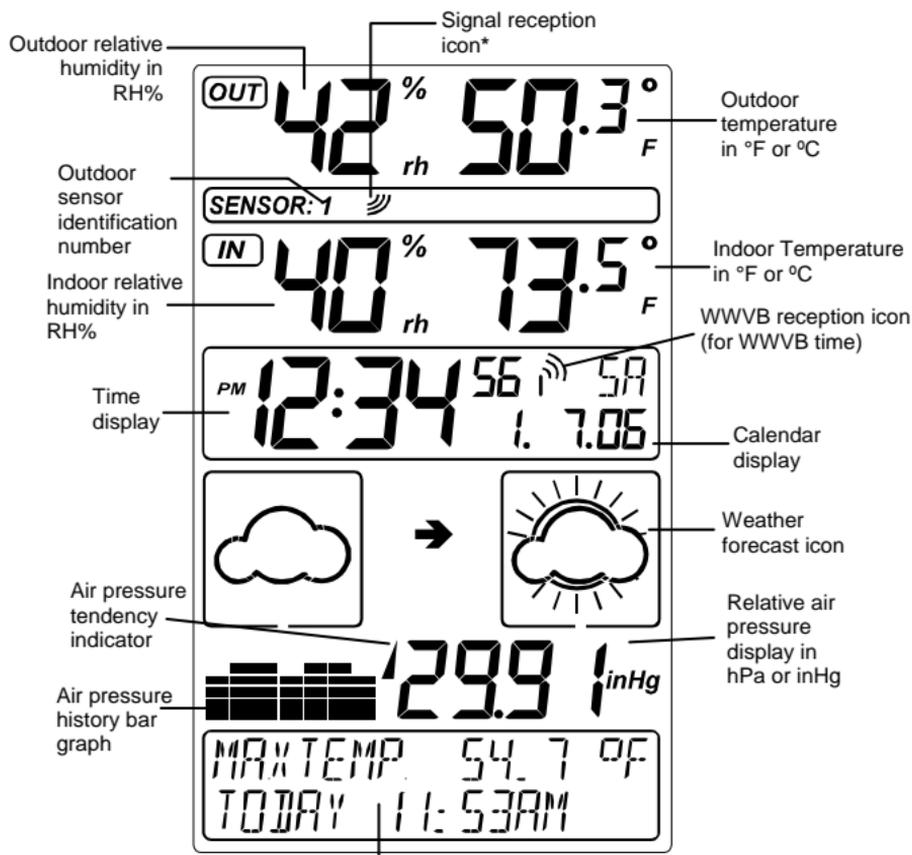
- Display MIN indoor and outdoor temperature and humidity records with time of recording
- Decrease all values in manual setting modes
- Decrease the weather alarm values
- Turn weather alarm off when sounding
- Reset max/min record

**ALARM key**

- Enter the weather alarm time setting mode
- Set next weather alarm in weather alarm setting mode

## LCD SCREEN

The LCD screen is split into 6 sections displaying the information for outdoor data, indoor data, time and date, weather forecast, air pressure and air pressure history, weather information display.



Weather display information in English, German, French, Italian and Spanish

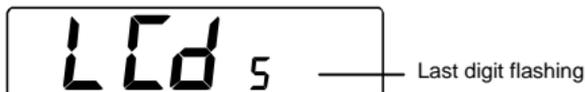
\*When the signal from the remote temperature/humidity sensor is successfully received by the intelligent weather station, this signal reception will be switched on. (If not successful, the icon will not be shown on LCD) So the user can easily see whether the last reception is successful (icon on) or not (icon off). On the other hand, the short blinking of the icon shows that reception is currently taking place.

## MANUAL SETTINGS

The following manual settings can be changed when pressing and holding the SET key for approximately 4 seconds:

- LCD contrast setting
- 12/24 hour time display
- Time zone setting
- Daylight time saving ON/OFF
- Manual time setting
- Calendar setting
- WWVB time reception ON/OFF setting
- °F/°C temperature unit setting
- Air pressure unit setting
- Relative pressure value setting
- Language display setting

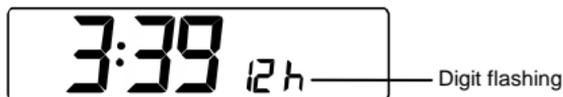
### LCD CONTRAST SETTING



The LCD contrast can be set within 8 levels, from LCD 1 to LCD8 (default setting is LCD 5):

1. Press and hold the SET key for about 4 seconds until the digit start flashing.
2. Use the MAX/+ or MIN/- key to view all levels of contrast.
3. Select the desired LCD contrast. Press and release the SET key to confirm selection and to enter the **12/24 Time Display setting**.

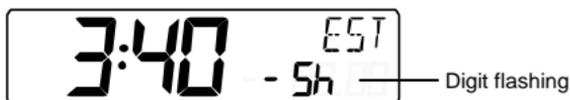
### 12/24 HOUR TIME DISPLAY SETTING:



The time display can be set to view time in 12 or 24 hour format. The default time display mode is "12h". To set to "24h" time display:

1. Use the MAX/+ or MIN/- key to toggle the value.
2. Press and release the SET key to confirm selection and to enter the **Time Zone setting**.

### TIME ZONE SETTING

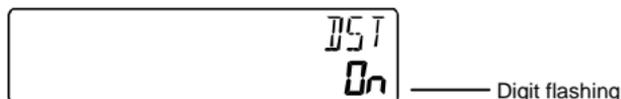


The time zone can be set  $\pm 12$  hour. The default time zone is set to Eastern Time zone ("EST"). To set a different time zone:

1. The current time zone value starts flashing.
2. Use the MAX/+ or MIN/- key to set the time zone. The MAX/+ key increases the value and the MIN/- key decreases the value in consecutive 1 hour intervals.
3. Press and release the SET key to confirm selection and to enter the **Daylight saving time On/Off setting**.

## DAYLIGHT TIME SAVING ON/OFF SETTING

The Daylight Saving Time setting may be turned "on" or "off".



1. The digit "ON" will start flashing on the LCD. Flashing
2. Use the MAX/+ or MIN/- key to turn OFF the daylight time saving function.
3. Press and release the SET key to confirm selection and to enter the **Manual Time setting**.

## MANUAL TIME SETTING:

In case the intelligent weather station cannot detect the WWVB-signal (for example due to disturbances, transmitting distance, etc.), the time can be manually set. The clock will then work as a normal Quartz clock.



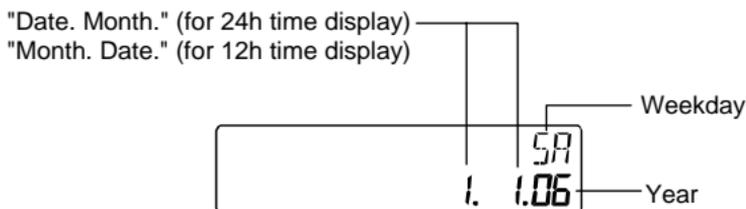
1. The hour digit will start flashing.
2. Use the MAX/+ or MIN/- key to set the hour.
3. Press again the SET key to switch to the minutes. The minute digits start flashing.
4. Use the MAX/+ or MIN/- key to set the minutes.
5. Press and release the SET key to confirm selection and to enter the **Calendar setting**.

### Note:

The unit will still try to receive the WWVB signal between 0:00 and 6:00 am every day despite it being manually set, if the WWVB reception function has been set ON. When it does receive the signal, it will change

the manually set time into the received time. During reception attempts the WWVB tower icon will flash. If reception has been unsuccessful, then the WWVB tower icon will not appear but reception will still be attempted the following hour.

### CALENDAR SETTING:



The date default of the intelligent weather station is 1. 1. in the year 2005. Once the radio-controlled time signals are received, the date is automatically updated. However, if the signals are not received, the date can also be set manually.

1. The year starts flashing.
2. Use the MAX/+ or MIN/- key to set the year. The range runs from 2005 to 2030.
3. Press the SET key again to confirm and to enter the month setting. The month starts flashing.
4. Use the MAX/+ or MIN/- key to set the month.
5. Press the SET key again to confirm and to enter the date setting mode. The date starts flashing.
6. Use the MAX/+ or MIN/- key to set the date.
7. Press and release the SET key to confirm selection and to enter the **WWVB Time Reception ON/OFF setting**.

### WWVB TIME RECEPTION ON/OFF SETTING



In area where reception of the WWVB time is not possible, the WWVB time reception function can be turned OFF. The clock will then work as a normal Quartz clock. (Default setting is ON).

4. The digit "ON" will start flashing on the LCD.
5. Use the MAX/+ or MIN/- key to turn OFF the time reception function.

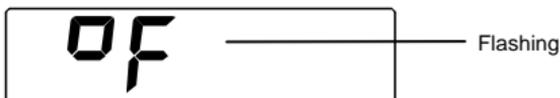
- Press and release the SET key to confirm selection and to enter the **°F/°C Temperature Unit setting**.

**Note:**

If the WWVB time reception function is turned OFF manually, the clock will not perform any reception of the WWVB time as long as the WWVB OFF function is activated.

The WWVB reception icon  will not be displayed on the LCD.

### °F/°C TEMPERATURE UNIT SETTING



The temperature display can be selected to show temperature data in °F or °C. (default °F)

- Use the MAX/+ or MIN/- key to toggle between "°F" or "°C".
- Confirm with the SET key and enter the **Air Pressure Unit setting**.

### RELATIVE AIR PRESSURE UNIT SETTING



The relative air pressure unit can be set in inHg or hPa unit. (default unit is inHg).

- Use the MAX/+ or MIN/- key to toggle between "inHg", "hPa" or "mmHg"
- Press and release the SET key to confirm selection and to enter the **Relative Pressure Value setting**.

**Note:**

The default reference pressure value of the barometer is 29.91 inHg (1013 hPa). **For an exact measurement it is necessary to first adjust the barometer to your local relative air pressure (related to elevation above sea level)**. Ask for the present atmospheric pressure of your home area (Local weather service, calibrated instruments in public buildings, airport).

### RELATIVE PRESSURE VALUE SETTING

The default relative pressure value is 29.91 inHg (1013 hPa). This corresponds to the average air pressure. Pressure below this is referred to as low-pressure area (weather to become worse), pressure above as high-pressure area (weather to improve). The relative air pressure can

be manually set to another value within the range of 28.35 to 30.72 inHg (960 – 1040 hPa) for a better reference.

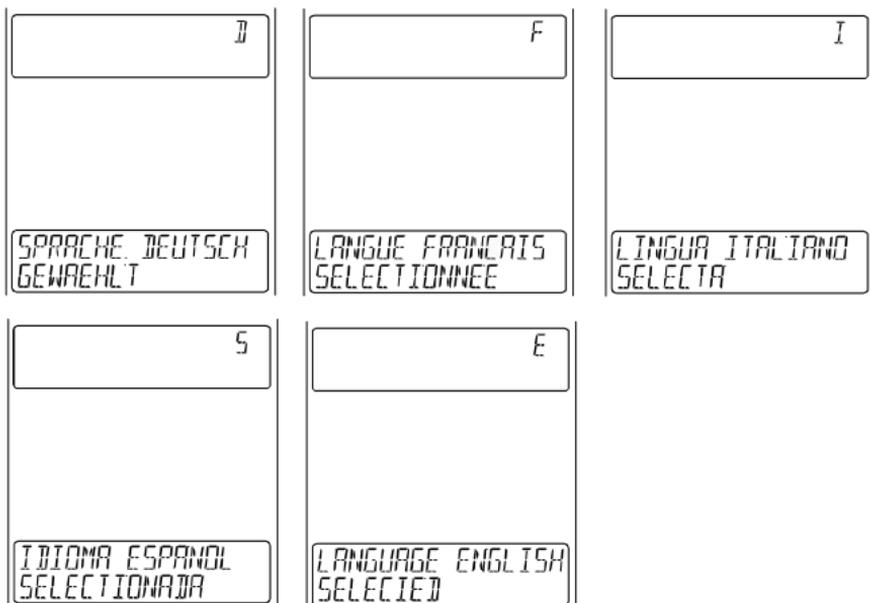


1. The current relative pressure value will start flashing
2. Use the MAX/+ or MIN/- key to increase or decrease the value. Keep holding the key allows the value to advance faster.
3. Press and release the SET key to confirm selection and to enter the **Language display setting**.

**Note:**

This calibration facility is useful for those users living at various elevations above sea level, but wanting their air pressure display based on sea level elevation.

**LANGUAGE DISPLAY SETTING:**



The language for the calendar and “Intelligent” weather information display can be set to view in German (D), French (F), Italian (I), Spanish (S) & English (E) Default setting is English. To set another language:

1. Use the MAX/+ or MIN/- key to set the desired language.

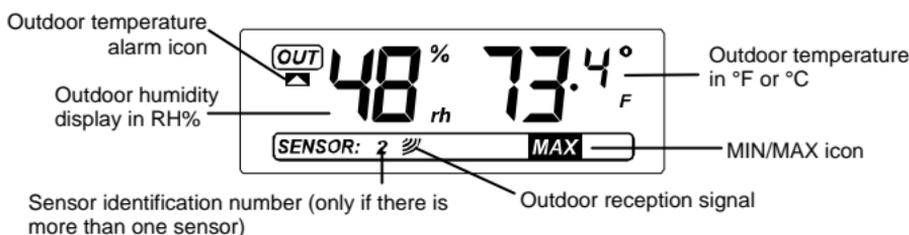
- Press and release the SET key to confirm selection and exit the **Manual settings**.

## TO EXIT THE MANUAL SETTING MODE

To exit the manual setting anytime during the manual setting modes, press the CH key anytime or wait for an automatic timeout. The mode will return to normal time display.

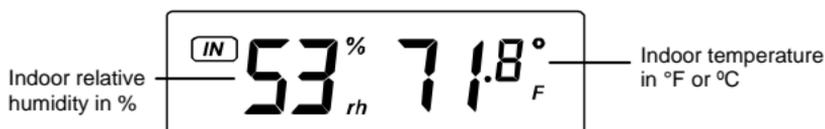
## OUTDOOR TEMPERATURE AND HUMIDITY:

The first LCD section can show the outdoor temperature, the reception indicator, the minimum or maximum reading. A number in the bottom part will also be shown if more than one sensor has been used.



## INDOOR RELATIVE HUMIDITY AND INDOOR TEMPERATURE:

The indoor temperature and humidity data are automatically updated and displayed in the second section of the LCD.



## TOGGLING BETWEEN MIN/MAX INDOOR AND OUTDOOR RECORDINGS:

To toggle between the current, minimum and maximum data and the times they were recorded, press the MIN/- key for viewing the minimum values, and press the MAX/+ key for viewing the maximum values (shown in MIN or Max displays).

When pressing the MIN/- or the MAX/+ key, the MIN and the MAX data will be displayed as following sequences:

- MAX or MIN outdoor temperature data with time and date of recordings. Data will flash
- MAX or MIN outdoor humidity data with time and date of recordings. Data will flash

2. MAX or MIN indoor temperature data with time and date of recordings. Data will flash
3. MAX or MIN indoor humidity data with time and date of recordings. Data will flash
4. Return to current indoor and outdoor data.

### **ADDING SENSORS (OPTIONAL)**

The WS-9020U is able to receive signals from 3 remote temperature/humidity sensors (TX28U-IT). These extra sensors can be purchased through the same dealer as this unit

### **TO SET-UP OF MULTIPLE SENSORS**

1. Remove all the batteries from the receiver and sensor(s) and wait 60 seconds. During these 60 seconds, press any button 20 times to discharge any excess power.
2. Insert the batteries to the first Thermo-hygro sensor.
3. Within 2 minutes of powering up the first sensor, insert the batteries to the Weather Station. Once the batteries are in place, all segments of the LCD will light up briefly. Following the indoor/outdoor temperature and humidity, time as 12:00, calendar, and weather icons will be displayed. If they are not shown in LCD after 60 seconds, remove the batteries and wait for at least 60 seconds before reinserting them.
4. The outdoor temperature and humidity from the first sensor (channel 1) should then be displayed on the Weather station. If this does not happen and the signal reception icon is not shown, after 2 minutes, the batteries will need to be removed from both units and reset from step 1.
5. Insert the batteries to the second sensor as soon as the outdoor temperature and humidity readings from the first sensor are displayed on the Weather station.

**NOTE: You must insert the batteries into the second sensor within 45 seconds of reception of the first sensor.**

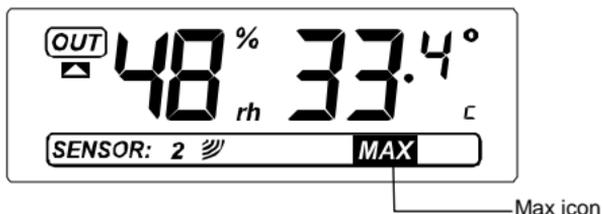
6. The outdoor temperature and humidity from the second sensor and the "channel 2" icon should then be displayed on the Weather station. If this does not happen after 2 minute, the batteries will need to be removed from all the units and reset from step 1.
7. Insert the batteries to the third sensor as soon as the "channel 2" icon and outdoor data are displayed on the Weather station. Then within 2 minutes, the channel 3 outdoor data from the third sensor will be displayed and the channel icon will shift back to "1" once the third sensor is successfully received. If this is not happen, user shall restart the setting up from step 1.

**NOTE: You must insert the batteries into the third sensor within 45 seconds of reception of the second sensor.**

**IMPORTANT:** Transmission problems will arise if the setting for multiple sensors is not followed as described above. Should transmission problems occur, it is necessary to remove the batteries from all units and start again the set-up from step 1.

### TO VIEW MIN/MAX INDOOR AND OUTDOOR RECORDS:

To toggle between the current, minimum and maximum data and the times they were recorded, press the MIN/- key for viewing the minimum values, and press the MAX/+ key for viewing the maximum values (shown in MIN or Max displays).



When pressing the MIN/- or the MAX/+ key, the MIN and the MAX data will be displayed as following sequences:

1. MAX or MIN outdoor temperature data with time and date of recordings. Data will flash.
2. MAX or MIN outdoor humidity data with time and date of recordings. Data will flash.
3. MAX or MIN indoor temperature data with time and date of recordings. Data will flash.
4. MAX or MIN indoor humidity data with time and date of recordings. Data will flash.
5. Return to current indoor and outdoor data.

### TO VIEW THE MIN/MAX DATA FROM DIFFERENT SENSORS

#### When more than 1 sensor used

1. To toggle between sensors, press the CH key:
  - Once to show sensor 2
  - Twice to show sensor 3
  - Three times to return to sensor 1
2. While the outdoor MIN/MAX humidity and temperature data is being displayed, press the CH key. The display will toggle between the different channels MIN/MAX data.

#### **Note:**

For example, when the MIN outdoor temperature data is displayed and the MAX/+ key is pressed, MAX data outdoor temperature will be

displayed. If the MAX outdoor temperature data is displayed and the MIN/- key is pressed, MIN outdoor data will be displayed.

While MIN/MAX data is displayed, the channel can be changed by pressing the CH key.

### **TO RESET THE MIN/MAX VALUES TO CURRENT VALUES:**

To reset individual indoor and outdoor MIN/MAX values to current values:

1. Press the MAX/+, MIN/- and CH key to select the desired MIN/MAX value.
2. Press the SET key to reset the selected value to current value

#### **Note:**

To reset all indoor and outdoor MIN/MAX values to current values, press and hold the MAX/+ or MIN/- key for 3 seconds.

### **OUTDOOR CHANNEL RE-LEARN MODE**

In case the temperature data in a particular outdoor channel often shows "--.-" due to low battery level or false reset of a sensor, that sensor can be set up again.

#### **To re-learn ALL channels:**

Press and hold the CH key for 3 seconds (outdoor reception signal will show next to channel display).

### **WEATHER ALARM SETTING**

The intelligent weather station can be set to alert when a specific weather condition is reached.

**The following Weather Alarm settings can be changed when pressing and holding the ALARM key for approximately 4 seconds:**

- LOW outdoor temperature alarm
- HIGH outdoor temperature alarm

#### **Default alarm values:**

Temperature alarm	Low	32°F
	High	86°F

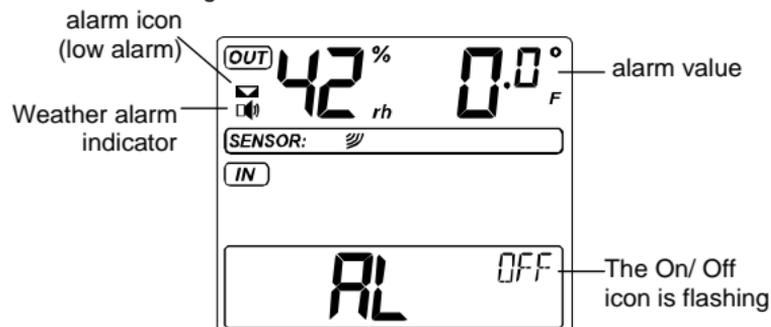
### **LOW OUTDOOR TEMPERATURE ALARM SETTING**

#### **Note:**

The outdoor temperature alarm can only be set for channel 1 sensor.

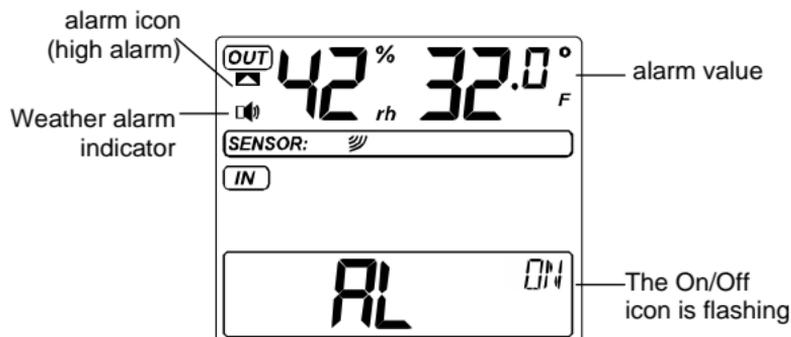
To set the LOW outdoor temperature alarm (default OFF):

1. Press and hold the ALARM key for about 3 seconds to enter the alarm setting mode.



2. Press the MAX/+ or MIN/- key to set the alarm ON or OFF.
3. Press the SET key to enter the alarm value setting (alarm value flashing)
4. Use the MAX/+ or MIN/- key to set the alarm value.
5. Press the SET key to confirm and enter the **HIGH outdoor temperature alarm setting.**

## HIGH OUTDOOR TEMPERATURE ALARM SETTING



1. The On/ Off icon is flashing. Press the MAX/+ or MIN/- key to activate the alarm ON/OFF.
2. Press the SET key to enter the alarm value setting (alarm value flashing)
3. Use the MAX/+ or MIN/- key to set the alarm value.
4. Press the SET key to confirm and enter the **HIGH outdoor temperature alarm setting.**

**Note:**

- The outdoor temperature alarm is only applicable to Channel 1.
- The alarm icon “” (outdoor high alarm) or “” (outdoor low alarm) will be shown in normal display when the weather alarm is set ON.

When the alarming outdoor temperature is reached, the alarm will sound. The weather alarm indicator , high or low alarm icon and the temperature reading will be flashing on LCD. The alarm will sound for 120 seconds if no one stops the alarm. User may press any key to stop the buzzer ringing. Then the weather alarm indicator, alarm icon and the temperature reading will be still flashing but the sound is stopped. If the alarm key is not pressed, the weather alarm indicator will keep flashing, indicating that alarm temperature has been reached before. User may press the Alarm key once to switch off the weather alarm indicator.

## WEATHER ALARM OPERATIONS

### WEATHER ALARMS

The Weather alarms are selectable for when certain weather conditions are met according to the user's requirements. For example, the user can set the thresholds for the outdoor temperature to +104°F (+40°C) (high) and +14°F (-10°C) (low), while only enabling the high alarm and disabling the low alarm (i.e. temperatures < +14°F (-10°C) won't trigger alarm, but temperatures > +104°F (+40°C) will).

Alarm setting	Minimum	Maximum
Outdoor Temperature	-40°F (40°C)	+139.8°F (59.9°C)

### HYSTERESIS

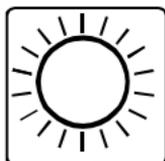
To compensate for fluctuation of the measured data, which may cause the weather alarm to sound constantly if the measured reading is close to user set level, a hysteresis function has been implemented for each weather alarm. For example, if the high temperature alarm is set to +77°F (+25°C) and the current value moves to +77°F (+25°C), the alarm will be activated (if it has been enabled). Now when the temperature drops to +76.8°F (+24.9°C) or below and thereafter again increases to beyond +78°F (+25°C), the data will be blinking, but no alarm will be activated. It has to drop to below +75.2°F (+24°C) (with a pre-set hysteresis of 2°F (1°C)) so that the alarm can be produced again. Hysteresis values for the various weather data types are given in the following table:

Weather data	Hysteresis
Temperature	2°F
Humidity	3% RH
Air pressure	0.03 inHg

## WEATHER FORECAST AND WEATHER TENDENCY:

### WEATHER FORECASTING ICONS:

There are 4 weather icons in the fourth section of LCD which can be displayed in any of the following combinations:



Sunny



Cloudy with  
sunny  
intervals



Cloudy



Rainy

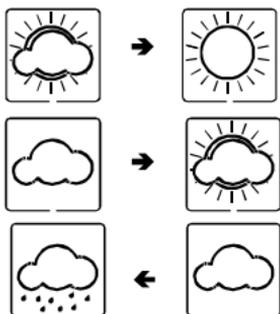
For every sudden or significant change in the air pressure, the weather icons will update accordingly to represent the change in weather. If the icons do not change, then it means either the air pressure has not changed or the change has been too slow for the intelligent weather station to register. However, if the icon displayed is a sun or rainy, there will be no change of icon if the weather gets any better (with sunny icon) or worse (with rainy icon) since the icons are already at their extremes.

The icons displayed forecasts the weather in terms of getting better or worse and not necessarily sunny or rainy as each icon indicates. For example, if the current weather is cloudy and the rainy icon is displayed, it does not mean that the product is faulty because it is not raining. It simply means that the air pressure has dropped and the weather is expected to get worse but not necessarily rainy.

The change of weather forecast icon is in agreement with the relationship between current relative pressure and the pressure change in the last three hours.

If the weather is changing, both old weather icon and new weather icon will be shown with a weather tendency indicator (animated arrows). If the weather has not changed within 6 hours, only the new weather icon in the middle display will be shown.

### Examples of changing weather icons:



#### Note:

After initial set up of the intelligent weather station with the setting of the relative value, readings for weather forecasts should be disregarded for the next 12-24 hours. This will allow sufficient time for the intelligent weather station to collect air pressure data at a constant altitude and therefore result in a more accurate forecast.

If the intelligent weather station is moved to another location significantly higher or lower than its initial standing point (for example from the ground floor to the upper floors of a house), set again the relative air pressure value, and discard the weather forecast for the next 12-24 hours. By doing this, the intelligent weather station will not mistake the new location as being a possible change in air-pressure when really it is due to the slight change of altitude.

### AIR PRESSURE TENDENCY INDICATOR

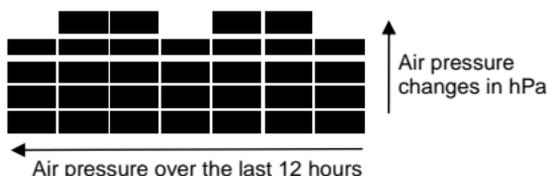
The air pressure tendency indicators are located on the left side of the air pressure display, below the weather icons, and they work independently from the weather forecast icons. The air pressure tendency indicator pointing upward or downward directions is displayed based on comparing the difference of the air pressure recorded during a full hour time frame.

#### Note:

- An upward air pressure tendency indicator means that there is an increase in air pressure within the past 4 hours.
- A downward air pressure tendency indicator means that there is an decrease in air pressure within the past 4 hours.

## AIR PRESSURE

The fifth section of the LCD shows the relative air pressure and the air pressure history.



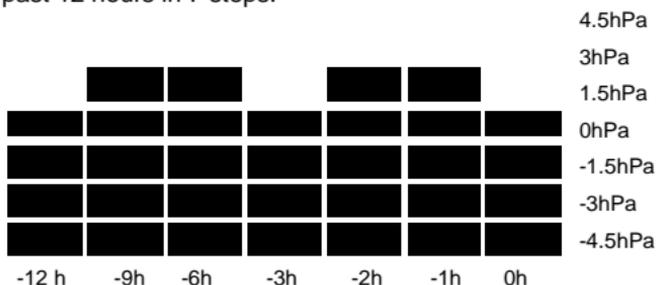
The reference relative air pressure can be set between 28.35 to 30.72 inHg (960 to 1040hPa). See **“Relative pressure value setting”** in manual setting.

## BAR GRAPH DISPLAY

You may select to display the history of the air pressure in the form of a graph consisting of vertical bars on the intelligent weather station LCD.

## AIR PRESSURE HISTORY

The bar graph of the electronic barometer shows the air pressure history for the past 12 hours in 7 steps.



The horizontal axis represents the last 12 hours air pressure recordings (-12, -6, -5, -4, -3, -2, -1, and 0 hour, from right to left). The bars are plotted at each of the 7 steps and give the trend over the recorded period. The scale on the right compares the result. The “0” in the middle of this scale determines the current air pressure.

The vertical axis represents the air pressure changes in hPa (4.5, 3, 1.5, “0” represents the current air pressure). Each change ( $\pm 1.5$ ,  $\pm 3$ ,  $\pm 4.5$ ; the other values are not shown on the vertical axis but can be determined) shows in inches of mercury (hPa), how high or low the past air pressure was as compared to the current one. Rising bars indicate the weather is getting better due to an increase in air pressure. A downward sloping bars indicates a drop of the air pressure and the weather is expected to get worse from the present time “0”.

At every full hour the current air pressure is used as a basis for the display of a new graph bar. The existing graph is then moved one bar to the left.

**Note:**

For accurate barometric pressure trend, the intelligent weather station should operate at the same altitude. For example, it should not be moved from the ground to the second floor of the house. Should the unit be moved to a new location, discard readings for the next 48 – 60 hours.

## **LOW BATTERY INDICATOR**

The low battery indicator will be displayed in the LCD when the battery power of the intelligent weather station is low. It is recommended to replace the batteries in all units on an annual basis to ensure optimum accuracy of the intelligent weather station.

**Note:** After battery change, both the intelligent weather station and the sensor(s) need to be reset (see note "**Setting up**")

## **WEATHER INFORMATION DISPLAY**

The weather information display located at the last section of the LCD will display the weather forecast based on data received from channel 1 and the air pressure.

The intelligent weather station will automatically display the following information:

- Maximum temperature of the day
- Minimum temperature of the day
- Probability of the weather forecast
- Time frame for the weather forecast
- Probability of snowfall
- Probability of fog
- Probability of glazed frost
- Probability of tempest
- Probability of strong wind
- Probability of storm
- Forecast for lowest night temperature

VORHERSAGEDAUER  
12 STUNDEN

PROGNOSE  
INDEX 70%/o

MAXTEMP. 78.2 °F  
HEUTE 13:57

MINTEMP. 74.6 °F  
HEUTE 3:57

German

FORECAST PERIOD  
12 HOURS

FORECAST  
INDEX 70%/o

MAXTEMP. 78.2 °F  
TODAY 13:57

MINTEMP. 74.6 °F  
TODAY 3:57

English

PERIOD PREVISION  
12 HEURES

PREVISION  
INDEX 70%/o

TEMPMAX. 78.2 °F  
DU JOUR 13:57

TEMPMIN. 74.6 °F  
DU JOUR 3:57

French

DURATA PREV  
12 ORE

INDICE  
PREVISIONE 70%/o

TEMPMAX. 78.2 °F  
OGGI 13:57

TEMPMIN. 74.6 °F  
OGGI 3:57

Italian

PERIODO PREV  
12 HORAS

INDICE  
PREVISIONE 70%/o

TEMPMAX. 78.2 °F  
HOY 13:57

TEMPMIN. 74.6 °F  
HOY 3:57

Spanish

## DETAILED INFORMATION SHOWN IN THE WEATHER DISPLAY:

	Language selected				
	English	German	French	Italian	Spanish
Timeframe for weather forecast	Forecast period 6 hours	Vorhersagedauer 6 Stunden	Period prevision 6 heures	Durata prev. 6 ore	Periodo prev. 6 horas
	12 hours	12 Stunden	12 heures	12 ore	12 horas
	24 hours	24 Stunden	24 heures	24 ore	24 horas
	36 hours 48 hours	36 Stunden 48 Stunden	36 heures 48 heures	36 ore 48 ore	36 horas 46 horas
Probability of weather forecast	Forecast Index 65%	Prognose Index 65%	Prévision Index 65%	Indice Previsione 65%	Indice Prevision 65%
	Index 70%	Index 70%	Index 70%	Indice 70%	Indice 70%
	Index 75%	Index 75%	Index 75%	Indice 75%	Indice 75%
	Index 80% Index 85%	Index 80% Index 85%	Index 80% Index 85%	Indice 80% Indice 85%	Indice 80% Indice 85%
Maximum temperature of the day	MaxTemp xx.x°F Today xx :xx	MaxTemp xx.x°F Heute xx :xx	MaxTemp xx.x°F Du Jour xx :xx	TempMax xx.x°F Oggi xx :xx	TempMax xx.x°F Hoy xx :xx
Minimum temperature of the day	MinTemp xx.x°F Today xx :xx	MinTemp xx.x°F Heute xx :xx	MinTemp xx.x°F Du Jour xx :xx	TempMin xx.x°F Oggi xx :xx	TempMin xx.x°F Hoy xx :xx
Probability of snowfall	Snowfall Index 65%	Schnee Index 65%	Neige Index 65%	Indice Neve 65%	Indice Nieve 65%
	Index 75%	Index 75%	Index 75%	Neve 75%	Nieve 75%
Probability of fog	Fog Index 80%	Nebel Index 80%	Brouillard Index 80%	Indice Nebbia 80%	Indice Niebla 80%
	Index 85%	Index 85%	Index 85%	Indice 85%	Indice 85%
Probability of glazed frost	Glazed frost Index 75%	Rauhreif Index 75%	Givre Index 75%	Indice Brina 75%	Indice Escarcha 75%

Probability of tempest	Tempest Index 80%	Gewitter Index 80%	Orage Index 80%	Indice Temporal 80%	Indice Tormenta 80%
Probability of strong winds	Strong wind Index 80%	Starkwind Index 80%	Vent Fort Index 80%	Indice Vento forte 80%	Indice viento Forte 80%
Probability of storm	Storm Index 75%	Sturm Index 75%	Tempête Index 75%	Indice Tempesta 75%	Indice Tempestad 75%
Forecast lowest night temperature	Forecast lowest Nighttemp xx°F	Min Erwartete Nachttemp xx°F	Prevision temp Min nuit xx°F	Previsione temp Min notte xx°F	Prevision temp Min noche xx°F

#### Note:

- The forecast period, forecast index, and today's maximum/minimum temperature will always be shown on the LCD.
- The Forecast lowest night temperature will be displayed between 8:00 pm to 6:00 am
- Other information will be show when a specific weather event happened that has been calculated by the unique algorithm of the intelligent weather station.

### REMOTE TEMPERATURE/HUMIDITY SENSOR / 915MHZ RECEPTION CHECK

The outdoor temperature and humidity is measured and transmitted about every 4 seconds.

The transmission range of the remote temperature/humidity sensor may be affected by the ambient temperature. At cold temperatures the transmitting distance may be decreased. Please bear this in mind when placing the sensor.

The remote temperature sensor should be placed in a dry, shaded area. The remote temperature sensor has a range of 330 feet. Keep in mind that the 330 feet is in open air with no obstructions and that radio waves DO NOT curve around objects. Actual transmission range will vary depending on what is in the path of the signal. Each obstruction (roof, walls, floors, ceilings, thick trees, etc.) will effectively cut signal range in half.

**Example:** A wireless weather station receiver with a 330 feet range is mounted on an interior wall, so that the signal has to pass through one interior wall, one exterior wall, and across the 10 foot width of the room between the 2 walls. The first wall will reduce the range to 165 feet, and the second wall will reduce the range to 87 feet. Factoring in the 10 foot room, this leaves a maximum of 77 feet of remaining signal range.

This allowance is typically enough for a frame wall with non-metallic siding; however certain materials can reduce range even further. Metal siding, stucco, and some types of glass can reduce signal range by as much as  $\frac{3}{4}$  or more, compared to the  $\frac{1}{2}$  reduction typical of most obstructions. It is possible to receive a signal through these materials, however maximum range will be much less due to their tendency to absorb or reflect a much larger portion of the sensor's signal.

If the outdoor temperature and humidity data are not being received within 2 minute after setting up (or the outdoor display show "--." in the outdoor section of the intelligent weather station after failed attempts during normal operation). Please check the following points:

1. The distance of the intelligent weather station or remote temperature/humidity sensor should be at least 3 to 6 feet (1.5 to 2 meters) away from any interfering sources such as computer monitors or TV sets.
2. Avoid positioning the intelligent weather station onto or in the immediate proximity of metal doors or window frames.
3. Using other electrical products such as headphones or speakers operating on the same signal frequency (915MHz) may prevent correct signal transmission and reception.
3. Neighbors using electrical devices operating on the 915MHz signal frequency can also cause interference.
4. "Visibility" of the intelligent weather station and remote temperature/humidity sensor (e.g. through a window) increases the range.

**Note:**

When the 915MHz signal is received, do not re-open the battery cover of either the remote temperature/humidity sensor or the intelligent weather station, as the batteries may spring free from the contacts and force a false reset. Should this happen accidentally then reset all units (see **Setting up** above) otherwise transmission problems may occur.

If no reception is possible despite the observation of these factors, all system units have to be reset (see **Setting up**).

**POSITIONING THE INTELLIGENT WEATHER STATION:**

The intelligent weather station has been designed to be hung on a wall or free standing.



**For Free standing:**

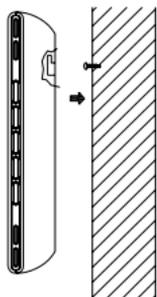
Simply attached the stand to the bottom of the unit and place onto a flat surface.

## To wall mount

Choose a sheltered place. Avoid direct rain and sunshine.

Before wall mounting, please check that the outdoor temperature and humidity values can be received from the desired locations.

To wall mount:

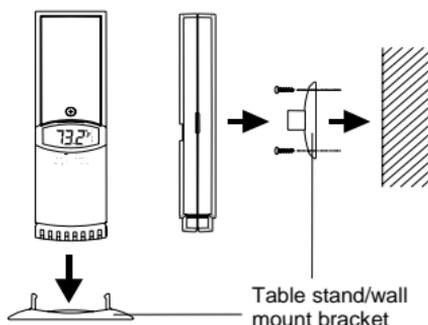


1. Fix a screw (not supplied) into the desired wall, leaving the head extended out the by about 0.2" (5mm).
2. Fold the stand of the intelligent weather station by pushing inward and hang it onto the screw. Remember to ensure that it locks into place before releasing.

## POSITIONING THE REMOTE

### TEMPERATURE / HUMIDITY SENSOR:

The remote temperature/humidity sensor can be placed onto any flat surface or wall mounted using the bracket which doubles as a stand or wall mount base.



### To wall mount:

1. Secure the bracket onto a desired wall using the screws and plastic anchors.
2. Clip the remote temperature/humidity sensor onto the bracket.

### Note:

Before permanently fixing the remote temperature/humidity sensor wall base, place all units in the desired locations to check that the outdoor temperature and humidity readings are receivable. In event that the signal is not received, relocate the remote temperature/humidity sensor or move them slightly as this may help the signal reception.

## **CARE AND MAINTENANCE**

- Extreme temperatures, vibration and shock should be avoided as these may cause damage to the units and give inaccurate forecasts and readings.
- When cleaning the display and casings, use a soft damp cloth only. Do not use solvents or scouring agents as they may mark the LCD and casings.
- Do not submerge the units in water.
- Immediately remove all low powered batteries to avoid leakage and damage. Replace only with new batteries of the recommended type.
- Do not make any repair attempts to the units. Return it to their original point of purchase for repair by a qualified engineer. Opening and tampering with the units may invalidate their guarantee.
- Do not expose the units to extreme and sudden temperature changes, this may lead to rapid changes in forecasts and readings and thereby reduce their accuracy.

## **SPECIFICATIONS**

Temperature measuring range:

- Indoor : +40°F to +139.8°F with Accuracy +/- 0.2°F resolution  
-40°C to +59.9°C with Accuracy +/- 0.1°C resolution  
("OF.L" displayed if outside this range)
- Outdoor : -39.8°F to +139.8°F with Accuracy +/- 0.2°F resolution  
-39.9°C to +59.9°C with Accuracy +/- 0.1°C resolution  
("OF.L" displayed if outside this range)

Relative humidity measuring range:

- Indoor : 1% to 99% with 1% resolution  
("- -" displayed when value < 1%; "99%"  
displayed if value ≥ 99%)
- Outdoor : 1% to 99% with 1% resolution  
("1%" displayed when value ≤ 1%; "99%" is  
played if value ≥ 99%)

- Indoor temperature checking interval : every 20 seconds  
Indoor humidity checking interval : every 20 seconds  
Outdoor temperature reception : every 4 seconds  
Outdoor humidity reception : every 4 seconds  
Sensor checking interval : every 4 seconds  
Air pressure checking interval : every 20 seconds  
Transmission range : up to 300 feet (100 meters)  
(open space)

Power supply:

- Intelligent Weather Station : 3 x AA batteries  
Remote temperature/humidity sensor : 2 x AA batteries

Battery life cycle : approximately 12 months  
Alkaline batteries are recommended  
Dimensions (H x L x W)  
Intelligent Weather Station : 6.88" x 4.72" x 1.22" / 175 x 120 x 31 mm  
Remote temperature/humidity sensor : 6.39" x 1.69" x 0.90" / 160 x 43 x 23mm

## ***WARRANTY INFORMATION***

La Crosse Technology, Ltd provides a 1-year limited warranty on this product against manufacturing defects in materials and workmanship.

This limited warranty begins on the original date of purchase, is valid only on products purchased and used in North America and only to the original purchaser of this product. To receive warranty service, the purchaser must contact La Crosse Technology, Ltd for problem determination and service procedures. Warranty service can only be performed by a La Crosse Technology, Ltd authorized service center. The original dated bill of sale must be presented upon request as proof of purchase to La Crosse Technology, Ltd or La Crosse Technology, Ltd's authorized service center.

La Crosse Technology, Ltd will repair or replace this product, at our option and at no charge as stipulated herein, with new or reconditioned parts or products if found to be defective during the limited warranty period specified above. All replaced parts and products become the property of La Crosse Technology, Ltd and must be returned to La Crosse Technology, Ltd. Replacement parts and products assume the remaining original warranty, or ninety (90) days, whichever is longer. La Crosse Technology, Ltd will pay all expenses for labor and materials for all repairs covered by this warranty. If necessary repairs are not covered by this warranty, or if a product is examined which is not in need or repair, you will be charged for the repairs or examination. The owner must pay any shipping charges incurred in getting your La Crosse Technology, Ltd product to a La Crosse Technology, Ltd authorized service center. La Crosse Technology, Ltd will pay ground return shipping charges to the owner of the product to a USA address only.

Your La Crosse Technology, Ltd warranty covers all defects in material and workmanship with the following specified exceptions: (1) damage caused by accident, unreasonable use or neglect (including the lack of reasonable and necessary maintenance); (2) damage occurring during shipment (claims must be presented to the carrier); (3) damage to, or deterioration of, any accessory or decorative surface; (4) damage resulting from failure to follow instructions contained in your owner's manual; (5) damage resulting from the performance of repairs or

alterations by someone other than an authorized La Crosse Technology, Ltd authorized service center; (6) units used for other than home use (7) applications and uses that this product was not intended or (8) the products inability to receive a signal due to any source of interference.. This warranty covers only actual defects within the product itself, and does not cover the cost of installation or removal from a fixed installation, normal set-up or adjustments, claims based on misrepresentation by the seller or performance variations resulting from installation-related circumstances.

LA CROSSE TECHNOLOGY, LTD WILL NOT ASSUME LIABILITY FOR INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR OTHER SIMILAR DAMAGES ASSOCIATED WITH THE OPERATION OR MALFUNCTION OF THIS PRODUCT. THIS PRODUCT IS NOT TO BE USED FOR MEDICAL PURPOSES OR FOR PUBLIC INFORMATION. THIS PRODUCT IS NOT A TOY. KEEP OUT OF CHILDREN'S REACH.

This warranty gives you specific legal rights. You may also have other rights specific to your State. Some States do not allow the exclusion of consequential or incidental damages therefore the above exclusion of limitation may not apply to you.

For warranty work, technical support, or information contact:

La Crosse Technology, Ltd  
2809 Losey Blvd. S.  
La Crosse, WI 54601  
Phone: 608.782.1610  
Fax: 608.796.1020

e-mail:

[support@lacrossetechnology.com](mailto:support@lacrossetechnology.com)  
(warranty work)

[sales@lacrossetechnology.com](mailto:sales@lacrossetechnology.com)  
(information on other products)

web:

[www.lacrossetechnology.com](http://www.lacrossetechnology.com)

Questions? Instructions? Please visit:

[www.lacrossetechnology.com/9020](http://www.lacrossetechnology.com/9020)

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FCC ID: OMO-TX28U (sensor)  
**FCC DISCLAIMER**

**RFExposure mobil:**

The internal / external antennas used for this mobile sensor must provide a separation distance of at least 20 cm (8 inches) from all persons and must not be co-located or operating in conjunction with any other antenna or sensor."

**Statement according to FCC part 15.19:**

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.

**Statement according to FCC part 15.21:**

Modifications not expressly approved by this company could void the user's authority to operate the equipment.

**Statement according to FCC part 15.105:**

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