

Color Screen Weather Station User Manual

1. Introduction

Thank you for purchasing the color screen weather station with temperature, humidity, barometric, moon phase and advanced forecasting. The following use guide provides step by step instructions for installation, operation and troubleshooting.

2. Product Features:



Figure 1

- 1) Wireless outdoor and indoor humidity (%RH)
- 2) Wireless outdoor and indoor temperature (°F or °C)
- 3) Records min. and max. humidity
- 4) Records min. and max. temperature
- 5) Barometric pressure (inHg, mmHg or hPa)
- 6) Weather forecast
- 7) Time and date by manual setting (WH2800)
- 8) DCF Radio controlled time and date (WH2801)
- 9) 12 or 24-hour time display
- 10) Perpetual calendar
- 11) Time alarm with snooze
- 12) Moon phase
- 13) Can receive one sensor
- 14) LED backlight
- 15) Wall hanging or free standing
- 16) Included transmitter (Outdoor sensor)
- 17) Synchronized instant reception

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3. Getting started

Note: The power up sequence must be performed in the order shown in this section (remote transmitter first, display console second) to avoid the console synchronization time out.

This weather station consists of a console (receiver), a thermo-hygrometer (remote transmitter), and a power adapter.

3.1 Parts list

QTY	ITEM
1	Display console Frame Dimensions (LxWxH): 161.5*86*21.5mm
1	Thermo-hygrometer transmitter Dimensions (LxWxH): 122*40*18mm
1	Power adapter

Console

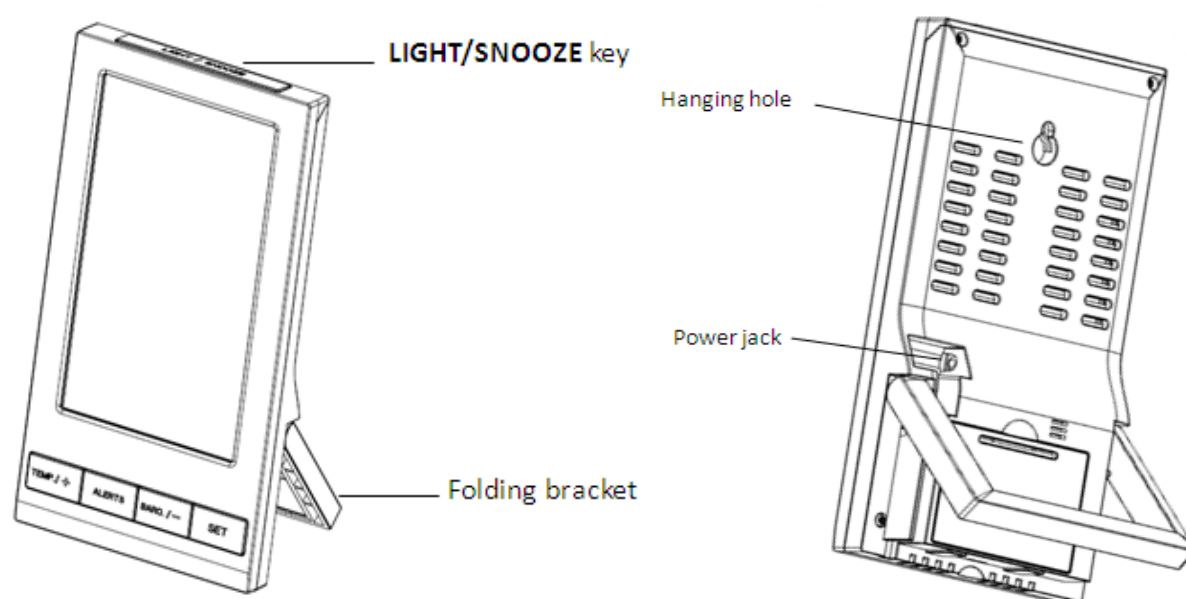


Figure 2

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Remote sensor

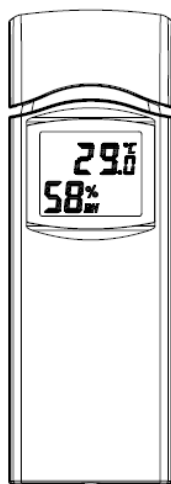


Figure 3

3.2 Thermo-Hygrometer Sensor Set Up

Note: To avoid permanent damage, please take note of the battery polarity before inserting the batteries.

Remove the battery door on the back of the sensor. Insert two AA batteries.

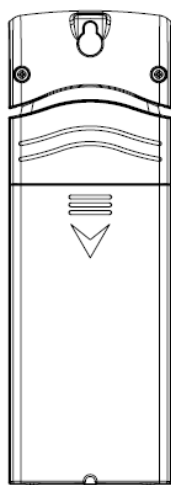


Figure 4

We recommend lithium batteries for cold weather climates, but alkaline batteries are sufficient for most climates. We do not recommend rechargeable batteries. They have lower voltages, do not operate well at wide temperature ranges, and do not last as long, resulting in poorer reception.

Replace the battery door. Note that the temperature and humidity will be displayed on the LCD display. Looking at the back of the unit from left to right, the polarity is (-) (+) for the top battery and (+) (-) for the bottom battery.

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3.3 Display Console Set Up

Place the remote thermo-hygrometer about 5 to 10 meters away from the display console (if the sensor is too close, it may not be received by the display console).

The console can be powered up by AC adapter or batteries. Choose one way of below two to power up the console.

1. Insert the power adapter into the power jack of the console, and plug in the adapter. The LCD display will beep once and then light up. The brightness of console is HIGH level when plug in the adapter. Press the **LIGHT/SNOOZE** key can adjust among HIGH/MIDDLE/OFF level according to your preference.
2. Remove the battery door on the back of the display. Insert three AAA (alkaline or lithium, avoid rechargeable) batteries in the back of the display console. Looking at the back of the unit (left to right), the polarity is (+) (-) for the top battery, (-) (+) for the middle battery and (+) (-) for the bottom battery.

Note: To avoid permanent damage, please take note of the battery polarity before inserting the batteries.

The display will beep once and all of the LCD segments will light up for a few seconds to verify all segments are operating properly.

Replace the battery door, and fold out the desk stand and place the console in the upright position.

Note: The backlight will be on for only 10 seconds if you use alkaline batteries as power supply. Only when you use power adapter it will be continuous light on.

The console will instantly display indoor temperature, humidity, barometer, moon phase, date and time.

The remote search icon will turn on:



3.3.1 Radio controlled clock

The RCC is received by the wireless transmitter, and passed to the console. After the remote sensor is powered up, the sensor will transmit weather data for 5 seconds, and then the sensor will begin radio controlled clock (RCC) reception.

During the RCC time reception period (maximum 10 minutes), no weather data will be transmitted to avoid interference.

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If the signal reception is not successful (normally during the day due to solar interference), the sensor search will be cancelled, the outdoor temperature and humidity will update as normal, and the RCC search will automatically resume every two hours until the signal is successfully captured. The regular RF link will resume once RCC reception routine is finished. In some locations, RCC reception may take a couple of days to receive the signal. The temperature and humidity data will continue to transmit during this period.

Once the radio controlled time is RCC reception icon  will turn on (reference Figure 4).

3.3.2 Display Console Layout

Note: The following illustration shows the full segments of the LCD for description purposes only and will not appear like this during normal operation.

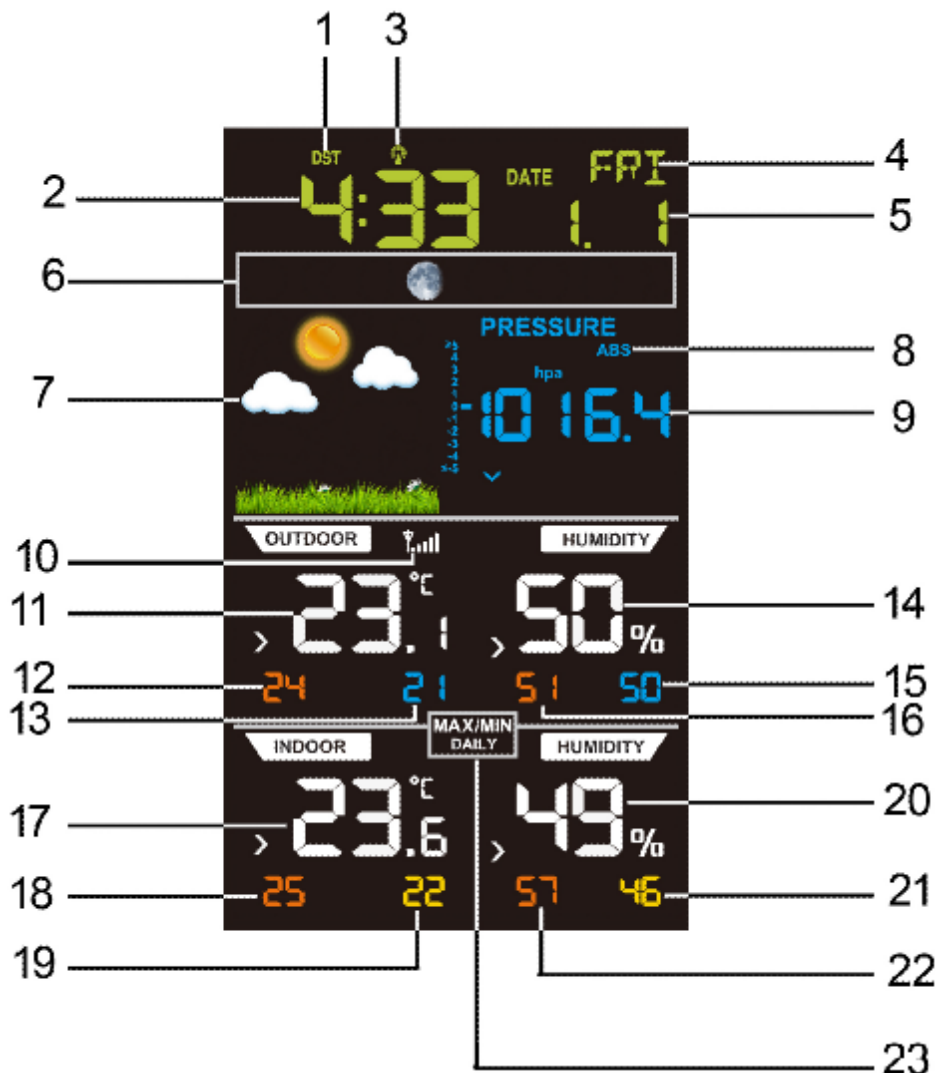


Figure 5

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- | | |
|--|-----------------------------|
| 1. Day Light Saving time. | 12. Max outdoor temperature |
| 2. Time | 13. Min outdoor temperature |
| 3. Radio controlled clock | 14. Outdoor humidity |
| 4. Week day | 15. Min Outdoor humidity |
| 5. Date | 16. Max outdoor humidity |
| 6. Moon phase | 17. Indoor temperature |
| 7. Weather forecast icon | 18. Max indoor temperature |
| 8. Absolute/relative barometric pressure selection | 19. Min indoor temperature |
| 9. Barometric pressure | 20. Indoor humidity |
| 10. Outdoor sensor signal | 21. Min indoor humidity |
| 11. Outdoor temperature | 22. Max indoor humidity |
| | 23. MAX/MIN DAILY icon |

3.3.3 Sensor Operation Verification

Verify the indoor and outdoor humidity match closely with the console and sensor array in the same location (about 10' apart). The sensors should be within 10% (the accuracy is $\pm 5\%$). Allow about 30 minutes for both sensors to stabilize.

Verify the indoor and outdoor temperature match closely with the console and sensor array in the same location (about 10' apart). The sensors should be within 4°F (the accuracy is $\pm 2^\circ\text{F}$). Allow about 30 minutes for both sensors to stabilize.

4. Sensor Placement

It is recommended you mount the remote sensor outside on a north facing wall, in a shaded area, at a height at or above the receiver. If a north facing wall is not possible, choose a shaded area, under an eave.

Direct sunlight and radiant heat sources will result in inaccurate temperature readings. Although the sensor is weatherproof, it is best to mount in a well-protected area, such as an eave.

1. Use a screw or nail to affix the remote sensor to the wall, as shown in Figure 6
2. Hang the remote sensor up on string, as shown in Figure 7.

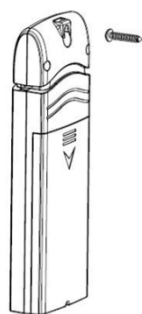


Figure 6

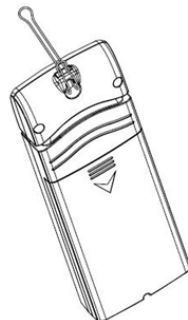


Figure 7

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Note: Make sure the sensor is mounted vertically and not lying down on a flat surface. This will insure optimum reception. Wireless signals are impacted by distance, interference (other weather stations, wireless phones, wireless routers, TVs and computer monitors), and transmission barriers, such as walls. In general, wireless signals will not penetrate solid metal and earth (down a hill, for example).

5. Console Operation

Note: The console has four keys for easy operation: **TEMP./+** key, **ALM** key, **BARO./-** key and **SET** key. There are four program modes: Set Mode, Alarm Mode, calibration mode and Min/Max Mode.

Any program mode can be exited at any time by either pressing the **SNOOZE/LIGHT** key (on the top of the display console), or waiting for the 30-second time-out to take effect.

5.1 Set Mode

5.1.1 Set Mode Quick Reference Guide

Command	Mode	Settings
SET + 2 seconds	Enter Set Mode, Beep	Press TEMP./+ or BARO./- to toggle OFF and ON
SET	RST-reset max/min at 0:00	Press TEMP./+ or BARO./- to toggle OFF and ON
SET	Time Zone (TZ)	Press TEMP./+ to increase. BARO./- to decrease
SET	12/24 Hour Format	Press TEMP./+ or BARO./- to toggle between 12 hour (12h) and 24 hour (24h) format
SET	Hour of Day	Press TEMP./+ to increase. BARO./- to decrease
SET	Minute of Day	Press TEMP./+ to increase. BARO./- to decrease
SET	D-M/M-D Format	Press TEMP./+ or BARO./- to toggle between D-M and M-D format
SET	Year	Press TEMP./+ to increase. BARO./- to decrease
SET	Month of Year	Press TEMP./+ to increase. BARO./- to decrease
SET	Day of Month	Press TEMP./+ to increase. BARO./- to decrease
SET	Temperature Units of Measure	Press TEMP./+ to toggle between degF and degC

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SET	Barometric Pressure Units of Measure	Press TEMP./+ to toggle between inHg, mmHg and hPa
SET	Northern Hemisphere (NTH) or southern Hemisphere (STH) select	Press TEMP./+ to toggle between Northern and southern Hemisphere
SET	Exit Set Mode	

5.1.2 Set Mode Operation

While in Normal Mode, press and hold **SET** key 2 seconds enter setting mode. The first setting will begin flashing. You can press the **SET** key again to skip any step, as defined below.

1. **Beep** on/off. The BEEP (ON or OFF) setting will begin flashing. Press the **TEMP./+** key to toggle between BEEP ON and BEEP OFF.
2. **MAX/MIN record reset** ON/OFF. Press **SET** key again, **RST** (ON or OFF) will begin flashing. This function is to switch off/on the automatically reset of MAX/MIN record at 0:00 every day, which is default turned on. Press **TEMP./+** key to toggle between RST ON and RST OFF.
3. **Time Zone Settings**. Press the **SET** key again to adjust the Time Zone (TZ) setting.
Press the **TEMP./+** key or **BARO./-** key to adjust the time zone from -12 to 12, based on the number of hours from Coordinated Universal Time, or Greenwich Mean Time (GMT).
4. **12/24 Hour Format**. Press the **SET** key again to adjust the 12/24 hour format setting. Press the **TEMP./+** key to change between 12 hour and 24 hour format.
5. **Change Hour**. Press the **SET** key again to set the hour. Press the **TEMP./+** key or **BARO./-** key to adjust the hour up or down.
6. **Change Minute**. Press the **SET** key again to set the minute. Press the **TEMP./+** key or **BARO./-** key to adjust the minute.
7. **D-M/M-D Format**. Press the **SET** key again to adjust the D-M/M-D format setting. Press the **TEMP./+** key to change between D-M and M-D format.
8. **Change Year**. Press the **SET** key again to set the calendar year. Press the **TEMP./+** key or **BARO./-** key to adjust the calendar year.

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9. **Change Month.** Press the **SET** key again to set the calendar month. Press the **TEMP./+** key or **BARO./-** key to adjust the calendar month.
10. **Change Day.** Press the **SET** key again to set the calendar day. Press the **TEMP./+** key or **BARO./-** key to adjust the calendar day.
11. **Temperature Units** (Celsius or Fahrenheit). Press the **TEMP./+** key again to toggle the temperature units from Celsius to Fahrenheit.
12. **Barometric Pressure Display Units** (hPa, mmHg or inHg). Press the **SET** key again to toggle the pressure units between hPa, mmHg or inHg.
13. **Northern Hemisphere (NTH) or southern Hemisphere (STH) select.** Press the **SET** key again to toggle the pressure units between NTH or STH.

Note: In the Set mode, press the **TEMP./+** key or **BARO./-** key to change or scroll the value. Hold the **TEMP./+** key or **BARO./-** key for 3 seconds to increase/decrease rapidly.

Note: Press the **LIGHT/SNOOZE** key (or wait 30 seconds for the programming mode to timeout), and the Set Mode will return to Normal Mode.

5.2 Check Barometric Pressure

5.2.1 Barometric Pressure History

While in normal mode, press **BARO./-** to check the barometric pressure. Press the **BARO./-** button to switch to past 12hr/24hr/48hr/72hr average pressure. To exit the barometric pressure history mode, press the **SNOOZE/LIGHT** key (on the top of the display console), or wait 30 seconds for the timeout to take effect.

5.2.2 Relative Pressure Calibration

You will want to calculate your barometric pressure to an official reporting station in your area. Since barometric pressure does not drastically change in a 50 mile radius (unless the weather is rapidly changing), this method of calibration is acceptable.

To determine the relative pressure for your location, locate an official reporting station near you (the internet is the best source for real time barometer conditions, such as Weather.com or Wunderground.com), and set your weather station to match the official reporting station.

5.2.3 Relative vs. Absolute Pressure

While in normal mode, Press and hold the **BARO./-** button for 2 seconds you can switch between absolute (ABS) pressure and relative (REL) pressure.

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The display console displays two different pressures: absolute (measured) and relative (corrected to sea-level).

To compare pressure conditions from one location to another, meteorologists correct pressure to sea-level conditions. Because the air pressure decreases as you rise in altitude, the sea-level corrected pressure (the pressure your location would be at if located at sea-level) is generally higher than your measured pressure.

Thus, your absolute pressure may read 28.62 inHg (969 mb) at an altitude of 1000 feet (305 m), but the relative pressure is 30.00 inHg (1016 mb).

The standard sea-level pressure is 29.92 in Hg (1013 mb). This is the average sea-level pressure around the world. Relative pressure measurements greater than 29.92 inHg (1013 mb) are considered high pressure and relative pressure measurements less than 29.92 inHg are considered low pressure.

To determine the relative pressure for your location, locate an official reporting station near you (the internet is the best source for real time barometer conditions, such as Weather.com or Wunderground.com), and set your weather station to match the official reporting station.

5.3 Dew point

While in normal mode, Press the **TEMP/+** key to view the Dew Point in the outdoor temperature field. If key idle 30 seconds, the display will return to normal mode.

To exit the Dew Point display mode, press the **SNOOZE/LIGHT** key (on the top of the display console), or wait 30 seconds for the timeout to take effect.

5.4 ALARM Mode

While in normal mode, press the **ALARM** key to view the alarm time. The alarm icon will be displayed in the time field.

5.4.1 Time ALARM

Press **ALARM** button once, you will see the ALARM time.


Press and hold the **ALARM** button for 2 seconds, you will enter the ALARM setting interface. Please follow the below sequence to operate settings:

1. Press the **TEMP/+** and **BARO/-** button to change the hour.
2. Press **SET** to confirm the hour and skip to minute setting. And press the **TEMP/+** and **BARO/-** button to change the minute.

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3. Press **SET** to confirm the minute and skip to Alarm on/off setting. Press **TEMP./+** and **BARO/-** button to switch on/off the time ALARM.
4. Press **SET** to skip to Ice ALARM on/off setting. Press **TEMP./+** and **BARO/-** button to switch on/off the Ice ALARM(Refer to 5.4.2).
5. Returns to the normal display mode.

5.4.2 Low temperature ALARM

Low temperature ALARM is an ALARM happens when outdoor temperature falls into (or goes up to) -3~-2 c range. The LO temperature icon  will appear and flash on the console. If the BEEP is switched on, a sound ALARM would be also activated when Low temperature ALARM occurs.



5.4.3 Cancelling the ALARM

When time ALARM or ice ALARM is triggered, press any key to close the sound alarm. During time ALARM, press **LIGHT/SNOOZE** key can enter snooze mode.

The ice ALARM will reset automatically once the value has fallen into the ice ALARM range.

5.5 Calibration Mode

While in normal node, press and hold the **SET** and **BARO./-** buttons 5 seconds to enter calibration mode(note: the SET mode will appear after three seconds. Continue pressing the two keys until you see the CAL icon appear in the upper right hand corner of the display).

The calibration sequence would be as below:

1. Outdoor temperature calibration.
2. Outdoor humidity calibration.
3. Indoor temperature calibration.
4. Indoor humidity calibration.
5. Absolute pressure calibration.

In calibration mode, press + and - buttons to adjust offset values, then press **SET** to confirm and proceed to next parameter. Press the **ALARM** button to cancel offset values.

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Example 1:

The calibrated temperature from a red spirit thermometer, or actual temperature is 30.0 °C

The uncalibrated or measured temperature is 28.7 °C.

Offset = Calibrated Temperature – Uncalibrated Temperature = 30.0 – 28.7 = 1.3 °C.

Enter the temperature offset +1.3 °C.

Example 2:

The calibrated absolute pressure from a calibrated pressure sensor, or actual absolute pressure is 28.61 inHg.

The uncalibrated or measured absolute pressure measured by the weather station is 28.66 inHg.

Offset = 28.66 – 28.61 = -0.05 inHg

Enter the absolute pressure offset -0.05 inHg



Note: The absolute pressure offset will also affect the relative pressure. To adjust the relative pressure, only (independent of the absolute pressure), reference Section 5.1.

Normally, you would not calibrate the absolute pressure because it is difficult to obtain a calibrated source. The preferred method is to calculate relative pressure to an official source near you, as described in Section 5.2.2.

During calibration mode, press **LIGHT/SNOOZE** to exit calibration mode.

Please note Offset values range as below:

Temperature offset calibrated (range +/-9F, default: 0 degrees).

Humidity offset calibrated (range +/-9%)

Pressure offset calibrated (range +/-10hpa)

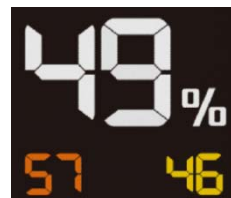
5.6 MAX/MIN Mode

The Max/Min weather data are displayed on the bottom of each parameter segment. Left one in red color is MAX record, right one in blue or yellow is MIN record. All the MAX/MIN records are based on since last reset time after turned on.



Max temperature

Min temperature



Max humidity Min humidity

All MAX/MIN records can be cleared if you press and hold the TEMP button 2 seconds.

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MAX/MIN records are cleared on 0:00 every day default. And below MAX/MIN DAILY icon would be displayed on console. You can switch off this automatically clearing function in setting mode (Refer to 5.1.2 2.RST ON/OFF in Set Mode Quick Reference Guide), and this icon would disappear.



5.7 Other Console Features

5.7.1 Color Weather Forecasting

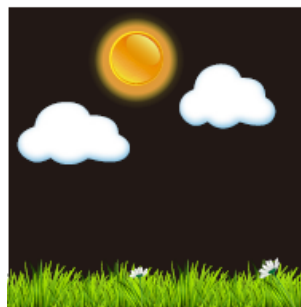
This station learns. Please allow 30 days for barometric calibration. This will ensure an accurate personal forecast for your location.

Six color forecast icons use changing atmospheric pressure to predict weather conditions for the next 12-hours .

Note: The weather forecast or pressure tendency is based on the rate of change of barometric pressure. In general, when the pressure increases, the weather improves (sunny to partly cloudy) and when the pressure decreases, the weather degrades (cloudy to rain).



Sunny



Partly Cloudy



Cloudy



Rainy



Stormy












Snowy

Note: Snowy icon will appear in place of rainy and stormy icons when the outdoor temperature is below 0 °C /32°F.









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5.7.2 Moon phase

The following moon phases are displayed based on the calendar date.

								
New	Waxing Crescent	First Quarter	Waxing Gibbous	Full	Waning Gibbous	Third Quarter	Waning	New

Note: Above icons are for Northern Hemisphere areas. For Southern Hemisphere the icons are as below:

								
New	Waxing Crescent	First Quarter	Waxing Gibbous	Full	Waning Gibbous	Third Quarter	Waning	New

5.7.3 Temperature/Humidity Trend Arrows

The temperature (2°F/1°C) and humidity (3%) trend indicators update every 30 minutes. The trend reflects changes over the past 3 hours. E.G.: At 3:00 — compares to 12:00 data; at 3:30 — compares to 12:30.

Temperature or Humidity increased in past 3 hours	Temperature or Humidity did not change in past 3 hours	Temperature or Humidity decreased in past 3 hours
^	>	▼

5.7.4 Pressure Tendency Arrows

The forecast trend indicators update every 30 minutes. The trend reflects changes in pressure (1 hPa) over the past 3 hours. E.G.: At 3:00 — compares to 12:00 data; at 3:30 — compares to 12:30.

Pressure is rising, weather expected to improve	Pressure is unchanged	Pressure is falling, weather expected to worsen
^	>	▼

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5.7.5 Restoring Lost Outdoor Temperature and Humidity Sensor

If the signal is lost between the remote sensor (or transmitter) and the display console (or the receiver), to resynchronize, while in normal mode, Press and hold **SET** and **TEMP** button for 5 seconds, to register the outdoor transmitter.

Please wait several minutes for the remote sensor reports in. Do not touch any buttons until synchronization is complete.

If the synchronization fails, reset the console by removing one battery from the display console, wait 10 seconds, and reinsert the battery, as specified in the console set up part.

6. Glossary of Terms

Term	Definition
Absolute Barometric Pressure	Relative barometric pressure, corrected to sea-level. To compare pressure conditions from one location to another, meteorologists correct pressure to sea-level conditions. Because the air pressure decreases as you rise in altitude, the sea-level corrected pressure (the pressure your location would be at if located at sea-level) is generally higher than your measured pressure.
Accuracy	Accuracy is defined as the ability of a measurement to match the actual value of the quantity being measured.
HectoPascals (hPa)	Pressure units in SI (international system) units of measurement. Same as millibars (1 hPa = 1 mbar)
Hygrometer	A hygrometer is a device that measures relative humidity. Relative humidity is a term used to describe the amount or percentage of water vapor that exists in air.
Inches of Mercury (inHg)	Pressure in Imperial units of measure. 1 inch of mercury = 33.86 millibars
Range	Range is defined as the amount or extent a value can be measured.
Relative Barometric Pressure	Measured barometric pressure relative to your location or ambient conditions.

7. Specifications

7.1 Wireless Specifications

- Line of sight wireless transmission (in open air): 100meter / 300 feet
- Frequency: 433 MHz/868 MHz/915 MHz
- Update Rate: 64 seconds

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7.2 Measurement Specifications

The following table provides specifications for the measured parameters.

Measurement	Range	Accuracy	Resolution
Indoor Temperature	-9.9-60C	$\pm 1\text{ }^{\circ}\text{C}$	0.1 $^{\circ}\text{C}$
Outdoor Temperature	-40 to 60C	$\pm 1\text{ }^{\circ}\text{C}$	0.1 $^{\circ}\text{C}$
Indoor Humidity	1 0 to 99 %	$\pm 5\%$ (only guaranteed between 20 to 90%)	1 %
Outdoor Humidity	1 0 to 99%	$\pm 5\%$ (only guaranteed between 20 to 90%)	1 %
Barometric Pressure	300hpa to 1100hpa	$\pm 3\text{ hpa}$ (only guaranteed between 700 to 1100hpa)	0.1hpa

7.3 Power Consumption

- Base station : 5V DC adaptor (included)
3 x AAA 1.5V Alkaline batteries (not included)
- Remote sensor : 2 x AA 1.5V Alkaline batteries (not included)
- Battery life: Minimum 12 months for base station
Minimum 24 months for thermometer-hygrometer sensor (use lithium batteries in cold weather climates)