

Color Screen Multi-channel Weather Station User Manual

1. Introduction

Thank you for purchasing the color screen weather station with temperature, humidity, barometric, moon phase and advanced forecasting. This device can receive signals up to 3 sensors. All the sensors measure temperature and humidity then transmit to the console and displayed on Outdoor segment.

The following use guide provides step by step instructions for installation, operation and troubleshooting.

2. Product Features:



Figure 1

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

3. Getting started

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

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

3.1 Parts list

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

*:1, 2 or 3 transmitters for user's option.

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Console

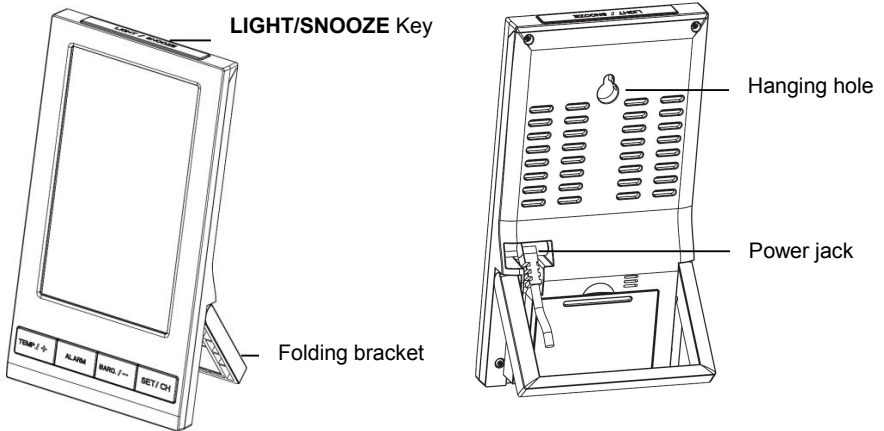


Figure 2

Remote sensor

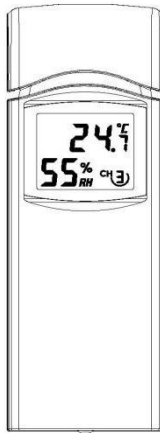


Figure 3

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3.2 Thermo-Hygrometer Sensor Set Up

Note: To avoid operating problems, please take note of battery polarity before/when inserting any Alkaline Batteries (permanent damaged could be introduced by inserting the battery in wrong direction). Do not use rechargeable batteries. We recommend fresh alkaline batteries for outdoor temperature range between -20°C and 60°C and fresh lithium batteries for outdoor temperature range between -40°C and 60°C .

1. Move the transmitter(s) about 2 to 3m away from the display console (if the transmitters are too close, they may not be received by the display console). With multiple transmitters, make sure all transmitters are powered up and displaying different channels on the display.
2. Remove the battery door on the back of the thermo-hygrometer sensor by sliding down the battery door.

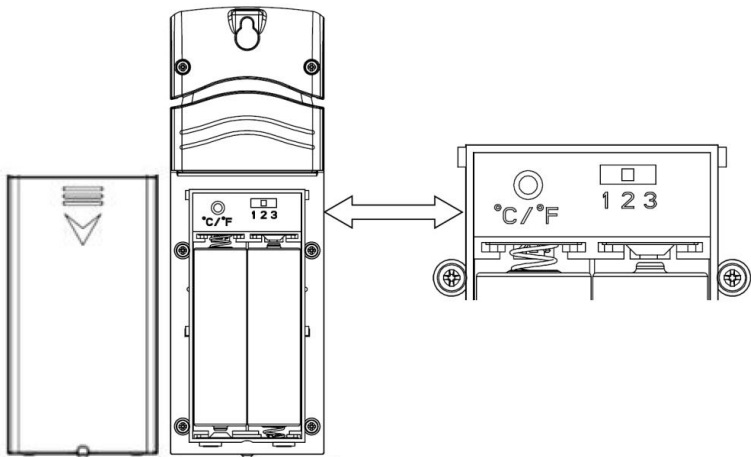


Figure 4

3. **BEFORE** inserting the batteries, locate the slide switches on the inside cover of the lid of the transmitter(Figure 4).

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4. **Channel Number:** the weather station support up to three sensors. To set each channel number, slide the button to according number.
5. **Temperature unit of Measure:** To change the sensor display units of measure ($^{\circ}\text{F}$ or $^{\circ}\text{C}$), Press the round button C/F.
6. Insert two AA batteries
7. Wait for seconds until temperature and humidity displayed on the LCD screen of sensors.
8. Verify the correct channel number (CH) and temperature units of measure are on the display, as shown in Figure 5.

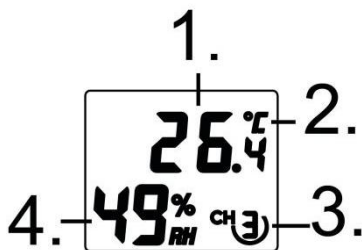


Figure 5

- (1) Temperature
 - (2) Temperature units ($^{\circ}\text{F}$ or $^{\circ}\text{C}$)
 - (3) Channel number
 - (4) Relative humidity
9. Close the battery door.
 10. Repeat for the additional remote sensor, verifying each remote is on a different channel.



3.3 Sensor Operation Verification

Verify the humidity sensors match closely with all of the sensors in the same location (about 2 to 3m apart). The sensors should agree within 10% (the accuracy is $\pm 5\%$). Allow about 30 minutes for all sensors to stabilize. The humidity can be adjusted or calibrated later to match each other a known source.

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Verify the temperature sensors match closely with all of the sensors in the same location (about 2 to 3m apart). The sensors should be within 2°C (the accuracy is $\pm 1^\circ\text{C}$). Allow about 30 minutes for all sensors to stabilize. The temperature can be adjusted or calibrated later to match each other or a known source.

3.4 Radio Controlled Clock (RCC)

After the remote sensor is powered up, the sensor will transmit weather data for 30 seconds, and then the sensor will begin radio controlled clock (RCC) reception. During the RCC time reception period (maximum 5 minutes), no weather data will be transmitted to avoid interference. Once the radio controlled time is received the RCC signal received successfully, the RCC reception icon  will turn on in the outdoor sensor LCD display. Then outdoor sensor sends the RCC signal to display console, Once the radio controlled time is received, RCC reception icon  will turn on in the display console. (reference Figure 8).

If the signal reception is not successful within 3 minute, the signal search will be cancelled and will automatically resume every six 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.

3.5 Remote Sensor Installation

Before mount the units, ensuring that the receiver can still pick up the signal from transmitters. It is recommended to mount the sensors on a north facing wall, in a shaded area. Direct sunlight and radiant heat sources will result in inaccurate temperature readings. Although the sensors are water resistant, it is best to mount in a well protected area, such as under 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.

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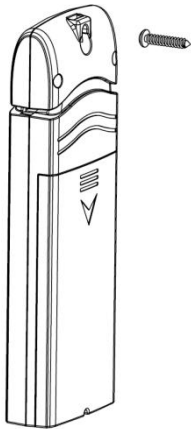


Figure 6

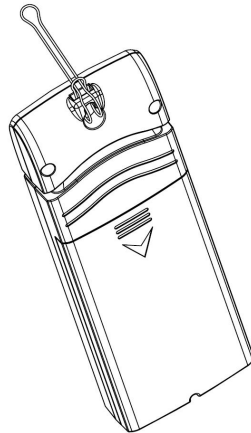


Figure 7

3.6 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).

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 selection is set to high when plugged into 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.

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

Note: The batteries are intended for back-up power only. The backlight will remain on for 5 seconds when on back up battery power only. Only when you use power adapter it will the back-light be continuously on.

4. The console will instantly display indoor temperature, humidity, barometer, moon phase, date and time. The remote search icon will turn on:



3.6.1 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.

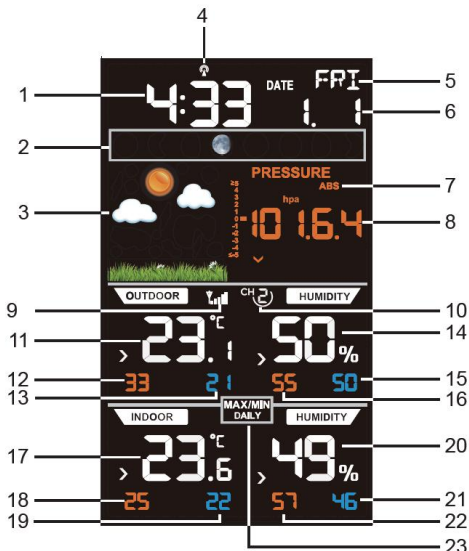


Figure 8

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

4. Console Operation

Note: The console has four keys for easy operation: **TEMP./+** key, **ALM** key, **BARO./-** key and **SET/CH** 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.

4.1 Set Mode

4.1.1 Set Mode Quick Reference Guide

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

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4.1.2 Set Mode Operation

While in Normal Mode, press and hold **SET/CH** key 2 seconds enter setting mode. The first setting will begin flashing. You can press the **SET/CH** 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/CH** 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/CH** 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/CH** 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/CH** 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/CH** 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/CH** 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/CH** key again to set the calendar year.

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Press the **TEMP./+** key or **BARO./-** key to adjust the calendar year.

9. **Change Month.** Press the **SET/CH** 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/CH** 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/CH** key again to toggle the pressure units between hPa, mmHg or inHg.
13. **Northern Hemisphere (NTH) or southern Hemisphere (STH) select.** Press the **SET/CH** 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.

4.2 Check different channels when multiple sensors included

If the device comes with multiple sensors, channel number can be set up as **3.2 Thermo- Hygrometer Sensor Set Up**. While in normal mode, press **SET/CH** key repeatedly to view data of different channels. Temperature, humidity, max./min. records of according channel will be displayed on outdoor segment.

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4.3 Check Barometric Pressure

4.3.1 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.

4.3.2 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.

4.3.3 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.

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

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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.

4.4 Dew point

While in normal mode, Press the **TEMP/+** key to view the Dew Point of current channel in the outdoor temperature Segment. 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.

4.5 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.

4.5.1 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/CH** 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/CH** 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/CH** to skip to Ice ALARM on/off setting. Press **TEMP./+** and **BARO/-** button to switch on/off the low temperature ALARM(Refer to 4.5.2).
5. Returns to the normal display mode.

4.5.2 Low temperature ALARM

Low temperature ALARM is an ALARM happens when outdoor temperature falls into (or goes up to) -3~2 c range. Once there is outdoor temperature of any sensor falls into this temperature range, the low temperature alarm would be triggered. 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.



4.5.3 Cancelling the ALARM

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

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

4.6 Calibration Mode

While in normal node, press and hold the **SET/CH** 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

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appear in the upper right hand corner of the display).

The calibration sequence would be as below:

1. CH1 Outdoor temperature calibration.
2. CH1 Outdoor humidity calibration.
3. CH2 Outdoor temperature calibration.
4. CH2 Outdoor humidity calibration.
5. CH3 Outdoor temperature calibration.
6. CH3 Outdoor humidity calibration.
7. Indoor temperature calibration.
8. Indoor humidity calibration.
9. Absolute pressure calibration.

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

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.

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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 4.3.2.

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)

4.7 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 of all sensors can be cleared if you press and hold the TEMP button for 2 seconds.

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 4.1.2 2.RST ON/OFF in Set Mode Quick Reference Guide), and this icon would disappear.



4.8 Other Console Features

4.8.1 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 .

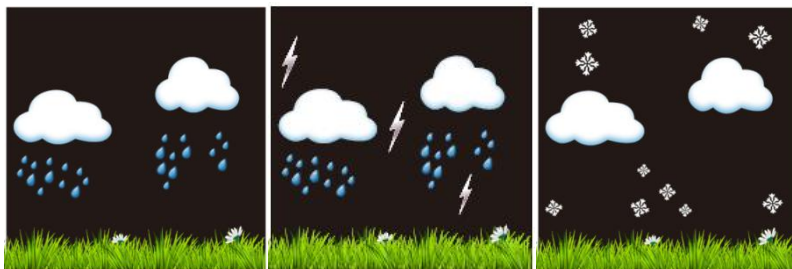
Note: The weather forecast or pressure tendency is based on the rate of change of barometric pressure. In general, when the pressure increases, the weather improves (sunny to partly cloudy) and when the pressure decreases, the weather degrades (cloudy to rain).



Sunny

Partly Cloudy

Cloudy



Rainy

Stormy










Snowy

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

4.8.2 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

4.8.3 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
		

4.8.4 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.

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Pressure is rising, weather expected to improve	Pressure is unchanged	Pressure is falling, weather expected to worsen
		

4.8.5 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/CH** 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.

5. 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.

6. Specifications

6.1 Wireless Specifications

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

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6.2 Measurement Specifications

The following table provides specifications for the measured parameters.

Measurement	Range	Accuracy	Resolution
Indoor Temperature	-9.9-60C	± 1 °C	0.1 °C
Outdoor Temperature	-40 to 60C	± 1 °C	0.1 °C
Indoor Humidity	1 0 to 99 %	± 5% (only guaranteed between 20 to 90%)	1 %
Outdoor Humidity	1 0 to 99%	± 5% (only guaranteed between 20 to 90%)	1 %
Barometric Pressure	300hpa to 1100hpa	±3 hpa(only guaranteed between 700 to 1100hpa)	0.1hpa

6.3 Power Consumption

- Base station : 6V DC adaptor (included)
3 x AAA 1.5V Alkaline batteries (not included)
- Remote sensors : 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)