

## 513-1311OTN FAQs

The links below will work in most PDF viewers and link to the topic area by clicking the link. We recommend Adobe Reader version 10 or greater available at: <http://get.adobe.com/reader>

## CONTENTS

<b>513-1311OTN FAQs</b> .....	1
<b>Batteries</b> .....	2
<b>Digital Atomic Clock Factory Restart</b> .....	2
<b>Outdoor Temperature Sensor</b> .....	3
Compatible Outdoor Sensors .....	3
Fahrenheit/Celsius.....	3
Flashing Outdoor Temperature.....	3
Dashes shown for Outdoor Temperature.....	3
Quick Connect.....	3
Inaccurate Outdoor Temperature Reading .....	3
Intermittent Outdoor Temperature .....	4
Outdoor Temperature Is Stuck or LL.L. HH.H.....	4
Outdoor Sensor Fell and No Longer Works .....	4
Outdoor Temperature Changes Constantly .....	5
Outdoor Sensor Drains Batteries Quickly .....	5
Mounting/Positioning Outdoor Sensor .....	5
Position Digital Atomic Clock .....	5
Distance/Resistance/Interference.....	6
<b>Digital Atomic Clock</b> .....	6
How tall are the Time Numbers? .....	6
Supported Time Zones .....	6
12-Hour or 24-Hour Time Format .....	7
Power Requirements.....	7
Does the Clock Have a Backlight?.....	7
Manually Set Time/Date: Program Menu .....	7
Set Time Alarm.....	8
Activate/Deactivate Time Alarm.....	8
Snooze Alarm.....	8
Dashes, LL.L or Stuck Indoor Temperature .....	8
Inaccurate Indoor Temperature Reading .....	8
Time is off by hours .....	8
No WWVB Tower Icon.....	9

Daylight Saving Time.....	9
Is There a Booster Antenna.....	9
Can the Clock Attach to a Timer?.....	9
Clock Has Missing Segments.....	9
Digital Atomic Clock Is Dim.....	9
Digital Atomic Clock Has Distorted Display.....	9
Digital Atomic Clock Display Is Frozen.....	10
Digital Atomic Clock is Blank: No Letters, Numbers or Dashed Lines.....	10
Digital Atomic Clock Drains Batteries Quickly.....	10

## Batteries

- ✓ Half of all warranty issues can be resolved with fresh batteries of the appropriate voltage.
- ✓ We suggest name brand Alkaline batteries for indoor displays such as clocks.
- ✓ 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.
- ✓ Alkaline batteries manufactured this year will have an expiration date 10 years in the future. Battery technology has improved and batteries will maintain voltage longer in storage. However, the environment the batteries reside in for the 10 years can deplete the power.
- ✓ Good name brand batteries make less noise, which reduces the chance of RF (radio frequency) interference from the battery compartment. A minimum voltage of 1.48V for each battery is necessary for proper performance.
- ✓ **Outdoor Sensors:** Use Alkaline batteries (or Lithium for temperatures below - 20°F/- 28.8°C)
- ✓ **Indoor Displays:** Use Alkaline batteries. Overpowered or underpowered batteries may cause loss of indoor readings, missing segments, dim display etc.

## Digital Atomic Clock Factory Restart

### FACTORY RESTART:

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

## Outdoor Temperature Sensor

### Compatible Outdoor Sensors

- ✓ The **KW9177T** outdoor sensor (433 MHz) comes packaged with this clock and is the only compatible sensor.

### Fahrenheit/Celsius

- ✓ **Digital Atomic Clock:** Hold the  $-/^{\circ}\text{C}/^{\circ}\text{F}$  button on the back of the clock for 5 seconds to switch the temperature display from Fahrenheit to Celsius.
- ✓ **KW9177T Transmitter:** Press the  $^{\circ}\text{C}/^{\circ}\text{F}$  button under the battery cover to switch the sensor temperature display from Fahrenheit to Celsius

### Flashing Outdoor Temperature

- ✓ The outdoor Temperature reading will flash when the connection is first lost or intermittent between the clock and the outdoor sensor.
- ✓ Distance/Resistance is generally the cause of intermittent connection or loss of connection between the sensor and the clock.
- ✓ Check the position of the clock. Turn the clock 90 degrees towards the outdoor sensor for better reception.
- ✓ Try the quick connect or factory restart.
- ✓ Batteries often resolve the connection issue.

### Dashes shown for Outdoor Temperature

- ✓ Dashes means the connection is lost between the clock and the outdoor sensor.
- ✓ This sensor reads down to  $-4^{\circ}\text{F}$ . when the temperature is below that, the outdoor temperature can show OFL, HH.H, dashes or stick at a number.
- ✓ Batteries often resolve the connection.
- ✓ Distance/Resistance can cause loss of connection between the sensor and the clock.
- ✓ Reorientation of the clock 90 degrees towards the outdoor sensor may provide better reception.
- ✓ Try the quick connect or factory restart.

### Quick Connect

- ✓ Bring the sensor and clock together inside and have both units 5-10 feet apart with nothing between them.
- ✓ Hold the **SEARCH** button on the clock for 5 seconds until the Temperature area starts to flash.
- ✓ Remove battery cover and press and release the **TX** button to send the signal.
- ✓ Wait for 2 minutes for the outdoor Temperature to appear.
- ✓ Factory Restart: If the above procedure does not work, please try the factory reset.

### Inaccurate Outdoor Temperature Reading

- ✓ When the sensor reads high during the day but not at night it is a positioning problem.
- ✓ **Side-by-side test:** Bring the outdoor sensor in the house and place it next to the clock for 2 hours.

- ✓ Compare indoor and outdoor temperature. The temperatures should be within 4° to be within tolerance.
- ✓ If the sensor reads correctly when next to the clock then try a different location outside.
- ✓ Look for heat sources such as sunlight, door or window frames, or reflected heat.

### Intermittent Outdoor Temperature

- ✓ What is the temperature? This sensor reads down to -4 degrees F. when the temperature is below that, the outdoor temperature can show OFL, dashes or stick at a number. If the temperature is hovering at about -4 degrees Fahrenheit, the temperature may come and go.
- ✓ RF (radio frequency) communication may come and go occasionally. This can be normal in some environments (e.g. moister climates). If sensor signal is lost, please wait 2-4 hours for the signal to reconnect on its own.
- ✓ Move the outdoor sensor to a closer location.
- ✓ **Freezer test:** Confirm the clock is reading the correct outdoor sensor. Place the sensor in the freezer for an hour and watch the temperature drop on the clock.
- ✓ **Indoor distance test:** Please complete the [Restart](#) with sensor and clock 5-10 feet apart and inside to establish a strong connection.
- ✓ After 15 minutes if there is a reading in the outdoor temperature area, move the sensor to another room with one wall between the sensor and the clock. 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 sensor to different locations outside to find a location where the Temperature reading will hold.
- ✓ [Distance/Resistance](#) can cause loss of sensor signal.
- ✓ Check [Batteries](#).

### Outdoor Temperature Is Stuck or LL.L. HH.H

- ✓ What is the temperature? This sensor reads down to -4 °F. When the temperature is below that, the outdoor temperature can show LL.L, HH.H, dashes or stick at a number. If the temperature is hovering at about -4 °F, the temperature may come and go.
- ✓ The last outdoor reading may remain (not change) for several hours when connection is lost.
- ✓ The outdoor Temperature reading will flash when the connection is first lost or intermittent between the clock and the outdoor sensor.
- ✓ Check [Batteries](#). Overpowered or underpowered batteries can cause this reading.
- ✓ Replace outdoor sensor.

### Outdoor Sensor Fell and No Longer Works

- ✓ If there is no physical damage to the outdoor sensor, the fall may not have caused internal damage.
- ✓ An outdoor sensor that has fallen into a puddle or other standing water or snow may have water damage.
- ✓ Sensors are water resistant, not waterproof.
- ✓ A fall can shock the sensor or the batteries in the 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.

## Outdoor Temperature Changes Constantly

- ✓ You may have an additional compatible outdoor sensor within range.
- ✓ Occasionally a neighbor will have a compatible outdoor sensor that is within range.
- ✓ During setup, the temperature may change frequently as the clock looks for the sensor.

## Outdoor 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. This is helpful in determining the problem.
- ✓ Check the distance and resistance between the sensor and clock. 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 sensor.
- ✓ Battery life is over 24 months when using reputable battery brands for both Alkaline and Lithium batteries.

## Mounting/Positioning Outdoor Sensor

- ✓ Mount outdoor Temperature sensors vertically and under a bit of an overhang.
- ✓ Protect the outdoor sensor from standing rain or snow, and from the overhead sun, which can cause it to read incorrectly. Generally, mounting under an eave or deck rail works well.
- ✓ Construct a small roof or box for the sensor if you do not have an overhang. Please be sure the box is well vented.
- ✓ Mount the sensor on the north-side to prevent sun from causing incorrect readings.
- ✓ Mount at least 6 feet in the air for a strong signal.
- ✓ Outdoor sensors are water resistant but not water proof.
- ✓ Avoid more than one wall between the sensor and the clock.
- ✓ 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.
- ✓ Place the outdoor sensor and the clock in the desired shaded locations, and wait approximately 1 hour before permanently mounting the sensor to ensure that there is proper reception.
- ✓ Do not mount the sensor on a metal fence. This significantly reduces the effective range.

### MOUNT

- ✓ Choose a location for the sensor that is within range of the clock and under an overhang for accuracy.
- ✓ Install one mounting screw into a wall leaving approximately ½ inch (12.7mm) extended.
- ✓ Place the sensor onto the screw, using the hanging hole on the backside.
- ✓ Gently pull the sensor down to lock the screw into place.

**Note:** Always ensure that the sensor locks onto the screw before releasing.

## Position Digital Atomic Clock

- ✓ Mount the clock near an exterior wall with the front or back facing toward Ft. Collins, Colorado for best WWVB reception.
- ✓ The clock should be six feet from other electronics or wireless devices to best receive the outdoor temperature sensor signal.

### **Foldout Table Stand:**

A foldout table stands are located on the back of the clock.

- ✓ Pull the stands out from the bottom of the Digital Atomic Clock, below the battery compartment.

### **Wall Mount**

- ✓ Use a straightedge to place one screw position on a wall to match the hanging hole on the back of the clock. Install one mounting screw (not included) into a wall within transmission range of the outdoor sensor—leaving approximately 3/16 of an inch (5mm) extended from the wall.
- ✓ Place the clock onto the screw, using the hanging hole on the backside.
- ✓ Gently pull the clock down to lock the screw into place.
- ✓ **Note:** Always ensure that the clock locks onto the screw before releasing.

## **Distance/Resistance/Interference**

### **Distance:**

- ✓ The maximum transmitting range in **open air** is over 200 feet (60 meters) between the outdoor sensor and the clock.
- ✓ Consider what is in the signal path between the clock and the sensor.
- ✓ Consider the distance the clock is located away from other electronic in the home.

### **Resistance:**

- ✓ Obstacles such as walls, windows, stucco, concrete, and large metal objects can reduce the range.
- ✓ When considering the distance between the sensor and the clock (200 feet open air) cut that distance in half for each wall, window, tree, bush or other obstruction in the signal path.
- ✓ Closer is better.
- ✓ Do not mount the sensor on a metal fence. This significantly reduces the effective range.

### **Interference:**

- ✓ Consider items in the signal path between the sensor and the clock.
- ✓ Sometime a simple relocation of the sensor or the clock will correct the interference issue.
- ✓ Windows can reflect the radio signal.
- ✓ Metal will absorb the RF (radio frequency) signal.
- ✓ Stucco is held to the wall by a metal mesh.
- ✓ Transmitting antennas (ham radio, emergency dispatch center, airports, military base etc.)
- ✓ Electrical wires (utilities, cable etc.)
- ✓ Vegetation is full of moisture and reduces signal.
- ✓ Dirt: Trying to receive a signal through a hill is difficult.

## **Digital Atomic Clock**

### **How tall are the Time Numbers?**

The time numbers are 4 ¼ inches tall.

### **Supported Time Zones**

**TIME ZONE:** Hold the **+ 12/24** button for 3 seconds to move the time zone once. Hold again to change to a different time zone.

- ✓ **P** Pacific
- ✓ **M** Mountain
- ✓ **C** Central
- ✓ **E** Eastern
- ✓ **NOTE:** This station will only support these four Time Zones. The clock is designed for use in North America.

## 12-Hour or 24-Hour Time Format

- ✓ Display the time in 12-hour or 24-hour format
- ✓ Default is 12-hour time
- ✓ Press and release the **+ 12/24** button to switch between 12-hour time (AM/PM) and 24-hour time format.

## Power Requirements

- ✓ Three “C” (LR14) alkaline batteries power the clock

## Does the Clock Have a Backlight?

- ✓ No, this clock does not have a backlight.
- ✓ Generally, an a/c power cord is required for products to have a backlight. This clock does not use a/c power cord.

## Manually Set Time/Date: Program Menu

The MODE/SET button will move through the program menu. The + or - button will change a value if needed.

- ✓ **HOUR:** Hold the MODE/SET button for 3 seconds. The hour will flash. Press and release the + or - button to select the correct hour. Confirm with the MODE/SET button and move to the minutes.
- ✓ **MINUTES:** The minutes will flash. Press and release + or - button to select the correct minutes. Confirm with the MODE/SET button and move to the seconds.
- ✓ **SECONDS:** The seconds will flash. Press and release + or - button to set the seconds to zero. Confirm with the MODE/SET button and move to the next item.
- ✓ **YEAR:** The year will flash. Press and release the + or - button to select the correct year. Confirm with the MODE/SET button and move to the month/day mode.
- ✓ **MONTH/DAY FORMAT:** The M/D (month/date) will flash. Press and release + or - button to select D/M (day/month). Confirm with the MODE/SET button and move to the month.
- ✓ **MONTH:** The month will flash. Press and release the + or - button to select the correct month. Confirm with the MODE/SET button and move to the date.
- ✓ **DATE:** The date will flash. Press and release the + or - button to select the correct date. Confirm with the MODE/SET button and move to DST.

**Note:** The weekday will set automatically after the year month and date are set.

- ✓ **DAYLIGHT SAVING TIME:** DST will flash. Press and release the + or - button to select DST ON or DST OFF. Confirm with the MODE/SET button and exit the program menu.

**FAHRENHEIT/CELSIUS:** Press and release the  $-^{\circ}\text{C}/^{\circ}\text{F}$  button to select temperature readings in Fahrenheit or Celsius

### CHANGE TIME ZONE:

- ✓ Hold the + 12/24 button for 3 seconds to move the time zone once.
- ✓ Hold again to change to a different time zone.
- ✓ **This clock has four time zones:**
- ✓ **E** = Eastern, **C** = Central, **M** =Mountain and **P** = Pacific

**12-HOUR OR 24-HOUR TIME FORMAT:** Press and release the + 12/24 to switch

## Set Time Alarm


Press and release the MODE/SET button to enter Alarm Mode. “AL” will show on the display.

**ALARM TIME:** Hold the MODE/SET button to enter alarm time setting mode.

- ✓ HOUR: The hour will flash. Press and release the **+ or -** button to select the correct hour. Confirm with the MODE/SET button and move to the minutes.
- ✓ MINUTES: The minutes will flash. Press and release **+ or -** button to select the correct minutes. Press and release the MODE/SET button to confirm and exit.

## Activate/Deactivate Time Alarm

**ACTIVATE:**

- ✓ Press and release the ALARM ON/OFF button to activate the alarm. The alarm icon  appears when alarm is activated.

**DEACTIVATE:**

- ✓ Press and release the ALARM ON/OFF button to deactivate the alarm. The alarm icon will disappear when alarm is inactive.

## Snooze Alarm

- ✓ When the alarm sounds, press the SNOOZE button to trigger snooze alarm for 5 minutes.
- ✓ The snooze icon **Zz** will flash above the time, when the snooze feature is active.
- ✓ The SNOOZE button can be pressed up to seven times to repeat the snooze function.

## Dashes, LL.L or Stuck Indoor Temperature

- ✓ This is generally a power related issue.
- ✓ [Batteries](#) may be overpowered or underpowered. Remove batteries from clock.
- ✓ Press any button 20 times. Leave the clock unpowered for 1-2 hours.
- ✓ Insert fresh alkaline batteries with correct polarity.
- ✓ If the indoor Temperature is still dashes or OFL, the clock may need replacement.

## Inaccurate Indoor Temperature Reading

- ✓ **Side-by-side test:** Bring the outdoor sensor in the house and place it next to the clock for 2 hours.
- ✓ Compare indoor and outdoor Temperature. The temperature should be within 4 degrees to be within tolerance.
- ✓ Look for heat sources such as sunlight, door or window frames, or reflected heat of cold.

## Time is off by hours

- ✓ Check to see if the [WWVB](#) Tower icon appears on the clock. If not, the clock has not received a WWVB time signal in the past 24-hours.
- ✓ Reposition the clock with the front or back facing Colorado.
- ✓ Check that the [Time Zone](#) selected correctly reflects your location.
- ✓ Check that the DST indicator is correct for your location (most areas observe DST so this should be ON). 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.



## No WWVB Tower Icon

- ✓ The clock has not received a WWVB time signal in the past 24 hours.
- ✓ [Position](#) the clock for better reception.
- ✓ Hold the **TOWER** button to send the clock on a signal search at night.
- ✓ Allow up to 5 nights to receive the time signal.

## Daylight Saving Time

- ✓ Dependent on your location, position of the clock 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 your Clock. The tower icon indicates you have received the WWVB signal from Ft Collins CO in the past 24-hours.
- ✓ Check that the clock is in the correct [Time Zone](#).
- ✓ Check whether the DST indicator is ON or OFF. If the indicator is OFF the clock will not change.
- ✓ Check for fresh [batteries](#). Without proper batteries, the antenna will have a harder time picking up the signal.
- ✓ Position the clock 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, locate the clock near an outside wall and point the unit in this general direction.

## Is There a Booster Antenna

- ✓ No. There is not a booster antenna available for the WWVB time signal.
- ✓ There is not a signal booster available for the outdoor sensor signal.

## Can the Clock Attach to a Timer?

- ✓ No timer circuit can be attached to the clock. Modifications will void the warranty.

## Clock Has Missing Segments

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

## Digital Atomic Clock Is Dim

- ✓ Most clock s have a gray background. Place the clock at eye level. Is it still dim?
- ✓ Clocks 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 clock.
- ✓ Press any button 20 times. Leave the clock unpowered for 1-2 hours.
- ✓ Install fresh alkaline batteries with correct polarity.

## Digital Atomic Clock Has Distorted Display

- ✓ On a brand new clock, check for thin plastic films of printed scratch guard that may be on the upper and lower screen of the clock. This thin piece of plastic has printed numbers for store displays.

- ✓ This film will be easy to peel off the LCD.
- ✓ With all power removed the clock should be blank.
- ✓ If numbers still appear, please check for scratch guard.
- ✓ Check that the batteries are installed correctly.
- ✓ This is generally a power related issue.
- ✓ Batteries may be overpowered or underpowered. Remove batteries from the clock.
- ✓ Press any button 20 times. Leave the batteries out of the display for 2 hours.
- ✓ Insert fresh alkaline batteries into the clock.

#### Digital Atomic Clock Display Is Frozen

- ✓ On a brand new clock check for thin plastic films of printed scratch guard that may be on the upper and lower screen of the clock. This thin piece of plastic has printed numbers for store displays. This can make the clock display appear “frozen”.
- ✓ With all power removed the clock should be blank.
- ✓ If numbers still appear, please check for scratch guard.
- ✓ Check that the batteries are installed correctly.
- ✓ This is generally a power related issue.
- ✓ Batteries may be overpowered or underpowered. Remove batteries from clock.
- ✓ Press any button 20 times. Leave the batteries out of the display for 2 hours.
- ✓ Insert fresh alkaline batteries into the clock.

#### Digital Atomic Clock is Blank: No Letters, Numbers or Dashed Lines

- ✓ Check that the batteries are installed correctly.
- ✓ Batteries may be overpowered or underpowered. Remove batteries from clock.
- ✓ Press any button 20 times. Leave the batteries out of the display for 2 hours.
- ✓ Insert fresh alkaline batteries into the clock.

#### Digital Atomic Clock 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. This is helpful in determining the problem.
- ✓ Check for leaking batteries, which may damage the clock.
- ✓ Battery life is over 12 months when using reputable battery brands.