Wi-Fi Clocks & Auxiliary Devices

Installation & Operation Manual

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SAFETY PRECAUTIONS

The Wi-Fi clock(s) should be installed in a secure location protected from:

- Physical damage
- Water, including condensation
- Direct sunlight
- Operation by untrained personnel

Operation of this product in a manner inconsistent with the instructions in the manual may result in damage to the product and will void the warranty.

NOTICE

- Do not install the clock outdoors. Damage to clocks placed outdoors voids the warranty.
- Do not hang objects from the clock or clock mounting parts.
- The clock lens and housing may be cleaned with a slightly damp cloth. Do not use bleach and chemicals known to dissolve plastics.

WARNING

FIRE HAZARD

SHOCK HAZARD

For Electric Clocks

- Ensure to follow national and your regional electrical codes and ordinances.
- Keep the electricity to this device turned OFF until the clock installation is complete.
- Do not install the clock where it can be exposed to water.

PHYSICAL INJURY HAZARD

Take precautions to avoid injury by potential safety hazards near the point of installation including (but not limited to) heavy machinery, sharp objects, hot surfaces, or exposed cables carrying an electric current.

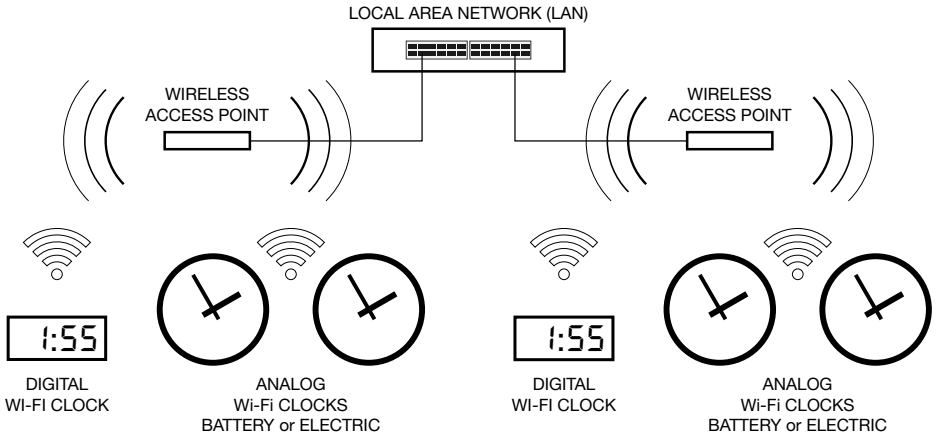
Follow mounting instructions provided in this manual. Failure to do so may result in the device falling and becoming damaged.

INTRODUCTION

Wi-Fi clocks exchange data with your network wirelessly using radio waves. Wi-Fi and Simple Network Time Protocol (SNTP) are used to make installation and setup as simple as possible. All you need to do is apply power to a pre-configured clock in an area where the intended Wireless Local Area Network (WLAN) signal strength is sufficient.

IP – Wi-Fi Synchronized Time System

Description: Network diagram showing IP network clocks connected to LAN through multiple Wireless Access Points (WAP). Number of WAPs needed determined by Wi-Fi signal range. Wi-Fi clocks provided by American Time.



Each Wi-Fi clock can be factory-configured to receive the precise time signal from your network server. They also automatically correct for the Daylight Saving Time changes and require little maintenance. Wi-Fi clocks only require synchronization twice per day using SNTP and create very little network traffic with staggered wake times. The electric and digital models can be user-selected to synchronize at a desired frequency.

Network

Preconfigured/Preprovisioned Wi-Fi Clocks are plug and play on networks with Dynamic Hosting Configuration Protocol (DHCP). A limited access point mode is also available for clocks that are not preconfigured at American Time.

inCloud Management Portal

Wi-Fi clocks are configured for use with American Time's inCloud Management Portal. With the inCloud management portal you can set up, monitor and manage your American Time network clocks easily and from anywhere. inCloud is a cloud-based management interface, featuring a status dashboard for monitoring your clocks, configuration profiles to ensure clocks are utilizing the same settings, and network/connectivity information.

The designated site manager for your location should have received a welcome e-mail with a link to inCloud and initial log-in information after placing the order for your clocks. Logging in to inCloud will be required to complete setup of the clocks; ensure that you or your site manager is available during the configuration and installation process.

Any configuration changes should be performed using the inCloud management portal. To log in to inCloud, visit incloud.american-time.com and log in with the credentials provided in your site welcome e-mail.

NOTE: For non-inCloud customers, Wi-Fi clocks can still be individually configured and modified using the Network Clock Setup App by "Self-Configuring Settings via App" on page 17, or by computer, using Limited Access Point mode described in "Self-Configure / Self-Provision" on page 13.

SPECIFICATIONS

General Specifications:

- Supports 2 static IP address SNTP servers for redundancy or Pool domain names
- 802.11n (b/g compatible, 2.4 GHz only)
- **Data rates:** 72, 65, 58, 43, 29, 22, 14, 7 Mbps (802.11n)
  54, 48, 36, 24, 18, 12, 9, 6 Mbps (802.11g)
  11, 5.5, 2, 1 Mbps (802.11b)
- **Security protocols:** WEP, WPA/WPA2 and Enterprise (PEAPv0-MSCHAPv2)
- DHCP or Static IP addressing
- Limited Access point operation for configuration
- Wi-Fi Alliance Radio/FCC/ICES certified
- RoHS Compliant
- **Operating Humidity:** 0% to 95%, non-condensing
- **Operating Temperature:** 32°-122°F (0°-50°C)
- **Storage Temperature:** 32°-122°F (0°-50°C)
- **Accuracy:** ±1 second

Port Requirements:

- 53 - DNS for time servers
- 80 - HTTP for web server
- 123 - NTP time sync
- 443 - HTTPS for inCloud

FEATURES

General Features:

- Clocks may be preconfigured (SSID, Passphrase, time zone, time servers) for plug-n-play installation
- WLAN time synchronization
- Clocks automatically update for DST by default
- Staggered wake times for reduced network load

Wi-Fi Analog Clocks

- Status LED
- Plug and play installation with no manual adjustments
- Battery clocks use six AA lithium batteries (included domestically)
- Electric clocks - 24VAC, 120VAC, 220VAC
- Plastic case clocks are high-impact resistant with a shatter-resistant polycarbonate crystal
- Metal case clocks are either anodized aluminum or powdercoated steel bezels with convex glass (10" and 12") or polycarbonate (15") crystal
- Wood case clocks are available in light oak or mahogany with a shatter-resistant polycarbonate crystal.

Wi-Fi Digital Clocks

- Super-bright red or green LED for high readability
- Non-glare lens
- Selectable 12- or 24-hour format
- Black anodized aluminum frame
- 3 brightness levels (user-selectable)
- 10-year battery backup for internal realtime clock
- Included mounting bracket
- Visibility: 2.5 inch digits - up to 125 ft.; 4 inch digits - up to 200 ft.
- Optional Elapsed Time Indicator and Code Blue function
- Optional Calendar Mode with configurable date/time display durations and six date display options:

MM:DD:YY	DD:MM:YY	YY:MM:DD	M:D:YY	D:M:YY	YY:M:D

Preconfigured / Preprovisioned

American Time Wi-Fi Clocks

If your Wi-Fi clocks have been preconfigured and preprovisioned by American Time, the network settings you provided have already been assigned to each device.

IMPORTANT!
Before applying power to the device, verify:

- Dynamic Host Configuration Protocol (DHCP) settings
- Firewall port 123 is open for UDP data
- Good Wi-Fi coverage at intended installation location.
- Gear locking pin is removed from the movement (Analog clocks only)

Continue to the following pages when ready to apply power.



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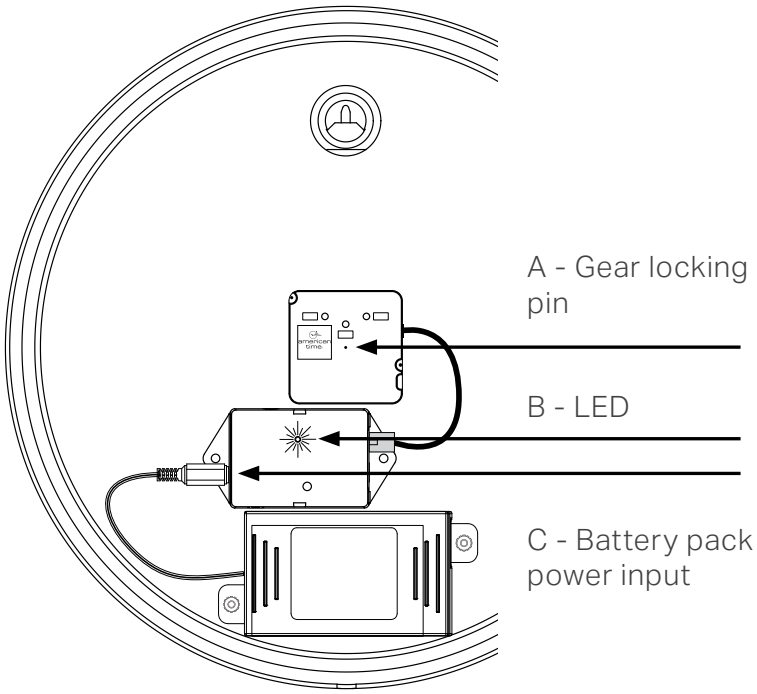
Preconfigured / Preprovisioned

Analog Battery Wi-Fi Clocks

IMPORTANT! Before applying power to the clock, verify:

- Dynamic Host Configuration Protocol (DHCP) settings
- Firewall port 123 is open for UDP data
- Good Wi-Fi coverage at intended installation location.
- Gear locking pin (A) is removed from the movement

1. Apply power to the clock by inserting the barrel plug (C) of the battery pack into the left side of the Wi-Fi module where the power connection is located.
2. Verify the LED (B):
   a. Flashes red when power is applied to the clock.
   b. Turns solid green within 60 seconds. Signifies normal operation and connection.
   c. Solid orange indicates a time server connection failure
   d. Solid red indicates a failed Wi-Fi connection
   e. Verify the clocks hands begin to spin rapidly within 3 minutes after applying power.



3. Verify the correct time on the clock within 10 minutes of applying power.
4. Place the clock on the wall using the hanger on the back of the clock or the optional security bracket (sold separately).

Preconfigured / Preprovisioned

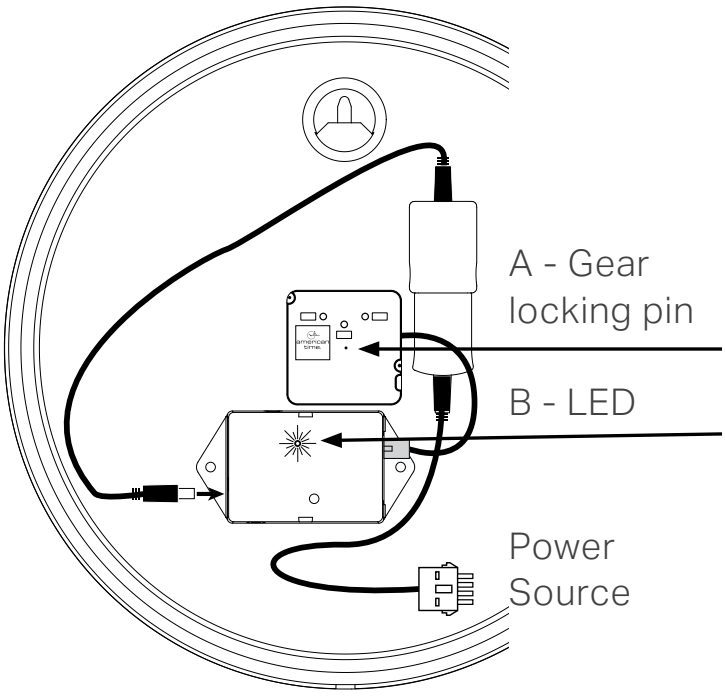
Analog Electric Wi-Fi Clocks

IMPORTANT! Before applying power to the clock, verify:

- Dynamic Host Configuration Protocol (DHCP) settings
- Firewall port 123 is open for UDP data
- Good Wi-Fi coverage at intended installation location.
- Gear locking pin (A) is removed from the movement

CAUTION: Risk of Electrical Shock – Disconnect and lock out power to the electrical box before installing or servicing the clock.

1. Apply power to Wi-Fi module by inserting the barrel plug of the power cord into the left side of the Wi-Fi module where the power connection is located for the electric clocks. Insert the other end of the power cord into the appropriate power source.
2. Verify the LED (B):
   a. Flashes red when power is applied to the clock.
   b. Turns solid green within 6 minutes (typically in under 60 seconds).
   c. Solid orange indicates a time server connection failure
   d. Solid red indicates a failed Wi-Fi connection



Note: The preceding sequence (a-d) may take up to 6 minutes.

3. Verify the clocks hands begin to spin rapidly within 7 minutes after applying power.
4. Verify the correct time on the clock within 15 minutes of applying power.
5. Place the clock on the wall using the hanger on the back of the clock or the optional security bracket (sold separately).

Preconfigured / Preprovisioned

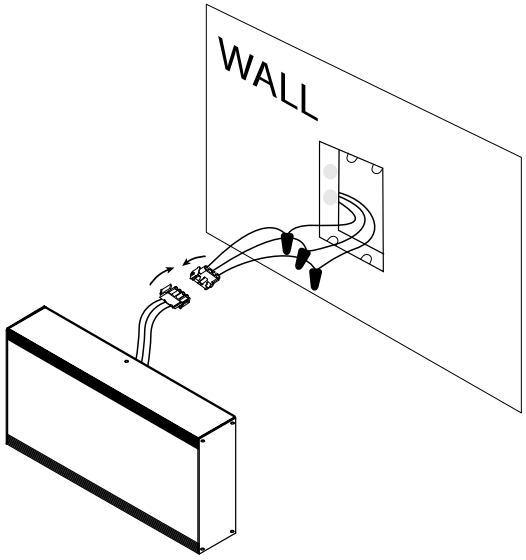
Digital Electric Wi-Fi Surface Mount Clocks

IMPORTANT! Before applying power to the clock, verify:

- Dynamic Host Configuration Protocol (DHCP) settings
- Firewall port 123 is open for UDP data
- Good Wi-Fi coverage at intended installation location.

CAUTION: Risk of Electrical Shock – Disconnect and lock out power to the electrical box before installing or servicing the clock.

1. For 120v 3-prong corded clock, run the cord through either cutout on the top or bottom of the clock and plug into a grounded outlet. This will apply power to the circuit and the clock should go to the correct time. Go to Step 6.
2. For clocks using Molex connections, make electrical connections (black to hot, white to neutral and green to ground) for the Molex cable (not wired to the clock) to a non-switched electrical circuit wiring using UL approved wire nuts. Route field wiring away from sharp projections and corners.



3. Join the wall and clock Molex together.
4. Seat the bracket spring in the channel on the bottom rail of the clock. Press down and pivot the hanger studs into the holes on the backplate, then release.
5. Remove plastic protector from display face.
6. Apply power to the circuit (Molex connections only) and confirm correct operation.

Preconfigured / Preprovisioned

Digital Electric Wi-Fi Double Sided Clocks

Before installing verify with the network administrator:

- Dynamic Host Configuration Protocol (DHCP) settings
- Firewall port 123 is open for UDP data
- Good Wi-Fi coverage at intended installation location.

CAUTION: Risk of Electrical Shock – Disconnect and lock out power to the electrical box before installing or servicing the clock.

Double-Sided, ceiling or wall mount

1. Make electrical connections (black to hot, white to neutral and green to ground) for the Molex cable (not wired to the clock) to non-switched electrical circuit wiring using UL approved wire nuts. Route field wiring away from sharp projections and corners.
2. Join the ceiling/wall and clock Molex together.
3. Mount the clock
    a. Ceiling (4" box).
    b. Wall (single or double gang box).
4. Remove plastic protector from display face.
5. Apply power to the circuit and confirm correct operation.

Self-Configure / Self-Provision

American Time Wi-Fi Clocks & Auxiliary Devices

If your Wi-Fi clocks or auxiliary devices were not preconfigured/preprovisioned by American Time, you'll need to self-configure and provision your them.

The following pages will guide you through these steps:

1. Putting your clocks into provisioning mode (Analog and Digital).
2. Configuring your clock and network settings via computer.



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Self-Provisioning Clocks

Analog Battery Wi-Fi Clocks

The clock will act as a limited access point for direct Wi-Fi communication to complete configuration. After connecting to the clock with a wireless device it can be configured with a web browser or app.

Note: If your clock was preconfigured by American Time this process is unneeded (unless changes are required) and the clock can be mounted in its desired location out of the box. Wait to apply power to the Wi-Fi module until the clock is in its installation location so good Wi-Fi coverage can be verified.

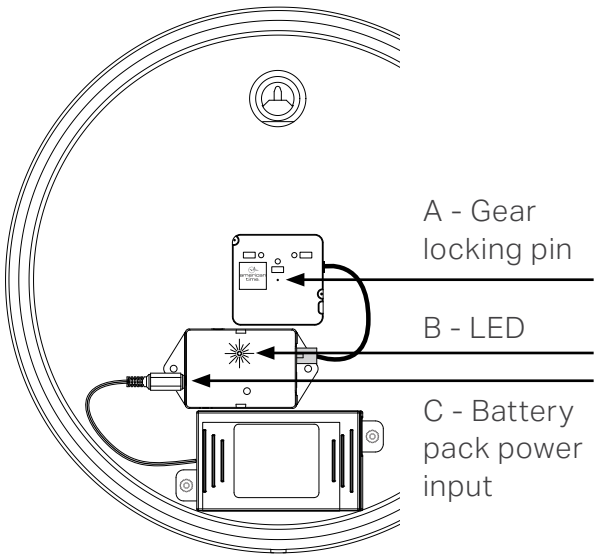
To enter configuration (limited access point mode) complete the following process:

Note: If gear locking pin (A) has not been removed, remove it prior to applying power.

Apply power to Wi-Fi module by inserting the barrel plug (C) of the battery pack into the left side of the Wi-Fi module where the power connection is located.

1. Verify the LED (B) starts flashing red.
2. Wait for the LED to stop flashing
3. Press and hold the button located on the middle of the Wi-Fi module.
    a. The LED (B) should turn solid green to indicate the button press (continue holding the button).
    b. Wait for the LED (B) to flash orange one time.

This will take about 2 seconds (additional flashes indicate other modes).



4. Release the button.
    a. Verify the LED (B) flashes green/orange indicating Limited Access Point mode is active.

If the configuration has been performed somewhere other than the intended installation location, disconnect power from the Wi-Fi module by disconnecting the barrel plug (C) of the battery pack from the left side of the Wi-Fi module where the power connection is located. Reconnect the power at the installation location to verify good Wi-Fi coverage.

5. To configure your clock, continue to:
    a. “Self-Configuring Settings via App” on page 17, or
    b. “Self-Configure Clocks and Auxiliary Devices Using a Computer” on page 18.

Self-Provisioning Clocks

Analog Electric Wi-Fi Clocks

The clock will act as a limited access point for direct Wi-Fi communication to complete configuration. After connecting to the clock with a wireless device it can be configured with a web browser or app.

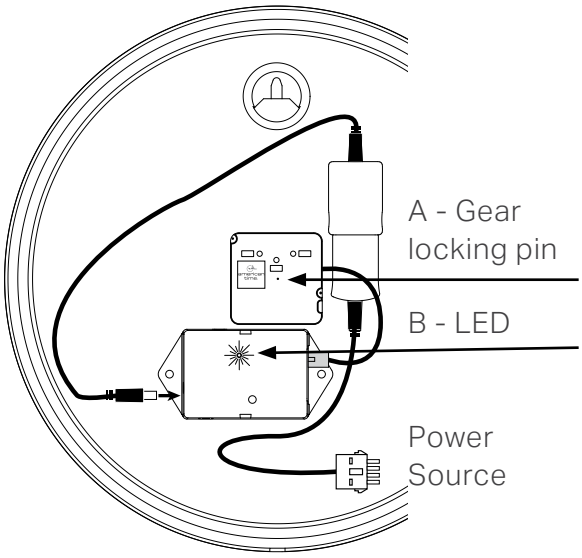
Note: If your clock was preconfigured by American Time this process is unneeded (unless changes are required) and the clock can be mounted in its desired location out of the box. Wait to apply power to the Wi-Fi module until the clock is in its installation location so good Wi-Fi coverage can be verified.

To enter configuration (limited access point mode) complete the following process:

Note: If gear locking pin (A) has not been removed, remove it prior to applying power.

Apply power to Wi-Fi module by inserting the barrel plug of the power cord into the left side of the Wi-Fi module where the power connection is located. Insert the other end of the power cord into the appropriate power source.

1. Verify the LED (B) starts flashing red.
2. Wait for the LED to turn a solid color.
3. Press and hold the button located on the middle of the Wi-Fi module.
    a. The LED (B) should turn solid green to indicate the button press (continue holding the button).
    b. Wait for the LED (B) to flash orange one time.



This will take about 2 seconds (additional flashes indicate other modes).

4. Release the button.
    a. Verify the LED (B) flashes green/ orange indicating Limited Access Point mode is active.

If the configuration has been performed somewhere other than the intended installation location, disconnect power from the Wi-Fi module by disconnecting the barrel plug from the left side of the Wi-Fi module where the power connection is located. Reconnect the power at the installation location to verify good Wi-Fi coverage.

5. To configure your clock, continue to:
    a. "Self-Configuring Settings via App" on page 17. or
    b. "Self-Configure Clocks and Auxiliary Devices Using a Computer" on page 18.

Self-Provisioning Clocks

Digital Electric Wi-Fi Clocks

The clock will act as a limited access point for direct Wi-Fi communication to complete configuration. After connecting to the clock with a wireless device it can be configured with a web browser.

Note: If your clock was preconfigured by American Time this process is unneeded (unless changes are required) and the clock can be mounted in its desired location out of the box. Wait to apply power until the clock is in its installation location so good Wi-Fi coverage can be verified.

CAUTION: Risk of Electrical Shock – Disconnect and lock out power to the electrical box before installing or servicing the clock.

To configure and provision your clock, complete the following steps:

1. Ensure that the clock is powered up and push the SET-RUN button. The clock will display a scrolling message: SEtUP.
2. Press the OK button and the clock Wi-Fi module will go into provisioning mode. The clock will scroll "GO tO 192.168.240.1" during this time.
3. To configure and provision your clocks, continue to:
   a. "Self-Configuring Settings via App" on page 17
   b. or "Connect the Clock's MAC address with Wi-Fi" on page 18

Watch the QuickStart video:
https://www.youtube.com/watch?v=yPKuxh-OF_U

Once provisioning is complete (or provisioning is canceled), the clock will scroll a series of dashes and return to displaying time.

Note: When the clock Wi-Fi module is connected to the Wi-Fi enabled device, the clock will scroll the message "CANCEL" across the screen. Pressing the OK button at any point before the configuration process is completed online, will cancel the provisioning and disconnect the Wi-Fi module from the Wi-Fi enabled device.

Cancelling the provisioning process will return the clock to its previous settings.

Note: The configuration process should be performed at the clock's intended installation location to verify good Wi-Fi coverage.

4. To configure your clock, continue to:
   a. "Self-Configuring Settings via App" on page 17. or
   b. "Self-Configure Clocks and Auxiliary Devices Using a Computer" on page 18

Self-Configure Clocks & Auxiliary Devices Using the App

Download the American Time Clock Setup app (Android) from the Google Play Store.

Google Play

https://click.american-time.com/app

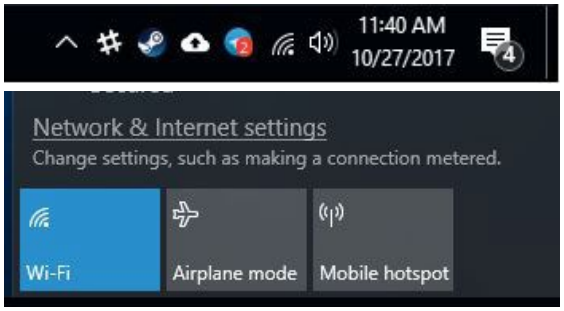
Note: The first time you start the Network Clock Setup mobile app, you'll be prompted to enable location services. Android requires location services to be able to scan for Wi-Fi networks, so you'll need to grant permission to the app to access your location.

Self-Configure Clocks & Auxiliary Devices Using a Computer

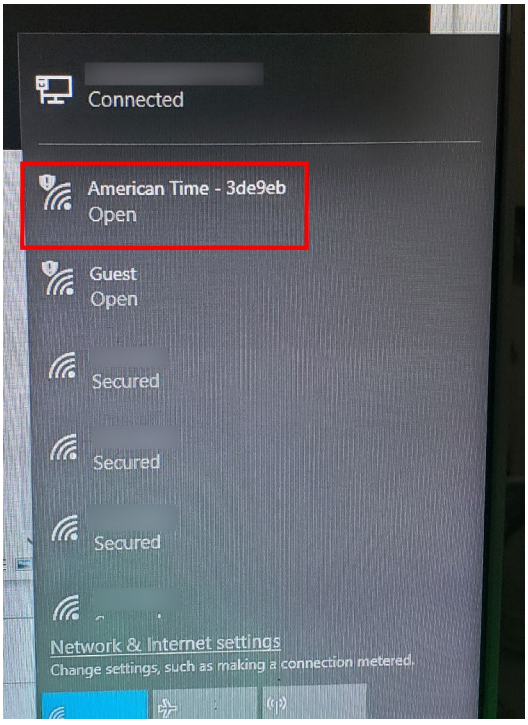
Connect the MAC address of the clock or device with Wi-Fi

NOTE: Connection steps may vary depending on operating system. Contact your local IT support if assistance is necessary.

1. Select the Wi-Fi icon in your task bar.



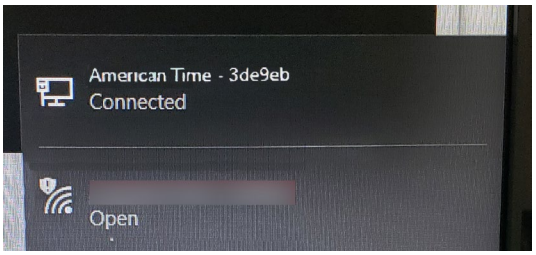
2. Ensure that Wi-Fi is active.
3. Select the network titled **"American Time - xxxxxx."** The numbers at the end of the SSID will correspond to the last six characters of MAC address printed on the sticker on the bottom or back of the clock.



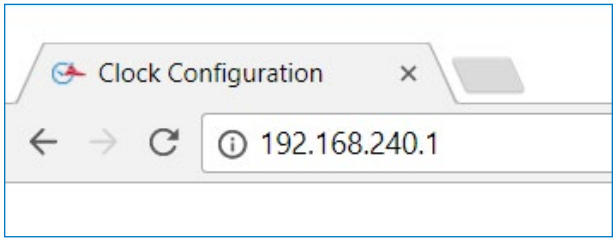
NOTE: The clock's access point may require a few seconds to become visible after activating configuration mode. If the SSID does not appear automatically, close and reopen the Wi-Fi menu.

CONTINUE▷

4. Verify that the computer connects to the clock or device access point.



5. Open a web browser and navigate to **192.168.240.1**.



When finished with configuration, the clock's access point will shutdown and the computer will automatically disconnect. The computer should automatically reconnect to the last Wi-Fi network to which it was connected prior to the configuration process.

CONTINUE▷

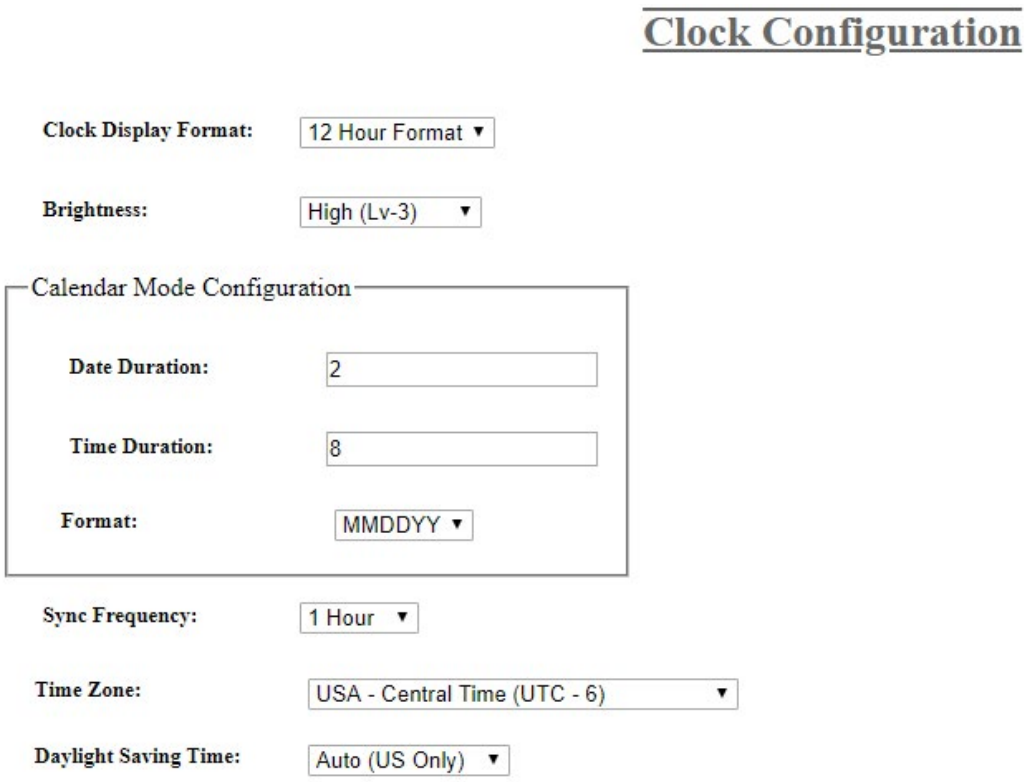
Clock Configuration Settings

These settings configure your clock's display and time sync settings.

Note: Settings may not be applicable to all Wi-Fi clocks and auxiliary devices.

Note: After initial setup, inCloud users should make any necessary changes in the inCloud Management Portal to avoid conflicting settings.

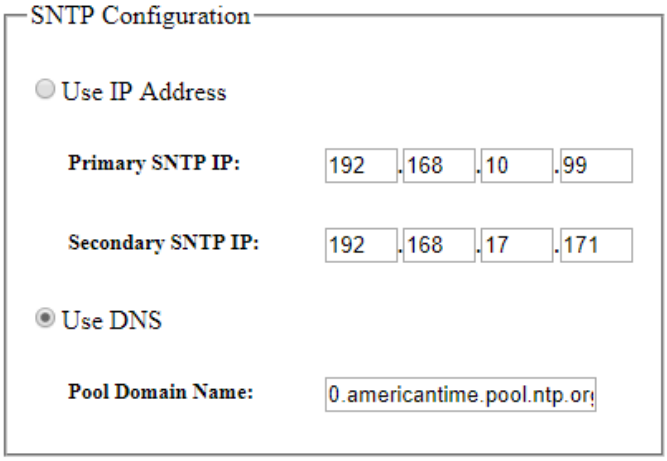
- **Clock Display Format –** Sets the clock displays to a 12 hour or 24 hour time format. Applicable to Digital Clocks only.
- **Brightness -** Sets the brightness of the display digits. Applicable to Digital Clocks only.
- **Calendar Mode Configuration -** Set the duration (seconds) of the time and date display, and the date display format. Applicable to specific model Digital Clocks only.



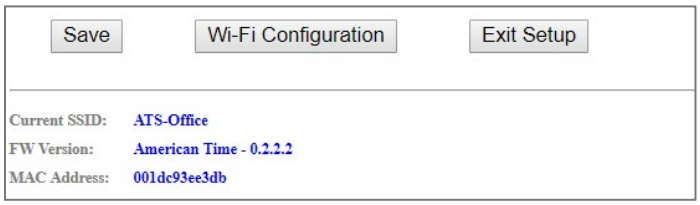
- **Sync Frequency –** Sets the frequency of the clock sync from 1 to 12 hours. Applicable to Auxiliary devices, Electric clocks and Digital clocks.
- **Time Zones –** The Time Zone entry sets the time zone. Reference Appendix B for a list of all available time zone configurations.
- **Daylight Saving Time –** Enable (Auto, Custom Fixed or Custom Floating) or Disable (Off) Daylight Saving Time adjustments.

CONTINUE▷

- **Use IP Address –** Enables use of “Primary SNTP IP” and “Secondary SNTP IP” static IP addresses for SNTP synchronization. Disables use of DNS pool.
- **Primary SNTP IP –** This is the first SNTP time server from which the Wi-Fi clock will receive time. This server will be attempted first. If it fails to provide a valid time the secondary server is tried next.
- **Secondary SNTP IP –** This is the second SNTP time server from which the Wi-Fi clock will receive time. This server is attempted only after the Primary SNTP server IP fails.
- **Use DNS –** Enables use of “Pool Domain Name” for SNTP synchronization. Disables use of Primary and Secondary SNTP IPs.



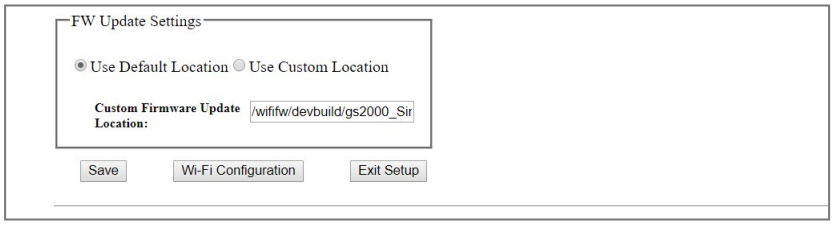
- **Pool Domain Name –** This text is used to retrieve an IP address from a DNS server for SNTP synchronization (i.e. Pool.ntp.org or time.nist.gov).
- **Save button –** This button is used to save on screen settings.
- **Wi-Fi Configuration –** This button moves to client settings menu page. Through the client settings menu page wireless network configuration pages can also be reached.
- **Exit Setup –** This button exits limited Access Point mode and returns to normal operation.
- **Current SSID –** The current Service Set Identifier (SSID) is the name of the wireless network the Wi-Fi clock will attempt to use if left unchanged.
- **FW Version –** The current firmware version used on the Wi-Fi clock.
- **MAC Address –** The Media Access Control (MAC) address is a unique identifier assigned to the Wi-Fi clock network hardware for communications.



CONTINUE▷

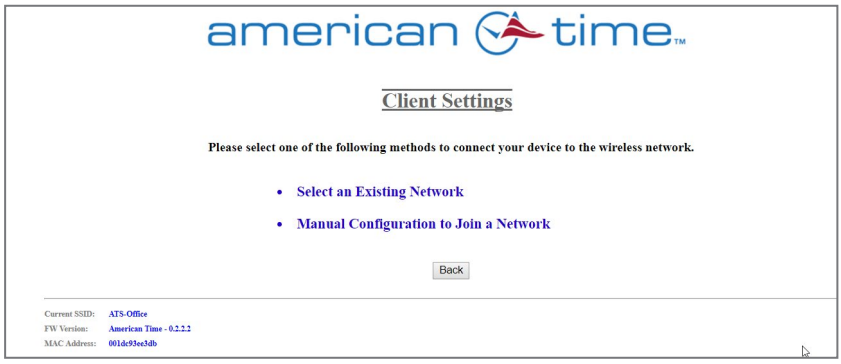
Wi-Fi Configuration

1. Click on “WiFi Configuration” button from Clock Configuration page.



2. Click on “Wireless and Network Configuration”.



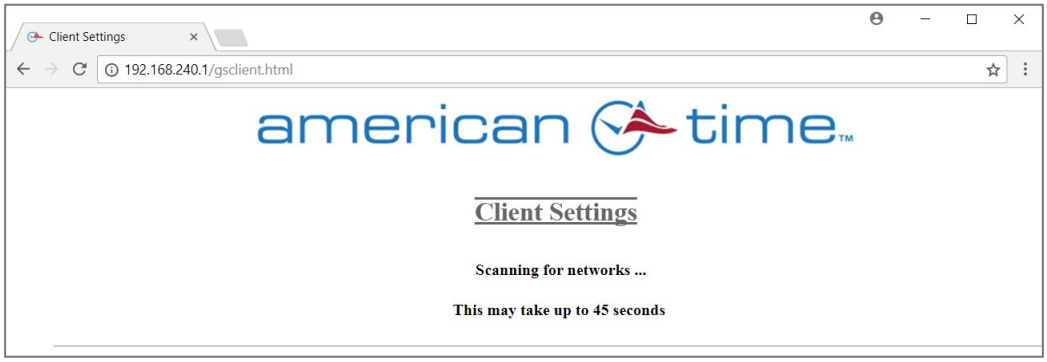


3. Select Wi-Fi configuration entry method.
   a. Click on “Select an Existing Network” if the SSID is active and available (this is normally the case) from desired network. If you select this option, go to “Select an Existing Network” on page 23.
   b. Click on “Manual Configuration to Join a Network” if the SSID is not active or is unavailable. If you select this option, go to “Manual Configuration to Join a Network” on page 25.

CONTINUE▷

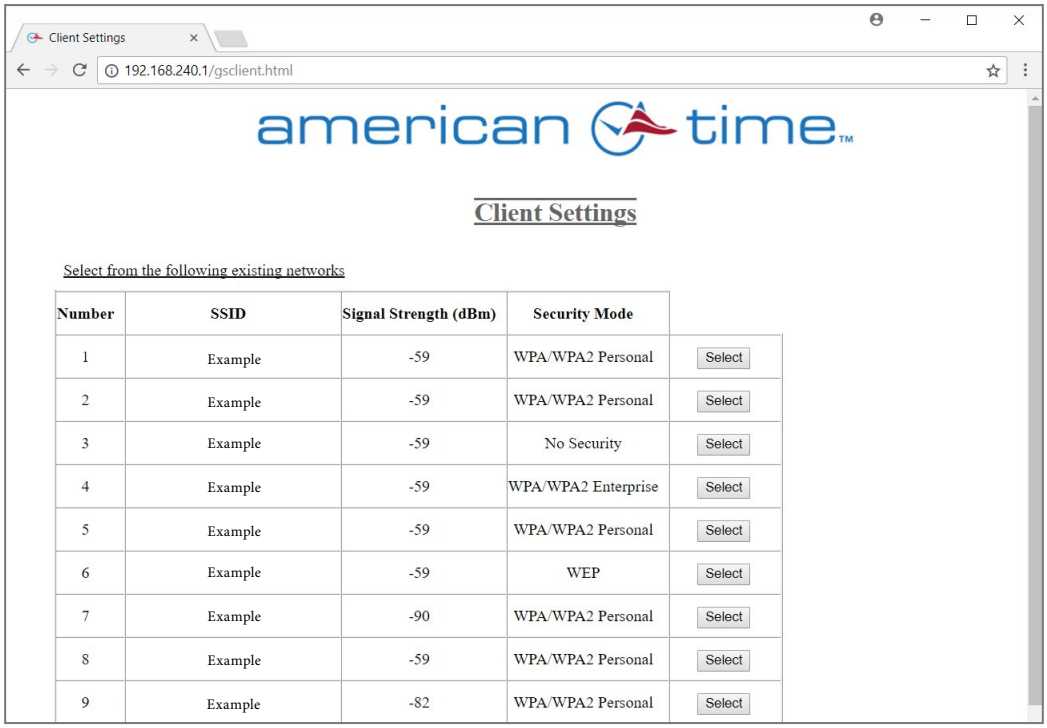
Select an Existing Network

1. If you chose Select an Existing Network for your Wi-Fi configuration entry method, the screen below will appear while the clock scans for available networks.
2. The screen below will appear when the clock has completed the SSID scan process.



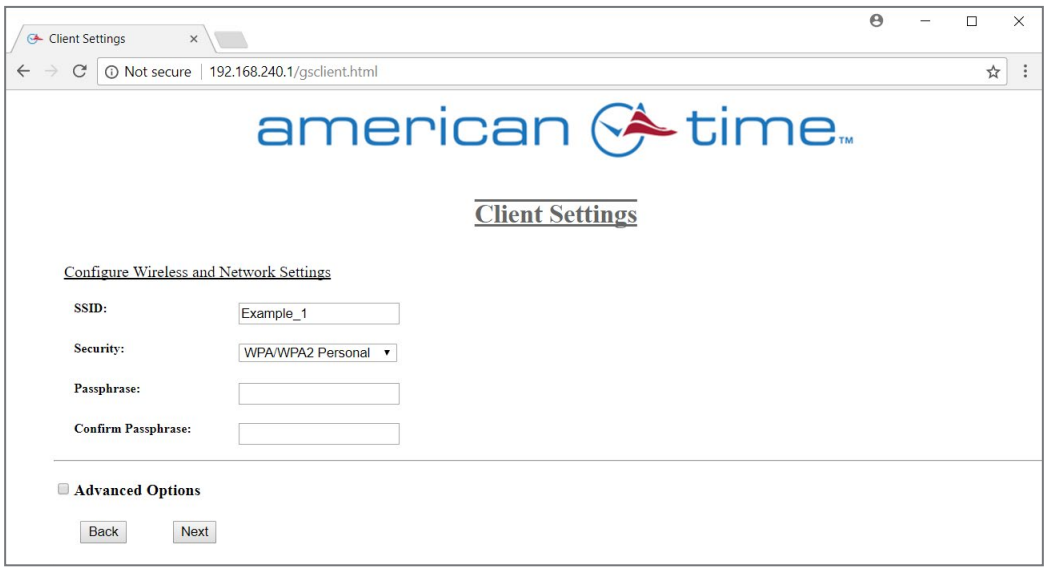
3. Click on the "**Select**" button next to the SSID you wish to configure your clock to.
4. Enter security information (if required for your network) and click next.

Note: If a static IP address is required, check the Advanced Options and select "**Static IP Address Configuration**" radial button.

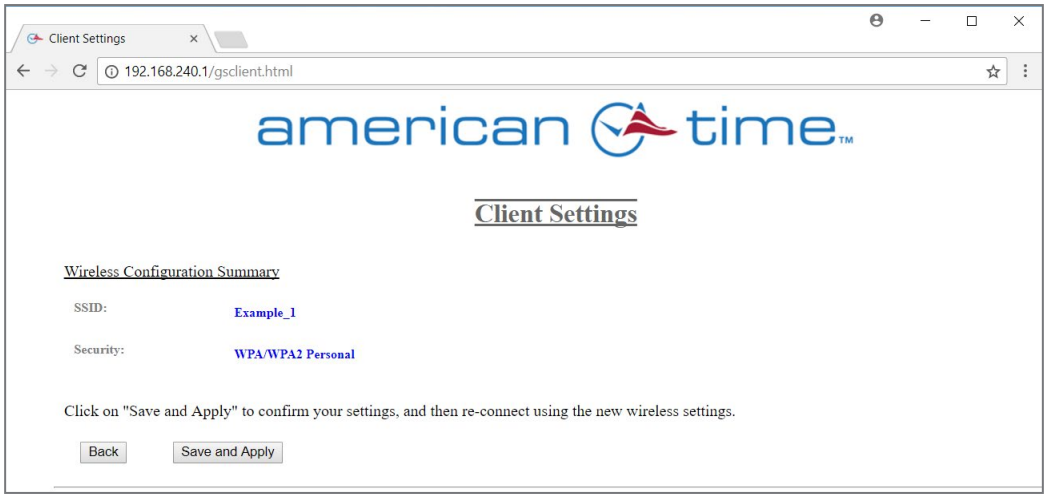


CONTINUE▷

Note: For Enterprise Security, see "Appendix C: Enterprise Security Configuration" on page 57.



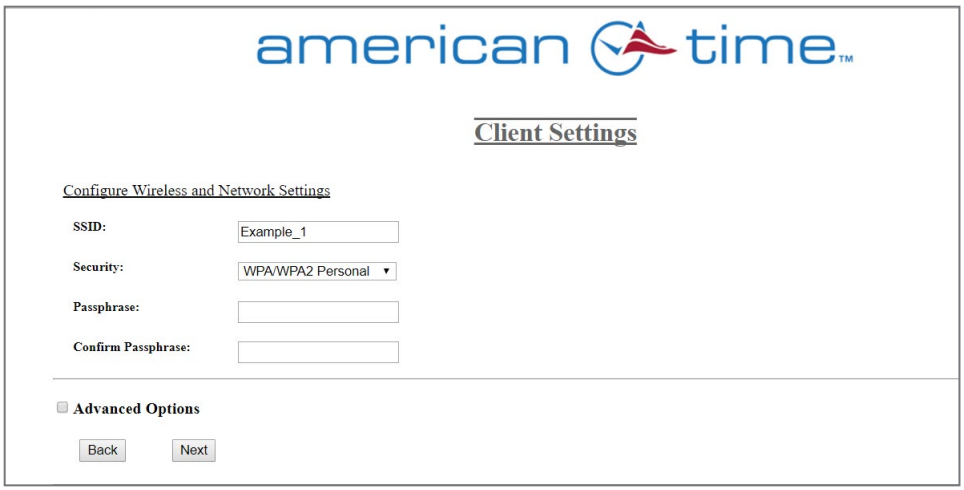
5. Select "**Save and Apply**" button to save and exit to normal operation.



Manual Configuration to Join a Network

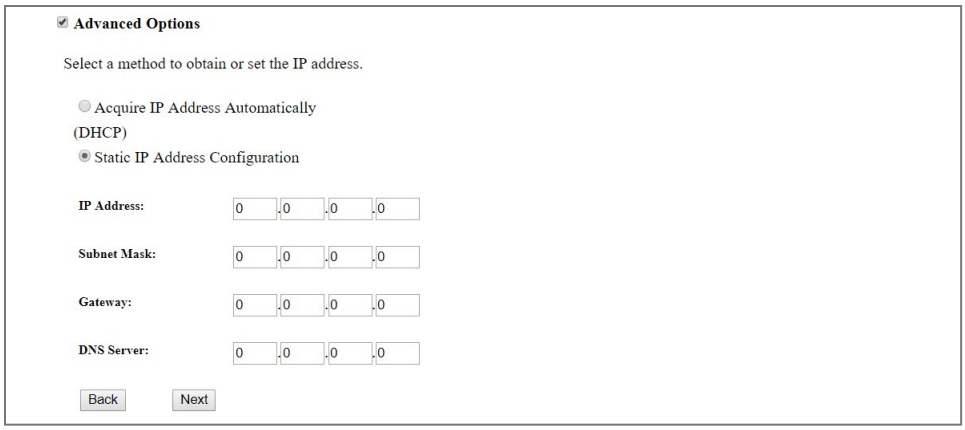
If you chose Manual Configuration to Join a Network for your Wi-Fi configuration entry method, the screen below will appear.

1. Enter the SSID, security type and security settings.



Note: If a static IP address is required, check the Advanced Options and select "**Static IP Address Configuration**" radial button.

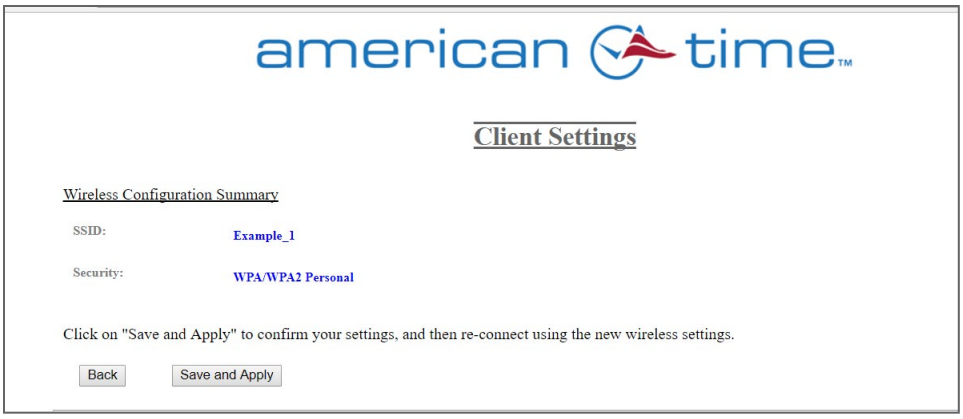
Note: For Enterprise Security, see "Appendix C: Enterprise Security Configuration" on page 57.



2. Click the next button to continue.

CONTINUE▷

3. Click on the Save and Apply button to save and exit to normal operation.



When finished with configuration, the clock's access point will shutdown and the computer will automatically disconnect. The computer should automatically reconnect to the last Wi-Fi network to which it was connected prior to the configuration process.

If installing plastic double-dial clocks, reference the "Installation" section to complete mounting the clocks. For steel double-dial clocks, return to the quick start guide included with your clocks.

Activating Your Clocks on the inCloud Management Portal

inCloud™

If your Wi-Fi devices have been configured, you can activate them on inCloud by logging in, using the credentials provided in your inCloud welcome email.

This can be done in one of two ways:

1. Log in through the Network Clock Setup App (Android) and click on ACTIVATE ON INCLOUD.
2. Activate through inCloud through a web browser. The following pages will guide you through these steps.

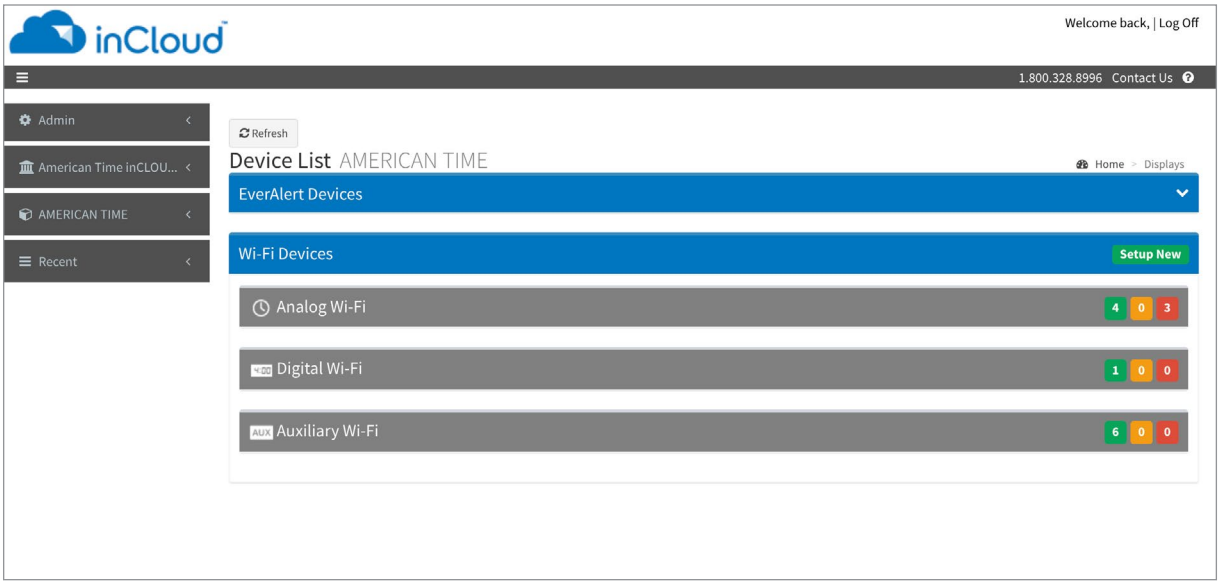


american time®

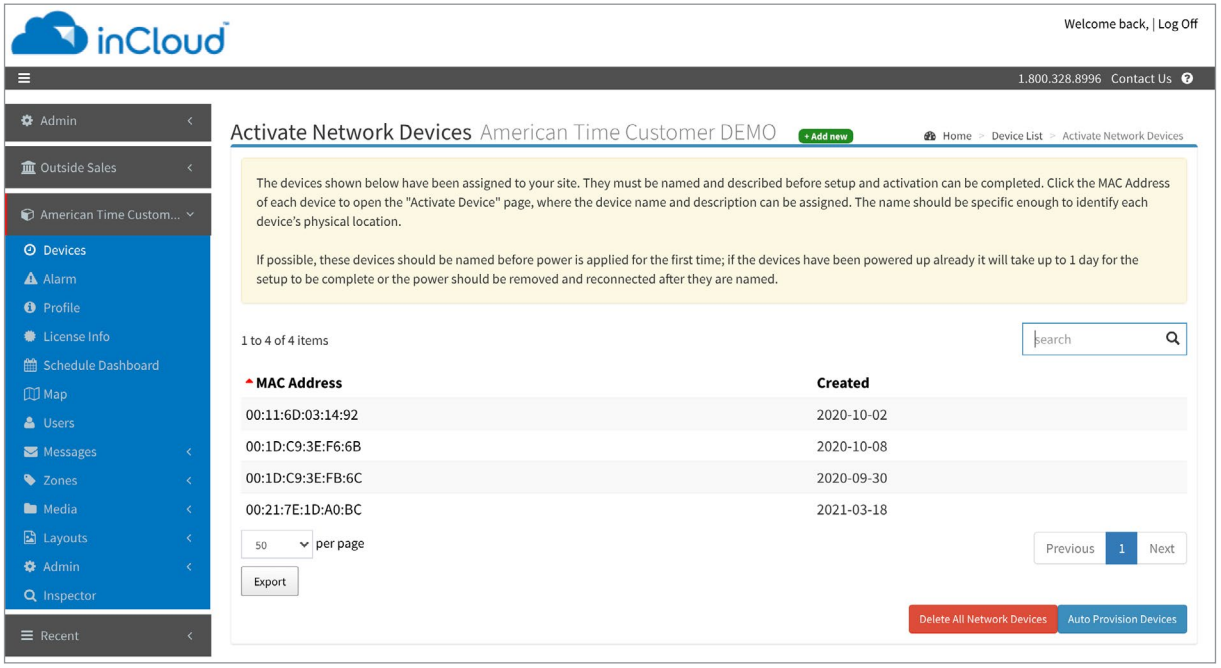
Activate Your Clock - Web Browser

Note: Your clock should be provisioned and configured before continuing on to the following steps (if not, refer to "Self-Configure / Self-Provision" on page 13):

1. Navigate to the inCloud portal: incloud.american-time.com
   Log in using the credentials supplied in the welcome e-mail from American Time.
2. Click on the green "Setup New" button in the Wi-Fi Devices bar on the Device List page.

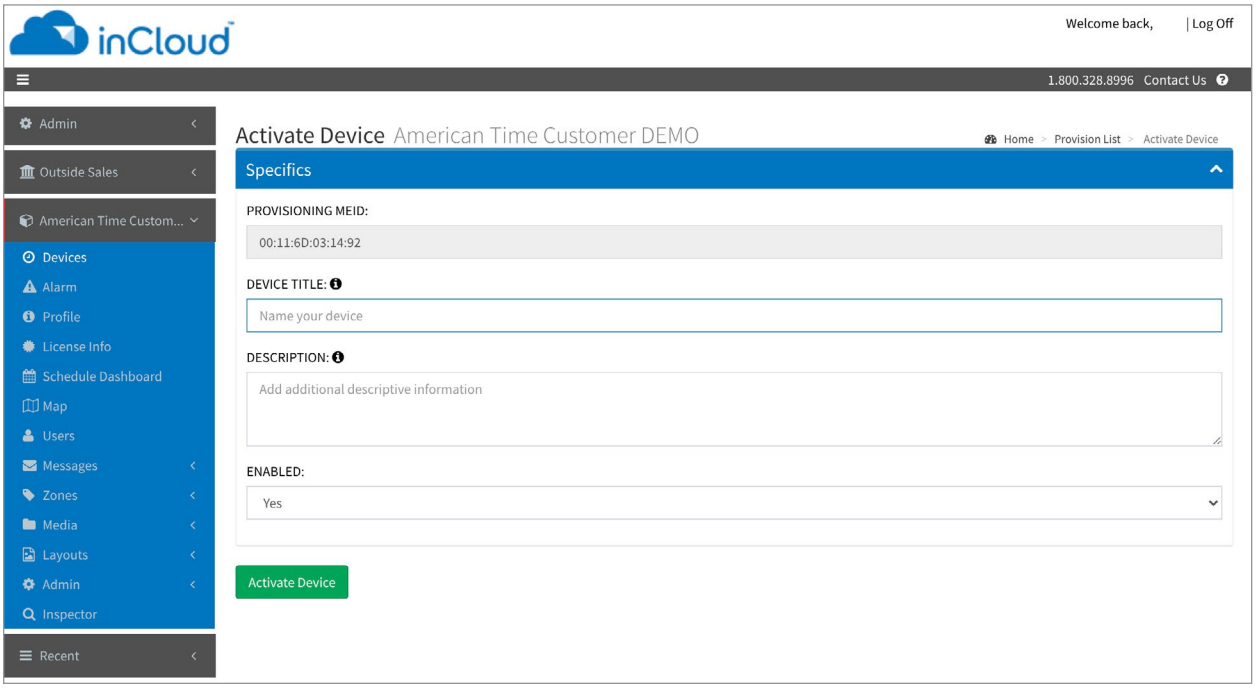


This will open the Setup Network Device List, which will list all the clocks assigned to your site.



CONTINUE▷

3. CIlck on the desired clock's MAC address and provide a name and (if desired) description for the clock.
   Reference the MAC address list where clock installation location was noted during installation for naming.



   - The MAC address can be searched using the last five characters of the address including the colon (for example, AA:11) in the search bar.
   - Once a clock is named on inCloud, it will appear as "partially configured" in the inCloud device list.
4. After a clock has been named, it can be mounted and given power Repeat these steps until all clocks have been set up.

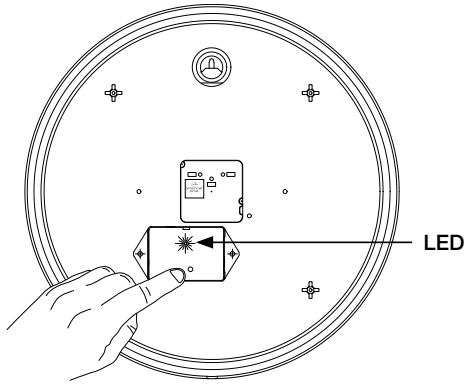
Note: If clocks cannot be configured prior to installation/power-up:

- Follow the same process as outlined. After configuration, clocks will appear as partially configured in the Device List until they communicate with inCloud fully; this may take up to 24 hours, but clocks will function normally until that occurs.
- If immediate connection is desired, removing and then reconnecting power to the clocks will command them to communicate with inCloud immediately. This must be performed with each clock if desired.

Analog Clock Button Operation

A recessed push button is located in the lower center of the Wi-Fi module. It can be used to initiate 5 different operations:

1. LED status indication
2. Configuration (via Limited Access Point). See also, pages 14-15.
3. Clock homing (sending clock hands to 12 o'clock). See also, page 31.
4. Firmware updates (internet access is required). See also, page 33.
5. Factory defaults restore (restores to the configuration that the clock was shipped). See also, page 35.



Each operation is proceeded by a number of orange flashes. If the button is released after the operational flash count (see list below) it will attempt the specific operation listed.

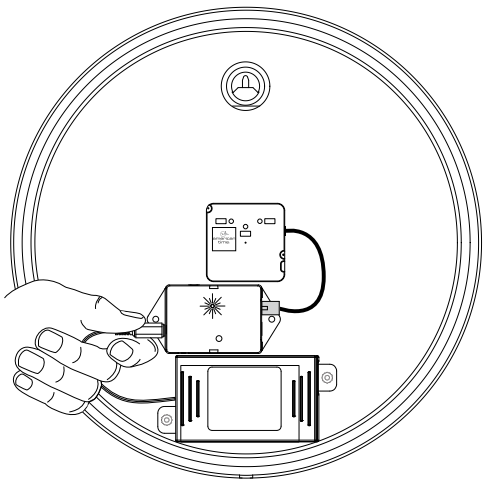
Orange LED Flash Count	Button Press Duration	Operation	LED Indication	Description
0	< 1 second	Clock Status Indication	Flashes status color for 3 seconds	Red: Network fail – see Analog Clock Troubleshooting, #7, page 23 Orange: Time sync fail– see Analog Clock Troubleshooting, #6, page 23 Green: Operating correctly
1	1 - 5 seconds	Configuration	Flash GREEN/ ORANGE	Wi-Fi Limited Access Point is available for clock and Wi-Fi configuration (web browser 192.168.240.1)
2	5-10 seconds	Clock Homing	6 seconds RED 5 seconds ORANGE 10 seconds rapid GREEN flash	Send clock hands to 12 O'clock position then stop until power is reset
3	10-15 seconds	Firmware Update	Flash GREEN/ ORANGE/RED	Update the firmware from the internet (port 80)
4	15+ seconds	Factory De-faults Restore	Flash RED/GREEN	Reset configuration to factory settings

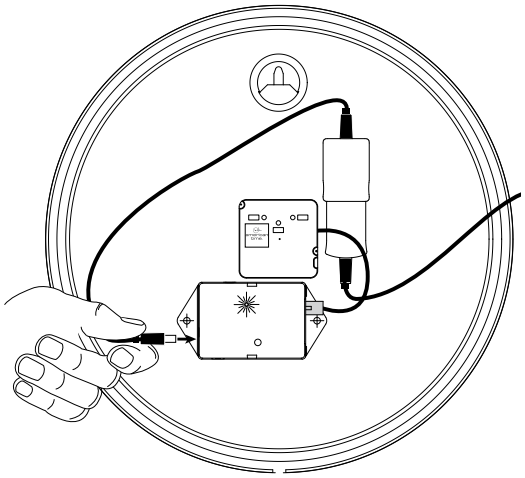
Homing Hands - Analog Clocks

If the clock is dropped it is possible for the clock hands to move from the correct placement. The Wi-Fi module can tell the clock movement to go to 12 o'clock to verify hand placement is still correct.

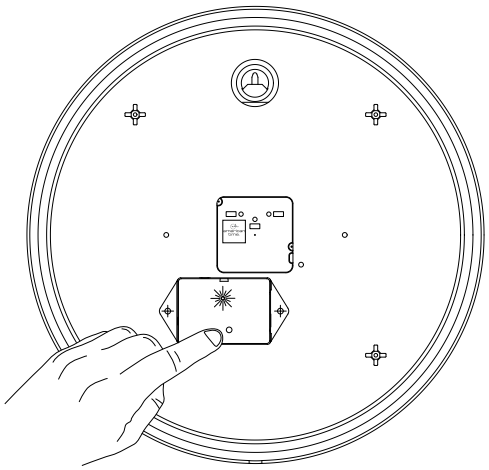
To check hand placement complete the following process:

1. Apply power to Wi-Fi module by inserting the barrel plug from the power source into the left side of the Wi-Fi module where the power connection is located.
2. Verify the LED starts flashing red.



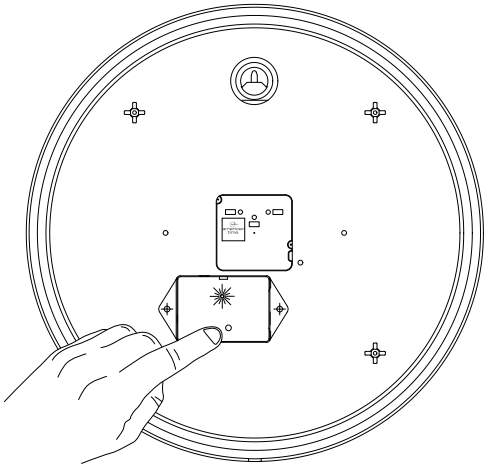


3. Wait for the LED to either stop flashing (Battery clock) or turn a solid color (Electric clock).
4. Press and hold the button located on the middle of the Wi-Fi module.



CONTINUE▷

a. The LED should turn solid green to indicated the button press (continue holding the button).
b. Wait for the LED to flash orange one time (do not release the button).
c. Wait for the LED to flash orange twice.



5. Release the button.
   a. Verify the LED turns solid red.
   b. Verify the LED turns solid orange.
   c. Verify the LED flashes green.
6. Hands should begin moving rapidly within 30 seconds.
   a. If not, remove power and start with step 1 again.
7. Wait for hands to stop moving (this may take up to 20 minutes).
8. Verify all three hands (second hand, minute hand and hour hand) stop at the 12 position.
   a. If not, contact American Time technical support at **800-328-8996**.
9. Power cycle Wi-Fi module by disconnecting barrel plug from the power source for 5 seconds and reconnecting.

Firmware Updates - Analog Clocks

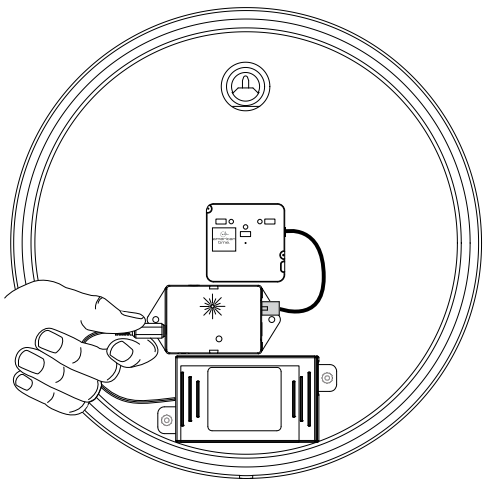
Occasionally American Time will have new firmware updates available. Contact American Time for the most recent firmware version available. Firmware updates require access to the internet through port 80.

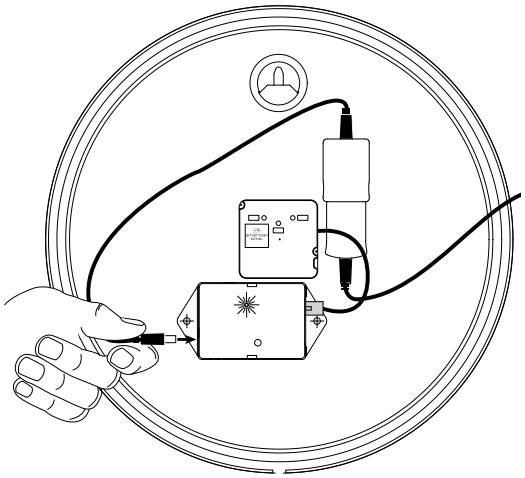
Note: If traffic is redirected on port 80, firmware updates will fail. Prior to completing the firmware update process verify internet access is available on port 80.

To complete a firmware update, complete the following process:

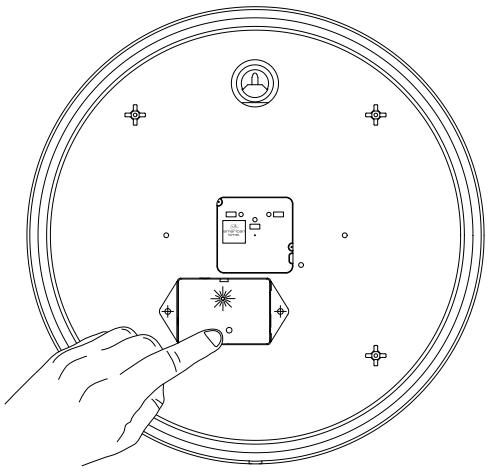
Note: To update firmware on digital clocks, see page.

1. Apply power to Wi-Fi module by inserting the barrel plug from the power source into the left side of the Wi-Fi module where the power connection is located. If clock is currently powered and running, go to step 4.
2. Verify the LED starts flashing.





3. Wait for the LED to either stop flashing (Battery clock) or turn a solid color (Electric clock).
4. Press and hold the button located on the middle of the Wi-Fi module. The LED should turn solid green to indicate the button press (continue holding

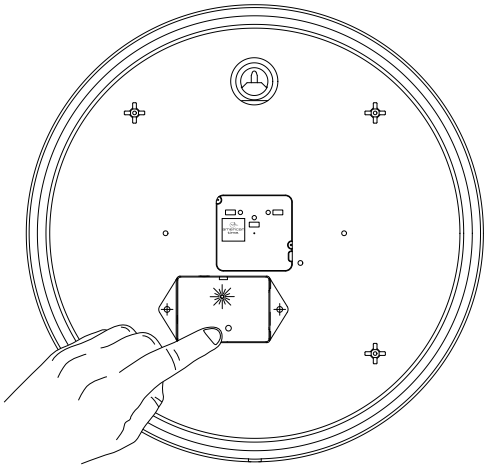


CONTINUE▷

the button).

a. Wait for the LED to flash orange one time quickly (do not release the button).
b. Wait for the LED to flash orange twice quickly (do not release the button).
c. Wait for the LED to flash orange three times quickly.

5. Release the button.
   a. Verify the LED alternates green/orange/red.
   b. Verify LED turns off.



   c. Verify LED flashes red.

Note: If the LED turns solid red for approximately 3 seconds, the firmware update process failed.
To verify firmware update process is successful connect to the clock in configuration mode and verify firmware version at the bottom of the browser page. Contact American Time technical support at **800-328-8996**.

6. Power cycle Wi-Fi module by disconnecting barrel plug from the power source for 5 seconds and reconnecting.

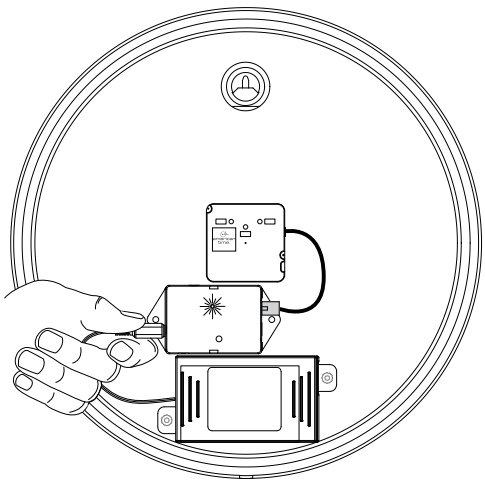
Factory Defaults Restore - Analog Clocks

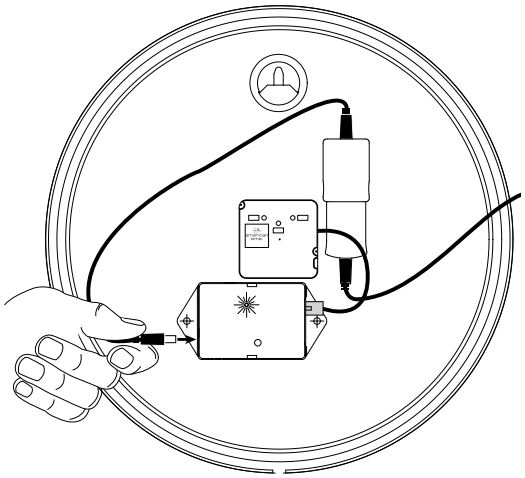
American Time preconfigures your clock settings prior to shipment to you. These preconfigured settings are stored in memory even after settings have been changed.

Note: If your clock was not preconfigured at American Time, completing the factory defaults restore process will not help. Refer to configuration section of this manual to reconfigure your clock.

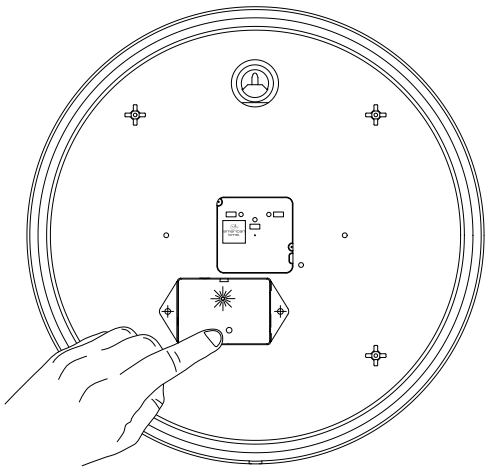
To restore preconfigured settings complete the following process:

1. Apply power to Wi-Fi module by inserting the barrel plug from the power source into the left side of the Wi-Fi module where the power connection is located. If clock is currently running, go to step 3.
2. Verify the LED starts flashing red.





3. Wait for the LED to either stop flashing (Battery clock) or turn a solid color (Electric clock).
4. Press and hold the button located on the middle of the Wi-Fi module. The LED should turn solid green to indicated the button press (continue holding

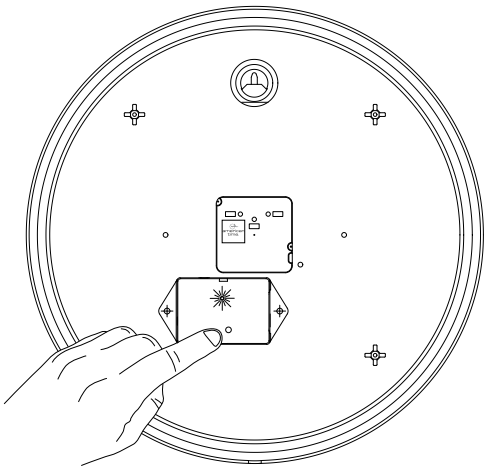


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the button).

a. Wait for the LED to flash orange one time (do not release the button).
b. Wait for the LED to flash orange twice (do not release the button).
c. Wait for the LED to flash orange three times (do not release the button).
d. Wait for the LED to flash orange four times.

5. Release the button.



a. Verify the LED alternates red/green.

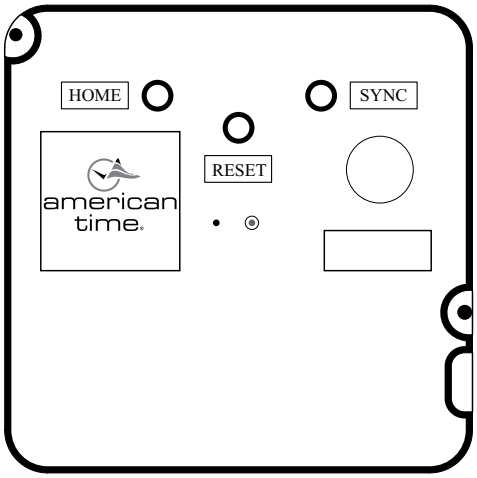
6. Wait 20 seconds.
7. Power cycle Wi-Fi module by disconnecting barrel plug from the power source for 5 seconds and reconnecting.

Analog Clocks - Movement Buttons

Home Button: This button should not be used to return the clock hands to the 12:00 or Home position. See "Homing Hands - Analog Clocks" on page 31.

Reset Button: This button is not applicable for Wi-Fi products.

Sync Button: This button is not applicable for Wi-Fi products.



Digital Clock Button Operation

The buttons on the digital clock can be used for general clock configuration and advanced debug.

NOTE: Settings should be changed through the inCloud Management Portal whenever possible. Any settings changed using the physical buttons will not be reflected on inCloud and will be highlighted as a configuration discrepancy.

Go to the top of the clock case to change settings on the digital clock. Begin by pressing Set/Run and using the OK and Increment (+) buttons as required, referencing the Figures below. When complete, press Set/Run again to exit the menu structure.



Provisioning Clock

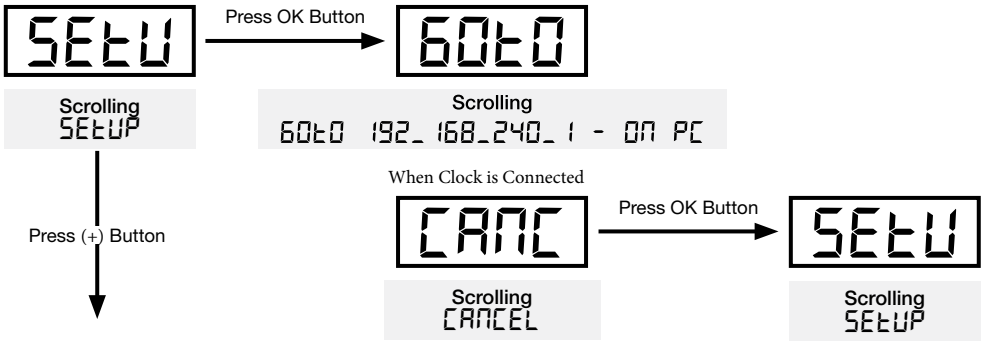
After pressing the **SET/RUN** button, the clock will scroll SEtUP. Pressing **OK** will put the clock in provisioning mode.

In provisioning mode, the clock can be modified through the Limited Access Point portal. This allows access to controls such as time zone, Daylight Saving, and display/ brighness settings. For more information on configuration through the portal, see the "Configuration" section of this manual.

After the clock is connected during setup, the clock will display CANCEL. Pressing **OK** will take the clock back to the SEtUP stage.

Once provisioning is complete, selecting "done" on the portal will cause the clock to automatically switch out of provisioning mode. The clock will look for a signal and display a time.

To skip provisioning mode and move on to set the display brightness, press the **(+)** button while SEtUP is scrolling.



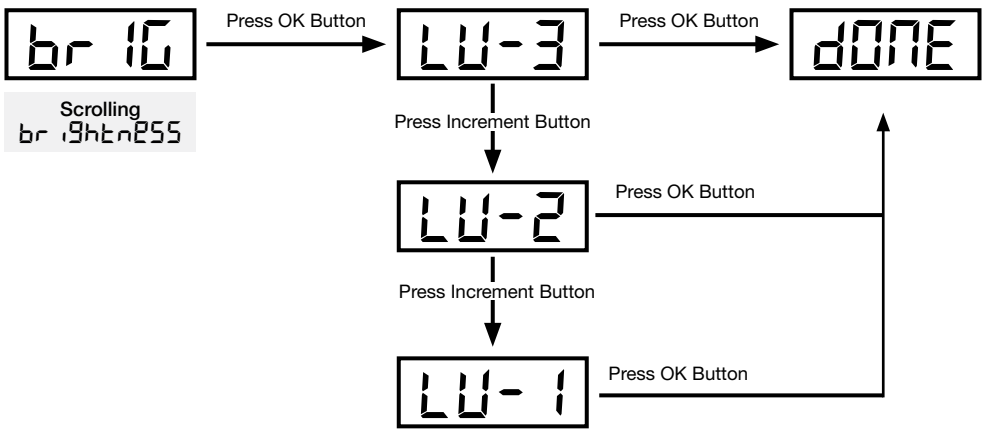
CONTINUE▷

Setting Brightness

After SEtUP, the clock will scroll br IGHtNESS. Pressing **OK** will open the brightness menu.

In the brightness menu, the brightness of the digital display can be adjusted between three levels, 3 being the brightest and 1 the dimmest. Pressing the **(+)** button will scroll through the brightness setting. Pressing **OK** will set the brightness to the displayed value. The clock will then display dONE and go to the 12/24 hour menu option.

To skip setting the brightness and move on to the 12/24 hour mode option, press the **(+)** button while br IGHtNESS is scrolling.



CONTINUE▷

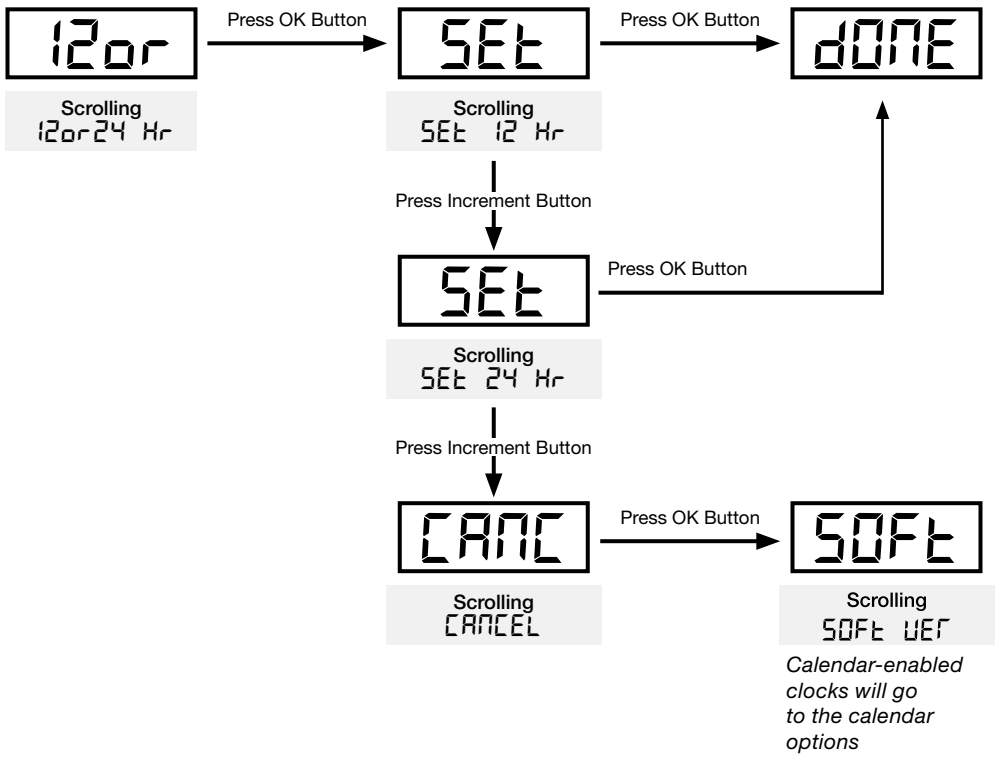
Setting Clock to 12 or 24 Hour Mode

After br IGHtnESS, the clock will scroll 12or24 Hr. Pressing **OK** will open the 12/24 hour mode menu.

In this menu, the clock can be set to display in either 12-hour or 24-hour time. Pressing the **(+)** button will cycle between SEt 12 Hr and SEt 24 Hr. Pressing **OK** will set the clock to display in the displayed mode. The clock will then display dONE and move on to either the calendar display settings (if the clock is calendar enabled) or will display the software version (if the clock is not calendar enabled).

To exit the 12/24 hour mode menu without making changes and move to the next menu option, scroll past SEt 24 Hr to CANCEL and press the **OK** button.

To skip 12/24 hour mode and move on to the next menu option, press the **(+)** button while 12or24 Hr is scrolling.



CONTINUE▷

Setting Calendar Display Options

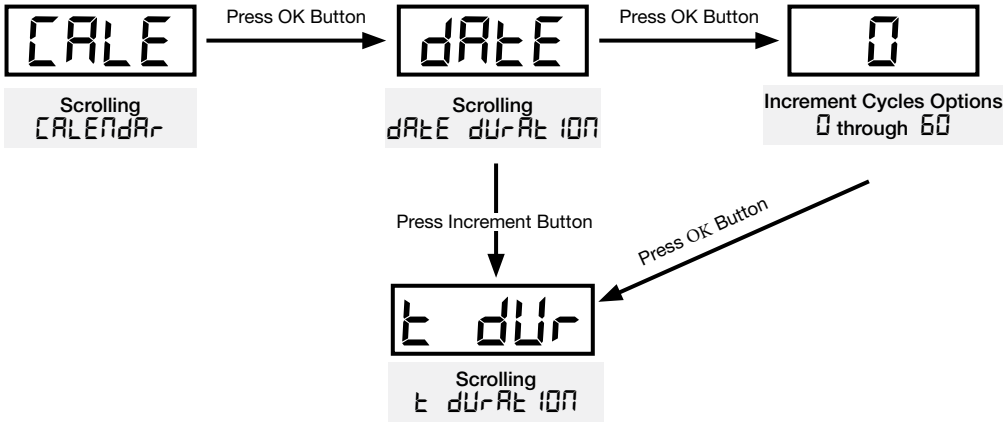
After 12Or24 Hr, calendar-enabled clocks will scroll CALENdAr. Pressing **OK** will open the calendar mode menu.

In this menu, the calendar display settings can be changed. Pressing the **(+)** button will scroll between dAtE dUrAtION, t dUrAtION, dAtE dISPLAY, and CANCEL. Press **OK** to enter the displayed setting.

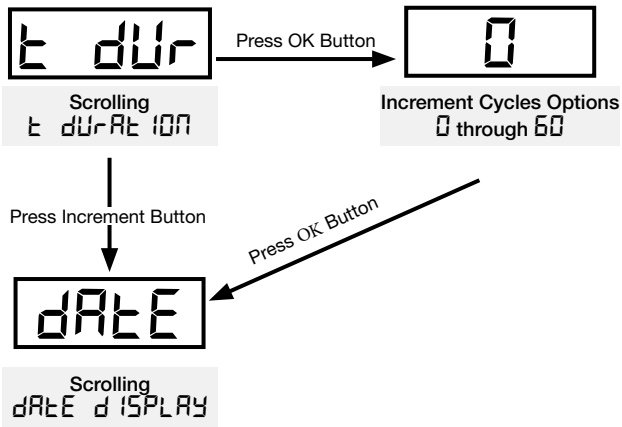
In dAtE dUrAtION, the duration the date is displayed can be set. This is determined by setting the number of seconds the date will display from 0 to 60. Pressing the **(+)** will increment the display time up by one second. Pressing **OK** will advance to t dUrAtION.

To exit the calendar mode menu without making changes and move to the software version display, scroll past dAtE dISPLAY to CANCEL and press the **OK** button.

In t dUrAtION, the duration the time is displayed can be set. This is determined by setting the number of seconds the time will display from 0 to 60. Pressing the **(+)**



will increment the display time up by one second. Pressing **OK** will advance to dAtE dISPLAY.

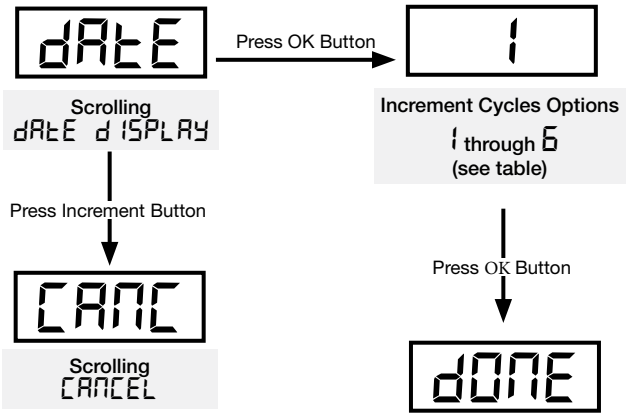


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In dAtE diSPLAY, the format of the date display can be set. Pressing the **(+)** button will cycle through the five different options for the date format.

dAtE diSPLAY option number	Calendar format
1	MM:DD:YY
2	DD:MM:YY
3	YY:MM:DD
4	M:D:YY
5	D:M:YY
6	YY:M:D

Pressing **OK** will set the displayed date setting. The clock will then display dONE and go to the software version menu.



Time/Date Display Duration

The calendar mode option allows the clock to be configured to alternate displaying the time and date at user-configured intervals. The time and date can be set to display at intervals ranging from 1 to 60 seconds under the dAtE dUrAtION and t dUrAtION settings under CALENdAr in the clock menu.

Calendar clocks are factory-configured to display the time for 15 seconds, followed by a five-second display of the date.

Setting either duration to "0" will disable the function (i.e. if dAtE dUrAtION is set to "0," the clock will display only the time).

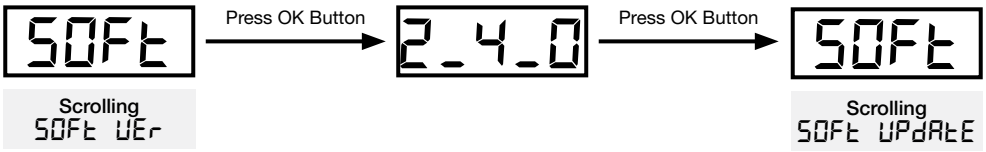
CONTINUE▷

Software Version

After 12Hr/24 Hr (CALENdAR for calendar-enabled clocks), the clock will scroll SOFt UEr. Pressing **OK** will open the software version display.

This will scroll the current software version. Pressing **OK** will advance to the software update menu.

To skip the software version menu, press the **(+)** button while SOFt UEr is scrolling.



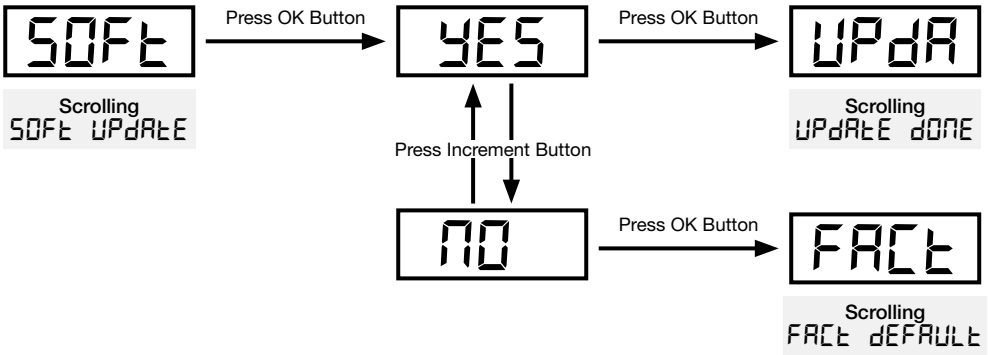
Software Update

After SOFt UEr, the clock will scroll SOFt UPdAtE. Pressing **OK** will open the software update menu.

Pressing the **(+)** button will cycle between YES and nO. With YES displayed, pressing **OK** will initiate a software update; once the update is complete, the clock will scroll UPdAtE dONE and advance to the factory default menu.

With nO displayed, pressing **OK** will advance to the factory default menu.

To skip the software update menu, press the **(+)** button while SOFt UEr is scrolling.



CONTINUE▷

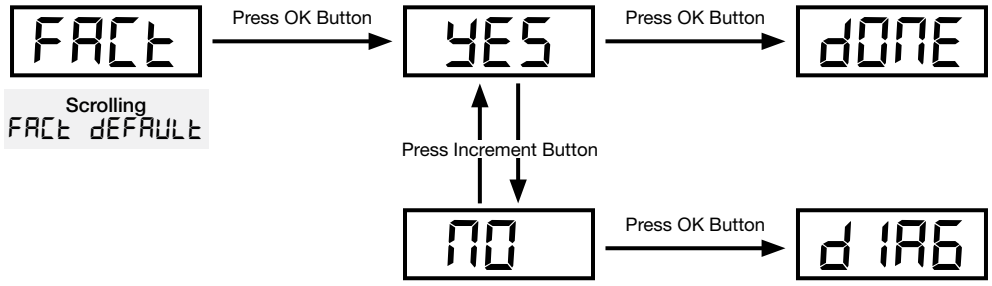
Factory Default

After SOFt UPdAtE, the clock will scroll FACt dEFAULt. Pressing **OK** will open the menu to return the clock to its factory defaults.

Pressing the **(+)** button will cycle between YES and nO. With YES displayed, pressing **OK** will reset the clock to default; once the update is complete, the clock will display dONE and advance to the diagnostic menu.

With nO displayed, pressing **OK** will advance to the diagnostic menu.

To skip the factory default menu, press the **(+)** button while SOFt UEr is scrolling.



CONTINUE▷

Diagnotics

After FACt dEFAULt, the clock will display diAG. Pressing **OK** will open the diagnostics menu.

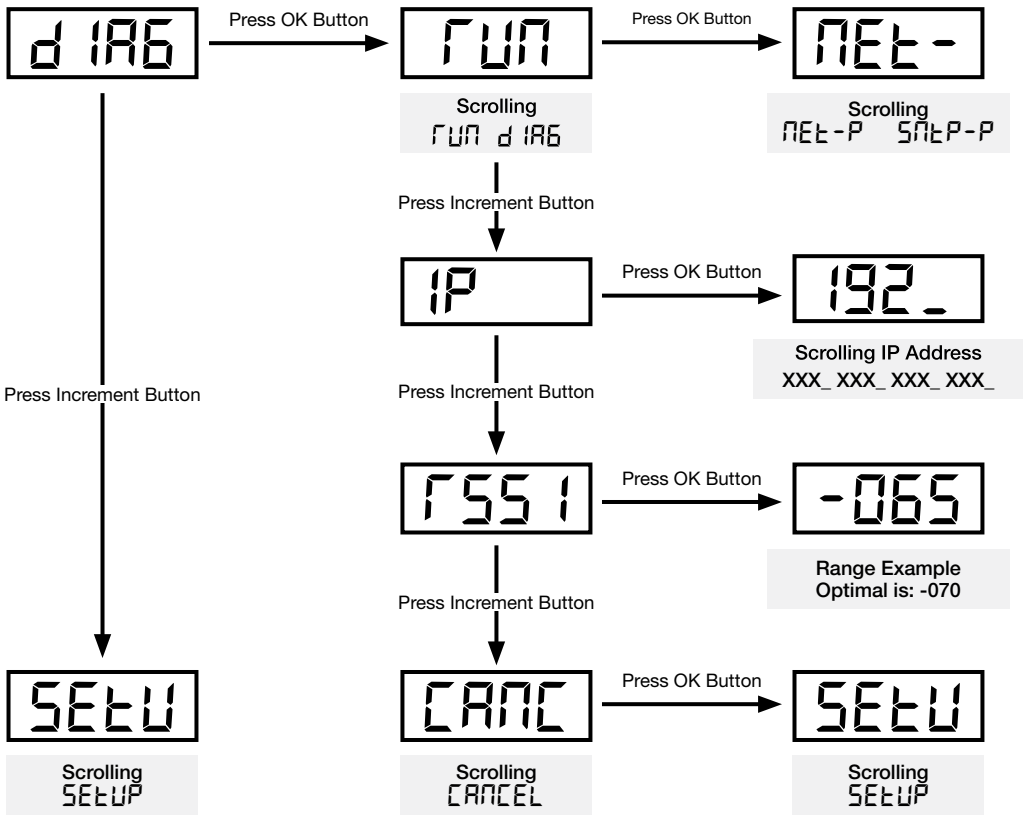
Pressing the **(+)** button will cycle through three diagnostic options. The first option will scroll rUN diAG. Pressing **OK** will run the connection diagnostic. If the clock is fully connected and receiving time from a time server, if will display nEt-P and SntP-P. If the clock is connected to the internet but not receiving time from a time server, it will display nEt-P and SntP-F. If the clock is not connected to the internet, it will display nEt-F and SntP-F.

The second option will display IP. Pressing **OK** will display the clock's IP address. If the clock does not have an IP, it will display nEt-F and SntP-F, then display IP again. Pressing **OK** again will result in scrolling all zeroes (000-000-000-000).

The third option will display rSSI. Pressing **OK** will display the quality of the clock's network connection.

Pressing **(+)** after the RSSI menu will display CANCEL. Pressing **OK** will take the clock back to the beginning of the SEtUP menu.

To skip the diagnostic menu, press the **(+)** button while SOFt UEr is scrolling.



Installation of Double Sided Analog Clocks

Wall or ceiling electrical boxes must be securely fastened to framing within the wall or ceiling to properly support the double dial clock.

It is recommended that a double-gang box be used in the wall or ceiling.

If using smaller, single-gang wall box, replace faceplate screws with #8-32 self-tapping screws enclosed. (Drill out existing threads with a #29 (.136) or 9/64" drill.)

Plastic Case

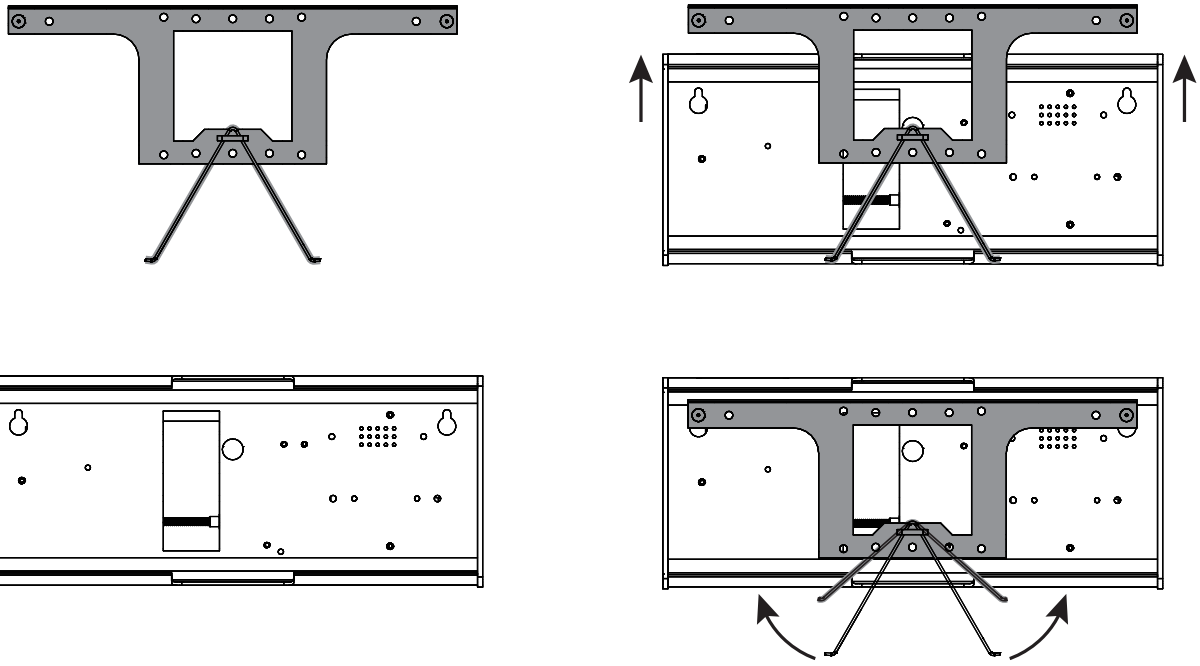
1. Remove acorn nuts from base and remove mounting plate.
2. Pull wires (electric only) from wall through mounting plate and attach mounting plate to the wall box.
3. Mount the double dial clock base to the mounting plate with the two acorn nuts removed in step 1.
4. Remove bottom mounting screws from double dial ring. (Remove clocks if mounted)
5. Hang first clock on the top mounting screw and secure with mounting screw removed in step 4.
6. Hang second clock on the top mounting screw and secure with mounting screw removed in step 4.

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Installation of Surface Mount Digital Clocks

Single-face, surface mount

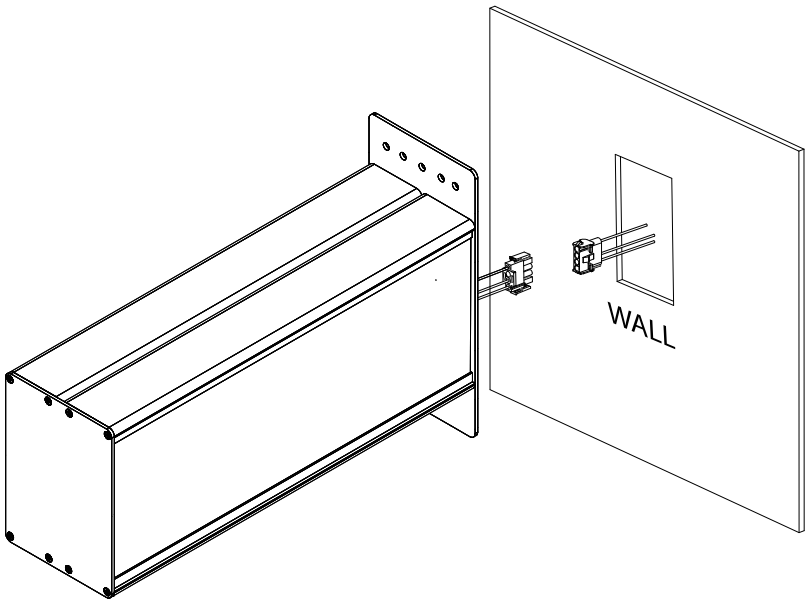
1. Remove the hanger from the clock by pushing the bracket down and pivoting the studs out of the backplate.
2. Mount the hanger on the wall using the bracket holes, either directly to the wall studs or to a single or double gang box.

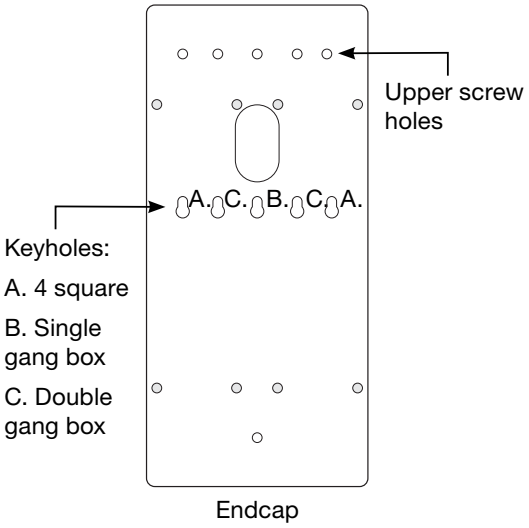


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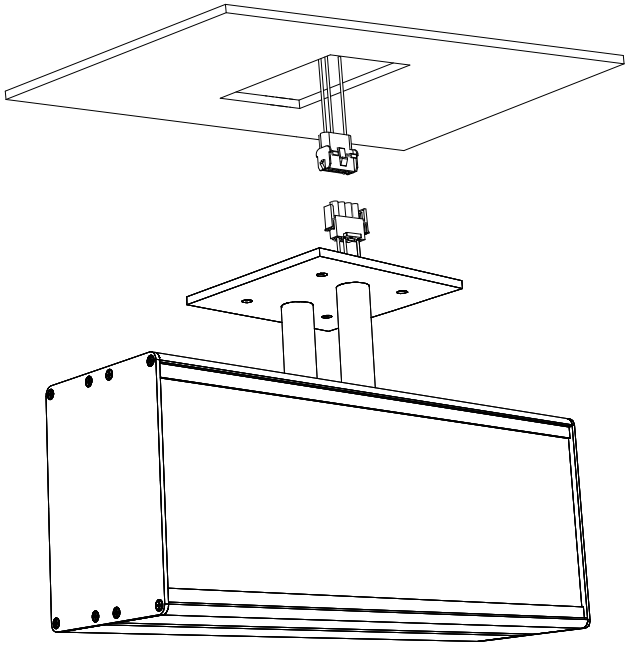
Installation of Double Sided Digital Clocks

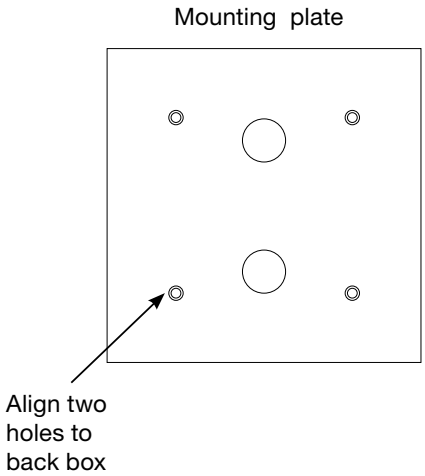
Wall Mount





Ceiling Mount





Analog Clock Troubleshooting

Clock is at Home Position

1. When the clocks are initially powered on, if they don't receive SNTP time the hands will advance to home and stay at home until the problem is fixed. Battery clocks will retry every 12 hours and electric clocks will retry by default every hour but can be changed in configuration sync frequency settings.
   a. Verify gear locking pin is removed.
   b. Disconnect barrel jack plug from Wi-Fi receiver module.
   c. Reconnect barrel jack plug after waiting at least 5 seconds.
   d. Watch for LED to flash. Should flash red then solid green within 60 seconds for normal operation.

- If no LED is illuminated proceed to 3.
- If red LED is illuminated proceed to 6.
- If orange LED is illuminated proceed to 5.
  Note: If you missed the flash, do quick button press to see status of clock.

2. Clock is off time
   a. Press button and release on receiver, watch LED.

- If LED is green, proceed to b.
- If LED is orange, proceed to 6.
- If LED is red, proceed to 7.
  b. Has DST change happened recently?
- If YES, check **DST** setting is correct by going into Configuration settings.
- If NO, go to "c".
  c. Check **time zone** is set correctly by going into Configuration settings.
- If time zone is correct, contact IT staff to verify time server.

3. Clock is not on time within 10 minutes of applying power
   a. Reference section 1b-1d. If issue is not resolved here proceed to 2b.
   b. Verify hand positions (see "Homing Hands - Analog Clocks" on page 31).
   c. Confirm proper time-zone and daylight savings time settings are configured. Reference Configuration settings.
   d. Verify time server is distributing the correct time.
- Contact IT staff to verify time server.

CONTINUE▷

4. Verify Clock Power
    a. If using battery clocks, confirm the battery voltage and polarity.

- Using and multi-meter, verify the voltage is between 1.55-1.8V at the battery booster. Clocks will not function properly below 1.55V.
- Confirm polarity of the batteries inside the batter pack.
- Make sure Barrel jack plug of the battery pack is plugged tightly into Wi-Fi Receiver module.

Note: If batteries need to be replaced all 6 six batteries should be replaced at the same time with 1.5V Lithium batteries only. Do not use Alkaline batteries.

    b. If using AC Electric clocks and no LED is illuminated.

- Confirm outlet has proper voltage levels.
- Make sure Barrel jack plug of the power supply is plugged tightly into Wi-Fi Receiver module.

5. Clock is power cycling every hour
    a. If wired into a legacy clock system, it is possible that the master clocks correction protocol will power cycle it's mechanical clocks hourly to synchronize.

- Disconnect clock from the master clock power source and provide an un-switched power source.

6. SNTP failing (flashing orange prior to solid orange)
    a. Verify Port 123 if open for UDP traffic.
    b. If "Use IP Address" is selected in SNTP configuration, verify SNTP primary and secondary time servers (see "Clock Configuration Settings" on page 20 and "Wi-Fi Configuration" on page 22).
    c. If "Use DNS" is selected in SNTP configuration, verify "Pool Domain Name" server (see "Clock Configuration Settings" on page 20 and "Wi-Fi Configuration" on page 22).

7. Network connection failing (continues flashing red prior to solid red).
    a. Verify proper signal reception in the intended installation location.

- Contact IT staff to verify signal at installation location
    b. Verify correct SSID and Password. See "Clock Configuration Settings" on page 20.

8. Clocks correcting when first powered but time drifts in good signal area using NIST time server.

Note: NIST time servers will reject multiple time requests from the same IP address.

CONTINUE▷

a. Change to internal time server or use Pool Domain Name option of SNTP configuration.

9. Limited Access Point is visible, but computer/mobile device cannot connect to the AP or cannot load the configuration portal.
   a. Likely caused by Wi-Fi signal intereference. Move the clock to a different location for configuration.

Note: If a Wi-Fi scanner application is available, find a location for configuration where there are no Wi-Fi networks using Channel 6.

If the above steps do not resolve the issue, please contact American Time at **800-328-8996** or **techs@atsclock.com**.

Digital Clock Troubleshooting

1. Clock is not on time within 6 minutes of applying power.
   a. Enter Diagnostics menu on Digital clock. Reference menu flow chart beginning with “Digital Button Operation” on page 38.
   Normal operation will scroll NEt-P followed by SntP-P.

- If nt-F is displayed, there is a problem with connecting to the Wi-Fi network proceed to **5**.
- If tS-F is displayed, there is an issue with the time server. Proceed to **7**.
- If nt-n is displayed, there is a problem connecting to the Wi-Fi network. Proceed to **6**.

2. Time on clock is not correct.
   a. Reference section 1. If issue is not resolved here proceed to 2b.
   b. Confirm proper time-zone and daylight savings time settings are configured. See “Clock Configuration Settings” on page 20.
   c. Verify time server is distributing the correct time.

- Contact IT staff to verify time server.

3. Nothing is displayed on clock.
   a. Verify proper voltage is at clock.
   b. Verify that the clock is wired to the proper voltage; i.e. a 120VAC clock will not function on a 24VAC system.

4. Clock is power cycling every hour.
   a. If wired into a legacy clock system, it is possible that the master clock’s correction protocol will power cycle its mechanical clocks hourly to synchronize.

- Disconnect clock from the master clock power source and provide a local unswitched power source.

5. 5. Clock is not finding a Wi-Fi signal (nt-F on Clock Display).
   a. Verify proper signal reception in the intended installation location.

- Enter DIAG menu and RSSI. Reference menu flow chart “Digital Clock Button Operation” on page 38. If the RSSI is weaker than -075 (example: -078 is weaker than -075) intermittent failures can occur.
- Contact IT staff to verify signal at installation location.
  b. Verify correct SSID and Password (See Digital Clock Configuration “Current SSID” page 20).

CONTINUE▷

6. Clock is finding a Wi-Fi signal but cannot connect to the access point (nE-n on Clock Display).
    a. Verify access point (AP) is working correctly.

- Check to see if AP has power and is turned on.
- Contact IT staff to verify AP is transmitting on the 2.4 Ghz frequency.

    b. Verify correct SSID (See Digital Clock Configuration "Current SSID" page 20).

7. SNTP failing (tS-F on Clock Display)
    a. Verify Port 123 if open for UDP traffic.
    b. If "Use IP Address" is selected in SNTP configuration, verify SNTP primary and secondary time servers (reference "Digital Electric Wi-Fi Clocks" on page 16).
    c. If "Use DNS" is selected in SNTP configuration, verify "Pool Domain Name" server (reference "Digital Electric Wi-Fi Clocks" on page 16).

8. Display IP address
    a. Enter DIAG menu IP. Reference Digital Button Operation flow chart (page 38, Figure 6).

9. Clocks correcting when first powered but time drifts in good signal area using NIST time server.

Note: NIST time servers will reject multiple time requests from the same IP address.

    a. Change to internal time server or use Pool Domain Name option of SNTP configuration.

10. Limited Access Point is visible, but computer/mobile device cannot connect to the AP or cannot load the configuration portal.
    a. Likely caused by Wi-Fi signal intereference. Move the clock to a different location for configuration.

Note: If a Wi-Fi scanner application is available, find a location for configuration where there are no Wi-Fi networks using Channel 6 .

If the above steps do not resolve the issue, please contact American Time at **800-328-8996**.

Appendices

Appendix A: SNTP Time Servers

American Time Wi-Fi clocks are set by default to connect to one of four American Time time servers:

- 0.americantime.pool.ntp.org
- 1.americantime.pool.ntp.org
- 2.americantime.pool.ntp.org
- 3.americantime.pool.ntp.org

Wi-Fi clocks can be configured to connect to a different time server in the online configuration dialog (see page 16). Clocks can be set to receive time either from a set IP address or from a DNS pool.



Please reference http://tf.nist.gov/tf-cgi/servers.cgi for the latest NIST Internet Time servers list, which includes the status of each server.

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Appendix B: Supported Time Zones

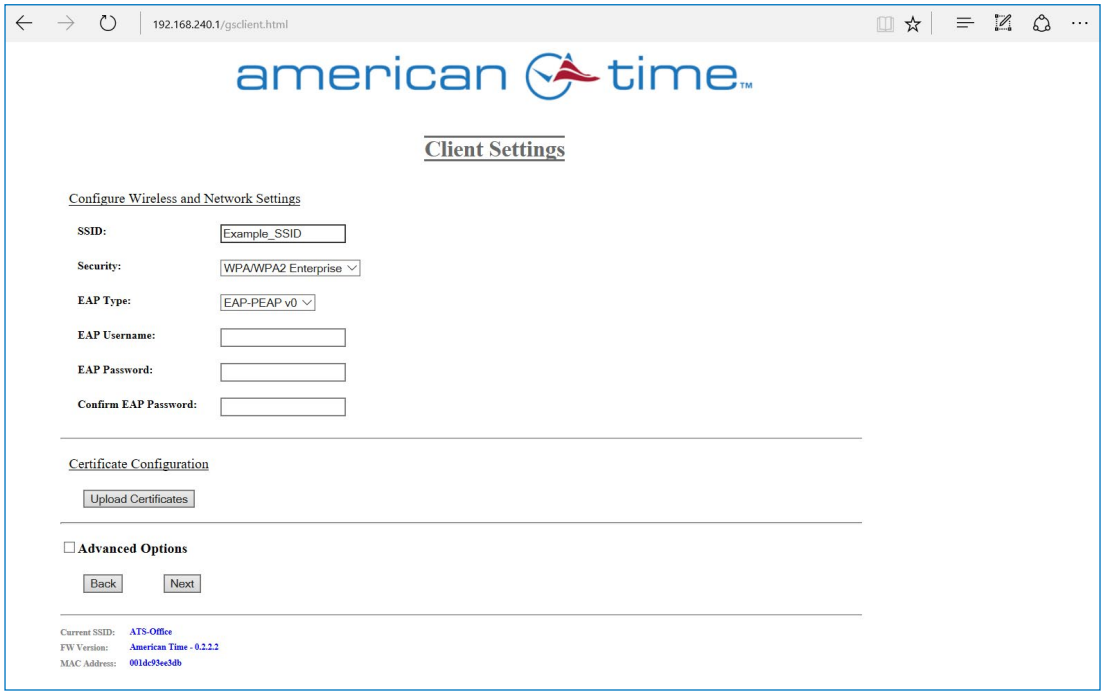
Description	Hours Difference from UTC (Winter)	Hours Difference from UTC (Summer)	Observes Daylight Saving Time
USA Alaska	-9	-8	YES
USA Aleutian Time	-10	-9	YES
USA Arizona	-7	-7	NO
USA Atlantic / Puerto Rico	-4	-4	NO
USA Central Time	-6	-5	YES
USA Chammoro	+10	+10	NO
USA Eastern Time	-5	-4	YES
USA Hawaii	-10	-10	NO
USA Indiana East	-5	-5	NO
USA Mountain Time	-7	-6	YES
USA Pacific Time	-8	-7	YES
USA Midway Island / Samoa	-11	-11	NO
USA Wake Islands	+12	+12	NO
UTC+00:00	+0	+0	NO
UTC+01:00	+1	+1	NO
UTC+02:00	+2	+2	NO
UTC+03:00	+3	+3	NO
UTC+03:30	+3.5	+3.5	NO
UTC+04:00	+4	+4	NO
UTC+04:30	+4.5	+4.5	NO
UTC+05:00	+5	+5	NO
UTC+05:30	+5.5	+5.5	NO
UTC+05:45	+5.75	+5.75	NO
UTC+06:00	+6	+6	NO
UTC+06:30	+6.5	+6.5	NO
UTC+07:00	+7	+7	NO
UTC+08:00	+8	+8	NO
UTC+08:45	+8.75	+8.75	NO
UTC+09:00	+9	+9	NO
UTC+09:30	+9.5	+9.5	NO
UTC+10:00	+10	+10	NO
UTC+10:30	+10.5	+10.5	NO
UTC+11:00	+11	+11	NO
UTC+11:30	+11.5	+11.5	NO
UTC+12:00	+12	+12	NO
UTC+12:45	+12.75	+12.75	NO
UTC+13:00	+13	+13	NO
UTC+14:00	+14	+14	NO

Description	Hours Difference from UTC (Winter)	Hours Difference from UTC (Summer)	Observes Daylight Saving Time
UTC-01:00	-1	-1	NO
UTC-02:00	-2	-2	NO
UTC-03:00	-3	-3	NO
UTC-03:30	-3.5	-3.5	NO
UTC-04:00	-4	-4	NO
UTC-04:30	-4.5	-4.5	NO
UTC-05:00	-5	-5	NO
UTC-06:00	-6	-6	NO
UTC-07:00	-7	-7	NO
UTC-08:00	-8	-8	NO
UTC-09:00	-9	-9	NO
UTC-09:30	-9.5	-9.5	NO
UTC-10:00	-10	-10	NO
UTC-11:00	-11	-11	NO
UTC-12:00	-12	-12	NO

Appendix C: Enterprise Security Configuration

Note: If certificate(s) are required, prior to configuring clock(s), the required certificate(s) should be available on configuration device (i.e. laptop).

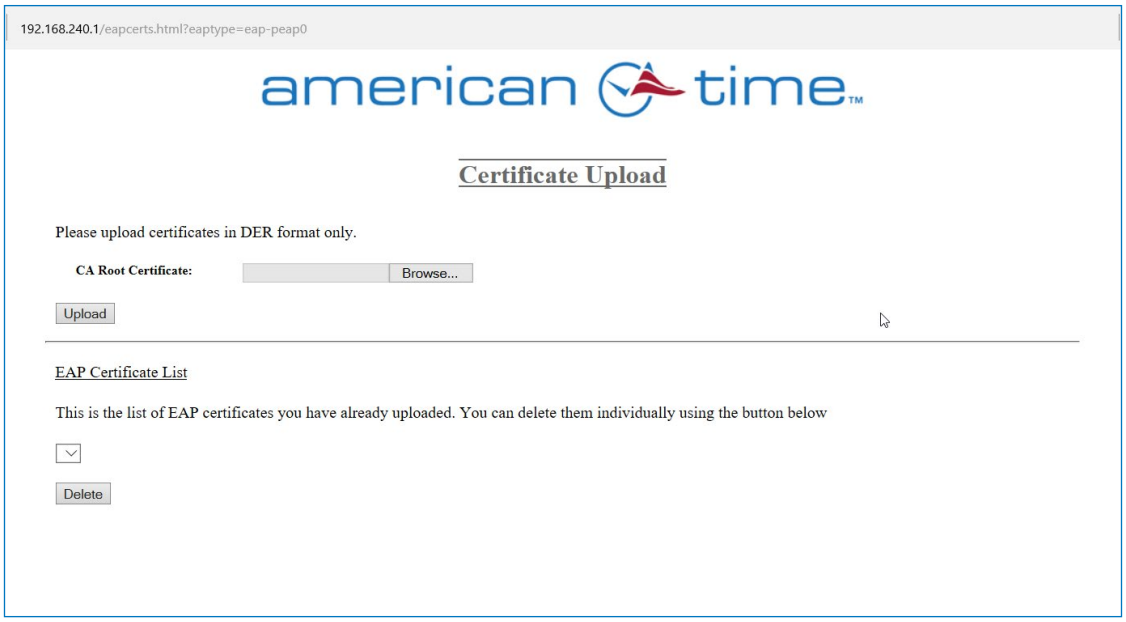
Note: Certificate(s) need to be DER encoded format for clock to function properly if certificate(s) are used.



1. **SSID** – Enter SSID of network
2. **Security** – Select security type WPA/WPA 2 Enterprise
3. **EAP Type** – Select Enterprise security type (EAP-PEAPv0 is the only available type. Additional Enterprise security types may become available in the future)
4. **EAP Username** – Enter (if applicable)
5. **EAP Password** – Enter (if applicable)
6. **Confirmation EAP Password** – Enter (if applicable)
7. Click on “Upload Certificates” button (if applicable)
   a. If certificates are used, continue with step 8, otherwise skip to step 12

Note: The CA certificate upload to the clock(s) is not required for clock to function on PEAPv0 security.

CONTINUE▷



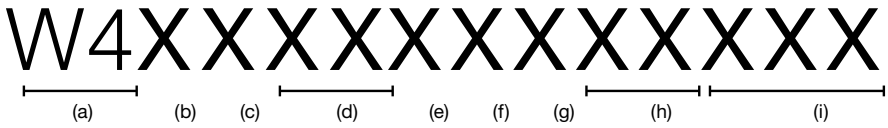
8. Click on “Choose File” button of pop-up window
9. Select CA Root Certificate

Note: This file must be DER encoded to function properly on clock(s)

10. Click on “Upload” button
11. Close certificate upload window
12. Click on “next” button
13. Click on “Save and Apply” button

Appendix D: MODEL NOMENCLATURE

Wi-Fi Analog Clocks



a: Clock Type
- W4 - Wi-Fi

b: Clock Diameter
- 4 - 10"
- 5 - 12"
- 6 - 15"

c: Mounting Type
- 2 - Round double-dial, ceiling mount
- 3 - Round double-dial, wall mount
- 4 - Round surface mount
- 5 - Round flush mount
- 6 - Round surface mount, plastic case
- 7 - Square surface mount
- 8 - Square flush mount
- 9 - Double-dial case, single display

d: Bezel Material/Finish
- AG - Aluminum w/ polycarbonate lens
- BA - Black plastic
- BG - Black sand steel, polycarbonate lens
- BH - Black sand steel
- GG - Gray steel w/ polycarbonate lens
- GH - Gray steel
- LG - Light oak w/ polycarbonate lens
- MG - Mahogany w/ polycarbonate lens
- WA - White plastic

e: Power Type
- A - 110v/220v
- B - 24v
- D - AA battery powered

f: Movement
- D - "AA" Movement

g: Hanger
- 1 - National Time
- 2 - Double-dial
- 3 - Economy (molded in)
- 4 - Surface
- 5 - Simplex
- 8 - Setco/Stromberg
- 9 - R&H (keyhole)

h: Dial and Color
- 01-93 - Dial style variations
- AA - Dial style variation
- XX - Custom dial

i: Special Customer Designations
- BP - Battery booster pack
- BU - Battery booster pack (unloaded)
- L - Customer logo
- LX - Customer logo, no labels
- X - No logo
- Z - Special (e.g. hands)

Wi-Fi Digital Clocks



a: Clock Type
- W4D - Wi-Fi Digital

b: Digit Size
- 2 - 2.5"
- 4 - 4"

c: Number of Digits
- 4 - 4-digit (hours and minutes)
- 6 - 6-digit (hours, minutes, seconds)
- M - 6-digit w/ calendar function

d: Number of Clock Displays
- 1- Single Display
- 2 - Double Display

e: LED Display Color
- G - Green
- R - Red

f: Mounting Type
- C - Ceiling
- S - Surface
- W - Wall

g: Power Type
- A - 120V Molex plug
- B - 24V Molex plug
- K - 220V Molex plug
- P - 120V 3-prong plug

Appendix E: Optional Timer Control Station Installation Instructions



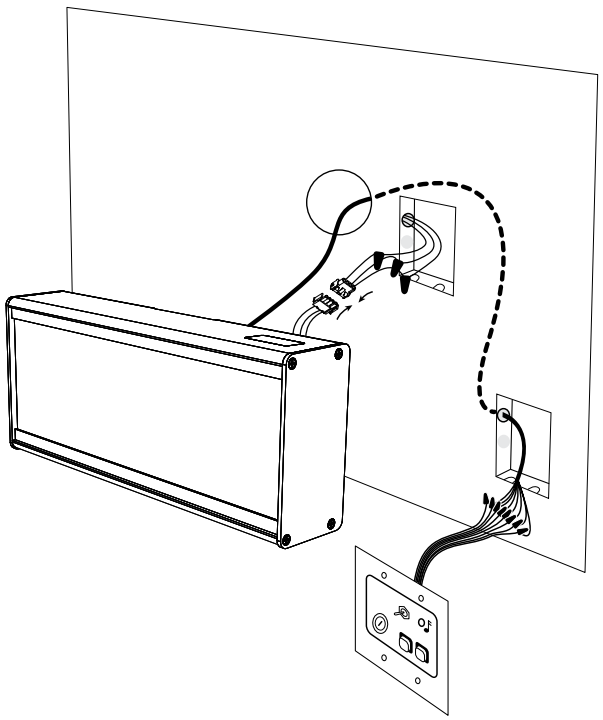
The **ATSTCS** Control Station can be mounted to a double gang box, 1[1/2] " deep or deeper. The Control Station can be mounted up to 30 feet away from the Digital Clock/Timer. The recommended minimum interconnecting field wire size is #22 AWG stranded wire with minimum 1/32" thick insulation.

Ensure that installation conforms to the National Electrical Code and local wiring codes.

CAUTION: Electric Shock Hazard! Ensure that **NO** electrical power is present on any wire before installation.

1. Pull interconnecting field wires into the double gang box.
2. Connect field wiring interconnecting the ATSTCS Control Station with the Digital Clock/Timer to the appropriate wires of the Control Station. See wiring detail below.
3. Mount the Control Station to the double gang box using the machine screws provided.
4. Terminate

For more detailed information, refer to the manual,
Control Panel for Digital Clock Elapsed Time Indicator with Optional Code Blue Function



Appendix F: W4B Auxiliary Devices – Wi-Fi Horn, Strobe, or Bell Installation Instructions

Identify Your Device Version

Before beginning installation, verify the part number of your Wi-Fi auxiliary device to ensure you are following the correct instructions.

- **W4B Series**: If the part number begins with **W4B**, continue with **Appendix F**.
- **W4A Series**: If the part number begins with **W4A**, refer to **Appendix G** for installation instructions.



W4A Series



W4B Series

IMPORTANT! Before powering the Wi-Fi horn or strobe, verify:

- Dynamic Host Configuration Protocol (DHCP) settings
- Firewall port 123 is open for UDP data
- Adequate Wi-Fi coverage at intended installation location.

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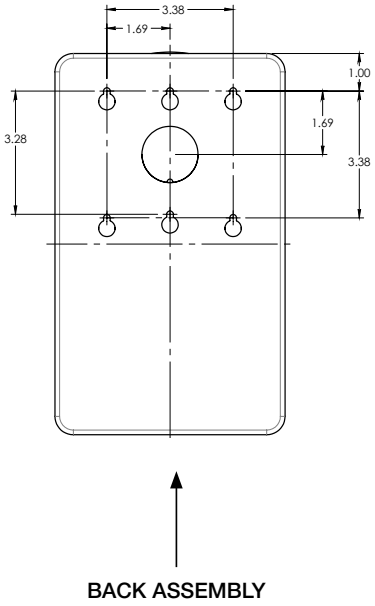
Mount your Wi-Fi Indoor Horn, Strobe, or Bell

The Wi-Fi indoor horn, strobe, or bell can be wall-mounted using the six keyhole slots on the back of the enclosure. Remove the six screws securing the front cover to access the internal wiring and mounting locations.

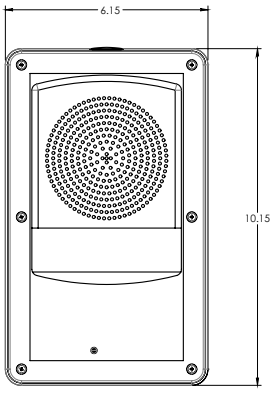
The horn, strobe, or bell may be installed over a standard electrical back box or mounted directly to the wall using appropriate anchors or fasteners for the wall construction.
A supplied cable assembly allows the field wiring connections to be made before the device is mounted.

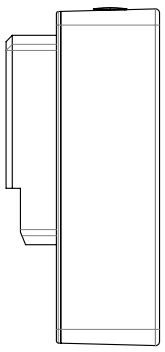
For installations without a back box, the top conduit opening may be used for wiring access. When using this option, the upper portion of the enclosure can serve as a junction box for making the required wiring connections.

Mounting screws and fasteners are not provided. Refer to the Wiring section for wiring access and connection details.

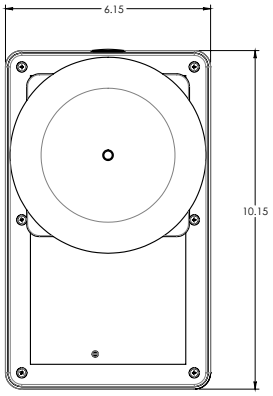


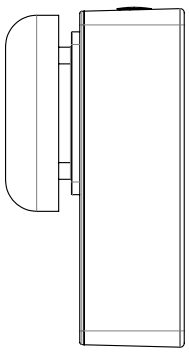
HORN



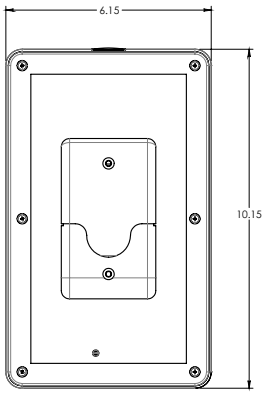


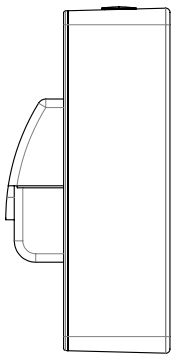
BELL





STROBE





CONTINUE▷

Wire the Wi-Fi Indoor Horn, Strobe, or Bell

CAUTION: Risk of Electrical Shock – Disconnect and lock out power to the electrical box before installing, wiring, or servicing the Wi-Fi horn, strobe, or bell.

The Wi-Fi indoor horn, strobe, or bell requires three field wiring connections: **Black – HOT, White – NEUTRAL, and Green – GROUND.**

Note: *When wiring any high-voltage device, follow all applicable local and national electrical codes. A licensed electrician is required for high-voltage wiring.*

Two openings are provided for wiring access. The standard opening is located on the back of the enclosure for installation over an electrical back box. A second opening is located on the top of the enclosure for installations using surface-mounted conduit.

When using the top conduit opening, wiring connections may be made within the upper portion of the enclosure. A hole plug is provided to close the conduit opening when it is not in use.

The Wi-Fi horn, strobe, or bell operates from **120/240 VAC, 0.1 A, 50–60 Hz and is hardwired.**

Once all wiring is complete, connect the matching Molex connectors and verify that all wiring connections are secure. Reinstall the front cover and secure it with the six screws removed during installation.

When properly wired and powered, the status LED will begin flashing red.

Setup

Once the Wi-Fi indoor horn, strobe, or bell is wired and powered, it may be tested or activated. "Activate Your Auxiliary Wi-Fi Device" on page 76.

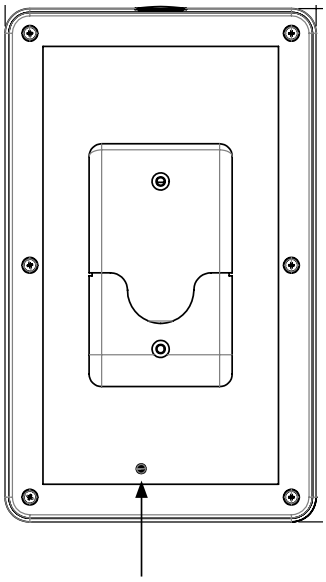
CONTINUE▷

Preconfigured / Preprovisioned

1. Verify the LED status:

After power is applied, verify the status LED:

- **Flashing red** – Power has been applied and the device is connecting.
- **Solid green** – The device has successfully connected. This may take up to 6 minutes but typically occurs within 60 seconds.
- **Solid orange** – The device failed to connect to the time server.
- **Solid red** – The device failed to connect to Wi-Fi.



LED LOCATION (STROBE SHOWN)

CONTINUE▷

Self-Provisioning Auxiliary Devices

Appendix F: W4B Auxiliary Devices – Wi-Fi Horn, Strobe, or Bell

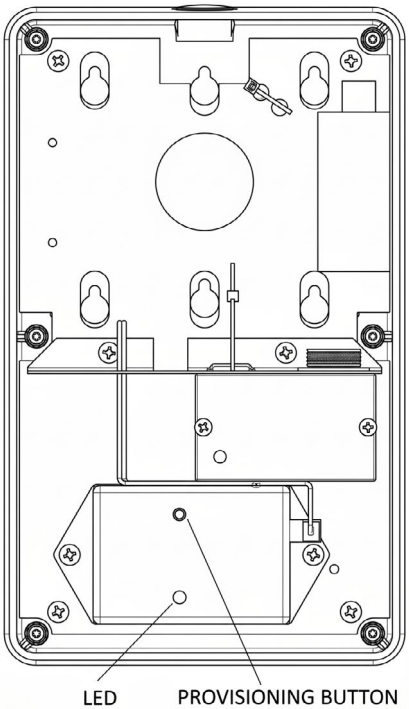
Note: If your horn, strobe, or bell was preconfigured by American Time, this process is not required unless configuration changes are needed. The device can be installed in its intended location as received. Do not apply power until the device is at its final installation location so adequate Wi-Fi coverage can be verified.

The Wi-Fi horn, strobe, or bell will act as a Limited Access Point for direct Wi-Fi communication to complete configuration. After connecting to the horn, strobe, or bell with a wireless device, it can be configured with a web browser or by using the American Time Network Clock Setup App for Android

To enter configuration (Limited Access Point Mode) complete the following steps:

1. Ensure power is applied to the Wi-Fi horn, strobe, or bell. The status LED may be flashing red or solid red, depending on how long power has been applied.

2. Remove the six front cover screws. Either disconnect the Molex connector leading to the auxiliary device and set the front cover aside, or support the front cover with the auxiliary device still connected.



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3. Press and hold the provisioning button above the status LED.
   a. The LED should turn solid green to indicate the button press (continue holding the button).
   b. Wait for the LED to flash orange one time. This will take about 2 seconds (additional flashes indicate other modes).
4. Release the provisioning button. Verify that the LED flashes green/orange, indicating that Limited Access Point Mode is active.
5. To configure and provision your horn, strobe, or bell, continue to: .
   a. “Self-Configuring Settings via App” on page 17, or
   b. “Self-Configure Clocks and Auxiliary Devices Using a Computer” on page 18.

Note: *If the device was tested prior to installation, verify that LED turns solid green at installation location.*

CONTINUE▷

Appendix F: W4B Wi-Fi Horn – Tone and Volume Settings

The horn's alarm tone and volume can be changed using DIP switch SW1, located directly behind the horn.

The table below shows the available alarm tones and two volume levels, along with the corresponding DIP switch settings for each.

SETTINGS: To set Volume and Tone, use Switch (SW1). Refer to Table 5,6 and Figures 3,4.

Figure 3: Switch (SW1) located as shown.

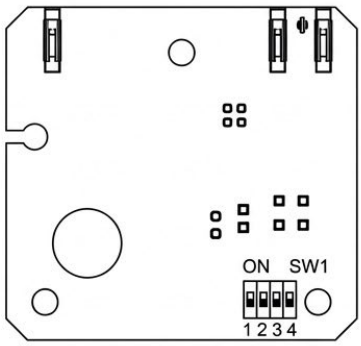


Figure 4: Switch (SW1) Settings

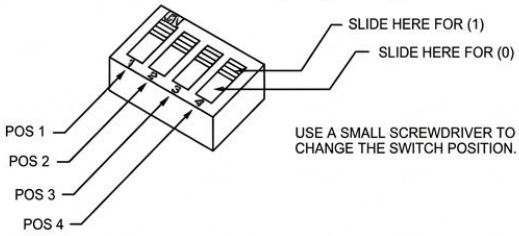


Table 5: dBA Sound Output Level Setting	
Sound Output Level	Switch SW1 Settings
High dBA	SW1 POS 1 on 1 (Factory Setting)
Standard dBA	SW1 POS 1 on 0

Table 6: Alarm Tone Settings				
Tone	Pattern Description	Switch (SW1)		
		POS 2	POS 3	POS 4
Horn**	Broadband Horn (Continuous)	1	1	1
Bell	1560 Hz Modulated (0.07 Sec. ON/Repeat)	1	0	1
March Time Horn	Horn (0.25 Sec. ON/0.25 Sec. OFF/Repeat)	0	0	1
Code 3 Horn	Horn (ANSI S3.41 Temporal Pattern)	1	1	0
Code 3 Tone	500 Hz (ANSI S3.41 Temporal Pattern)	0	1	1
Slow Whoop	500-1200Hz Sweep (4 sec ON/0.5 sec OFF/Repeat)	0	1	0
Siren	600-1200Hz Sweep (1.0 Sec. ON/Repeat)	1	0	0
HI/LO	1000/800 Hz (0.25 Sec. ON/Alternate)	0	0	0

** Factory Setting is Horn with Switch Code 3 Tone set on 0, 1, 1

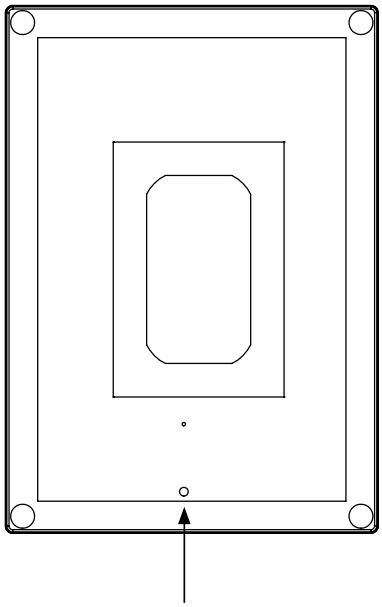
CONTINUE▷

Preconfigured / Preprovisioned

Appendix G: W4A Auxiliary Device – Wi-Fi Horn or Strobe

IMPORTANT! Before powering the Wi-Fi horn or strobe, verify:

- Dynamic Host Configuration Protocol (DHCP) settings
- Firewall port 123 is open for UDP data
- Good Wi-Fi coverage at intended installation location.



LED LOCATION (STROBE SHOWN)

CAUTION: Risk of Electrical Shock – Disconnect and lock out power to the electrical box before installing or servicing the Wi-Fi horn or strobe.

1. First, install the Wi-Fi indoor horn or strobe according to installation guidelines to ensure the device is powered.
2. Verify the LED status:
   c. Flashes red when power is applied to the device.
   a. Turns solid green within 6 minutes (typically in under 60 seconds).
   b. Solid orange indicates a time server connection failure
   d. Solid red indicates a failed Wi-Fi connection

Note: The preceding sequence (a-d) may take up to 6 minutes.

CONTINUE▷

Self-Provisioning Auxiliary Devices

Appendix G: W4A Auxiliary Device – Wi-Fi Horn or Strobe

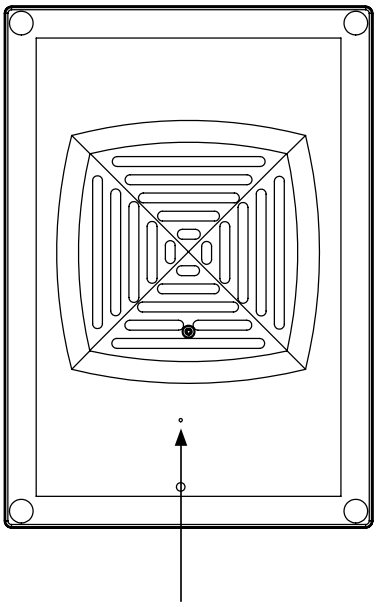
Note: If your horn or strobe was preconfigured by American Time, this process is unneeded (unless changes are required) and the device can be mounted in its desired location out of the box. Wait to apply power until the device is in its installation location so good Wi-Fi coverage can be verified.

The Wi-Fi horn or strobe will act as a limited access point for direct Wi-Fi communication to complete configuration. After connecting to the horn or strobe with a wireless device, it can be configured with a web browser or by using the American Time Network Clock Setup App for Android.

To enter configuration (limited access point mode) complete the following process:

First, ensure the Wi-Fi horn or strobe is powered.

1. The LED may be flashing red or be solid red (depending on how long power has been applied to the device).
2. Use a paper clip to press and hold the tiny pinhole above the status LED.
   a. The LED should turn solid green to indicate the button press (continue holding the button).
   b. Wait for the LED to flash orange one time. This will take about 2 seconds (additional flashes indicate other modes).
3. Release the button.
   a. Verify the LED flashes green/orange indicating Limited Access Point mode is active.
4. To configure and provision your horn or strobe, continue to:
   a. “Self-Configuring Settings via App” on page 17, or
   b. “Self-Configure Clocks and Auxiliary Devices Using a Computer” on page 18.



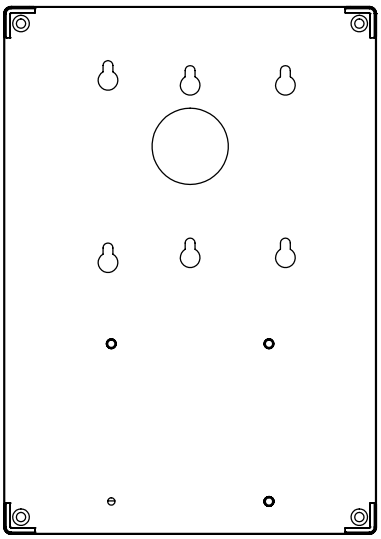
PINHOLE LOCATION (HORN SHOWN)

Note: If the device was tested prior to installation, verify that LED turns solid green at installation location.

Appendix G: W4A Wi-Fi Indoor Horn or Strobe Installation Instructions

Mount your Wi-Fi Indoor Horn or Strobe

The Wi-Fi indoor horn or strobe may be easily mounted to a wall using the six keyhole openings on the back of the enclosure. Mounting screws not provided.



Wire the Wi-Fi Indoor Horn or Strobe

Wiring of the Wi-Fi indoor horn or strobe consists of three wires—Black-HOT; White-NEUTRAL; Green-GROUND.

NOTE: When wiring any high voltage device, ensure to follow all local electrical codes for safety requirements. A licensed electrician is required for any high voltage wiring.

There are two openings in the Wi-Fi indoor horn or strobe enclosure where wiring may be accessed. One opening is located on the back of the enclosure (standard); the other opening is located on the top of the enclosure. A hole plug is supplied to close the opening not being used.

Power options for the horn/strobe are 120VAC/240VAC, 0.07A, 50-60 Hz (hard wired).

Once the Wi-Fi horn or strobe has been properly wired, make sure matching Molex plugs are connected before attaching cover. Ensure that the transparent light pipe (attached to the enclosure cover) is placed over the enclosure half that has the circuit board.

When wired properly and power is present, the status LED will flash.

Setup

Once the Wi-Fi indoor horn or strobe is wired and powered up, it may be tested or activated, see "Activate Your Auxiliary Wi-Fi Device" on page 76.

CONTINUE▷

Appendix G: W4A Wi-Fi Indoor Horn or Strobe Installation Instructions

Mount your Wi-Fi Indoor Horn or Strobe

The Wi-Fi indoor horn or strobe may be easily mounted to a wall using the six keyhole openings on the back of the enclosure. Mounting screws not provided.

Wire the Wi-Fi Indoor Horn or Strobe

Wiring of the Wi-Fi indoor horn or strobe consists of three wires—Black-HOT; White-NEUTRAL; Green-GROUND.

NOTE: When wiring any high voltage device, ensure to follow all local electrical codes for safety requirements. A licensed electrician is required for any high voltage wiring.

There are two openings in the Wi-Fi indoor horn or strobe enclosure where wiring may be accessed. One opening is located on the back of the enclosure (standard); the other opening is located on the top of the enclosure. A hole plug is supplied to close the opening not being used.

Power options for the horn/strobe are 120VAC/240VAC, 0.07A, 50-60 Hz (hard wired).

Once the Wi-Fi horn or strobe has been properly wired, make sure matching Molex plugs are connected before attaching cover. Ensure that the transparent light pipe (attached to the enclosure cover) is placed over the enclosure half that has the circuit board.

When wired properly and power is present, the status LED will flash.

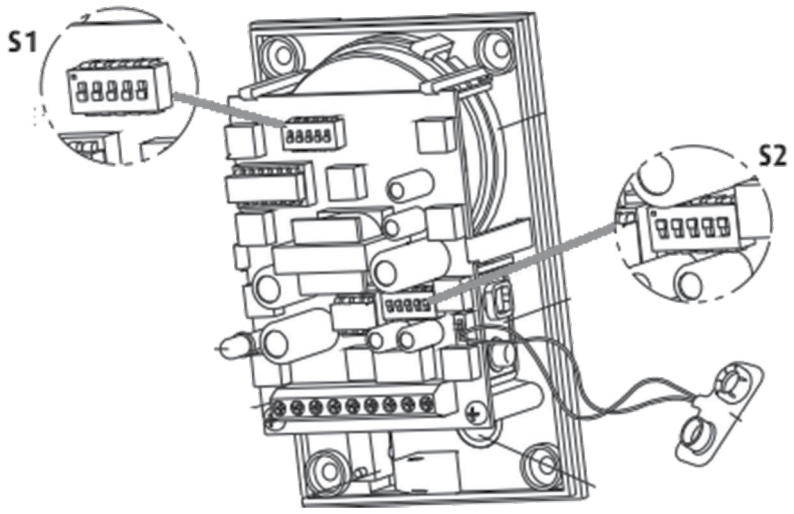
Setup

Once the Wi-Fi indoor horn or strobe is wired and powered up, it may be tested or activated, see "Activate Your Auxiliary Wi-Fi Device" on page 76.

CONTINUE▷

Appendix G: W4A Wi-Fi Strobe Alarm Tones & Timing

The strobe/siren's alarm tone may be changed by removing the lens cover and changing the setting on dip switch **S1**. Use the supplied key to remove the lens.



The table below shows the different alarm tones available and the proper dip switch setting for each.

ALARM TONES – S1

	1	2	3	4	5			1	2	3	4	5	
1	0	0	0	0	0	BUZZ	***17**	0	0	0	0	1	STANDARD ALARM
2	1	0	0	0	0	SLOW ON/OFF	**18**	1	0	0	0	1	#3 FAST
3	0	1	0	0	0	SLOW SIREN	**19**	0	1	0	0	1	#5 SLOW
4	1	1	0	0	0	3 BEEP/PAUSE/REPEAT	**20**	1	1	0	0	1	FAST BEEP
5	0	0	1	0	0	UFO FAST	**21**	0	0	1	0	1	SOUND A
6	1	0	1	0	0	FAST SIREN	**22**	1	0	1	0	1	SOUND B
7	0	1	1	0	0	#5 FAST	**23**	0	1	1	0	1	SOUND C
8	1	1	1	0	0	#2 MEDIUM	**24**	1	1	1	0	1	SOUND D
9	0	0	0	1	0	#5 MEDIUM	**25**	0	0	0	1	1	SOUND D LOUD
10	1	0	0	1	0	SWOOP MEDIUM	**26**	1	0	0	1	1	SOUND E
11	0	1	0	1	0	#3 MEDIUM	**27**	0	1	0	1	1	SOUND F
12	1	1	0	1	0	BUZZ TONE	**28**	1	1	0	1	1	SOUND G
13	0	0	1	1	0	STEADY FAST	**29**	0	0	1	1	1	SOUND H
14	1	0	1	1	0	SWOOP SLOW	**30**	1	0	1	1	1	#4 LOW
15	0	1	1	1	0	CONTINUOUS	**31**	0	1	1	1	1	SOUND K
16	1	1	1	1	0	FAST REPEAT	**32**	1	1	1	1	1	CONTINUOUS FAST

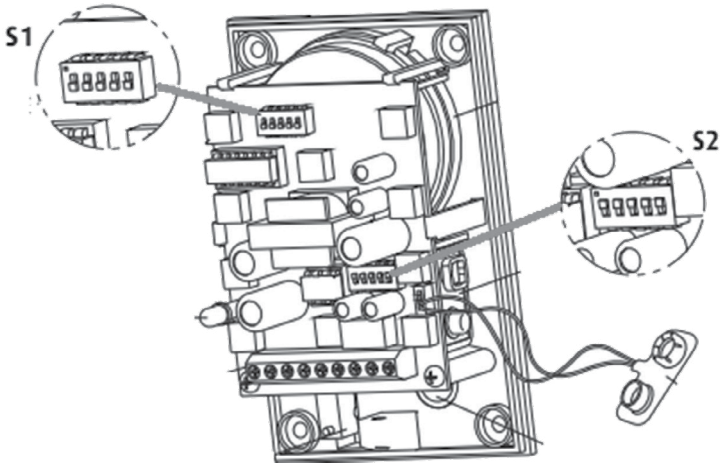
1=ON, 0=OFF

* Factory Default Setting

CONTINUE▷

Appendix G: W4A Wi-Fi Strobe Alarm Timing & Volume

The strobe/siren's alarm timing and volume may be changed by removing the lens cover



and changing the setting on dip switch **S2**. Use the supplied key to remove the lens.

The table below shows the different alarm volumes and timing available and the proper dip switch setting for each.

Note: Low Volume = 85dB High Volume = 100dB

ALARM TIMING & VOLUME – S2

	ALARM TIMING		STROBE TIMING		VOLUME
	1	**2**	**3**	**4**	**5**
1 ON	■	■	■	■	■
0 OFF					

1=ON, 0=OFF

ALARM TIMING	**SIREN**		**STROBE**		**VOLUME**
	1	**2**	**3**	**4**	**5**
15 Seconds	1	1	1	1	High
30 Seconds	1	0	1	0	1
60 Seconds	0	1	0	1	Low
*continuous	0	0	0	0	0

1=ON, 0=OFF

* Factory Default Setting

Preconfigured / Preprovisioned

Appendix H: Auxiliary Device – Wi-Fi Relay

IMPORTANT! Before powering the Wi-Fi relay, verify:

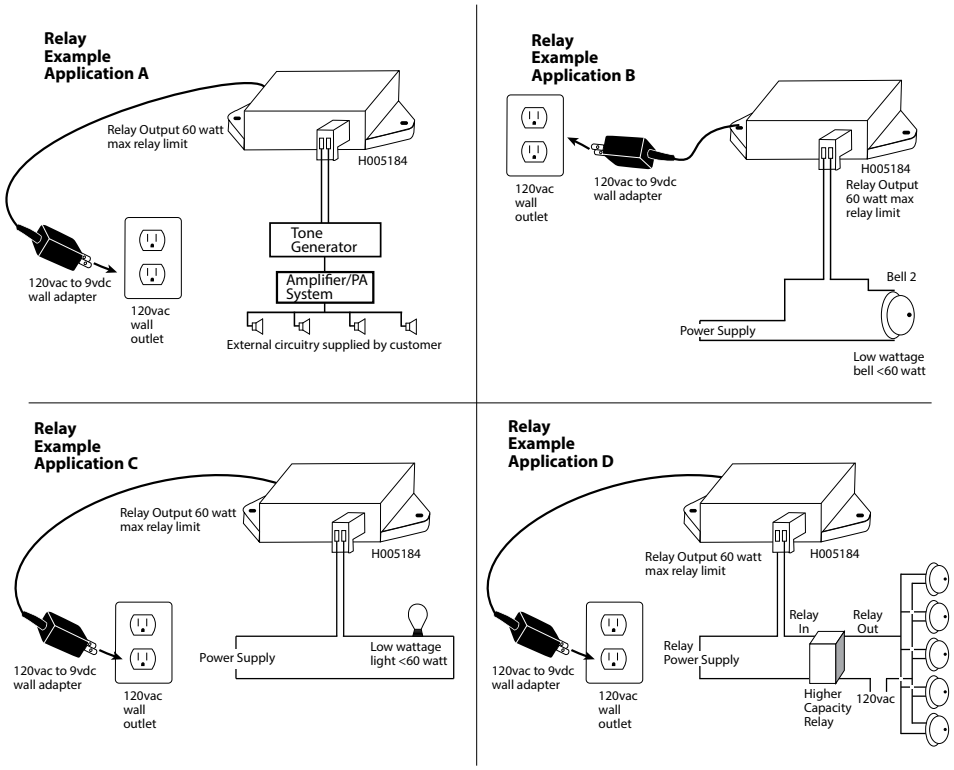
- Dynamic Host Configuration Protocol (DHCP) settings
- Firewall port 123 is open for UDP data
- Good Wi-Fi coverage at intended installation location.

CAUTION: Risk of Electrical Shock – Disconnect and lock out power to the electrical box before installing or servicing the Wi-Fi relay.

1. Install the Wi-Fi relay according to installation guidelines to ensure the device is powered.
2. Verify the LED status:
   a. Flashes red when power is applied to the clock.
   b. Turns solid green within 6 minutes (typically in under 60 seconds).
   c. Solid orange indicates a time server connection failure
   d. Solid red indicates a failed Wi-Fi connection

Note: The preceding sequence (a-d) may take up to 6 minutes.

Application examples



CONTINUE▷

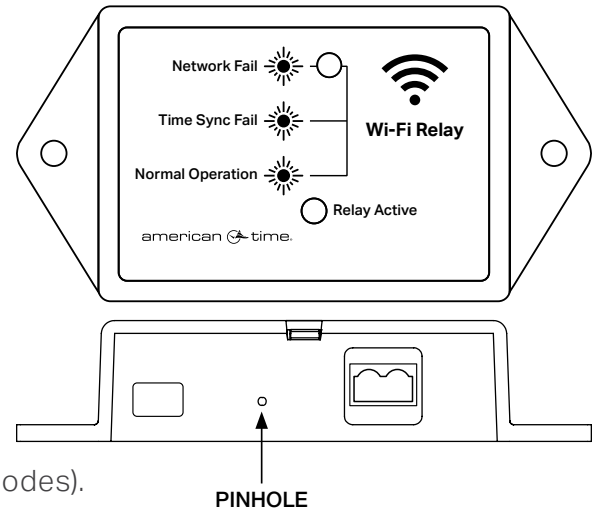
Self-Provisioning Auxiliary Devices

Appendix H: Auxiliary Device – Wi-Fi Relay

Note: If your relay was preconfigured by American Time, this process is unneeded (unless changes are required) and the relay can be mounted in its desired location out of the box. Wait to apply power to the relay until the relay is in its installation location so good Wi-Fi coverage can be verified.

The relay will act as a limited access point for direct Wi-Fi communication to complete configuration. After connecting to the relay with a wireless device it can be configured with a web browser or app.

Apply power to relay by inserting the barrel plug of the power cord into the relay where the power connection is located. Insert the other end of the power cord into the appropriate power source.



1. Verify the LED starts flashing red.
2. Wait for the LED to turn a solid color.
3. Use a paper clip to press and hold the button through the tiny pinhole on the relay.
   a. The LED should turn solid green to indicate the button press (continue holding the button).
   b. Wait for the LED to flash orange one time.
   This will take about 2 seconds (additional flashes indicate other modes).
4. Release the button.
   a. Verify the LED flashes green/orange indicating Limited Access Point mode is active.
5. To configure and provision your relay, continue to:
   a. “Self-Configuring Settings via App” on page 17, or
   b. “Self-Configure Clocks and Auxiliary Devices Using a Computer” on page 18.

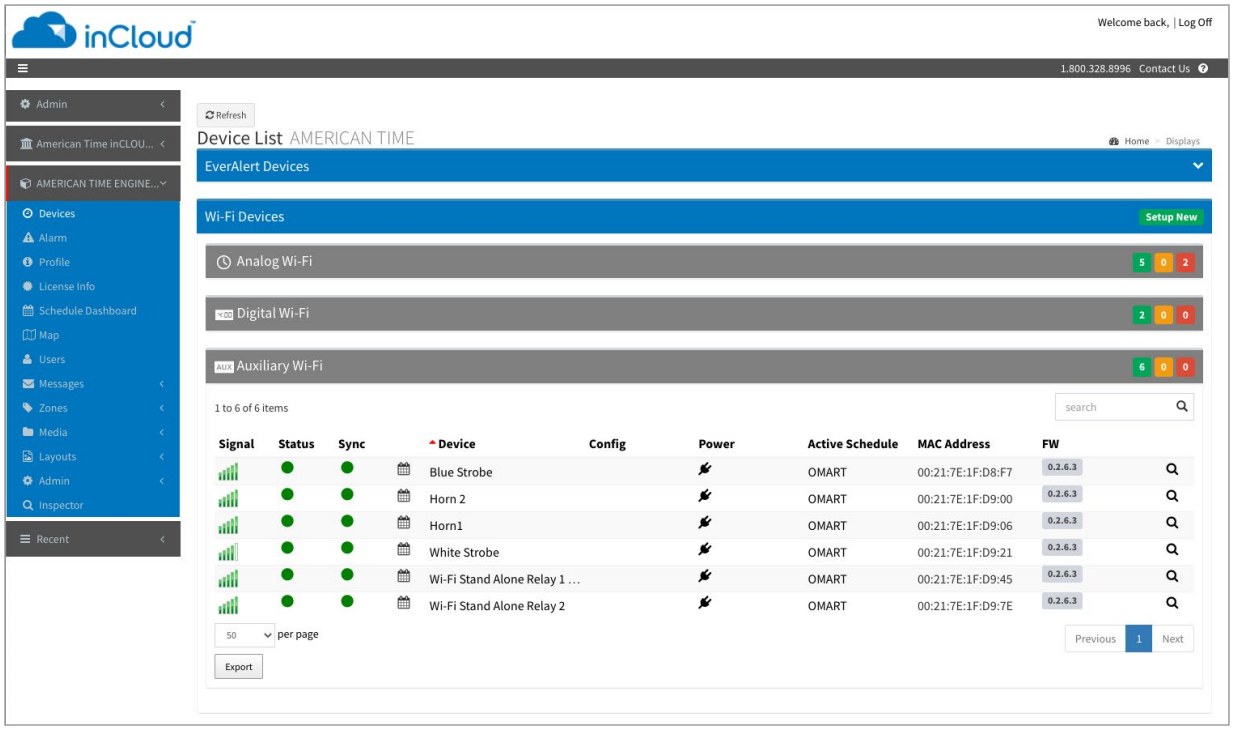
If the configuration has been performed somewhere other than the intended installation location, disconnect power from the relay by disconnecting the barrel plug of the relay where the power connection is located. Reconnect the power at the installation location to verify good Wi-Fi coverage.

Activating Wi-Fi Auxiliary Devices

Appendix I: Activate Your Auxiliary Wi-Fi Device (Horn, Strobe, Relay) via Web Browser

Note: Your Wi-Fi device (horn, strobe, or relay) should be provisioned and configured before continuing on to the following steps (if not, refer to "Self-Configure / Self-Provision" on page 13):

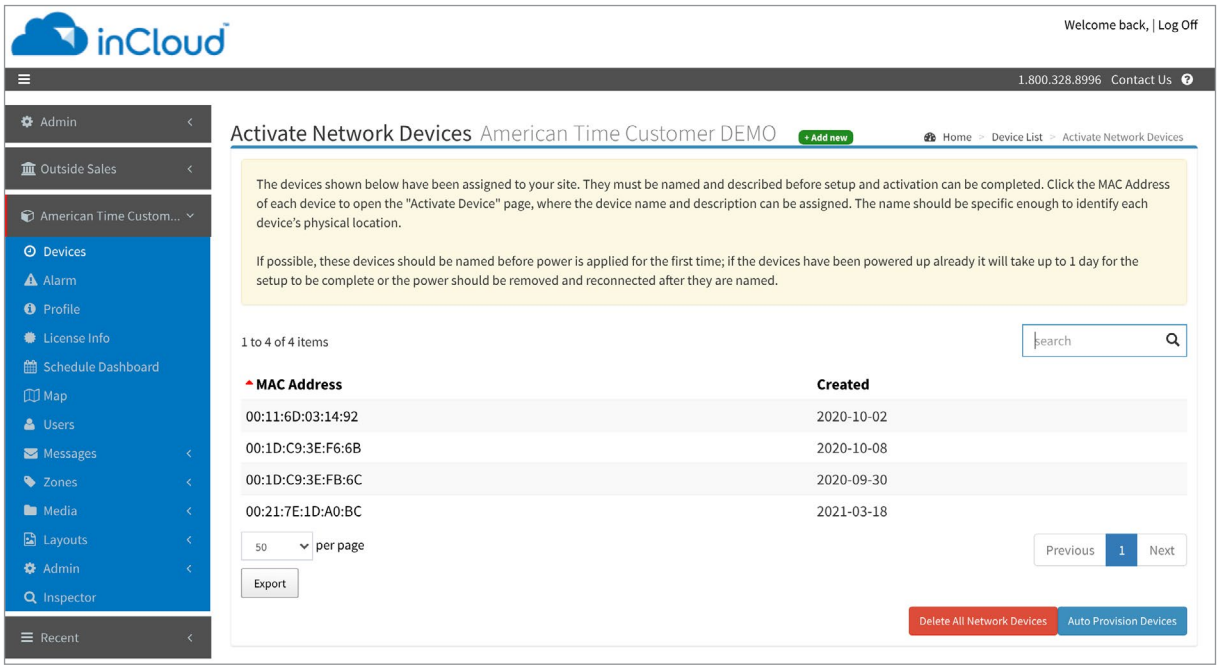
1. Navigate to the inCloud portal: incloud.american-time.com
   Log in using the credentials supplied in the welcome e-mail from American Time.
2. Click on the green "Setup New" button in the Wi-Fi Devices bar on the Device List page.



   This will open the Setup Network Device List, which will list all the clocks and auxiliary devices (horns, strobes, relays) assigned to your site.
3. Click on your auxiliary Wi-Fi device's MAC address and provide a name and (if desired) description for the device. Ideally, the name will identify the device's location or otherwise make the device easy to identify for management purposes. Repeat this for each device in the list.

CONTINUE▷

- The MAC address can be searched using the last five characters of the address including the colon (for example, AA:11) in the search bar.
- Once the auxiliary Wi-Fi device is named on inCloud, it will appear as “partially configured” in the inCloud device list.



4. The Activation process will be completed when your auxiliary Wi-Fi device checks in to inCloud within 12 hours or the next power cycle.

