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## Batteries

**Explanation:** Many problems are resolved with fresh batteries of the appropriate voltage. Many items sent in under warranty, work when tested with fresh batteries. Batteries manufactured this year will have an expiration date 10 years (or more) in the future. Battery technology has improved, and batteries will maintain voltage longer in storage. However, the environment the batteries reside in for 10 years can deplete the power.

- Use Alkaline or Lithium batteries in the **remote sensor**.
- A minimum voltage of 1.48V for each battery is necessary for proper performance.
- Use batteries dated at least six years in advance of the current year. Batteries dated earlier than six years from now may still work but may be unstable in performance.
- Good name brand batteries make less noise, which reduces the chance of RF (radio frequency) interference from the battery compartment.

## Station Factory Restart

**Explanation:** The factory restart returns the station and remote sensor to an “out-of-the-box” default state and often resolves an issue.

### Factory Restart:

1. Remove batteries from remote sensor and station.
  2. Press one of the buttons on the station at least 20 times to clear all memory.
  3. Verify that the station is blank before proceeding (there may be lines painted on the screen that will show when there is no power).
  4. Leave both units without power for 15 minutes (very important).
  5. Insert fresh batteries into the remote sensor, then into the station.
  6. Press the TX button on the remote sensor to transmit RF signal.
  7. Keep the remote sensor 5-10 feet from the station.
  8. When RF connection is established, the temperature will appear on the station. Allow the remote sensor and station to sit together for 15 minutes to establish a strong connection.
  9. Do not press buttons for 15 minutes.
- For optimum 433MHz transmission, place the remote sensor no more than 330 feet (100 meters, open air) from the station.
  - See the section on [mounting](#) and [distance/resistance/interference](#) for details on mounting the remote sensor.

## Remote Temperature Sensor

### Compatible Remote sensors

The TX141-Bv4 remote sensor comes packaged with this station.

## Power Requirements

- 2-AA [batteries](#) power the remote sensor.
- 2-AA [batteries](#) power the station.
- We recommend Alkaline batteries for the remote sensor.
- You may choose to use Lithium batteries for temperatures below -20°F/-28.8°C.

## Quick Connect

**Explanation:** Use the quick connect for a station and remote sensor that have been working but lost connection due to interference or low batteries. This is not the same as a thorough factory reset.

1. Bring the remote sensor and station together inside and place the units 5-10 feet apart with nothing between them.
2. Hold the MINUS button for 5 seconds. The remote temperature area will flash.
3. Remove battery cover from the remote sensor and press and release the TX button to send the signal.
4. Wait for 2 minutes for the remote temperature to appear on the station.

Factory Restart: If the above procedure does not work, please try the factory reset.

## “NO” show for Remote Temperature

If you are seeing “NO” for your outdoor readings, please try the following steps:

1. Hold the - (**MINUS**) button to search for your outdoor sensor. The Reception Indicator will begin to animate.
2. If after 3 minutes the sensor still isn't connected, bring the sensor inside next to the display and remove power from both the sensor and clock.
3. Press any button on the clock 20 times and leave the parts sit for a few moments with the power off.
4. Install a new set of alkaline batteries into the sensor, then into your clock.
5. For additional help visit: [bit.ly/basic\\_restart](https://bit.ly/basic_restart)

## Remote Temperature is stuck or HH.H, LL.L

**Explanation:** These symbols are error messages indicating the remote sensor is outside of its readable range.

- Check [Batteries](#). Overpowered or underpowered batteries can cause this reading.
- Replace remote sensor.

**Note:** The last remote reading may remain (not change) for several hours when connection is lost. The remote temperature reading will flash when the connection is first lost or intermittent.

## Inaccurate Remote Temperature Reading

**Explanation:** High remote temperature readings are generally a location issue. Low remote temperature readings are power related or a sensor going bad.

- The remote sensor reads the environment where it is mounted. When mounted inside the home, it will read inside temperature.
- When the remote sensor reads high during the day, but not at night, it is a [positioning](#) problem.
- Look for heat sources such as sunlight, door or window frames or reflected heat.

**Side-by-side test:** Place the remote sensor right next to the station for 2 hours.

- Compare indoor and remote temperature. The temperatures should be within 4 degrees to be within tolerance.
- If the remote sensor reads correctly when next to the station, try a different location outside.

### Intermittent Remote Temperature

**Explanation:** Intermittent problems are the hardest to resolve. RF (radio frequency) communication may come and go occasionally. This can be normal in some environments (e.g., moister climates). If remote sensor signal is lost, please wait 2-4 hours for the signal to reconnect on its own.

- Move the remote sensor to a closer location.
- [Distance/Resistance](#) can cause loss of remote sensor signal.
- Check [Batteries](#).

**Freezer test:** Confirm the station is reading the correct remote sensor (not a neighbor's sensor). Place the remote sensor in the freezer for an hour and watch the temperature drop on the station.

**Indoor distance test:** Please complete the [Restart](#) with remote sensor and station 5-10 feet apart and inside to establish a strong connection.

- After 15 minutes, if there is a reading in the remote temperature area, move the remote sensor to another room with one wall between the remote sensor and the station.
- Observe to see if the temperature remains on consistently for 1 hour.
- If the temperature remains on while in the house, then it is likely a [distance/resistance](#) issue.
- Move the remote sensor to different locations outside to find a location where the temperature reading will hold.

### Remote sensor drains batteries quickly

- Test a new set of alkaline batteries. Write down the date of installation and the voltage of the batteries.
- When the batteries fail, please note the date and voltage again.
- Check the [distance](#) and [resistance](#) between the remote sensor and station. Remote sensors at the end of the range may work while batteries are fresh but not after they drain a bit.
- Check for leaking batteries, which may damage the remote sensor.
- Battery life is over 24 months when using reputable battery brands for both Alkaline and Lithium batteries.

### Remote sensor fell. The sensor no longer works

**Explanation:** If there is no physical damage to the remote sensor, the fall may not have caused internal damage. A fall can shock the remote sensor or the batteries in the remote sensor. Batteries that have fallen on a hard surface may be damaged and unable to function properly.

- Complete a [Restart](#) with fresh batteries.

- Use [Batteries](#) dated at least six years in advance of the current year. Batteries dated earlier than six years from now may still work but may be unstable in performance.

**Note:** A remote sensor that has fallen into puddle, snow, or other standing water, will likely have water damage and need to be replaced. Remote sensors are water resistant, not waterproof.

### Temperature Trend Arrows

**Explanation:** The indoor and remote temperature (2°F / 1°C) trend indicators update every 30 minutes or less. These trends represent temperature changes over the past three hours.

**Up Arrow:** Temperature has **risen** in the past 3 hours.

**Right Arrow:** Temperature has **not changed** in the past 3 hours.

**Down Arrow:** Temperature has **fallen** in the past 3 hours.

### HI | LO Temperature readings

**Explanation:** The station shows the daily HI | LO temperatures each day starting at midnight (12:00 AM). The station automatically resets the HI | LO temperatures at midnight (12:00 AM).

Press and release the PLUS button to view minimum then maximum temperatures.

### Mounting/Positioning Remote sensor

**First:** Place the remote sensor in the desired shaded location and the station in the home. Wait approximately 1 hour before permanently mounting the remote sensor to ensure that there is proper reception.

#### POSITION

##### Outdoor:

- Protect the remote sensor from standing rain or snow and from the overhead sun, which can cause it to read incorrectly.
- Mounting under an eave or deck rail works well.
- If you choose, you can construct a small roof or box for the remote sensor. Be sure a box has vents.
- Mount the remote sensor on the North side to prevent sun from causing incorrect readings.
- Mount at least 6 feet in the air for a strong RF (radio frequency) signal.
- Do not mount the remote sensor on a metal fence. This significantly reduces the effective [range](#).
- Remote sensors are water resistant, not waterproof.

##### Indoor:

- Mount the Remote Sensor indoors to monitor high mold risk areas like in a crawl space or a basement.

##### Indoor or Outdoor:

- Mount remote temperature sensor **vertically**.
- Avoid more than one wall between the remote sensor and the station.
- The maximum transmitting range in open air is over 330 feet (100 meters).

- Obstacles such as walls, windows, stucco, concrete and large metal objects can reduce the range.
- Do not mount near electrical wires, transmitting antennas or other items that will interfere with the signal.
- RF (radio frequency) signals do not travel well through moisture or dirt.

### Position Station

- The station has a pull out stand to sit on a desk or table or can be wall mounted.
- Place within range of the remote sensor.
- The maximum transmitting range in open air is 330 feet (100 meters).
- Obstacles such as walls, windows, stucco, concrete and large metal objects can reduce the range.
- Choose a location 6 feet or more from electronics such as cordless phones, wireless gaming systems, televisions, microwaves, routers, baby monitors, etc., which can prevent signal reception.
- Be aware of electrical wires and plumbing within a wall. This will interfere with RF (radio frequency) signal reception.

### Distance/Resistance/Interference

#### Distance:

- The maximum transmitting range in open air is over 330 feet (100 meters) between the remote sensor and the station. This range is in open air with ideal conditions.
- Consider what is in the signal path between the station and the remote sensor.
- Avoid placing electronics in the signal path between the station and the remote sensor.

#### Resistance:

- Obstacles such as walls, floors, windows, stucco, concrete and large metal objects can reduce the range.
- When considering the distance between the remote sensor and the station (330 feet open air), cut that distance in half for each wall, window, tree, bush or other obstruction in the signal path.
- Closer is better.
- Windows reflect the RF (radio frequency) signal.
- Metal absorbs the signal and reduces the range.
- Stucco has a metal mesh that absorbs the signal.
- Do not mount the remote sensor on a metal fence. This significantly reduces the effective range.

#### Interference:

- Consider items in the signal path between the remote sensor and the station.
- Sometimes a simple relocation of the remote sensor or the station will correct the interference.
- Windows can reflect the radio signal.
- Metal will absorb the RF (radio frequency) signal.
- Stucco has a metal mesh that absorbs signal.
- Avoid transmitting antennas: (ham radios, emergency dispatch centers, airports, military bases, etc.)
- Electrical wires (utilities, cable, etc.)

- Vegetation is full of moisture and reduces signal.
- It is difficult for RF (radio frequency) signal to travel through a hill.

## Station

### Power Requirements

2-AA alkaline batteries may be used.

### 12-Hour time format

Time can display in 12-hour only

### Fahrenheit/Celsius

Use the [program menu](#) to switch between Fahrenheit and Celsius.

### Moon Phase

The moon phase is based on the lunar calendar and the year, month and date set. Most Internet moon phase calculations are based on the lunar calendar.

- **Waxing** indicates growing or expanding illumination and happens after a new moon.
- **Waning** indicates decreasing illumination and occurs after a full moon.
- **Crescent** refers to the moon being less than half illuminated. Crescents can be waning or waxing.
- **Gibbous** describes a moon phase when more than half is illuminated. Gibbous can be waxing or waning.
- **New Moon** occurs when the moon is between the earth and sun, so the illuminated portion of the moon is on the back side facing the sun and we cannot see it. After a new moon, the illuminated portion will increase or wax until the full moon occurs.
- **Full Moon** occurs when the earth, moon and sun are in approximate alignment, with the moon and the sun on opposite sides of the earth. The illuminated portion of the moon faces the earth, giving us complete visibility of one side of the entire moon. After a full moon, the illuminated portion will decrease or wane until the new moon occurs.
- **First Quarter** and **Last Quarter** moons occur when the moon is at a 90 degree angle to the earth and sun. We see half of the moon illuminated and the other half is in shadow.

### Dashes, HH.H, LL.L or stuck Indoor Temperature

**Explanation:** These symbols are error messages indication the indoor sensor is outside of its readable range. For indoor readings, this is generally a power related issue.

- [Batteries](#) may be overpowered or underpowered. Remove batteries from the station.
- Press any button 20 times. Leave the station unpowered for 1-2 hours.
- Install fresh Alkaline batteries with correct polarity.
- If the indoor temperature is still shows dashes, HH.H or LL.L, the station may need replacement.

## Set Time Alarm

Hold the ALARM button for 5 seconds to enter the alarm setting mode.

1. The alarm **hour** digit will flash in the time display.
2. Press and release the + or - buttons to select the hour.
3. Press and release the ALARM button to set the minutes.
4. The **minute** digits will flash.
5. Press and release the + or - buttons to adjust the minutes.
6. Confirm with the ALARM button and exit.

## Activate/Deactivate time alarm

- Press and release the ALARM button once to show alarm time.
- Press and release the ALARM button to activate/deactivate the Alarm.
- The bell icon will disappear when the alarm is no longer active.

## Snooze Alarm

- When the alarm sounds, press the LIGHT button to trigger snooze alarm for 10 minutes. The snooze icon will flash when the snooze feature is active.
- To stop the alarm for one day, press ALARM button, while in snooze mode. The bell icon will remain solid.
- **Note:** When the alarm sounds, it continues for 2 minutes and then shuts off completely.

## Manually Set Time/Date: Program Menu

1. Hold the **SETTINGS** button to enter settings mode.
2. Press the + or - buttons to adjust the values.
3. Press the **SETTINGS** button to confirm adjustments and move to the next item.

### Setting order:

1. Language (English or Español)
2. Beep ON/OFF
3. Atomic ON/OFF
4. DST ON/OFF (Daylight Saving Indicator)
5. Time Zone
7. Hour
8. Minutes
9. Year
10. Month
11. Date
12. Fahrenheit/Celsius

1. Hold the SETTINGS button for 5 seconds.
2. **ENGLISH** will flash.
3. Press and release the + or - buttons to select Español.
4. Confirm with the SETTINGS button and select beep ON | OFF
5. **BEEP** and **ON** will flash.
6. Press and release the + or - buttons to turn this feature OFF.
7. Confirm with the SETTINGS button and select atomic time ON | OFF.
8. **ATOMIC** and **ON** will flash.

9. Press and release the + or - buttons to turn this feature OFF.
10. Confirm with the SETTINGS button and select Time Zone.
11. **ZONE-EST** will flash.
12. Press and release the + or - buttons to change time zones.
13. Confirm with the SETTINGS button and select DST (Daylight Saving Time) ON | OFF.
14. **DST** and **ON** will flash.
15. Press and release the + or - buttons to turn this feature OFF.
16. Confirm with the SETTINGS button and move to the hour.
17. The **hour** digit will flash.
18. Press and release the + or - buttons to select the hour.
19. Press and release the SETTINGS button to set the minutes.
20. The **minute** digits will flash.
21. Press and release the + or - buttons to adjust minutes.
22. Confirm with the SETTINGS button and select the year.
23. The **year** will flash.
24. Press and release the + or - buttons to set the year.
25. Press the SETTINGS button again to confirm and to enter the month setting.
26. The **month** will flash.
27. Press and release the + or - buttons to set the month.
28. Press the SETTINGS button again to confirm and enter the date setting.
29. The **date** will flash. (Day of the week will set automatically)
30. Press and release the + or - buttons to set the date.
31. Confirm all calendar settings with the SETTINGS button and select Fahrenheit/Celsius.
32. **°F** will flash.
33. Press and release the + or - buttons to select Celsius.
34. Confirm with the SETTINGS button and exit.

#### Time is off by hours

- Check to see if the [WWVB](#) Tower icon appears on the atomic digital station. If not, the digital station has not received a WWVB time signal in the past 24 hours.
- Reposition the digital station with the front or back facing Colorado.
- Check that the [Time Zone](#) selected correctly reflects your location. Adjust the time zone in the [Program Menu](#).
- Check that the DST indicator is correct for your location (On this station, please change the DST setting to OFF unless you live in Arizona). Adjust the DST indicator in the [Program Menu](#).
- Large buildings, metal roofed buildings and buildings or rooms full of electrical and/or radio equipment make it difficult to receive the WWVB time signal.
  
- Optional: Press and release the **SET** button to manually start or stop a search for the WWVB Atomic Time Signal.
- The Tower Icon will flash for about one minute while searching which means the station is engaged to search for the signal over the next 12 to 24 hours. The icon will remain solid on screen when the WWVB Signal is received.
- When your time and date are manually set correctly, your station will automatically search for the Atomic Time Signal at UTC 7:00, 8:00, 9:00, 10:00, and 11:00.
- For information about WWVB Atomic Time visit: [bit.ly/atomic\\_time](http://bit.ly/atomic_time)

**Disclaimer:** The Atomic Time Signal originates in Ft. Collins Colorado and has a range of roughly 4800 kilometers (3000 miles). In some cases, the signal is affected by weather

conditions, geographic location. dwelling construction materials or electrical interferences. The position of the clock in the home may result in poor reception. If the station has not synchronized to the correct time within a few days of activation, you may need to move the station to a different location. It is best to position the station near an exterior wall that faces toward Colorado. If the Atomic Time Signal is NOT received, your station will still operate as a reliable accurate timekeeper and should not be considered broken.

### Daylight Saving Time

- Dependent on your location, position of the station in your home, and atmospheric interference, it may take up to 5 nights for the change from Daylight Savings Time to Standard Time and vice-versa to occur.
- Check for a [WWVB Tower Icon](#) showing on the atomic digital station. The tower icon indicates you have received the WWVB signal from Ft Collins CO in the past 24 hours.
- Check that the station is in the correct [Time Zone](#).
- Check whether the DST indicator is ON or OFF. On this station, please change the DST setting to OFF unless you live in Arizona.
- Check for fresh [batteries](#). Without proper batteries, the antenna will have a harder time picking up the signal.
- Position the digital station in a window (*with the front or back*) facing Ft. Collins, Colorado and leave for up to five nights. If you do not have a window facing this direction, position the station near an outside wall and point the unit in this general direction.

### Station is dim

**Explanation:** Most stations have a dark background. Place the station at eye level, to determine if it is dim. Stations that sit in the sunlight can develop a cloudy film over time.

- This is generally a power related issue.
- [Batteries](#) may be overpowered or underpowered. Remove batteries from station.
- Press any button 20 times. Leave the station unpowered for 1-2 hours.
- Install fresh alkaline batteries with correct polarity.

### Station has distorted or frozen display

**Explanation:** On a brand new station, check for thin plastic film of **printed scratch guard** that may be on the screen of the station. This thin piece of plastic has printed numbers for store displays. When the batteries are installed, the “real” numbers show behind the printed scratch guard and create distortion.

- With all power removed, the station should be blank.
- If numbers still appear, please check for scratch guard.

#### **Power:**

- Check that the batteries are installed correctly.
- This is generally a power related issue.
- [Batteries](#) may be overpowered or underpowered.
- Remove batteries from station.
- Press any button 20 times. Leave the batteries out of the display for 2 hours.
- Insert batteries into the station.

### Station is blank: No letters, numbers or dashed lines

- Check that the batteries are installed correctly.
- [Batteries](#) may be overpowered or underpowered.
- Remove batteries from station.
- Press any button 20 times. Leave the batteries out of the display for 2 hours.
- Insert batteries into the station.

### Station has missing segments

**Explanation:** When parts of numbers, letters, or pictures are missing on the display, it is often power related.

- [Batteries](#) may be overpowered or underpowered. Remove batteries from station.
- Press any button 20 times. Leave the station unpowered for 1-2 hours.
- Install fresh alkaline batteries with correct polarity.