

# ATOMIC RADIO CONTROLLED LCD WALL CLOCK WITH RF IN/OUT THERMOMETER USER'S INSTRUCTION MANUAL (USA VERSION)

## 1. What is Atomic Radio Controlled?

The most precise time keeping device on earth is the atomic clock. It keeps time to the accuracy of better than 1 second for every million years. The atomic clock is a huge piece of scientific equipment and is so expensive that it is normally found in laboratories and standards institutions etc. Thanks to the latest technology, the accuracy of the atomic clock is now brought to your home. The NIST\* (National Institute of Standards and Technology) is broadcasting electronically encoded time signals based on an atomic clock from an antenna in Fort Collins, Colorado to cover the mainland of the United States. The signal is picked up by the radio receiver circuit in your clock and is then recorded to synchronize the time to within a split of a second precision. The radio signal automatically sets the color and daylight savings or standard time too.



Fig. 1 Atomic radio controlled time signal transmission and reception

\* For more information on the NIST transmission and custom atomic clock visit web-site [www.bldrdoc.gov/timefreq](http://www.bldrdoc.gov/timefreq)

Note: The clock is used in USA mainland only. In the states of Alaska and Hawaii, the radio signal may not be strong enough for synchronization and the clock can only be used as a normal quartz clock that needs manual setting.

## 2. About Your Clock

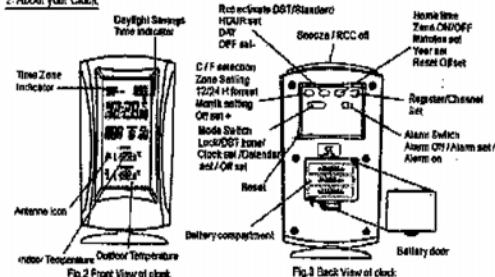


Fig. 2 Front View of clock

Fig. 3 Back View of clock

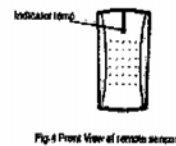


Fig. 4 Front View of remote sensor

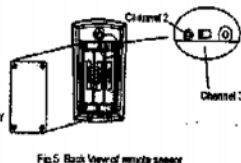


Fig. 5 Back View of remote sensor

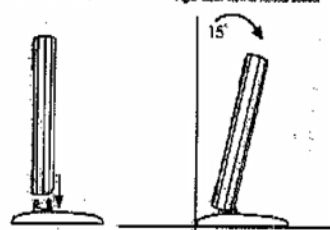


Fig. 6 Side View of assembling clock onto the wall

## 3. Battery Time

The clock and the remote sensor uses 3 AAA or UM-45 type alkaline batteries. Insert the batteries observing the polarities as shown in battery compartment or remove insulation lag if the clock comes with batteries. (The clock is designed to maximize the battery life. The trade-off of this is that with brand new batteries, some shadowy effect appears on the LCD. The effect will last only for a few days.)

## 4. The synchronization

Once the batteries are installed, the clock will enter the synchronization mode automatically and the tower signal on the display will start blinking. To minimize the interference, you are not allowed to operate the switches or buttons except pressing

The clock will activate auto synchronization at 8:00 p.m. in standard time (8:00pm in DST time) every day. If the clock fails to synchronize in the first attempt, it will make a new attempt at the beginning of every hour afterwards for 5 more times. In most cases, the clock synchronizes overnight as the radio signal is the strongest and clearest in the early morning. You may leave the clock to synchronize to the right time later or you may temporarily set the clock manually. If user manually sets the time, the clock will start synchronization when the time reaches the beginning of next hour and it fails to try every hour until 12:00 am and enter normal synchronization cycle.

## 5. Forced synchronization

You can force the clock to attempt synchronization any time by pushing the RCC activate button with the mode switch at LOCK position.

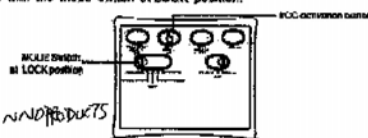


Fig. 11 Force synchronization

## 6. Manual Setting

If necessary the clock can be set manually. Once it is manually set, the clock will attempt to synchronize regularly for a few days. If all attempts are failed till the receiver circuit is put into sleep mode to conserve the power. The clock will function as a quartz clock until it is forced to attempt synchronization again. (section 5)

## 6.1 To set time zone & daylight saving/standard time

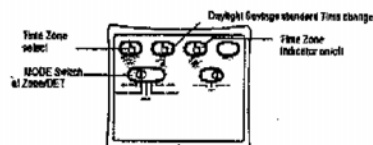


Fig. 12 Time zone/daylight savings standard time select  
After setting is done, put mode switch back to LOCK position

## 6.2 To select 12/24-hour display and set time

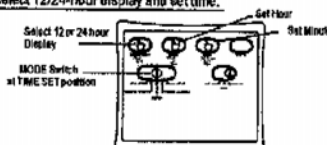


Fig. 13 12-24 Hour display select and Time set  
After setting is done, put mode switch back to LOCK position

## 6.3 To set Calendar

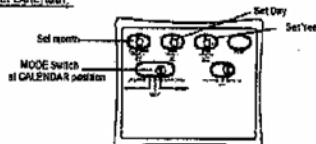


Fig. 14 Calendar set  
After setting is done, put mode switch back to LOCK position

## 7. Alarm setting and enabling the alarm

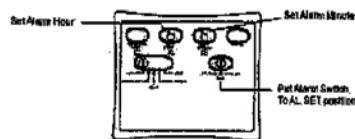


Fig. 15 To Set Alarm  
Alarm will sound at preset time. To stop temporarily, push SNOOZE button on the top. Alarm will repeat for 4 times with the press of SNOOZE in every 5 minutes interval or until the Alarm Switch is put to OFF position. Also the alarm will be stopped by pressing off push button.

## 8. When Traveling to another place

If you are traveling to another city in the mainland of the USA, you can change the time zone of the clock to that of the destination city. If you are traveling outside the USA mainland, you can enter the hour.

## 8.1 To offset time

If the mode switch is in OFF-SET position, you can set any offset value up to match the time in anywhere in the world. You can adjust from 0 to 123 offset by pressing

#### 4. The synchronization

Once the batteries are installed, the clock will enter the synchronization mode automatically and the tower symbol on the display will start blinking. To minimize the interference you are not allowed to operate the switches or buttons except pressing the mode button during the synchronization process. To set your local time, calendar and time zone, it is necessary to stop the synchronization process by pressing the mode button and the blinking tower symbol will disappear. After stopping the synchronization process you are allowed to use the switch and buttons to set your desired information in following order: zone, time & calendar. To set zone move the mode switch at the back of your clock to Zone/DST position and press zone setting button to select your local time zone do not want to show the time zone on the display, push zone On/Off button.

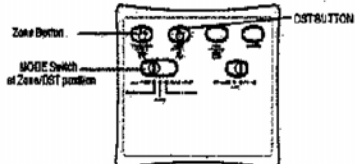


Fig. 7 set time Zone/DST

After setting move the mode switch back to LOCK position.

At this time, the receiver circuit is automatically activated. This is symbolized by the blinking of the Antenna icon (See Fig. 8a). The Bars facing the Antenna indicate the strength of the radio signal, no bar means there is no or very weak signal received, one bar indicates a weak signal and 5 bars the strongest. (See Fig. 8b)

Fig. 8a Blinking Antenna icon  
(Clock attempting to synchronize)Fig. 8b Synchronization & radio  
signal strength indication

Use the radio signal strength indicator to find a location to hang the clock so that the reception is strong. If the clock is too close to electrical appliances such as TV, mobile phone and computer they may cause undesirable signal interference. Strong signal is normally found close to the window. For good visual quality on the display avoid locations where there is strong glare or reflection on the lens.

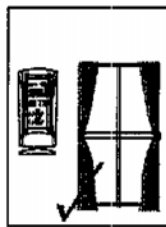


Fig. 9 How to position the clock for the best signal reception

It normally takes 3 to 10 minutes to synchronize. Once it is successfully done, the clock will show extremely accurate time and the correct date. On the display of a properly synchronized clock, the Antenna icon is still and the beacon radiates.

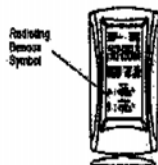


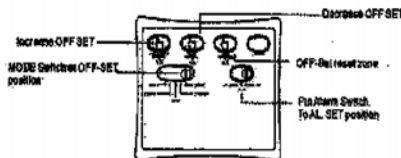
Fig. 10 Example of synchronized clock

A properly synchronized clock attempts to adjust itself with radio time signal everyday during late night, early in the morning, before noon and afternoon. If the clock did not synchronize the time in three consecutive days the antenna icon will disappear, but the clock will still function as a quartz clock until it gets synchronized again.

The clock is a radio device and like the mobile phone or the radio, in certain locations and at certain time of the day, it may not be able to pick up signal strong enough to synchronize.

#### 5.1 To offset time

If the mode switch is in OFF-SET position you can set any offset value to match the time in anywhere in the world. You can adjust from 0 to +23 offset by pressing OFF-SET A (and adjust 0 to -23 offset by pressing OFF-SET B). If you want to reset offset to zero, it can be done by one touch on OFF-SET CLR button while the mode switch is at the OFF-SET mode.

Fig. 10a To offset time  
To reset home time, push Home button

Note: If you are traveling to the India Subcontinent where the local time is half an hour from the main time zone of the world you may reset the clock by taking off the batteries and then manually set the clock to the local time according to the procedure described above. Hide the US time zone indicator on the LCD by putting Mode Switch at Zone/DST position and then push Z CLR.

#### 9. Indoor and RF outdoor thermometer function

Your clock has a special thermometer function, which can show the indoor temperature and outdoor temperature. Outdoor temperature will be detected by an external sensing unit and the encoded temperature data will be sent to your clock via radio signals.

Your clock may come with 1 or 3 remote thermo sensors. If it comes with 1 remote unit then you will only be able to see the temperature of one distant location. If it comes with 3 remote unit then you can see the temperature of 3 different distant locations.

##### 9.1 Registering the remote sensors with your clock

After installing the batteries to your clock and the remote unit, you should register the remote sensor with your clock to get the outdoor temperature reading. To register the sensor:

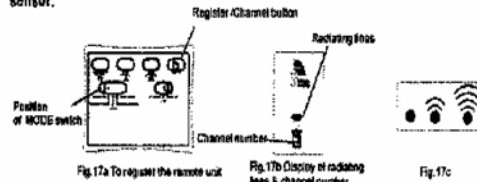


Fig. 17a To register the remote unit

Fig. 17b Display of radiating  
lines & channel number

Fig. 17c

At this moment you can see the few lines over the channel display will blink and at the same time the Outdoor thermo display will show "-.-". Watch the indicator lamp on the remote sensor and you will see with a blink of the lamp your clock will show the outdoor temperature. If you could not see the blink of the lamp, Remove the batteries of the sensor and reinstall. When the display starts to show the outdoor temperature the few lines on the channel display will radiate as shown in Fig. 17c. This indicates the remote sensor has been registered correctly. If your clock comes with 3 remote sensors then you have to do the same registration process in each channel.

##### 9.2 To set the outdoor display channel

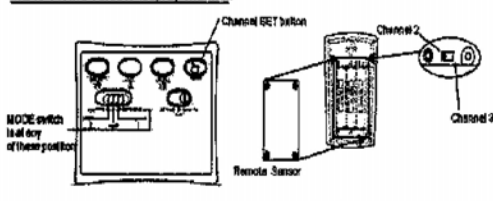


Fig. 18a To set the outdoor display channel

Fig. 18b Channel on the remote sensor  
has to adjust to the channel desired

##### 9.3 To change the thermometer display between °C and °F

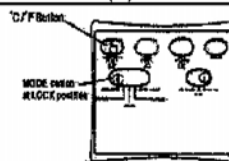


Fig. 19 To change the display between °C / °F

## INSTRUCTION TO THE USER

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- \* Reorient or relocate the receiving antenna.
- \* Increase the separation between the equipment and receiver.
- \* Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- \* Consult the dealer or an experienced radio/TV technician for help.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.