



Installation Manual V3.3

SAW Series Wi-Fi Clock



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SAW Series Wi-Fi Clocks - Table of Contents

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Important Safety Instructions

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

DANGER



SHOCK HAZARD

- Keep the electricity to this device turned OFF until the clock installation is complete.
- Do not expose the clock movement to water, or install the clock in a location where it may be exposed to water.

NOTICE

- Do not install the clock outdoors. Damage to the clock if placed outdoors voids the warranty.
- Do not hang objects from the clock or clock mounting parts. The clocks are not designed to support the weight of other objects.
- The clock face and housing may be cleaned with a damp cloth or disinfectant. Test other cleaning products on a small part of the clock housing before attempting to use on the rest of the clock. Avoid bleach and chemicals known to dissolve plastics.

WARNING



FIRE HAZARD

- Always follow your national and regional electrical codes or ordinances.
- The AC power circuit for the clock must be attached to a circuit breaker that can be reset by the user.

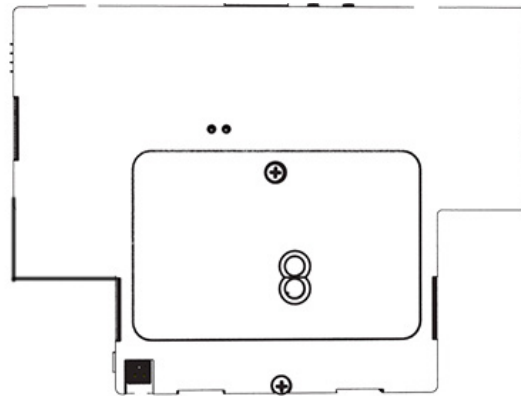


PHYSICAL INJURY HAZARD

- If you are standing on an object while installing your clock, make sure that the object can support your weight, and will not sway or move as you stand on it.
- 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 all mounting instructions exactly as stated in this manual. Failure to do so may result in the device falling off the point of installation.
- Packaging materials and mounting items include plastic bags and small pieces, which pose a suffocation hazard to young children.

Identify Your Clock

A label containing the part number of your clock is attached to the clock movement.



If your part number begins with SAW-4, it is a SlimLine ABS or SQUARE clock

If your part number begins with SAW-5, it is an ALUMINUM clock

If your part number begins with SAW-6, it is a WOOD clock

Example part numbers:

SAW- 4 BS-12 S -4	(SQUARE clock)
SAW- 4 BS-12 R -4	(SlimLine ABS clock)
SAW- 5 AS-09R-1	(ALUMINUM clock)
SAW- 6 DS-12R-2	(WOOD clock)

Preparing to Install - System/Network Requirements

To be able to set up an IP-based synchronized clock network, you will need the following items:

- This manual
- A Wireless Local Area Network (WLAN) that has access to at least one of the following:
 - An in-house NTP server
 - The Internet
- A local firewall that is open on Ports 80 (TCP), 123 (UDP), and 1777 (UDP)
 - Port 123 is to allow the clock to get time data from NTP Time Server(s)
 - Port 80 is to allow access to the clock's built-in web interface (HTTP)
 - Port 1777 is to allow the NET-MON-SOFT to identify our clocks that are on the network and present them on the network monitoring software
- At least one laptop or desktop computer with access to the following:
 - The same LAN as the clocks
 - The same subnet as the clocks
 - A web browser such as Internet Explorer, Microsoft Edge, or Mozilla Firefox
 - An internal or external Wi-Fi network card
- A wireless router or wireless access point that broadcasts using an 802.11 b/g/n protocol
 - Depending on the size of the network, you may need to install additional Wireless Access Points
- A copy of the Network Monitor program
- Security access to all of the above items
- We also recommend keeping a record of the clock serial numbers, locations, and IP addresses by creating a table like the one shown below:

LINE #	SERIAL #	CLOCK NAME / LOCATION	IP ADDRESS	MAC ADDRESS
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Synchronization System Setup

Positioning the Wireless Router or Wireless Access Point (WAP):

The main router or WAP should be installed in a central location. Depending on the transmission protocol of your router, the clocks must be located within the following ranges:

Wi-Fi Protocol	Range (Feet)	Range (Meters)
802.11 b	115 feet	35 meters
802.11 g	125 feet	38 meters
802.11 n	230 feet	70 meters.

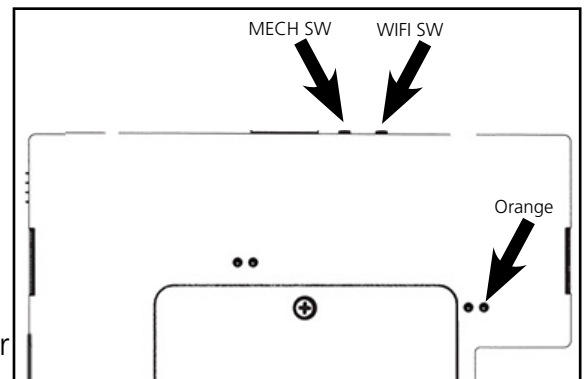
Check with the access point or router manufacturer, as some transmitters offer boosted ranges.

*NOTE: This clock is not compatible with 802.11a or 802.11ac protocols. Many AC-compatible routers and access points are backwards compatible with 802.11n. Check your router settings for more information.

Be aware of walls or other obstructions made of thick concrete or sheet metal, as these may block the signal entirely.

Logging into the clock for the first time:

1. Power the clock. Press and release the right-side "WIFI SW" on the movement twice. The Orange LED will light up. On a Wi-Fi enabled computer, check the available Wireless Networks. Refresh the available networks until a network named Analog-#### appears (where #### is the serial number of the clock). This may take up to 30 seconds. Once it appears, connect to this network.



2. Open a web browser and enter the following web address into the URL field:


<http://192.168.240.1/login.html>

3. On the login page, use the password **6063** and click on **Submit** to log into the clock.



The screenshot shows a web browser window with the title 'SAPLING WIFI CONFIG'. Below the title is a text input field labeled 'Password(Show):'. Below the input field is a 'Submit' button.

4. Click on the **Network Settings** button.



The screenshot shows a web browser window with the title 'SAPLING WIFI CONFIG'. Below the title is a large button labeled 'Network Settings'.

Synchronization System Setup (ctd.)

5. In the **Network** field, enter the SSID of your preferred Wi-Fi network. This is the name that appears if you try to connect to that Wi-Fi network on any other computer, tablet, or smart phone. If you do not remember the name of your network, check to see if it has appeared in the **Select Network** list. A network that does not broadcast its SSID will not appear in this list. **SSIDs must use only English letters, numbers, and spaces. No symbols.**

6. In the **Network Password** field, enter the password of your preferred Wi-Fi network. Network passwords must be 32 characters or fewer, and are case-sensitive.

7. If you wish to set a static IP address, change DHCP Auto On from ON to OFF, then enter information for the Static IP address, Subnet Mask, and Gateway Address. To acquire this information, contact your network administrator.

8. If you wish to set a DNS server other than the one provided through DHCP, change DHCP Auto On from ON to OFF, change Auto DNS from ON to OFF, then enter an IP address for a new DNS server in the DNS Address field.

9. If your network does not use Enterprise Encryption, skip this step.
If your network uses WPA2-Enterprise Encryption, click on the **Enterprise Settings** button and fill in the fields appropriate to your network. To acquire this information, contact your network administrator. When finished, press **Submit** to return to this page.

NETWORK SETTINGS

Clock Name:	Room 302
Serial Number:	1109
MAC Address:	60:36:96:0a:00:6d
Select Network:	Series1 ▼
Network:	Series1
Network Password (Show):	
DHCP Auto On:	On ▼
IP Address:	192.168.4.4
Subnet Mask:	255.255.255.0
Gateway Address:	192.168.4.1
Auto DNS:	On ▼
DNS Address:	192.168.0.31
Broadcast to Monitors:	On ▼
Send Specific Monitor IP:	Off ▼
Monitor IP Address:	0.0.0.0

9 **Enterprise Settings** **Submit** 10

WPA ENTERPRISE SETTINGS

User Name:	<input type="text"/>
Outer Authentication:	EAP-PEAP ▼
Inner Authentication:	EAP-MSCHAP
	Submit

10. Press the **Submit** button, followed by the **Log Out** button.

11. The clock should connect to the new Wi-Fi network. Confirm by accessing the clock with the Network Monitor (If clock DHCP is on and the computer is on the same subnet as the Access Point) or the new static IP address (if clock DHCP is off). If the clock is not accessible, press the WiFi SW button once and wait thirty seconds before trying to access the clock with the Network Monitor or IP address. If the clock is still not accessible, refer to the section of this manual labeled "Troubleshooting"

For NEW battery powered clocks: For the first four minutes after powering on, a new (or recently reset-to-default) clock will be accessible in direct mode. Once the user has entered and saved new network settings, the clock will only connect to the network once to make initial contact, then it will not access the network again until the next synchronization period twelve hours later. To force the clock to power its transmitter, the user must press the WiFi SW button.

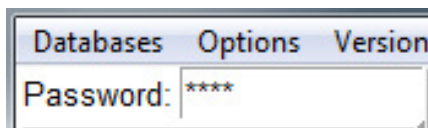
Configuring multiple clocks with wifiDirectLoader

wifiDirectLoader.exe is a piece of software that lets a user rapidly duplicate existing clock settings to other clocks of the same type (analog or digital). This is useful for large clock systems, where a user may not have the time to configure many clocks individually.

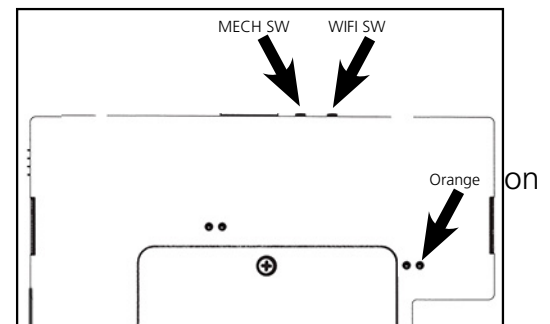
NOTICE: Starting wifiDirectLoader.exe will take your computer off of its current Wi-Fi network. If you need to access your network while simultaneously running this software, connect the computer to the network using a LAN cable.

Obtaining the configuration file:

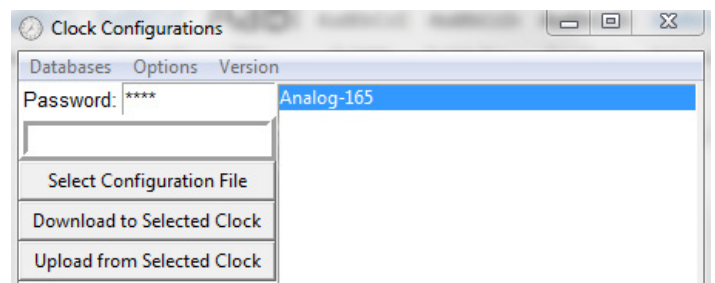
- 1) **DO NOT Start wifiDirectLoader.exe.** First, set up one clock using the steps described in the Synchronization Setup section of this manual.
- 2) Once you have completed all of the steps, exit the clock.
- 3) Start wifiDirectLoader.exe by double-clicking on it. Enter the value **6063** in the password field.



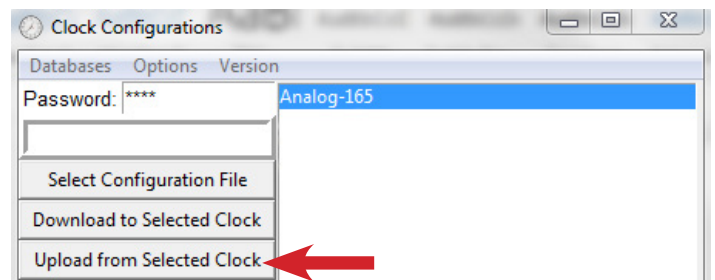
- 4) Power the clock. Press and release the right-side "WIFI SW" the movement twice. The Orange LED will light up.



- 5) In the wifiDirectLoader.exe window, an entry should appear for the clock.



- 6) Click on the entry name for the clock, then press on the Upload from Selected Clock button.



- 7) Save the configuration file to an easily-accessible location, like your My Documents or Desktop folder.

Configuring multiple clocks with wifiDirectLoader

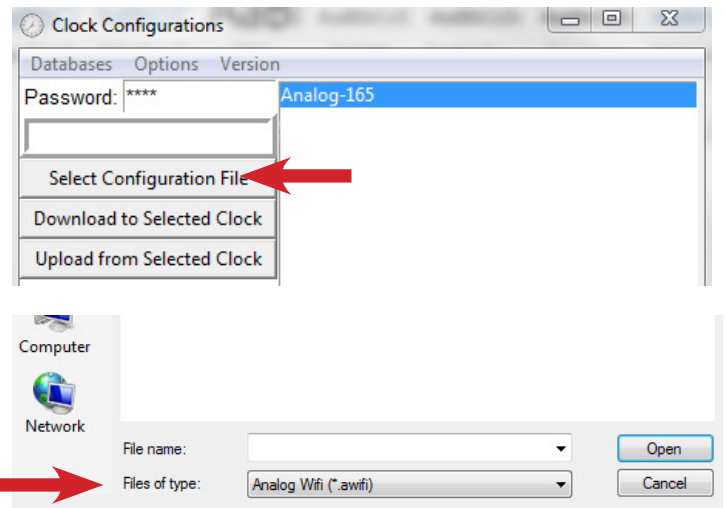
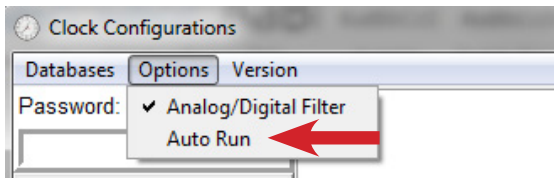
Before Applying the configuration file:

The fastest way to perform this process is to collect all of the Wi-Fi clocks in a single room and run this program.

If you have already installed the Wi-Fi clocks on the wall, you will need to take each clock down to access the Direct Mode button. Since Wi-Fi has a limited broadcast range, you will need to take a mobile, Wi-Fi-capable computer such as a laptop or ultrabook that runs wifiDirectLoader while you go to each clock.

Applying the configuration file:

1) Press on the Select Configuration file button. Use the window to select the configuration file that you downloaded from the first clock. If you cannot see the file, confirm that the Types of File field is set to Analog WiFi (*.awifi).



2a) Under the Options menu, select "Auto Run."

2b) You may also download to specific clocks by clicking on the name of a clock, then pressing the "Download to Selected Clock" button.

NOTE: Your computer may repeatedly prompt you for information as to whether or not each new clock's network is Private, Work, or Public. Selecting the option for "Set all future networks as public" will help speed up this process, and prevent this prompt from appearing with each new clock.

3) Power additional clocks and place them into direct mode using Step 4 from the previous page.

4) wifiDirectLoader.exe will automatically program every clock that appears. Clocks can be identified by their Serial Number, which will appear as part of the name of each clock that appears in the field to the right of the buttons.

5) Once each clock is programmed, the clock may be powered down, then mounted on the wall using the instructions in the following sections. Battery-powered clocks may be left running, if the user wishes.

6) Once all clocks are programmed, exit out of wifiDirectLoader. You will be unable to access any other networks if wifiDirectLoader is still running.

Before Installation - Network Monitoring Software

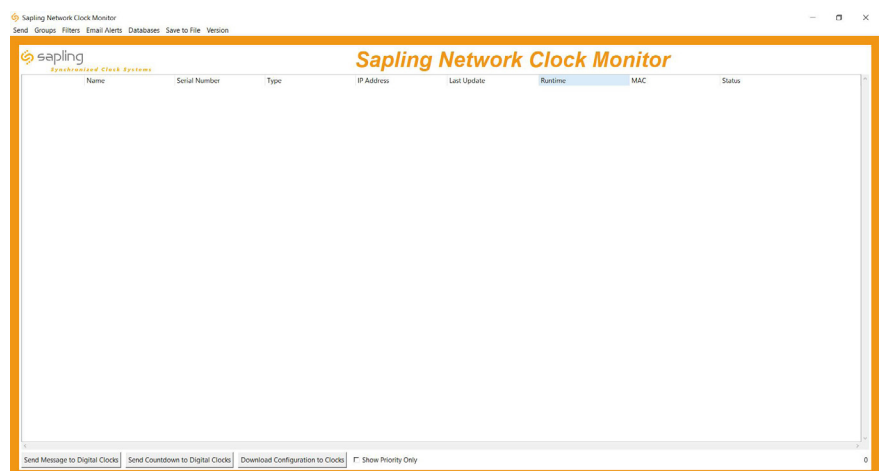
The clock is provided with a Network Monitoring Software, allowing the user to view, program, and monitor the clocks (displays). The Network Monitoring Software will be used once the clock(s) has been powered and connected to the network. Therefore, at this stage, the software should be ready and available, and will require downloading the software on a computer.

In addition to the CD, the Network Monitoring Software is also available to be downloaded from our website as per the below link. Please also note that the Network Monitoring Software is available in two different versions: One version is meant for the hard-wired network clocks, while the second version is meant for the Wi-Fi network clocks. Make sure that you download the correct software version depending on the type of clock you have.

<https://sapling-inc.com/software/>

Instructions for downloading and installing the Network Monitoring Software:

1. Create a folder on your computer called *Network Monitor*
2. If you have the Network Monitor on a CD:
 - a. Load the CD into your computer's CD Drive
 - b. Open the file on the CD and select the file ending in extension ".exe"
 - c. Copy the file to your Network Monitor folder.
3. If you downloaded the Network Monitor from our website: <https://sapling-inc.com/software/>
 - a. Locate the Network Monitor file in your computer's Downloads folder.
 - b. Select the file and copy all of its contents to your Network Monitor folder.
4. If you received the Network Monitor as an email attachment, refer to your email provider's instructions for downloading email attachments.
5. In order to use the Network Monitoring Software, port 1777 must be open in the facility's firewall.
6. If your computer has a security software in use, please make sure that it is not blocking the network monitoring software (if it is, you need to allow it to run by having it "whitelisted" on your computer).
7. Once the software is running on your computer, you can proceed with the next steps of the installation instructions. At this stage, no clocks (displays) will appear in the network monitoring software until additional steps are taken, as described later on in this manual.



Before Installation - DHCP

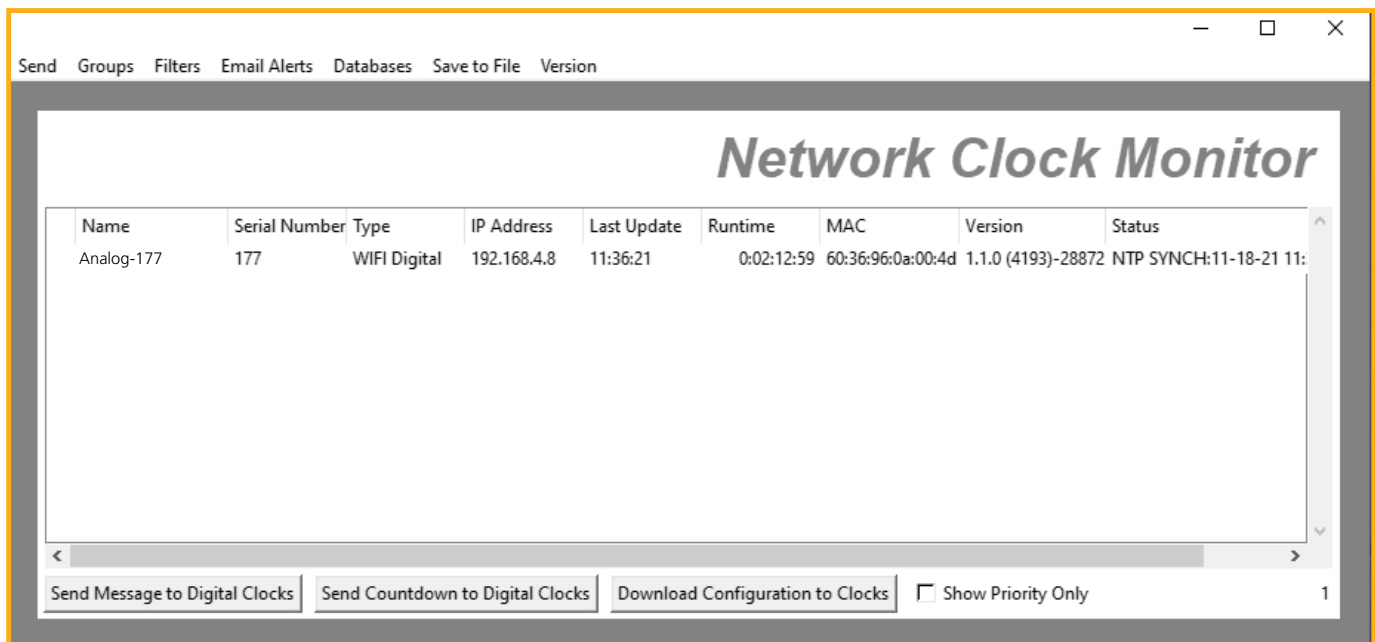
The SAW clock can be set to DHCP or Static IP address.

The clock is shipped in DHCP mode as default. This means that once the clock is connected to the network it is assigned the next available IP address by a DHCP server. It is user changeable, meaning that the clock can be set with a static IP address and that these settings can be changed in the clock built-in web interface (as explained in this manual).

If you wish to be able to access the web interface from a computer, Port 80 must be open.

If you wish to access your clock using a known, unchanging Static IP address, see the next page.

If a user wishes to access the web interface while the clock is in DHCP mode, use the Network Monitoring Software in order to find its IP address. You can also double click on the clock line in the monitoring software to access its built-in web interface.



Before Installation - Static IP

The SAW clock can be set to DHCP or Static IP address.

The clock is shipped in DHCP mode as default. This means that once the clock is connected to the network it is assigned the next available IP address by a DHCP server. It is user changeable, meaning that the clock can be set with a static IP address and changing these settings in the clock built-in web interface (as explained in this manual).

For setting your Wi-Fi clock to a static IP address, please follow these steps:

1. After connecting to the designated Wi-Fi network, access the clock using the designated IP address provided by the DHCP server.
2. To find the clock's dynamic IP address, find the clock serial number provided on the label on the back of the clock, then using the Network Monitoring Software, find this serial number and verify its IP address. The IP address will be listed next to it, as shown in the image below:

Name	Serial Number	Type	IP Address	Last Update	Runtime	MAC	Version	Status
Analog-177	177	WIFI Digital	192.168.4.8	11:36:21	0:02:12:59	60:36:96:0a:00:4d	1.1.0 (4193)-28872	NTP SYNCH:11-18-21 11:

3. Go onto a web browser on a computer that is connected to the same LAN (Local Area Network) as the clock and type the IP address of the clock into the address bar.
4. This should bring you to the web interface of the clock and you will be prompted to log in. The Password is **6063**.
5. Once logged in, select the "Network Settings" tab of the clock's built-in software.
6. In "Network Settings," note the DHCP option. Toggle DHCP from "ON" to "OFF." This will make the current IP address of the clock static.
7. Enter the following parameters provided by your network administrator: Gateway IP Address, Subnet Mask, DNS Router, and the designated Static IP Address of the clock. After entering these settings, click on the "submit" button.
8. After making these network configuration changes, power cycle the clock, wait 10 seconds, and power it again.

NETWORK SETTINGS

Image A

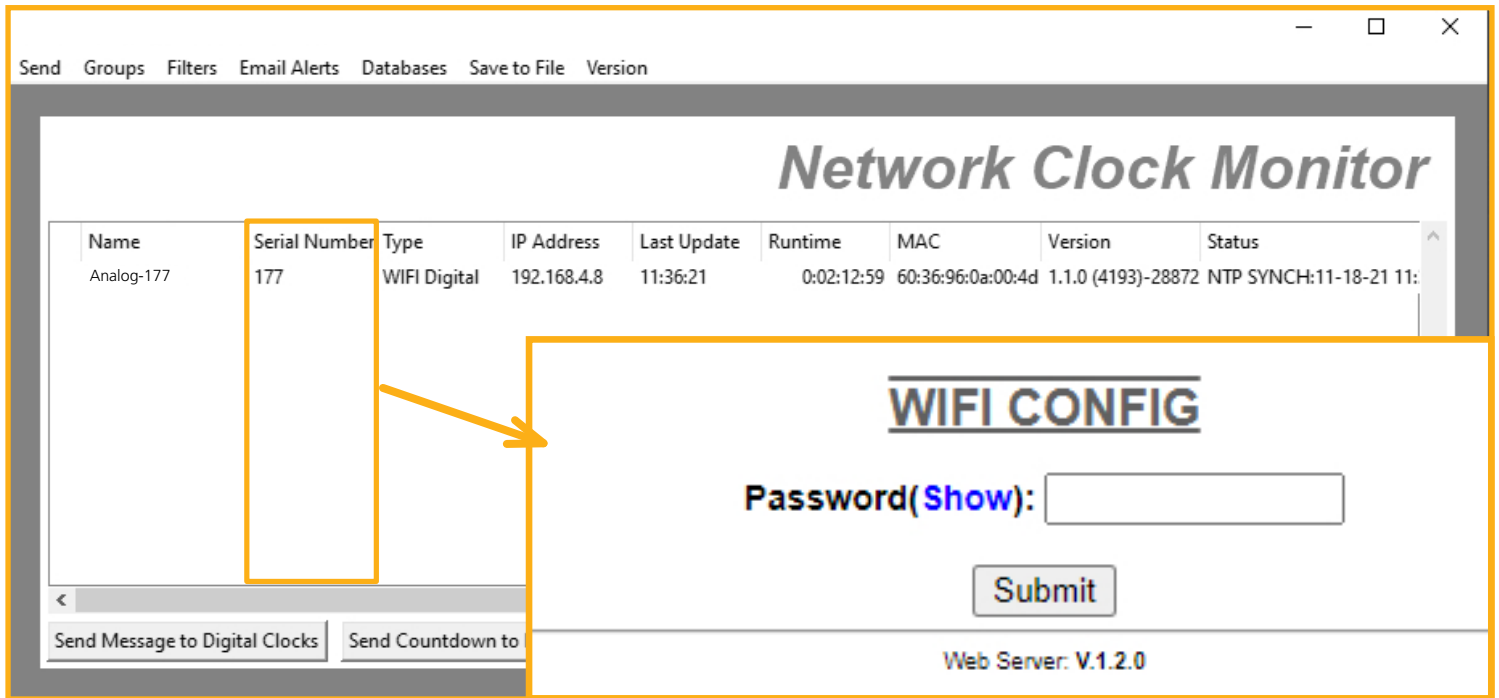
Clock Name:	Digital-113
Serial Number:	113
MAC Address:	60:36:96:0a:00:0d
Select Network:	WIFIPROD ▼
Network:	WIFIPROD
Network Password (Show):	
DHCP Auto On:	On ▼
IP Address:	192.168.4.6
Subnet Mask:	255.255.255.0
Gateway Address:	192.168.4.1
Auto DNS:	On ▼
DNS Address:	192.168.0.31
Broadcast to Monitors:	On ▼
Send Specific Monitor IP:	Off ▼
Monitor IP Address:	0.0.0.0

Enterprise Settings Submit

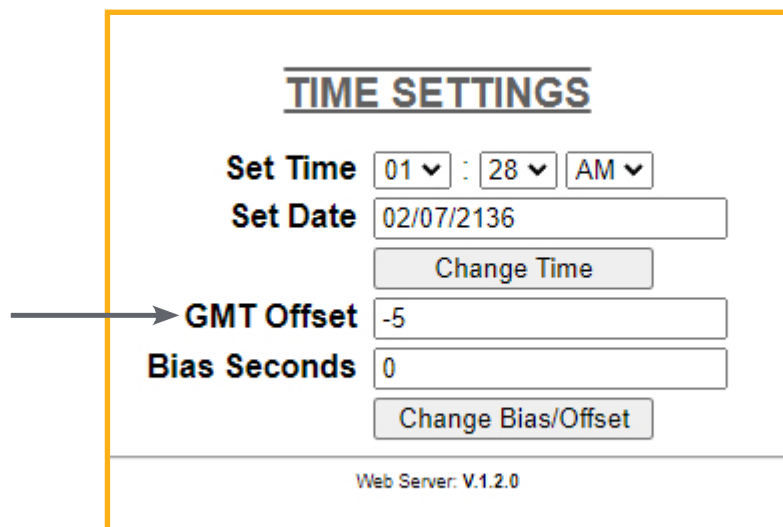
Web Server: V.1.2.0

Before Installation - Clock Setup - GMT/UTC Offset

1) Double click on the serial number for the clock being installed. This should take you to the web interface for that clock. Use the password **6063** to enter.



2) Select the "Time Settings" tab and then select the GMT/UTC offset for your time zone (for example, New York is -5).



Before Installation - Clock Setup - Network Servers

3) Time Input – From Third-Party NTP Time Servers:

The clock comes pre-programmed with third-party NTP Time Servers (user changeable) accessible via the facility network and internet. These pre-programmed Time Servers can be viewed or changed in the “Network Servers” tab of the clock built-in web interface (as shown in the below image). In order to allow the clock to access the NTP Time Servers, port number 123 must be open in the facility network firewall.

The time server address text boxes in the clock’s web interface are changeable, allowing the user to delete the default third-party NTP Time Servers and program the master clock to receive time data from different third-party NTP Time Servers by typing their IP addresses or URLs into the text boxes.

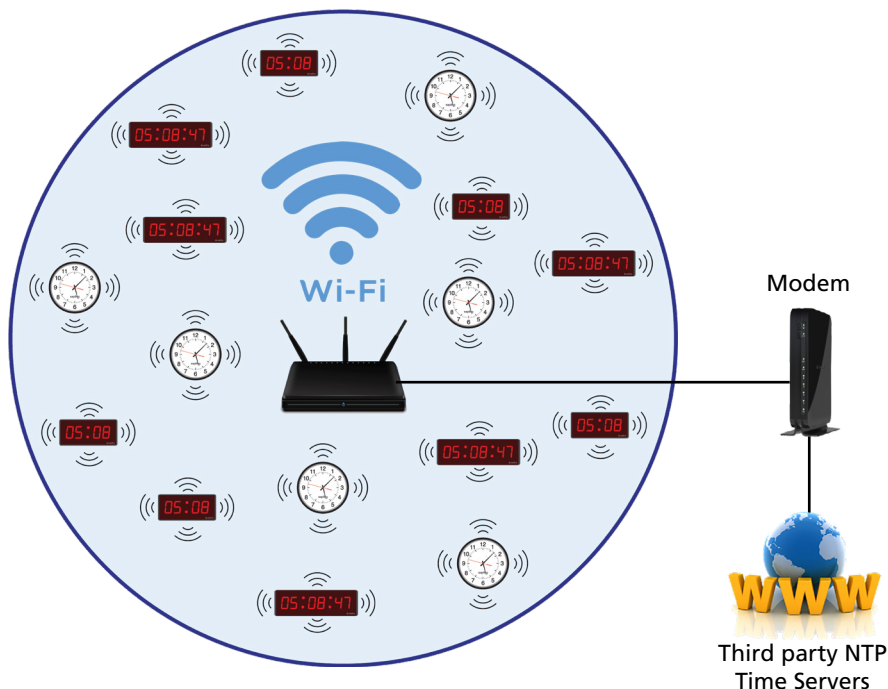
SERVER SETTINGS

1st Server Address: ● <input type="text" value="us.pool.ntp.org"/>	Server Performance EXCELLENT
2nd Server Address: <input type="text" value="ca.pool.ntp.org"/>	EXCELLENT
3rd Server Address: <input type="text" value="uk.pool.ntp.org"/>	EXCELLENT
4th Server Address: <input type="text" value="jp.pool.ntp.org"/>	EXCELLENT
5th Server Address: <input type="text" value="ru.pool.ntp.org"/>	EXCELLENT

Rotate Servers: ☐
Network Sync Every:

Server Performance
 1-20% POOR
 20-40% SATISFACTORY
 40-60% FAIR
 60-80% GOOD
 80-100% EXCELLENT

Web Server: V.1.2.0

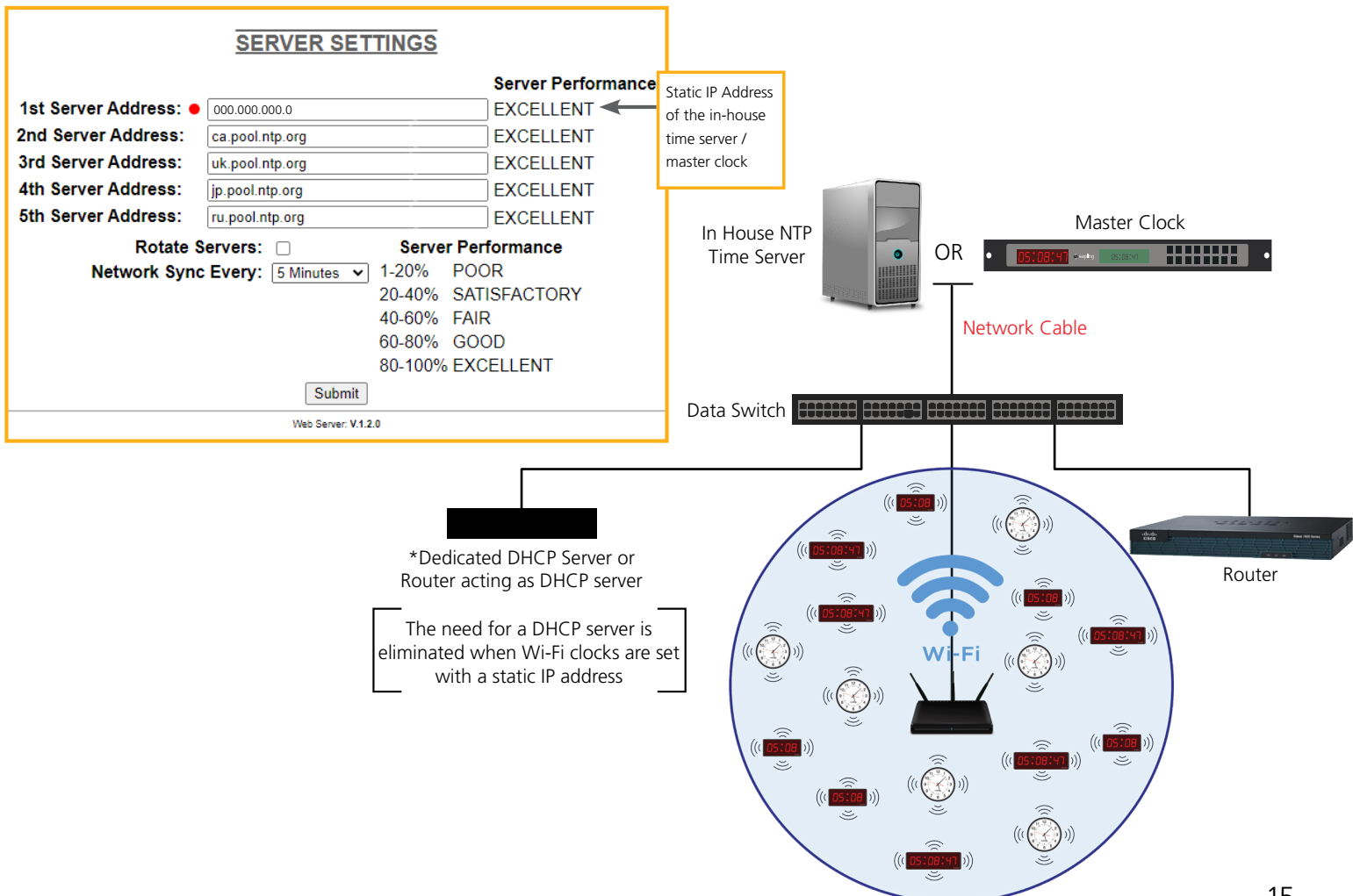


Before Installation - Clock Setup - Network Servers

Time Input – From an In-House NTP Time Server or from a Master Clock

If the facility has their own in-house NTP Time Server or a master clock capable of providing time data to the Wi-Fi clocks, the clocks should be programmed accordingly. To set the clocks to receive the time data from the in-house time source, please follow the below steps:

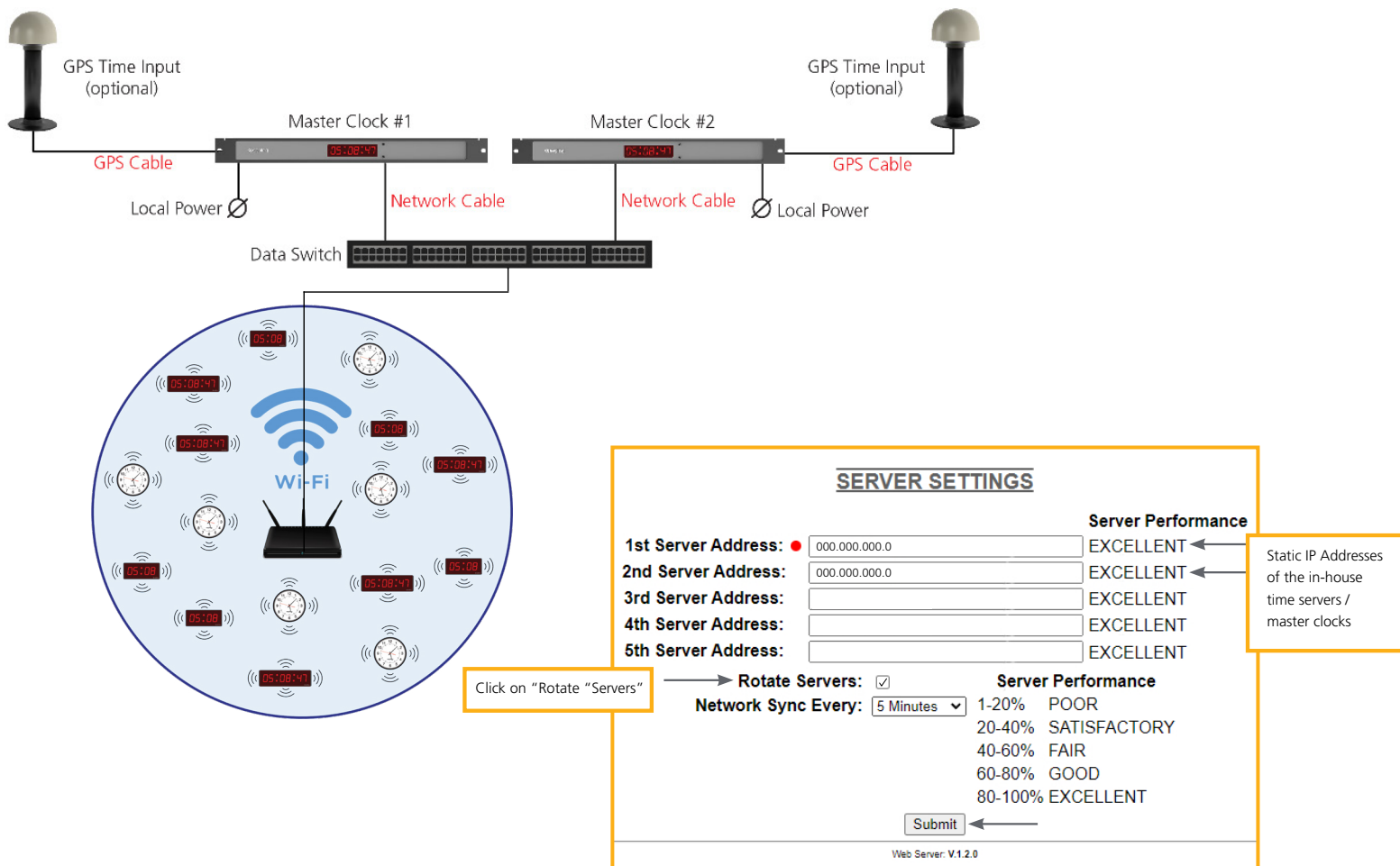
- Set the in-house NTP Time Server or master clock (capable of providing time data to the IP clocks) with a static IP address.
- Once the IP address of the in-house time source has been identified, program it in the clock "1st Server Address" text box in the "Network Servers" tab of the clock built-in web interface.
- Make sure to click the circle next to the "1st Server Address" text box, which will command the clock to take time data from this selected time source.
- Make sure that the option "Rotate Servers" is **not** selected, which commands the clock to receive time data from the "1st Server Address" as long as it is active.
- Regardless of what server or master clock you are using as a time source, all IP clocks must still be set with the UTC/GMT Offset and DST separately, as explained in this manual.
- If you only want the clocks to receive time data from the in-house NTP time server or from the in-house master clock, you can delete all other pre-loaded server addresses (2nd Server Address – 10th Server Address). If you leave these third-party time servers listed, they can be used as a backup to the in-house NTP time server, as long as the clocks can access the internet.



Before Installation - Clock Setup - Network Servers

Time Input – From two In-House NTP Time Servers or from two Master Clocks

- Set the in-house NTP Time Servers or master clocks (capable of providing time data to the IP clocks) with a static IP address.
- Once the IP addresses of the in-house time sources have been identified, program these two static IP addresses into the clock's "1st Server Address" and "2nd Server Address" text boxes in the "Network Servers" tab of the clock's built-in web interface.
- Delete all other Server Addresses that came pre-programmed in the clock and make sure to leave only the two IP addresses of the in-house time sources that you have programmed into the clock.
- Make sure that the option "Rotate Servers" is selected, which commands the clock to rotate between the two time sources.
- Regardless of what server or master clock you are using as a time source, all IP clocks must still be set with the UTC/GMT Offset and DST separately, as explained in this manual.



4) Close the web interface and IP monitor. The clock should now be able to accurately display time when connected to your network. More information on selectable IP clock settings are provided later on in this manual.

Preparing for the Installation

Consideration should be made for various factors such as their location, type of mounting (surface, dual-faced or flag mounted), electrical wiring run, and more. Please read the manual including all relevant sections for your specific installation configuration to understand the steps, how to wire, and how to install the clock. In addition, please note what hardware you may need to supply.

The clock can be **Surface (wall) Mounted**, **Dual-Faced** or **Flag Mounted**.

For installing the clocks, the installer will need to have the below items which are not provided with the clocks:

- A #2 Phillips-head screwdriver
- Electrical wires for power (Recommended 12, 14 or 16 AWG)
- A drill and a drill bit (size depending on wall anchor)
- A flat-head screwdriver

In Addition:

For a Surface (wall) Mounted Clock:

- A double gang (utility) box

For a Dual-Faced or a Flag Mounted Clock:

- A double gang (utility) box
- There are 4 holes in the pole base plate that would accommodate size #8 screws for fixating it to the ceiling or to the wall. Hardware to fixate the pole base plate to the ceiling or to the wall depending on the type of wall is to be provided by the installer.

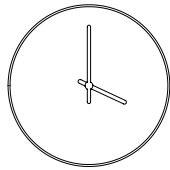
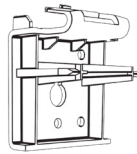


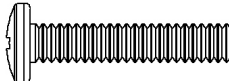



Wall Mount Installation - Round SlimLine Clock - Battery Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

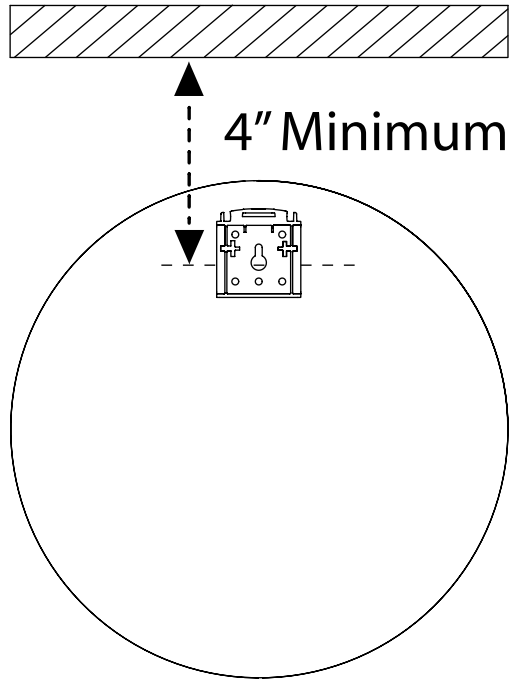
Description	Quantity	Picture
Round SlimLine analog clock	1	
Included in Wiring Kit (A-SLM-MK-S-1)		
Mounting Piece	1	
#6-19x7/16 screw	2 (not used)	
Strain Relief	1 (not used)	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2 (not used)	
#6-19x3/8 screw	1 (not used)	
Included in Wiring Kit (A-WK-MTG-1)		
#10x1.5 Self-tapping screw	2	
Wall anchor	2	

PLEASE NOTE: A user will also have to provide two D-Cell batteries, a Phillips-head screwdriver, a small slot-head screwdriver, a drill with a 1/4 inch drill bit, a pencil, a single gang box, and any equipment needed to install the gang box.

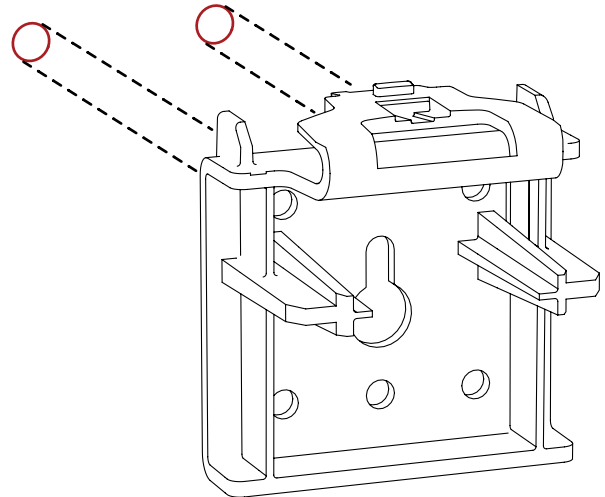
If any of the items listed in the wiring kit are missing, you may contact your dealer and order a replacement kit.

Wall Mount Installation - Round SlimLine Clock - Battery Powered

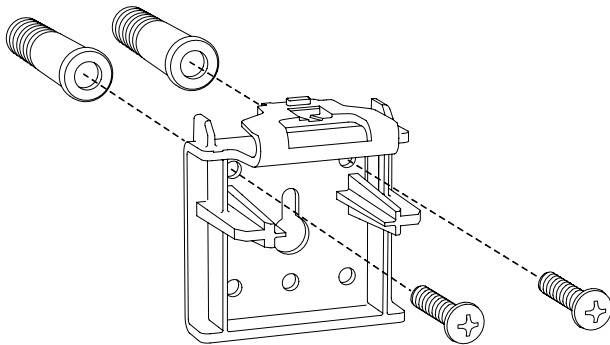
1) Place the mounting piece on the wall. Leave at least 4 inches between the top of the gang box and ceiling. Confirm that the bottom of the mounting piece is level with the floor.



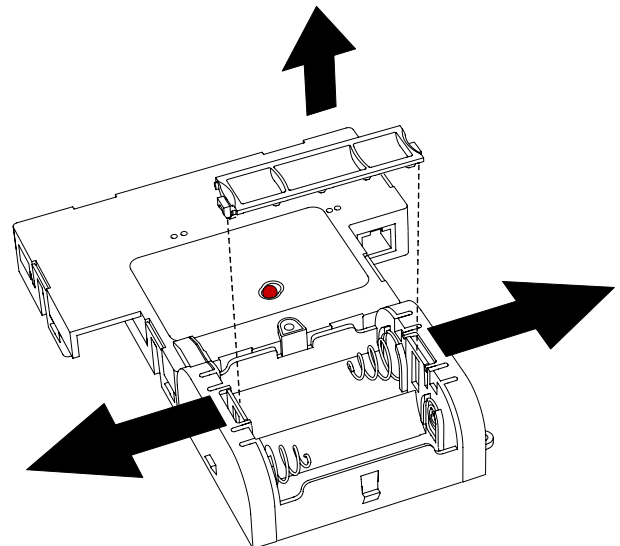
2) Use a pencil to mark the positions of the top two holes, then use the 1/4 inch drill bit to drill holes at the locations of the two marks.



3) Insert the wall anchors into the two holes, then place the two self tapping screws through the mounting piece and into the wall anchors.

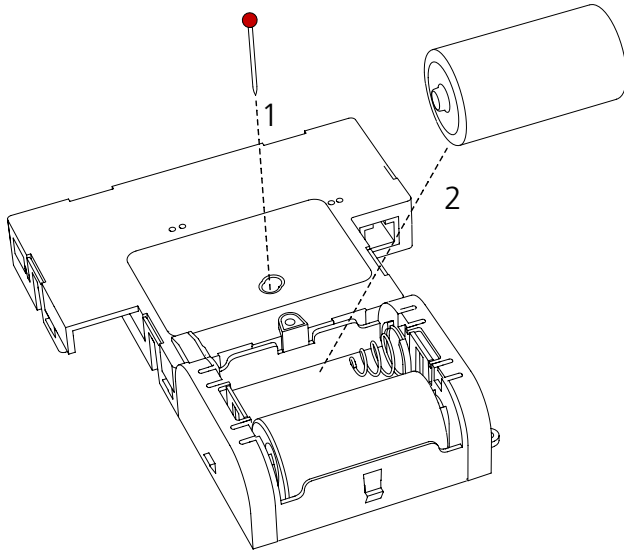


4) Remove the back cover from the battery pack by pulling the two latches away to either side and sliding the cover out.

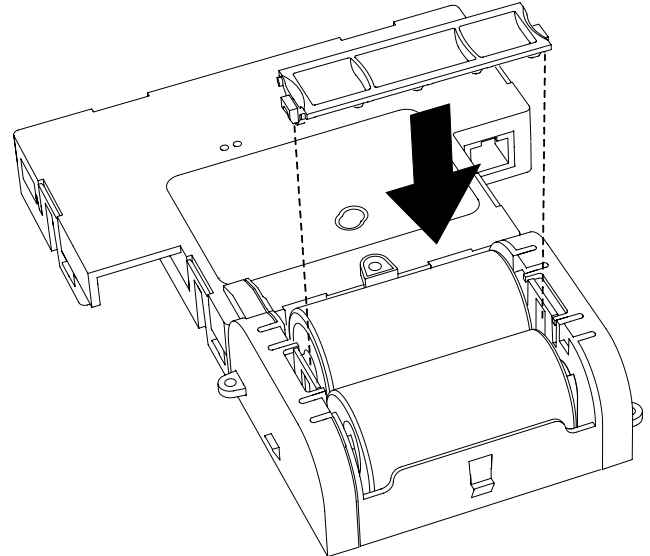


Wall Mount Installation - Round SlimLine Clock - Battery Powered

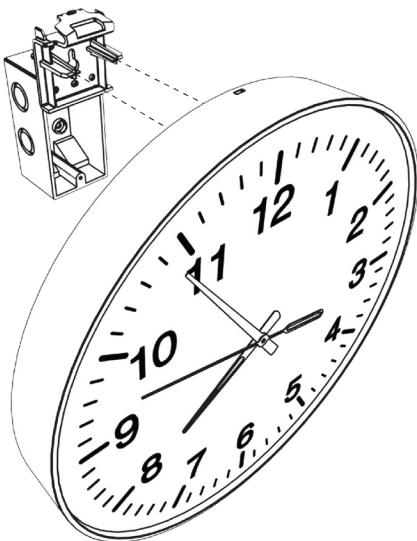
5) **First remove the gearbox pin**, then insert the batteries into the clock.



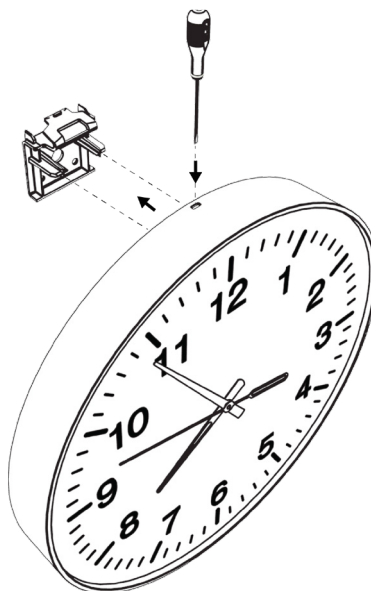
6) Place the cover back onto the battery pack. You should hear a snapping noise as the latches engage.



7) Attach the clock to the mounting piece by sliding the clock back onto it. You should hear a snapping noise as the latch engages.



8) If you need to take the clock off the wall after the installation has been completed, use a flat-blade screwdriver or eyeglasses screwdriver to lower the mounting piece latch, then slide the clock off the mounting piece.



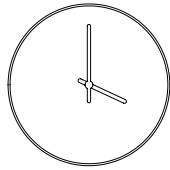
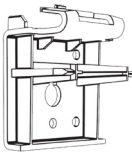


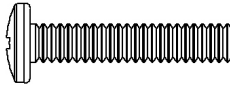


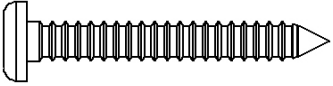
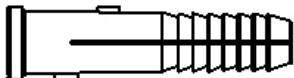
Wall Mount Installation - Round SlimLine Clock - Locally Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

Description	Quantity	Picture
Round SlimLine analog clock	1	
Included in Wiring Kit (A-SLM-MK-S-1)		
Mounting Piece	1	
#6-19x7/16 screw	2	
Strain Relief	1	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2	
#6-19x3/8 screw	1 (not used)	
Included in Wiring Kit (A-WK-MTG-1V)		
Power/grounding wires and connector	1	
#8x1.5 Self-tapping screw	2	
Wall anchor	2	

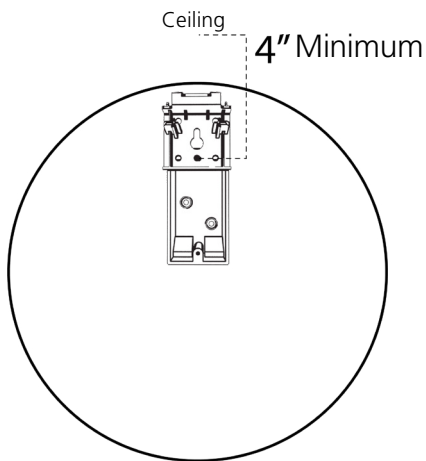
PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a single gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the power or ground cables. You may also need a 1/4 inch drill if you decide not to attach the clock directly to the gang box.

If any of the items listed in the wiring kit are missing, you may contact your dealer and order a replacement kit.

Wall Mount Installation - Round SlimLine Clock - Locally Powered

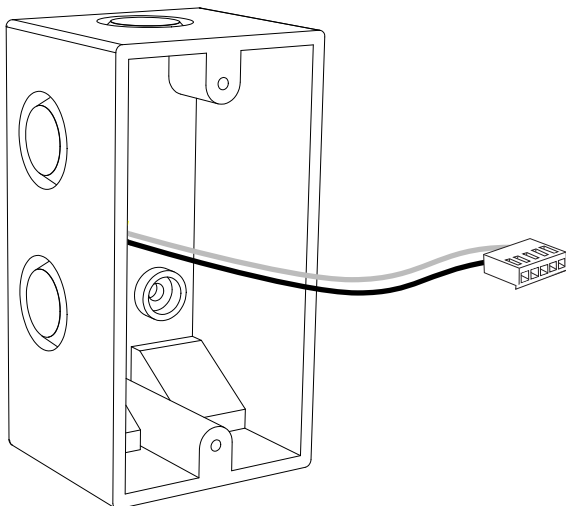
1) If you are installing a new gang box in the wall, leave at least 4 inches between the top of the gang box and ceiling. Confirm that the bottom of the gang box is level with the floor.

If you are using an existing gang box, the top of the gang box must be a minimum of four inches away from the ceiling.



3) Attach the power wires from your kit to the power wires in the gang box.

- Attach the Hot wire to the connector's black/orange wire.
- Attach the Common wire to the connector's white/yellow wire.
- Attach the Ground wire to the connector's green wire.



2) Run power wiring to the gang box.

For 24V power use the ORANGE and YELLOW wires
For 110VAC or 230VAC power use the BLACK and WHITE wires

CHECK YOUR WIRING

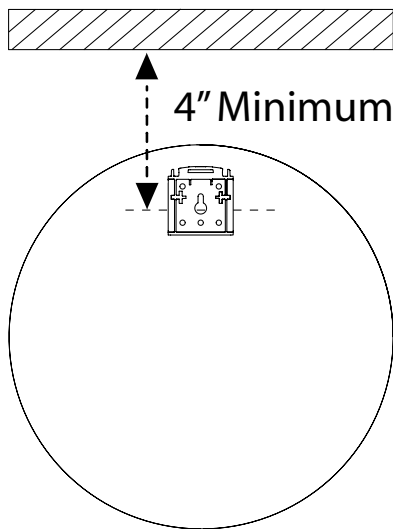
The voltage between the white and black wires should measure 105-126 volts AC in the 115 volt model, 207-253 volts AC in the 230 volt model, or 21.5-26.5 volts AC/DC in the 24 volt model.

If you are using the 24 volt model, make sure that the wiring leading to the clock is from an ISOLATED transformer.

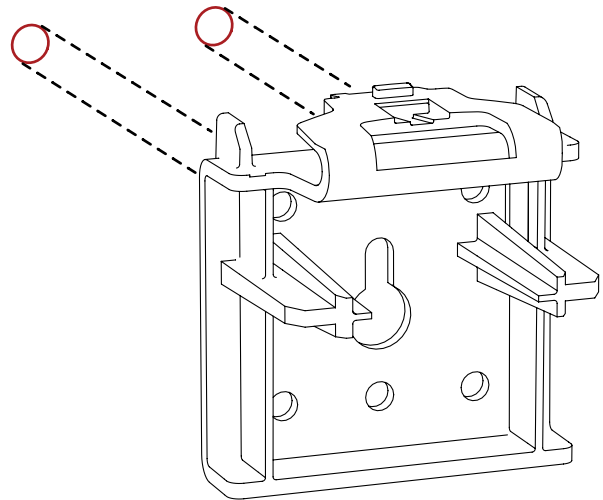
4) If you do not wish to attach the mounting piece to the gang box, proceed to step 5A. Otherwise, go to step 6.

Wall Mount Installation - Round SlimLine Clock - Locally Powered

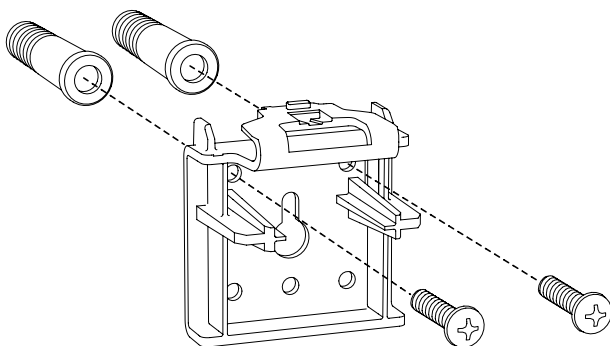
5A) If you do not wish to attach the mounting piece to a gang box, place the mounting piece on the wall. Leave at least 4 inches between the middle of the mounting piece and ceiling. Confirm that the bottom of the mounting piece is level with the floor.



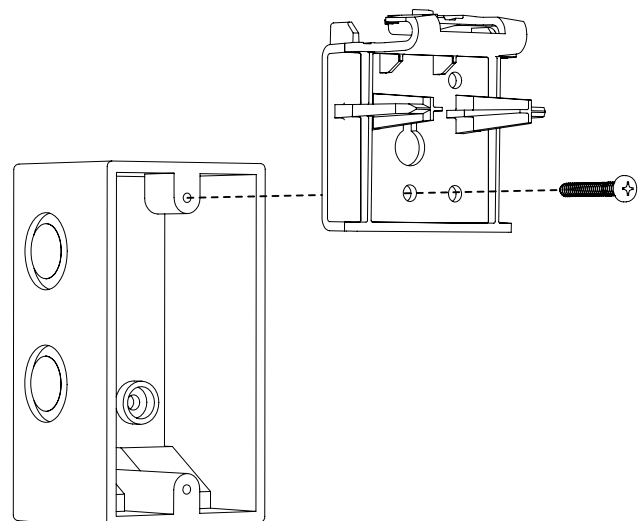
5B) Use a pencil to mark the positions of the top two holes, then use the 1/4 inch drill bit to drill holes at the locations of the two marks.



5C) Insert the wall anchors into the two holes, then place the two self tapping screws through the mounting piece and into the wall anchors. Skip step 6 and go directly to step 7.

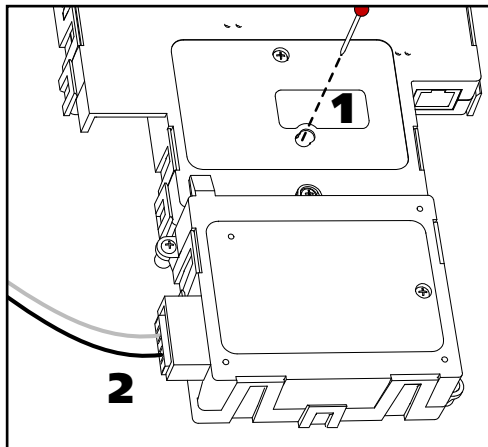


6) Place the mounting piece on the wall above the gang box so that the bottom centered hole on the piece overlaps the top hole on the gang box. Insert a #6-32x1 screw through the bottom centered hole and into the top hole of the gang box.

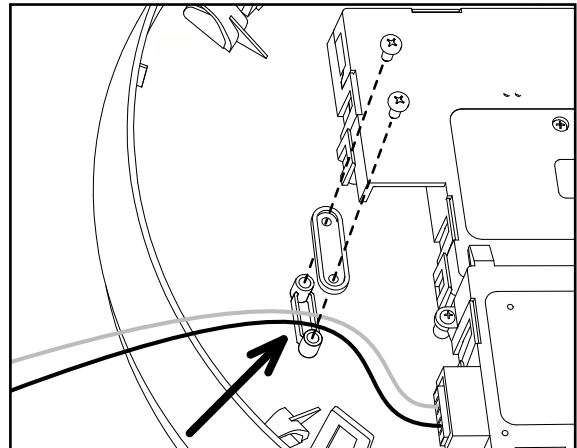


Wall Mount Installation - Round SlimLine Clock - Locally Powered

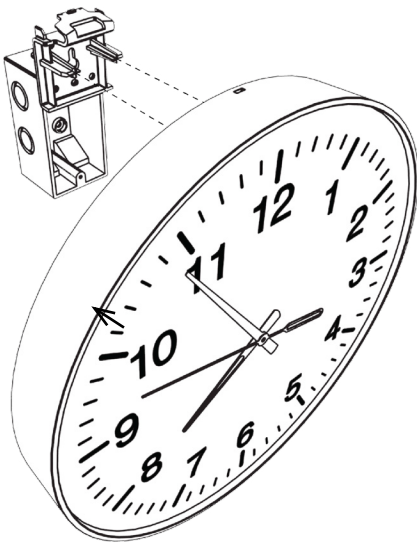
7) **First remove the gearbox pin**, then attach the power connector to the port on the movement.



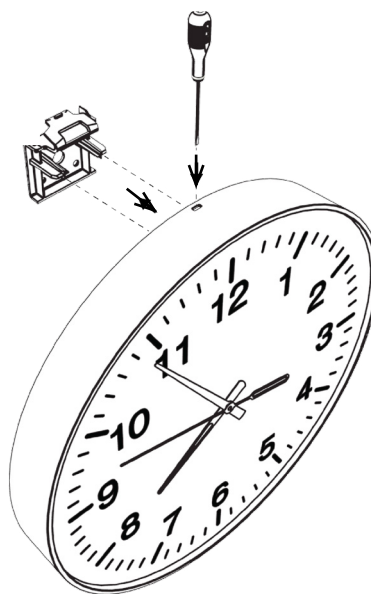
8) Lay any excess wiring across the strain relief base, then attach the strain relief to the clock with the two #6-19x7/16 screws. The strain relief should be tight enough to prevent the wire from sliding.



9) Attach the clock to the mounting piece by sliding the clock back onto it. You should hear a snapping noise as the latch engages.



10) If you need to take the clock off the wall after the installation has been completed, use a flat-blade screwdriver or eyeglasses screwdriver to press down on and release the mounting piece latch, then slide the clock off the mounting piece.



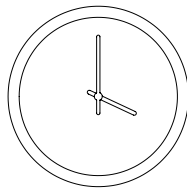
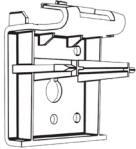
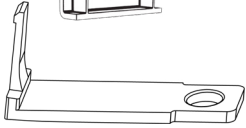


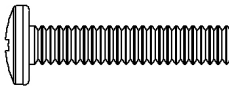

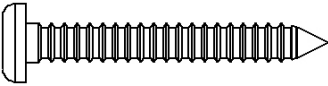
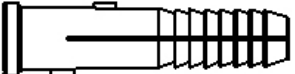
Wall Mount Installation - Round Aluminum or Wood Clock - Battery Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

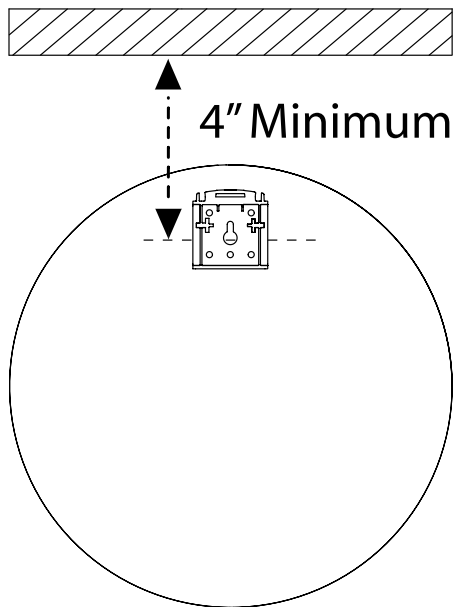
Description	Quantity	Picture
Round SlimLine analog clock with aluminum/wood rim	1	
Included in Mounting Kit (A-SLM-MK-AW-1)		
Mounting Piece	1	
Release lever	1	
#6-19x7/16 screw	2 (not used)	
Strain Relief	1 (not used)	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2 (not used)	
#6-19x3/8 screw	1 (not used)	
Included in Wiring Kit (A-WK-12-1V)		
#8x1.5 Self-tapping screw	2	
Wall anchor	2	

PLEASE NOTE: A user will also have to provide two D-Cell batteries, a Phillips-head screwdriver, a small slot-head screwdriver, a drill with a 1/4 inch drill bit, a pencil, a single gang box, and any equipment needed to install the gang box.

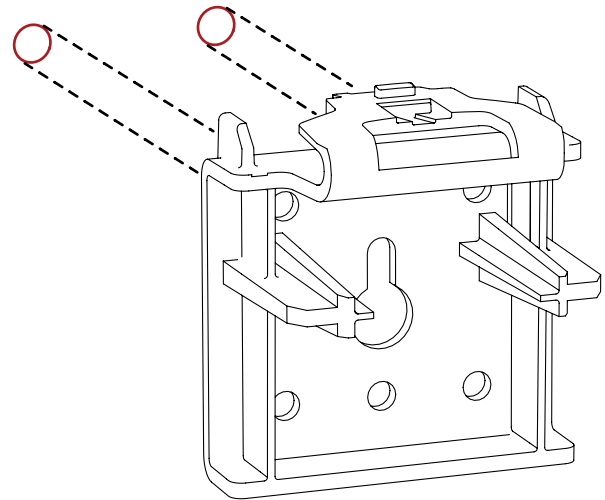
If any of the items listed in the wiring kit are missing, you may contact your dealer and order a replacement kit.

Wall Mount Installation - Round Aluminum or Wood Clock - Battery Powered

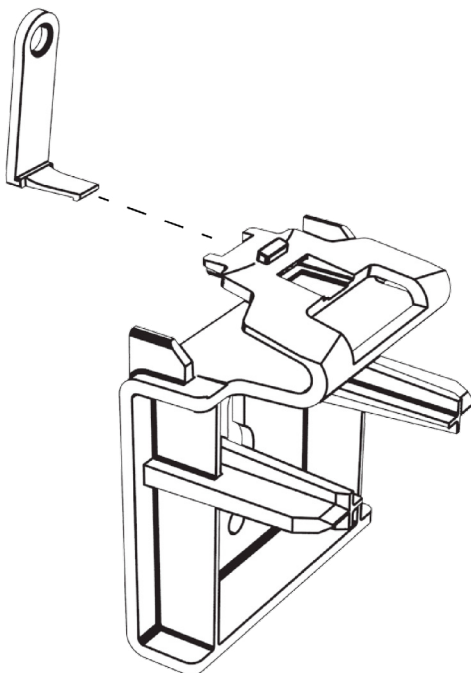
1) Place the flat side of the mounting piece on the wall. Leave at least 4 inches between the top of the mounting piece and ceiling. Confirm that the bottom of the mounting piece is level with the floor.



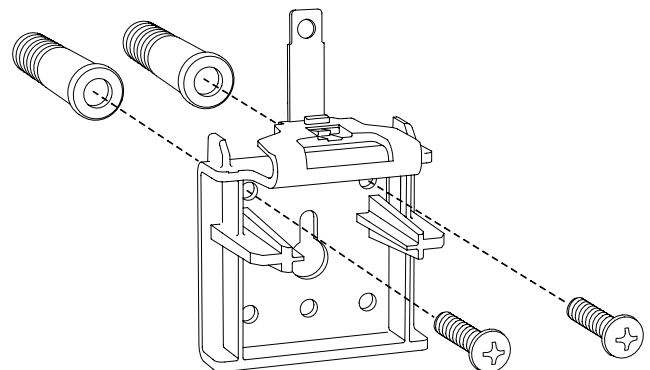
2) Use a pencil to mark the positions of the two holes, then use the 1/4 inch drill bit to drill holes at the locations of the two marks.



3) Insert the release lever into the hole atop the mounting piece latch.

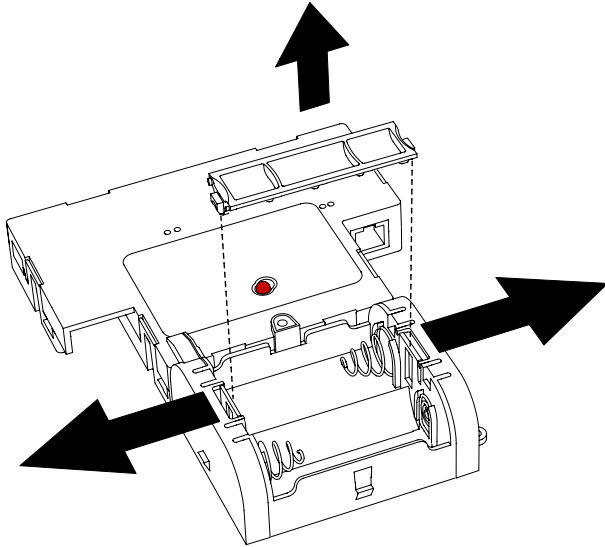


4) Insert the wall anchors into the two holes, then place the two self tapping screws through the mounting piece and into the wall anchors.

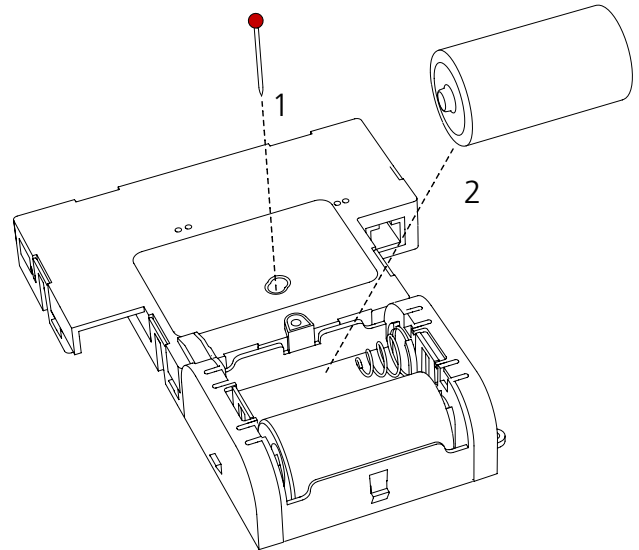


Wall Mount Installation - Round Aluminum or Wood Clock - Battery Powered

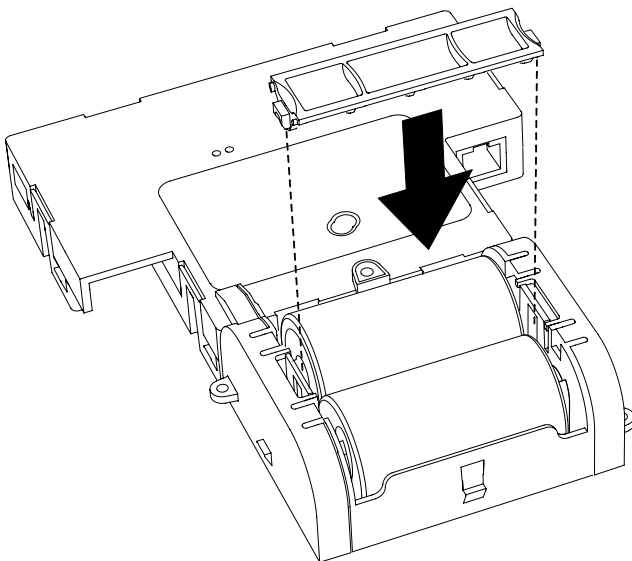
5) Remove the back cover from the battery pack by pulling the two latches away to either side and sliding the cover out.



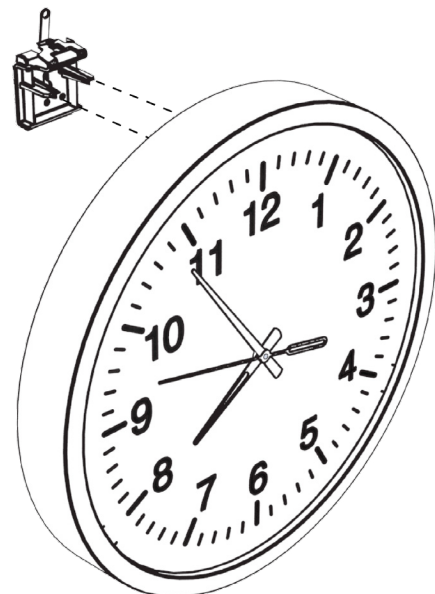
6) **First remove the gearbox pin,** then insert the batteries into the clock.



7) Place the cover back onto the battery pack. You should hear a snapping noise as the latches engage.

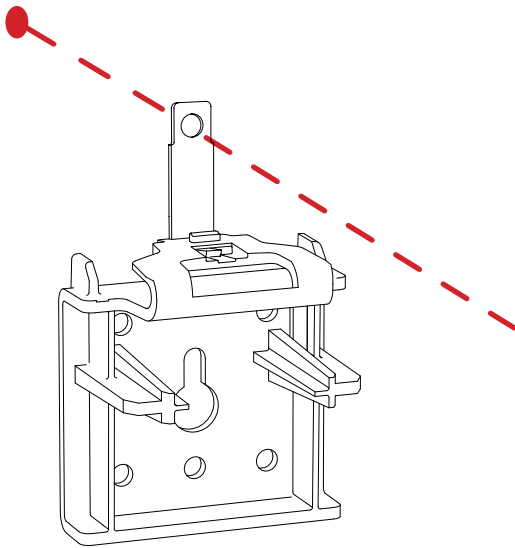


8) Attach the clock to the mounting piece by sliding the clock back onto it. You should hear a snapping noise as the latch engages.

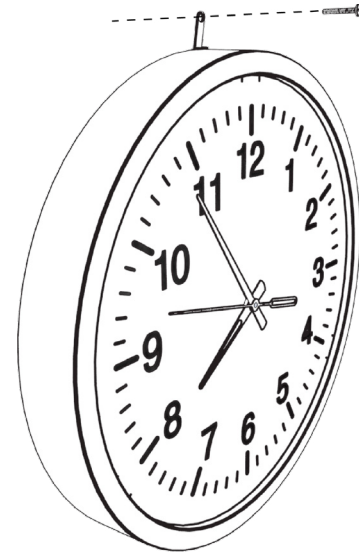


Wall Mount Installation - Round Aluminum or Wood Clock - Battery Powered

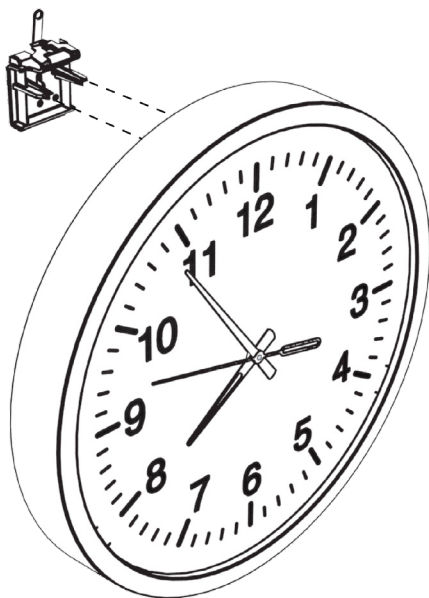
9) Use the pencil to mark the location of the hole at the top of the release lever, and remove the clock again (see step 11). Remove the mounting piece and make a hole at the location you just marked with the 1/8 inch drill bit.



10) Reattach the mounting piece and clock. Place one of the self-tapping screws through the hole in the top of the release lever and into the wall.



11) If you need to take the clock off the wall after the installation has been completed, remove the screw from the release lever, press the release lever down, then slide the clock off the mounting piece.



12) If you need to take the clock off the wall after the installation has been completed AND you accidentally broke off the release lever or forgot to attach it during installation, take a thin flathead screwdriver, thin ruler, or eyeglass screwdriver and insert the end between the clock and the wall. Press down on the latch until you are able to slide the clock off the mounting piece.

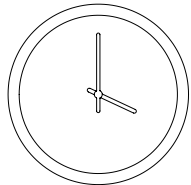
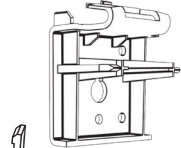
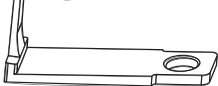




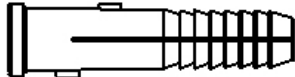
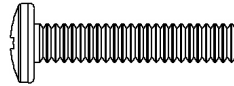

Wall Mount Installation - Round Aluminum or Wood Clock - Locally Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

Description	Quantity	Picture
Round SlimLine analog clock with aluminum/wood rim	1	
Included in Mounting Kit (A-SLM-MK-AW)		
Mounting Piece	1	
Release lever	1	
#6-19x7/16 screw	2	
Strain Relief	1	
Included in Wiring Kit (A-WK-MTG-1V)		
Power/grounding wires and connector	1	
#8x1.5 Self-tapping screw	2	
Wall anchor	2	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2	
#6-19x3/8 screw	1 (not used)	

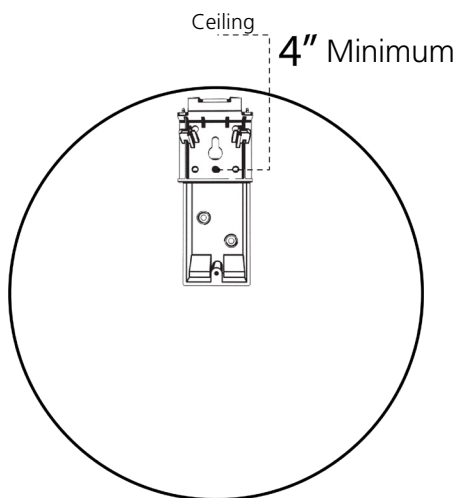
PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a drill with a 1/4 inch drill bit, a pencil, a single gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the power or ground cables.

If any of the items listed in the wiring kit are missing, you may contact your dealer and order a replacement kit.

Wall Mount Installation - Round Aluminum or Wood Clock - Locally Powered

1) If you are installing a new gang box in the wall, leave at least 4 inches between the top of the gang box and ceiling. Confirm that the bottom of the gang box is level with the floor.

If you are using an existing gang box, the top of the gang box must be a minimum of four inches away from the ceiling.



2) Run power wiring to the gang box.

For 24V power use the ORANGE and YELLOW wires
For 110VAC or 230VAC power use the BLACK and WHITE wires

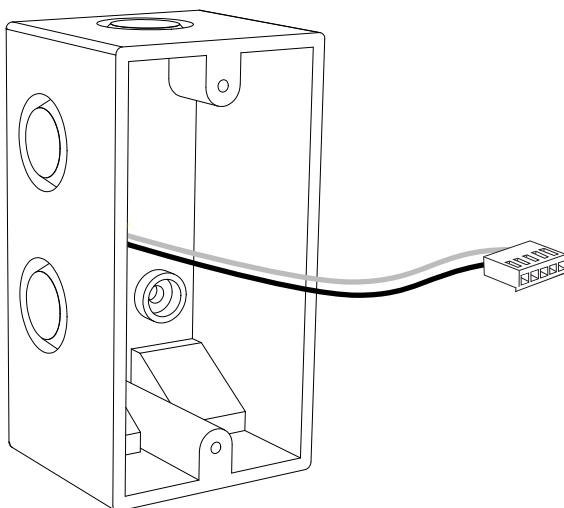
CHECK YOUR WIRING

The voltage between the white and black wires should measure 105-126 volts AC in the 115 volt model, 207-253 volts AC in the 230 volt model, or 21.5-26.5 volts AC/DC in the 24 volt model.

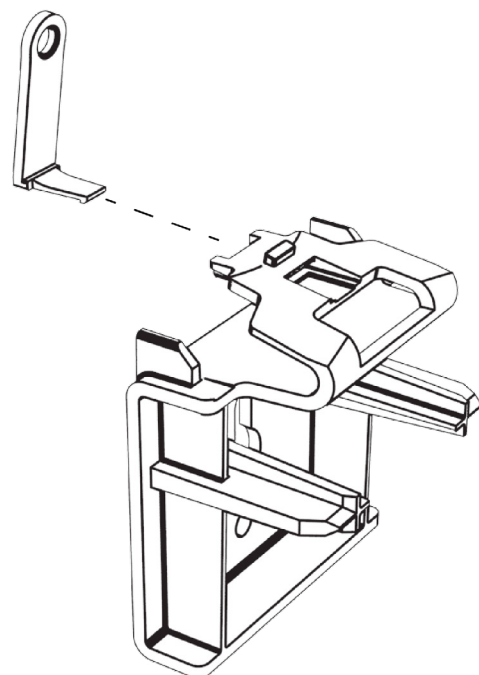
If you are using the 24 volt model, make sure that the wiring leading to the clock is from an ISOLATED transformer.

3) Attach the power wires from your kit to the power wires in the gang box.

- Attach the Hot wire to the connector's black/orange wire.
- Attach the Common wire to the connector's white/yellow wire.
- Attach the Ground wire to the connector's green wire.



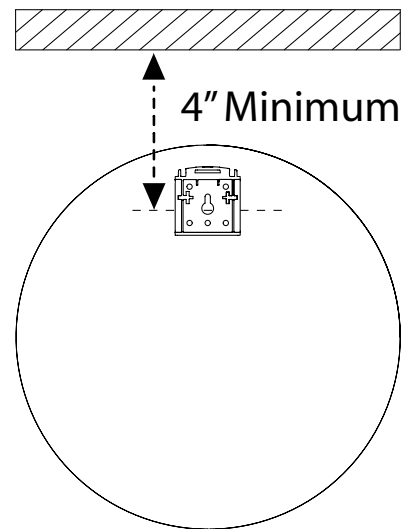
4) Insert the release lever into the hole atop the mounting piece latch.



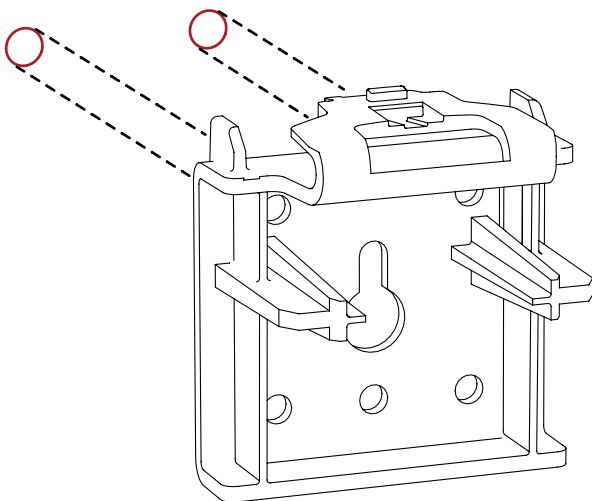
Wall Mount Installation - Round Aluminum or Wood Clock - Locally Powered

5) If you do not wish to attach the mounting piece to the gang box, proceed to step 6A. Otherwise, go to step 7.

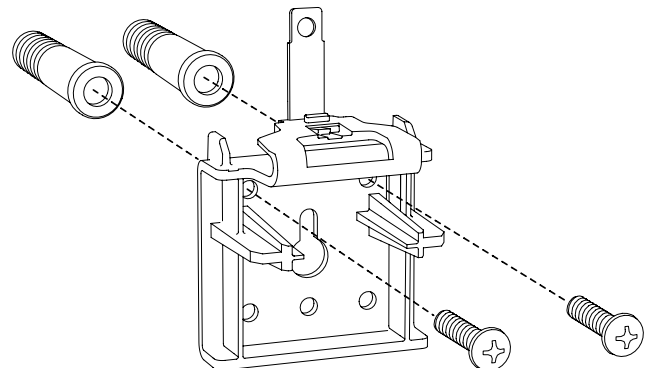
6A) If you do not wish to attach the mounting piece to a gang box, place the mounting piece on the wall. Leave at least 4 inches between the middle of the mounting piece and ceiling. Confirm that the bottom of the mounting piece is level with the floor.



6B) Use a pencil to mark the positions of the top two holes, then use the 1/4 inch drill bit to drill holes at the locations of the two marks.

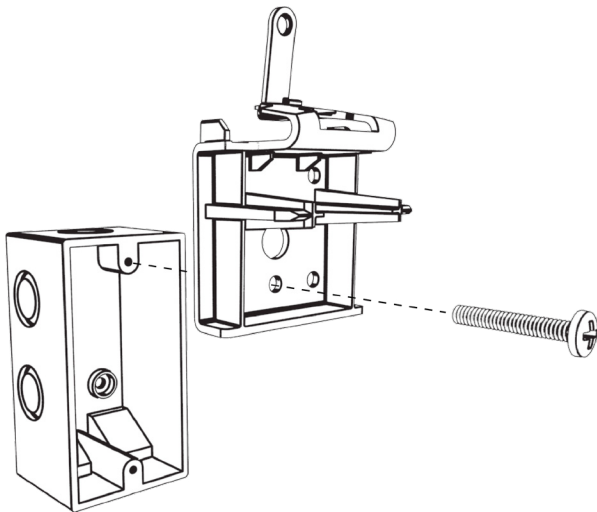


6C) Insert the wall anchors into the two holes, then place the two self tapping screws through the mounting piece and into the wall anchors. Skip step 7 and go directly to step 8.

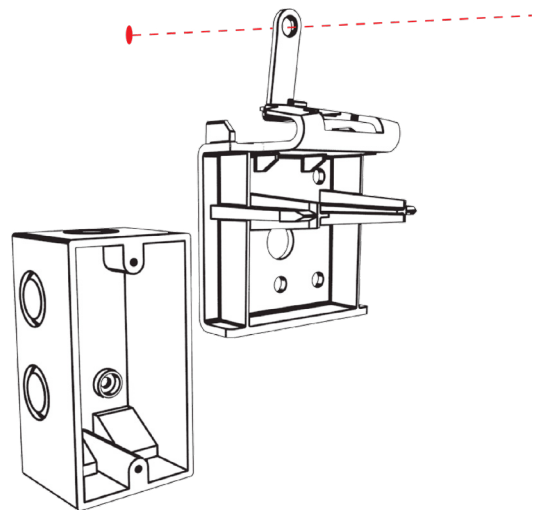


Wall Mount Installation - Round Aluminum or Wood Clock - Locally Powered

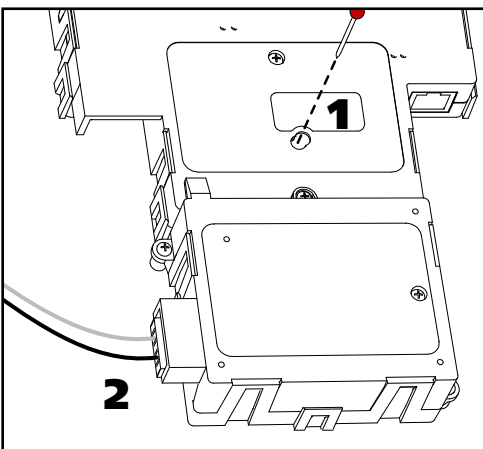
7) Place the mounting piece on the wall above the gang box so that the bottom centered hole on the piece overlaps the top hole on the gang box. Insert a #6-32x1 screw through the bottom centered hole and into the top hole of the gang box.



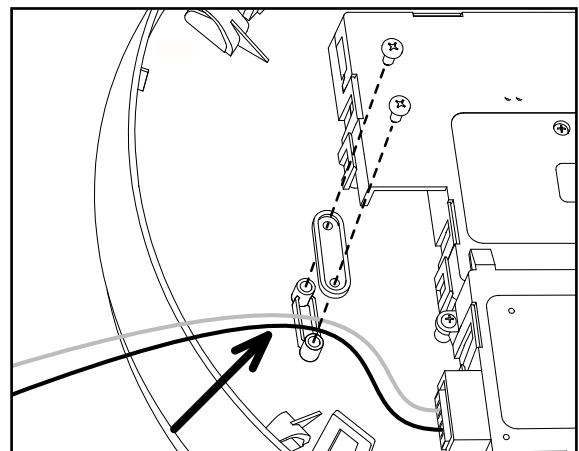
8) Temporarily attach the clock to the mounting piece (see step 11), use the pencil to mark the location of the hole at the top of the release lever, and remove the clock again (see step 13). Remove the mounting piece and make a hole at the location you just marked with the 1/8 inch drill bit. When finished, reattach the mounting piece.



9) **First remove the gearbox pin**, then attach the power connector to the port on the movement.

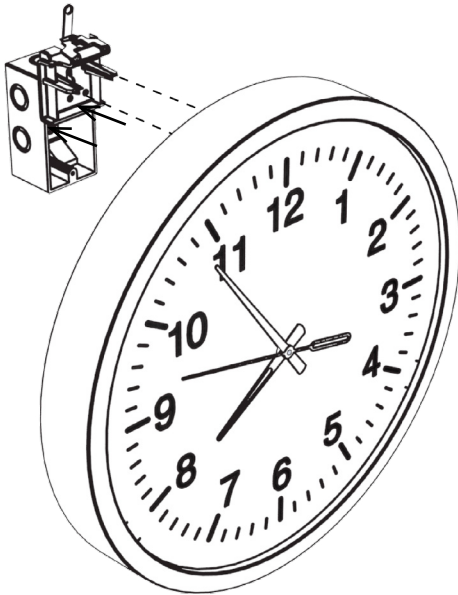


10) Lay any excess wiring across the strain relief base, then attach the strain relief to the clock with the two #6-19x7/16 screws. The strain relief should be tight enough to prevent the wire from sliding.

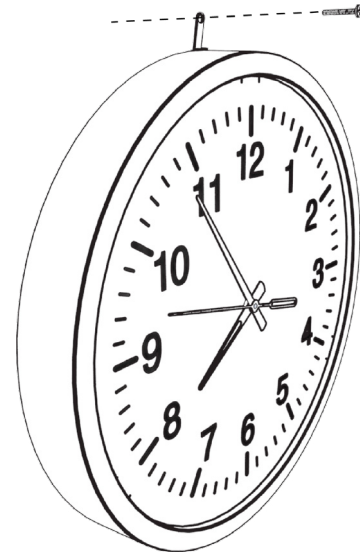


Wall Mount Installation - Round Aluminum or Wood Clock - Locally Powered

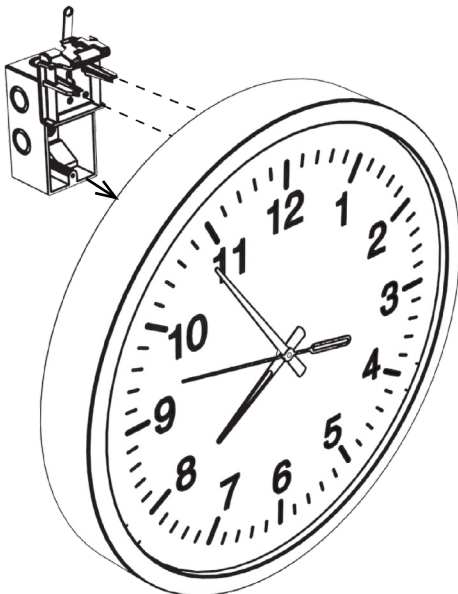
11) Attach the clock to the mounting piece by sliding the clock back onto it. You should hear a snapping noise as the latch engages.



12) Place one of the self-tapping screws through the hole in the top of the release lever.



13) If you need to take the clock off the wall after the installation has been completed, remove the screw from the release lever, press the release lever down, then slide the clock off the mounting piece.



14) If you need to take the clock off the wall after the installation has been completed AND you accidentally broke off the release lever or forgot to attach it during installation, take a thin flathead screwdriver, thin ruler, or eyeglass screwdriver and insert the end between the clock and the wall. Press down on the latch until you are able to slide the clock off the mounting piece.

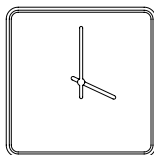
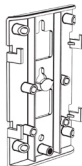

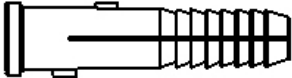
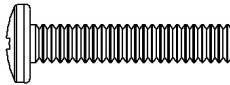

Wall Mount Installation - Square Clock - Battery Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

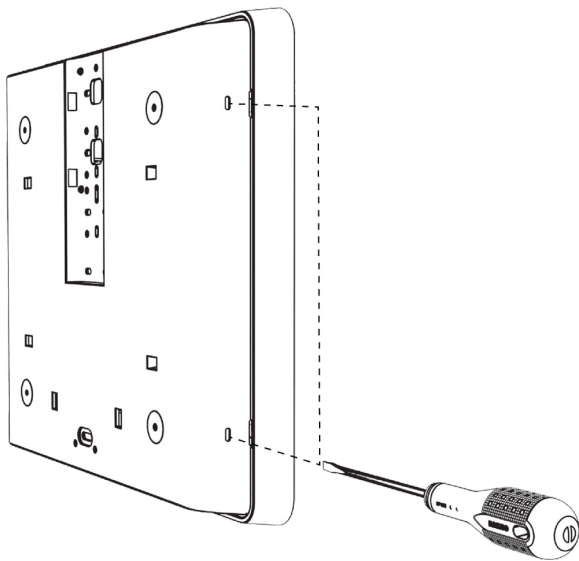
Description	Quantity	Picture
Square analog clock	1	
Mounting Piece (already attached to clock housing)	1	
Included in Wiring Kit (A-WK-MTG-1)		
#8x1.5 Self-tapping screw	2	
Wall anchor	2	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2 (not used)	
#6-19x3/8 screw	1 (not used)	

PLEASE NOTE: A user will also have to provide two D-Cell batteries, a Phillips-head screwdriver, a small slot-head screwdriver, a drill with a 1/4 inch drill bit, a pencil, a single gang box, and any equipment needed to install the gang box.

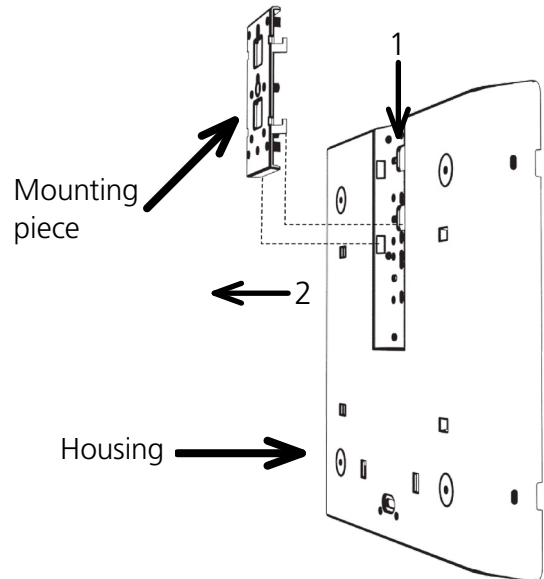
If any of the items listed in the wiring kit are missing, you may contact your dealer and order a replacement kit.

Wall Mount Installation - Square Clock - Battery Powered

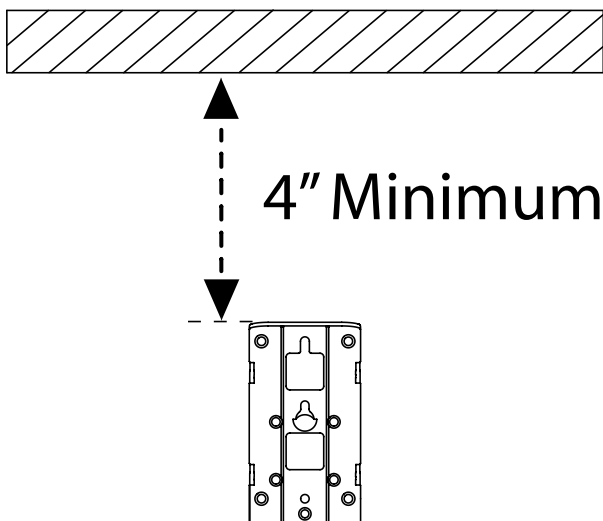
1) Detach the housing from the back of the clock. Do this by inserting a flat-blade screwdriver about 1/8 inch into each of the slot holes until the housing detaches from the clocks. You may hear a snapping noise as the latches disengage.



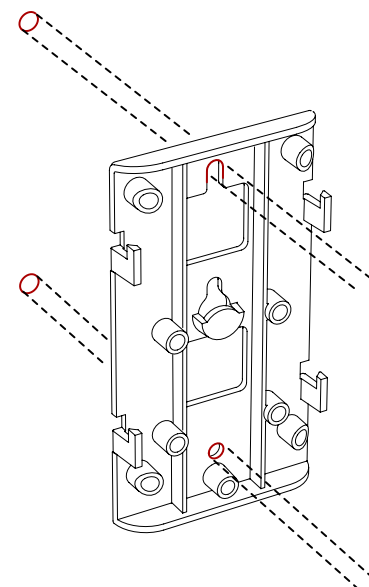
2) Release the mounting piece from the back of the housing by sliding it towards the center of the housing, then pulling it back and away from the housing.



3) Place the mounting piece on the wall. Leave at least 4 inches between the top of the mounting piece and ceiling. Take care to make sure that the bottom of the mounting piece is level with the floor.

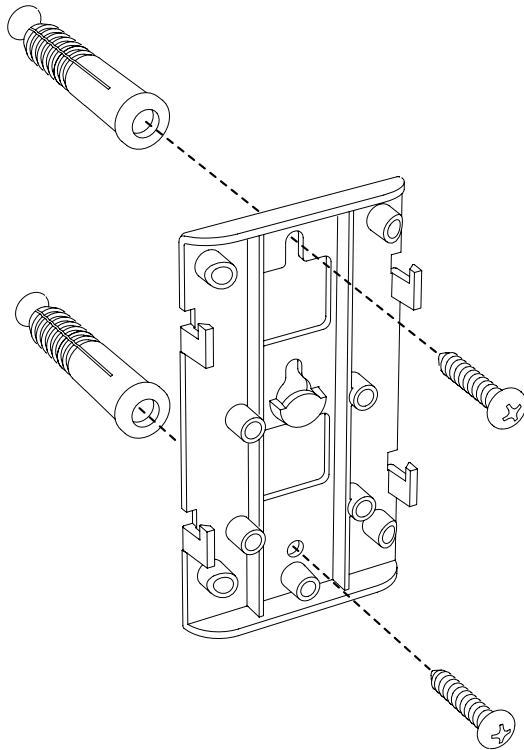


4) Use a pencil to mark the two holes shown in the diagram below. Then use the 1/4 inch drill bit to drill the holes at the marked positions.

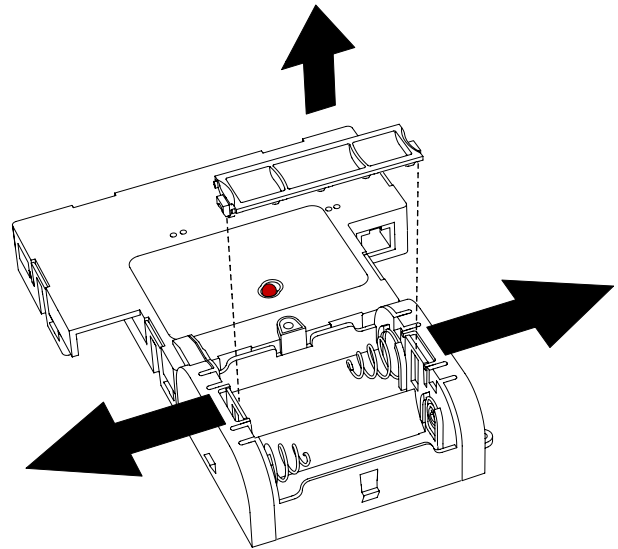


Wall Mount Installation - Square Clock - Battery Powered

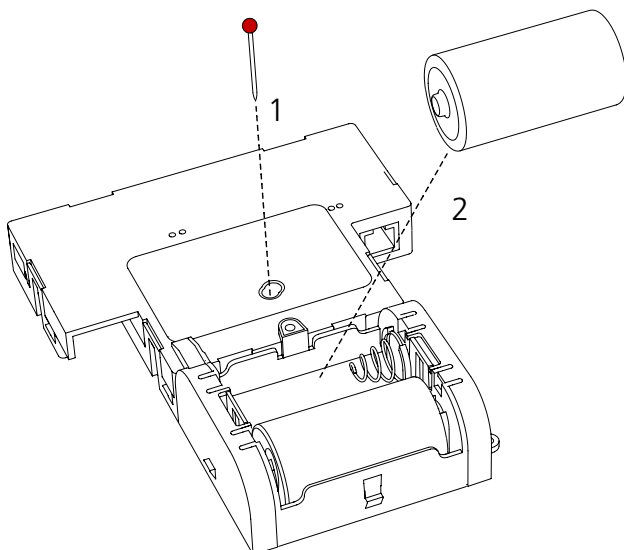
5) Insert the wall anchors into the holes, then place the self-tapping screws through the mounting piece and into the wall anchors.



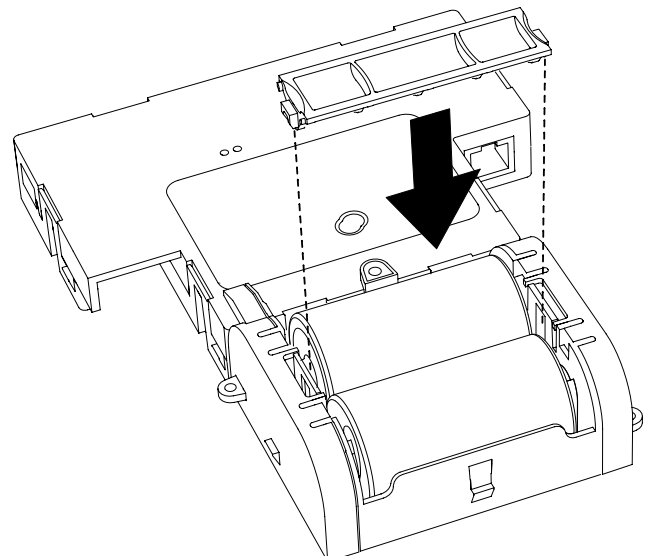
6) Remove the back cover from the battery pack by pulling the two latches away to either side and sliding the cover out.



7) **First remove the gearbox pin,** then insert the batteries into the clock.

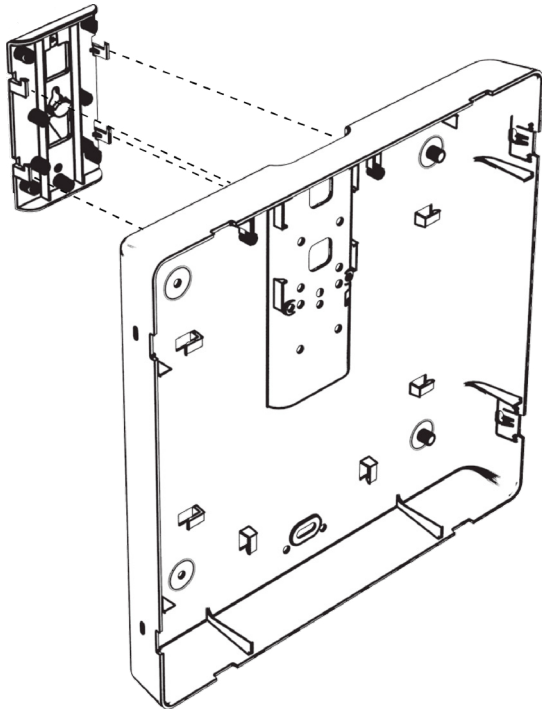


8) Place the cover back onto the battery pack. You should hear a snapping noise as the latches engage.

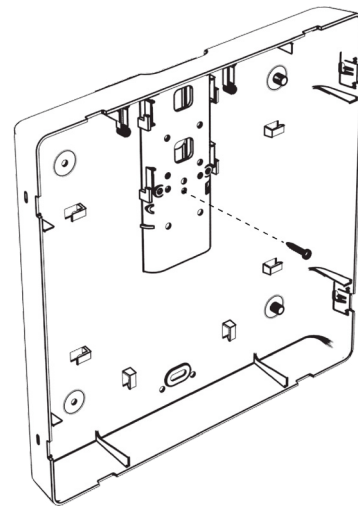


Wall Mount Installation - Square Clock - Battery Powered

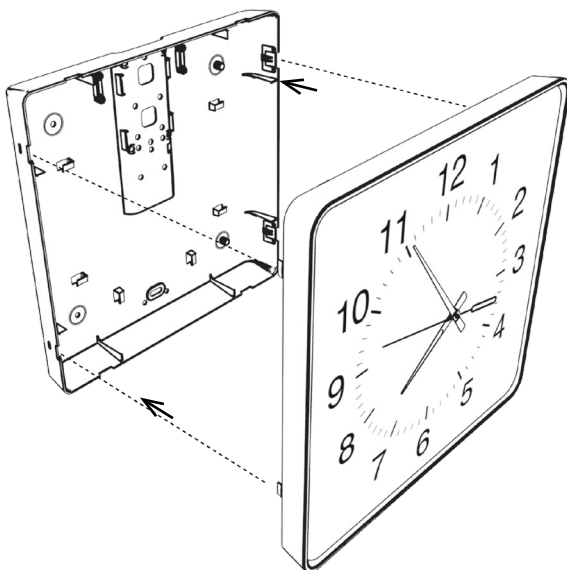
9) Slide the clock housing onto the mounting piece. If the housing does not slide on properly, tighten the screws that attach the mounting piece to the wall.



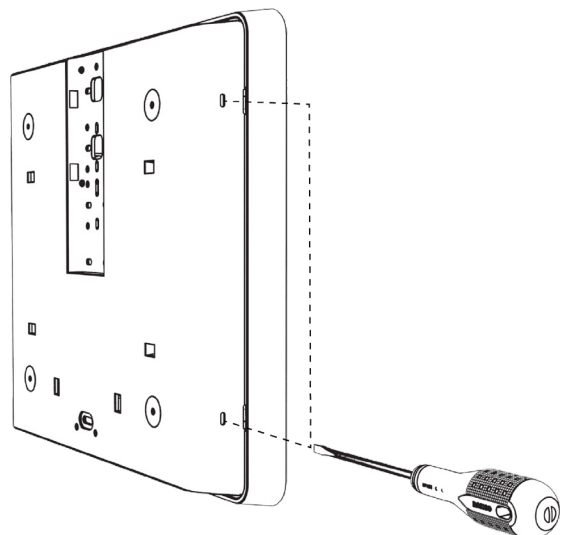
10) If you wish to prevent the clock from sliding off the mounting piece, use the small silver screw on the hole below the lower of the two #6-32x1 screws. Once the small screw is in place, test it by attempting to slide the housing up. The housing should not move.



11) Slide the clock back into the housing. You should hear a snapping noise as the latches reengage.



12) If you feel the need to take the clock off the wall after the installation has been completed, use a flat-blade screwdriver to detach the housing from the back of the clock, then use a Phillip's-head screwdriver to detach the mounting piece from the housing and gang box.



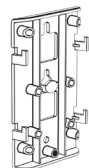
Wall Mount Installation - Square Clock - Locally Powered

VERY IMPORTANT:



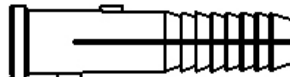
CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.



Included in Package

Description	Quantity	Picture
Square analog clock	1	
Mounting Piece (already attached to clock housing)	1	

Included in Wiring Kit (A-WK-12-1V)

Power/grounding wires And connector	1	
#8x1.5 Self-tapping screw	2 (not used)	
Wall anchor	2 (not used)	

Included in Gang Box Kit (A-GB-MK-1)

#6-32x1 screw	2	
#6-19x3/8 screw	1	

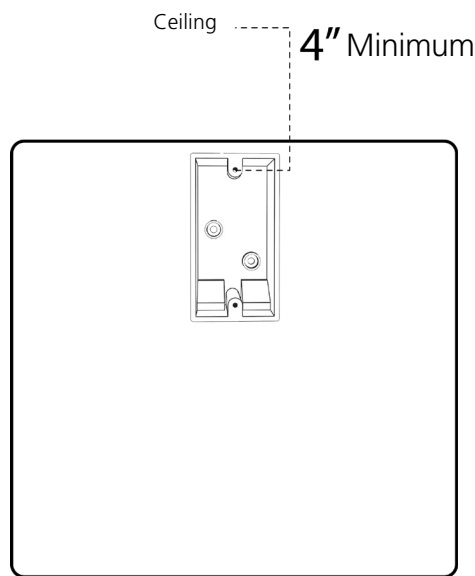
PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a single gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the power or ground cables.

If any of the items listed in the wiring kit are missing, you may contact your dealer and order a replacement kit.

Wall Mount Installation - Square Clock - Locally Powered

1) If you are installing a new gang box in the wall, leave at least 4 inches between the top of the gang box and ceiling. Confirm that the bottom of the gang box is level with the floor.

If you are using an existing gang box, the top of the gang box must be a minimum of four inches away from the ceiling.



2) Run power wiring to the gang box.

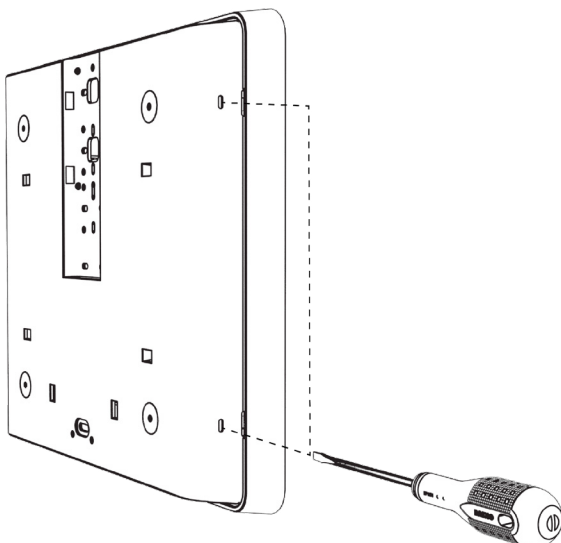
For 24V power use the ORANGE and YELLOW wires
For 110VAC or 230VAC power use the BLACK and WHITE wires

CHECK YOUR WIRING

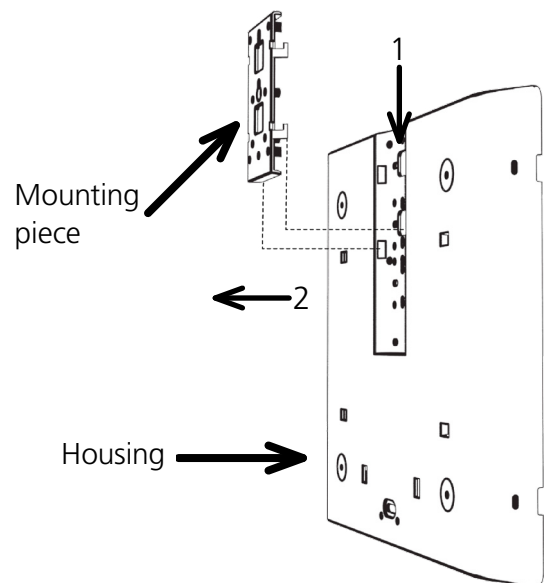
The voltage between the white and black wires should measure 105-126 volts AC in the 115 volt model, 207-253 volts AC in the 230 volt model, or 21.5-26.5 volts AC/DC in the 24 volt model.

If you are using the 24 volt model, make sure that the wiring leading to the clock is from an ISOLATED transformer.

3) Detach the housing from the back of the clock. Do this by inserting a flat-blade screwdriver about 1/8 inch into each of the slot holes until the housing detaches. You may hear a snapping noise as the latches disengage.



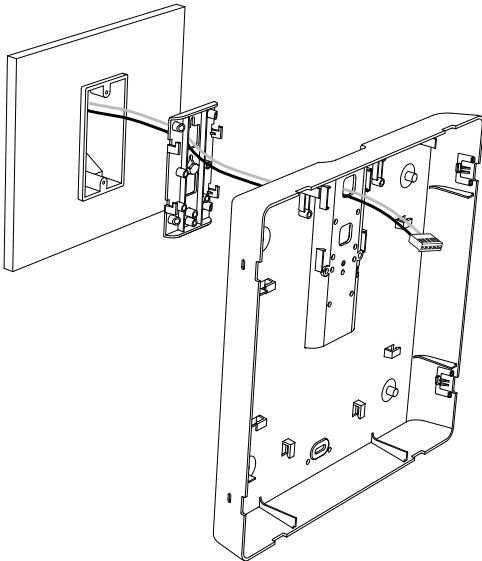
4) Release the mounting piece from the back of the housing by sliding it towards the center of the housing, then pulling it back and away from the housing.



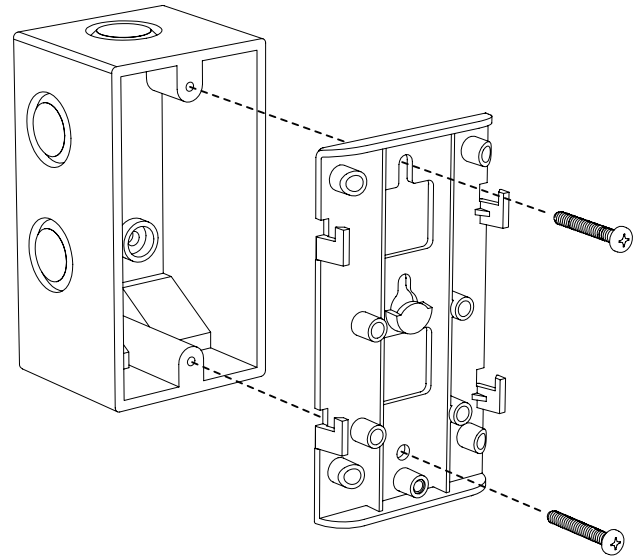
Wall Mount Installation - Square Clock - Locally Powered

5) Thread the power wires from your kit through the hole at the top of the housing followed by the mounting piece, then attach them to the wires in the gang box.

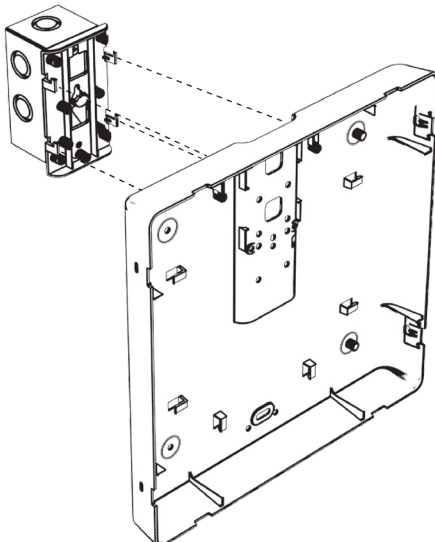
- Attach the Hot wire to the connector's black/orange wire.
- Attach the Common wire to the connector's white/yellow wire.
- Attach the Ground wire to the connector's green wire.



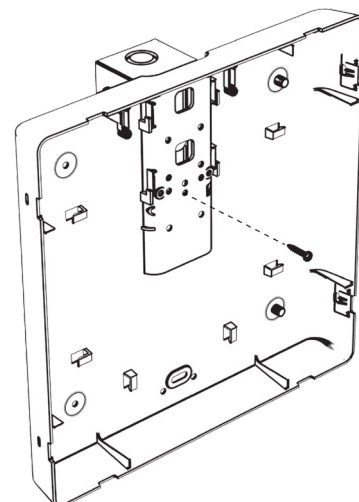
6) Attach the mounting piece to the gang box using both of the #6-32x1 screws and a Phillips-head screwdriver.



7) Slide the clock housing onto the mounting piece. If the housing does not slide on properly, tighten the screws that attach the mounting piece to the gang box.

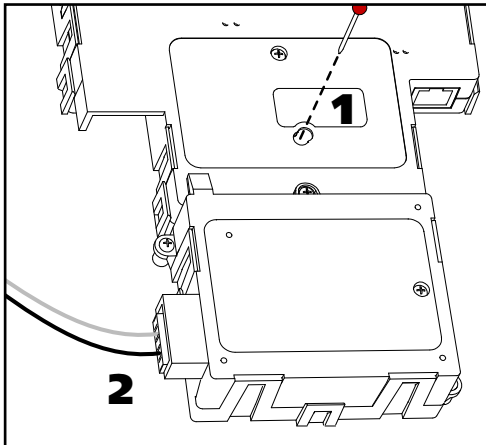


8) If you wish to prevent the clock from sliding off the mounting piece, use the small, silver 6-19x3/8 screw on the bottom centered hole. Once the screw is in place, test it by attempting to slide the housing up. The housing should not move.

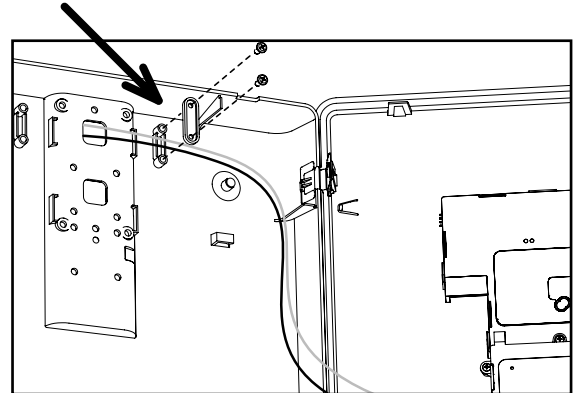


Wall Mount Installation - Square Clock - Locally Powered

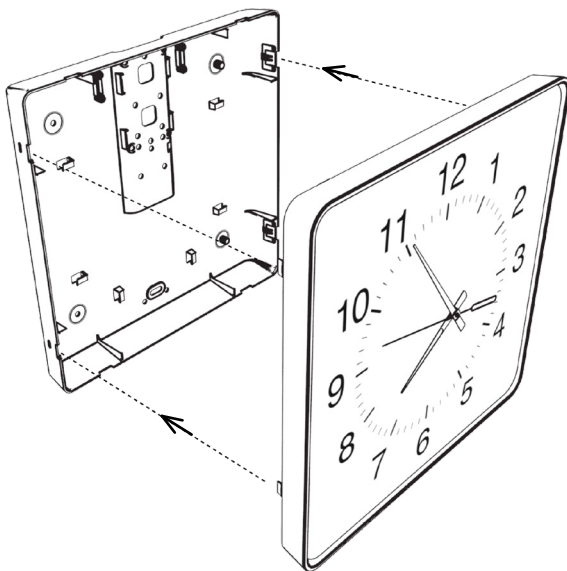
9) **First remove the gearbox pin**, then attach the power connector to the port on the movement.



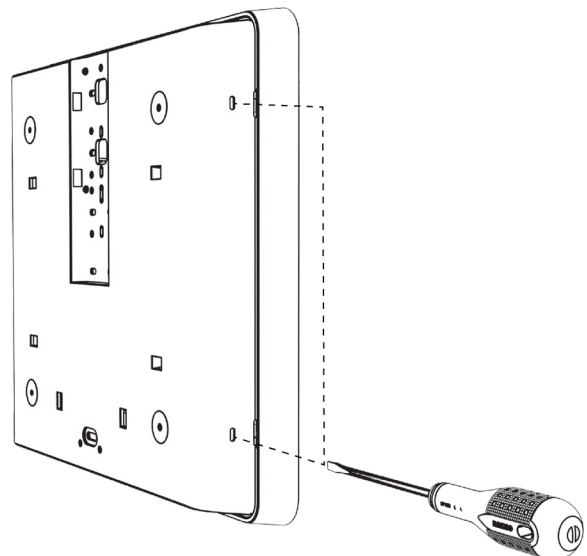
10) Loosen the strain relief by unscrewing the two screws. Slip any excess wiring through it, then tighten the strain relief by reinserting and tightening the screws.



11) Slide the clock back into the housing. You should hear a snapping noise as the latches reengage.



12) If you feel the need to take the clock off the wall after the installation has been completed, use a flat-blade screwdriver to detach the housing from the back of the clock, then use a Phillip's-head screwdriver to detach the mounting piece from the housing and gang box.



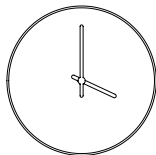
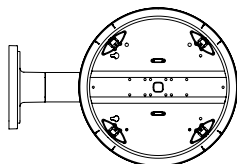
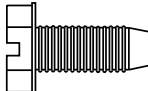
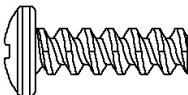
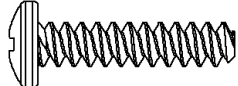


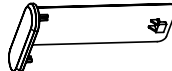
Flag Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

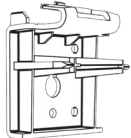
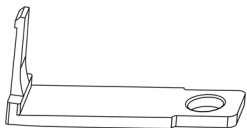


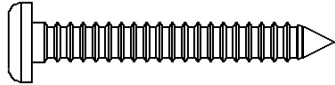
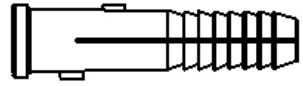
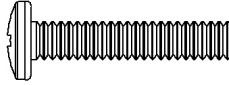

Description	Quantity	Picture
Round SlimLine analog clock	1	
Included in Double Mount Kit (SAH-1BD-12R-0 or SAH-1BD-16R-0)		
Dual-mount pole, including mounting plate.	1	
#10-32x3/8 green screw	1	
#8-32x7/16 screw	8 (not used)	
M3.5-1.0x10 screw (black)	4	
Internal-tooth washer	8 (not used)	
#6-32x1 screw	4	
Flag Mount Endcap	1	

Continued on next page

If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Flag Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

Included in Mounting Kit (A-SLM-MK-S-1) or (A-SLM-MK-AW)

Description	Quantity	Picture
Mounting Piece	1 (not used)	
Release lever	0 or 1 (not used)	
#6-19x7/16 screw	2	
Strain relief	1	
Included in Wiring Kit (A-WK-MTG-1)		
#10x1.5 Self-tapping screw	2	
Wall anchor	2	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2 (not used)	
#6-19x3/8 screw	1 (not used)	

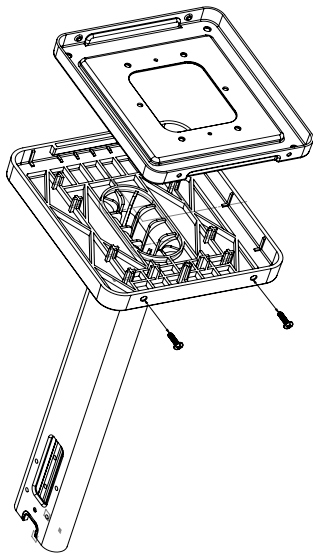
PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small slot-head screwdriver, a drill with a 1/4 inch drill bit, a pencil, a double gang box, four wall anchors that can support 50 lbs and a maximum screw size of 10x1.5", four #8 screws for the wall anchors, four #6-32x1 screws for attaching the mounting plate to the gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the ground cables.

If any of the items listed in the wiring kit are missing, you may contact your dealer and order a replacement kit.

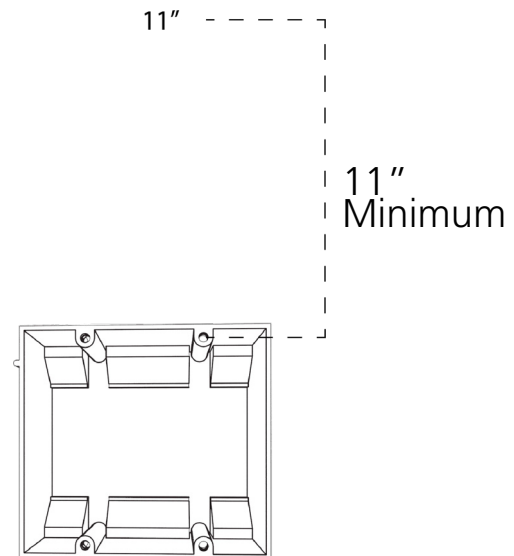
SlimLine and Aluminum Clocks use the same installation procedures for flag mount housings.

Flag Mount Installation - Round SlimLine/Aluminum Clock - Battery powered

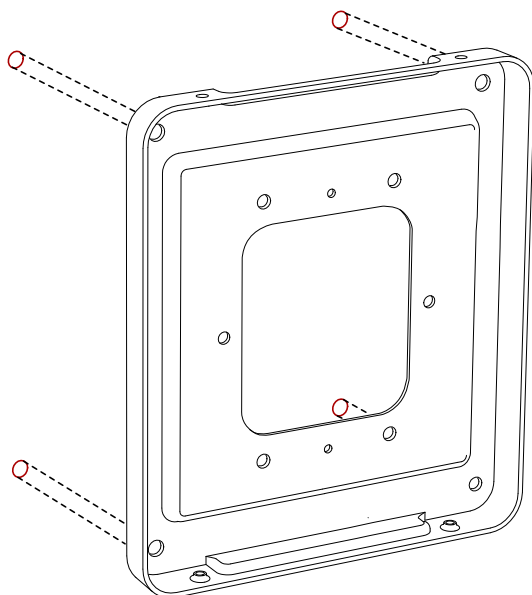
1) Detach the mounting plate from the mounting pole by unscrewing the two screws. Set the screws and pole aside for later.



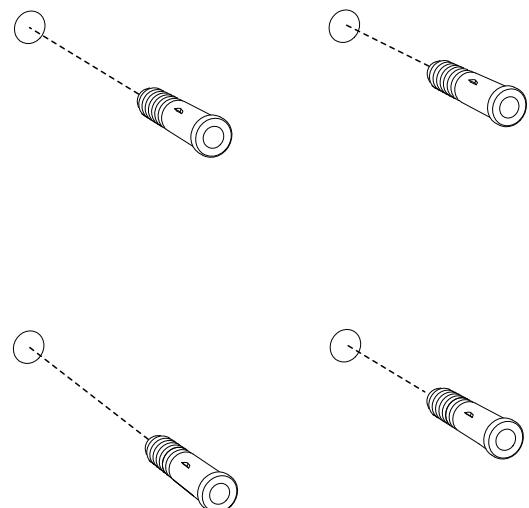
2) Place the mounting plate on the wall or ceiling. If you are installing a gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall.



3) Confirm that the mounting plate is level with the floor. With the mounting plate as a guide, use the pencil to trace the locations of the four larger holes at the outer corners of the plate.

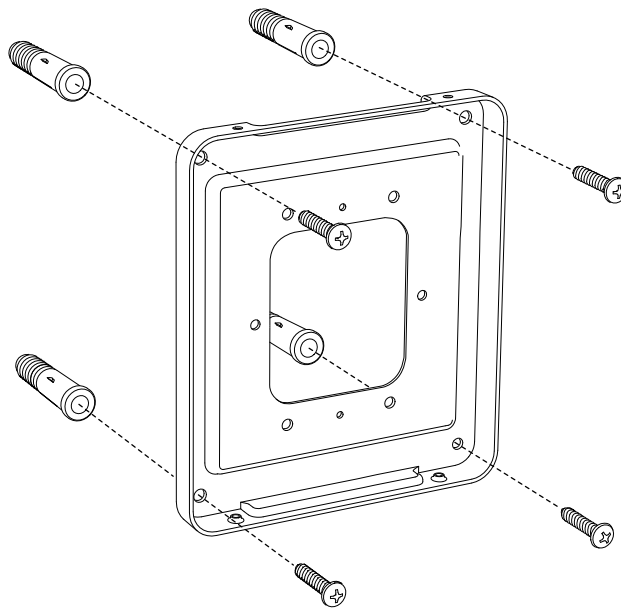


4) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.

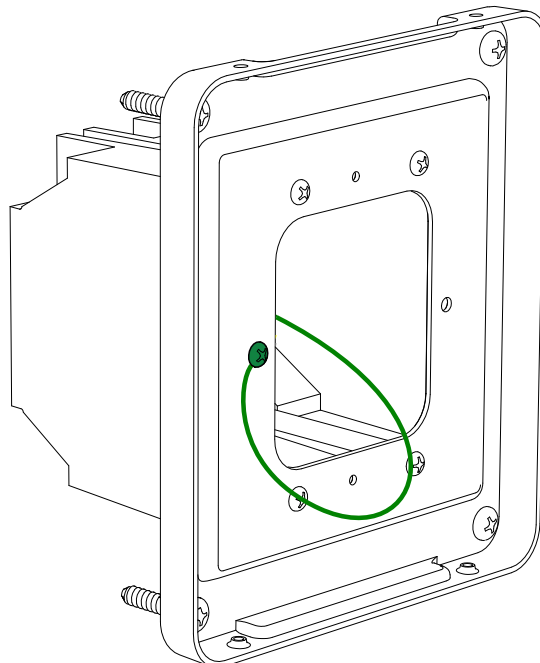


Flag Mount Installation - Round SlimLine/Aluminum Clock - Battery powered

5) Insert the #8 screws through the mounting plate and into the anchors.

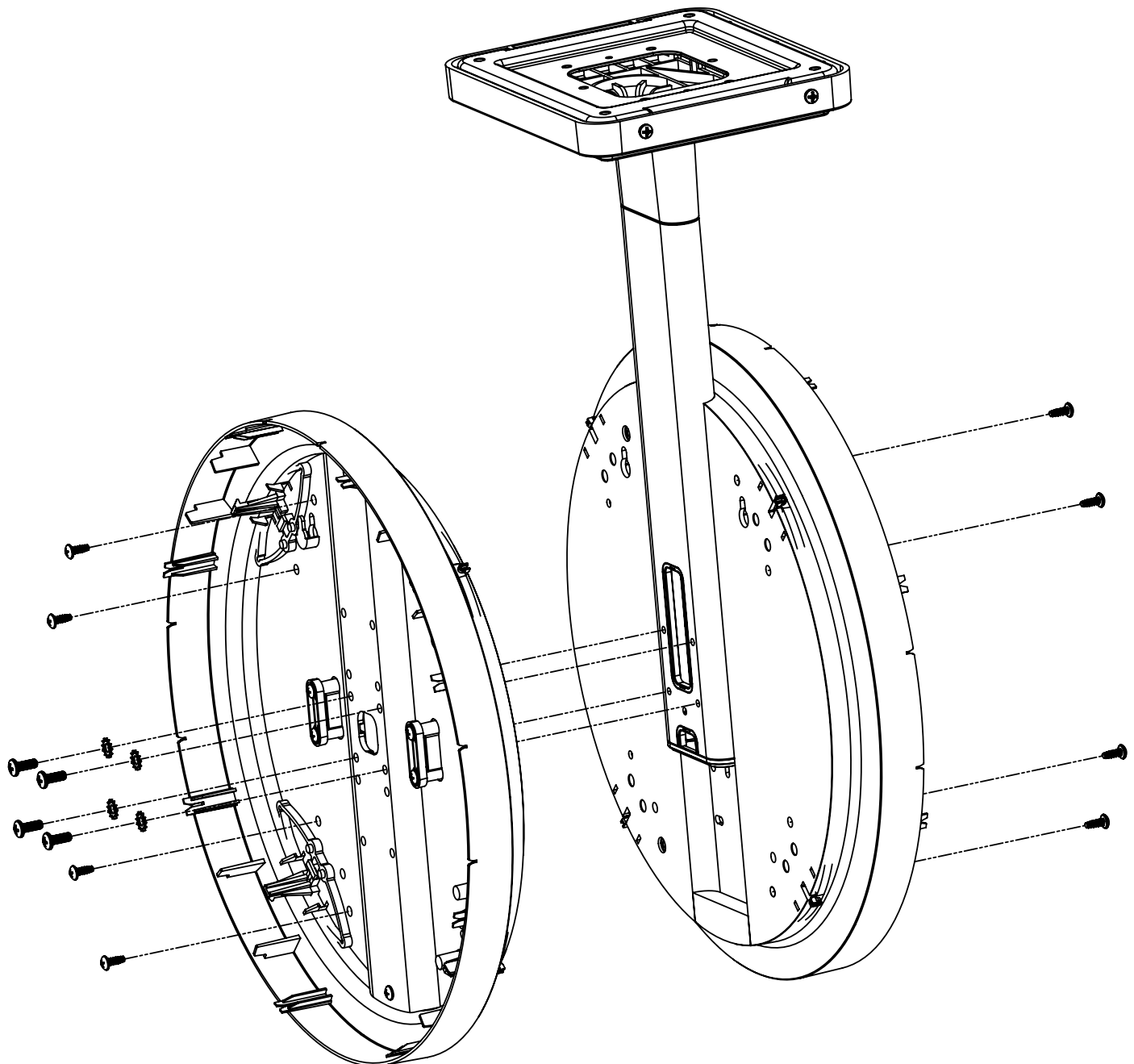


5B) If you are installing the clock atop an gang box, use the green screw to attach a grounding wire to the mounting plate.



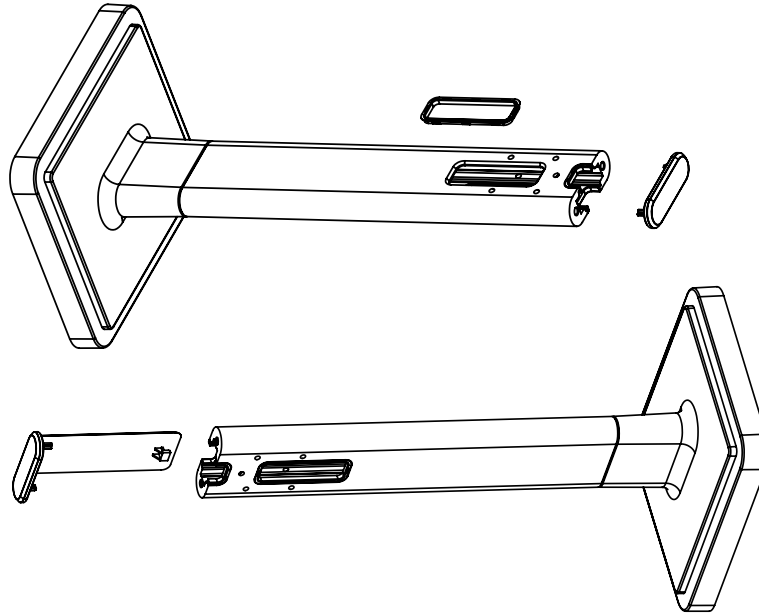
Flag Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

6) Remove one of the included adapters. Unscrew the four screws that connect the adapter to the pole, and the eight screws that hold the two adapters to each other. You may keep the removed adapter and screws or throw them away, at your preference.

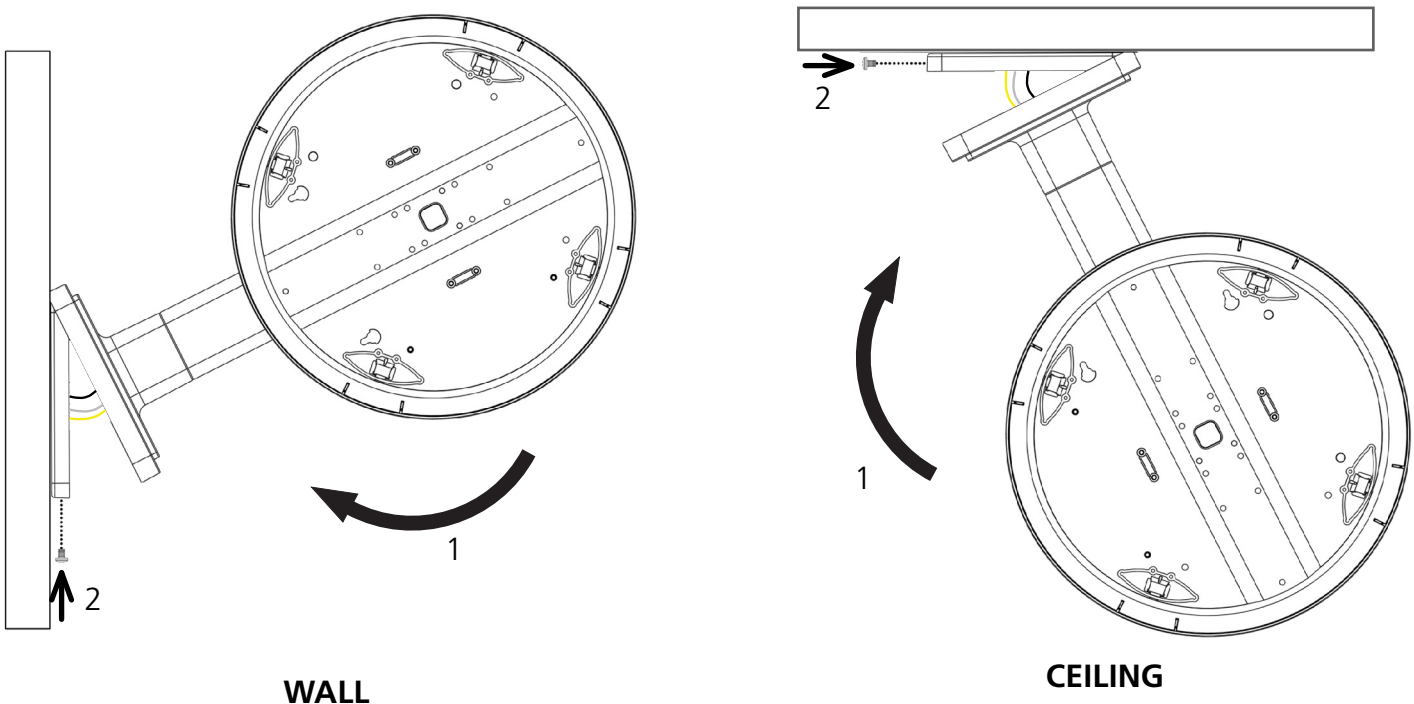


Flag Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

7) Remove the pole endcap and plastic ring from the exposed pole side. Place the flag mount endcap on the end of the pole so that it covers the exposed large rectangular hole.

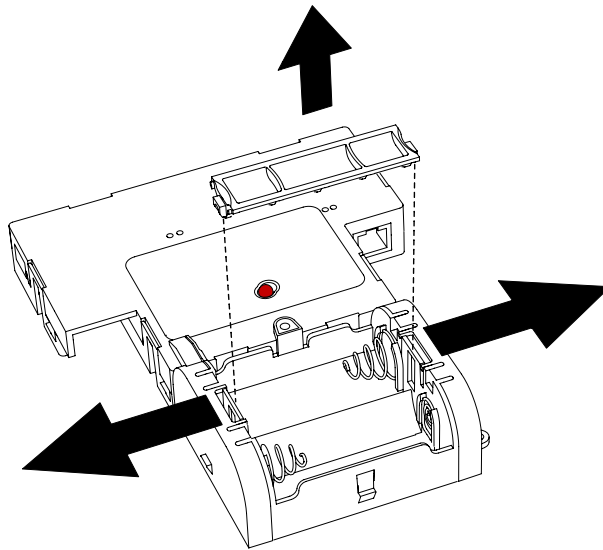


8) Attach the base of the pole to the mounting plate so that the lip is on the top of the base, and the holes for the screws are on the bottom of the base. Hang the base on the mounting plate, attach the wires from the bottom of the pole to the wires in the gang box, then screw the other side of the base onto the mounting plate using the two black screws you set aside before.



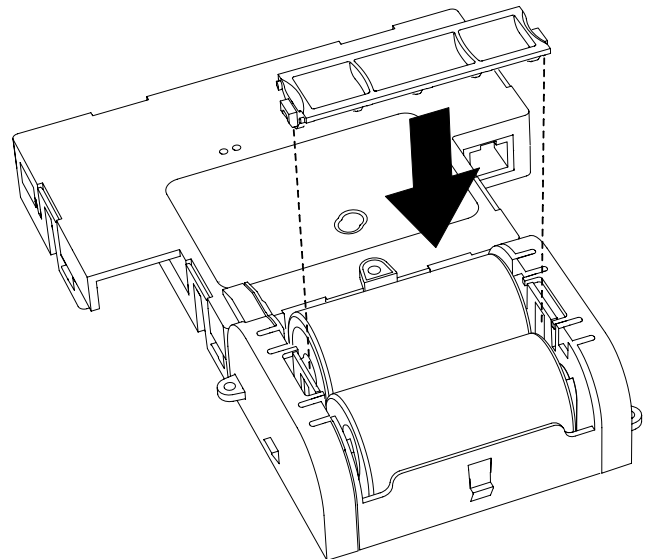
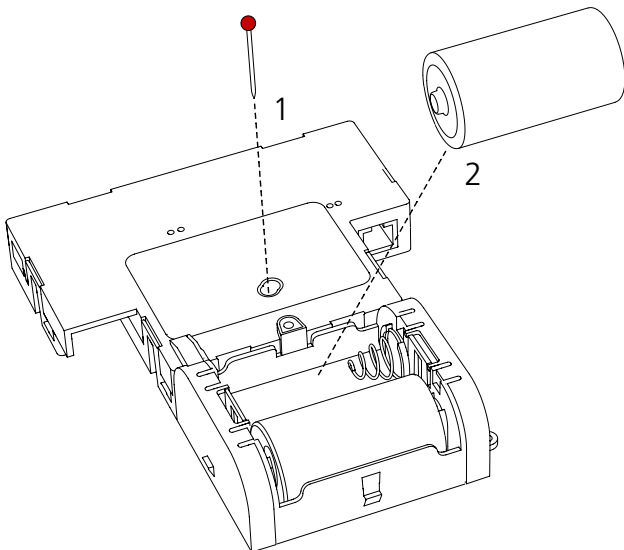
Flag Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

9) Remove the back covers from the battery pack by pulling the two latches away to either side and sliding the cover out.



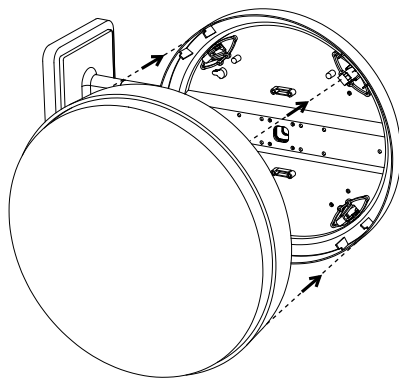
10) **First remove the gearbox pin**, then insert the batteries into the clock. If the clock is within range of a powered transmitter, the hands should begin to move within a minute.

11) Place the cover back onto the battery pack. You should hear a snapping noise as the latches engage.

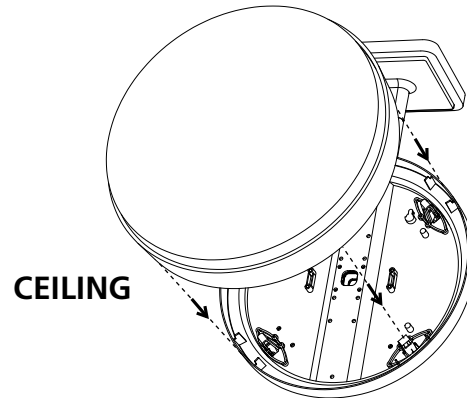


Flag Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

12) Slide the clock onto the adapter in the rotation that you wish it to be viewed. You should hear a snapping noise as the four clips on the adapter secure the clock in place.

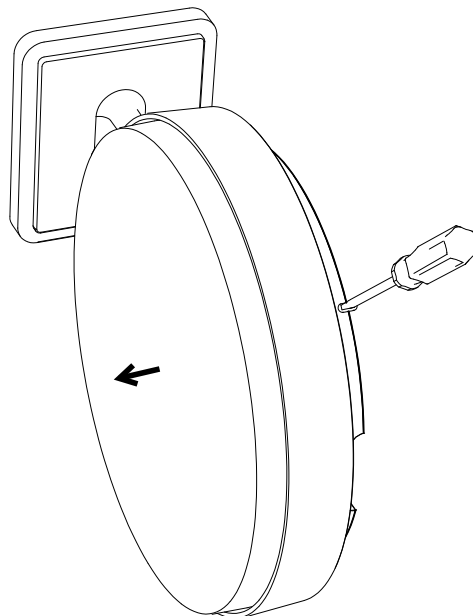


WALL



CEILING

13) If you feel the need to detach the clock from the housing after the installation has been completed, use a flat-blade screwdriver on the four slots around the outside of the housing. You may hear a snapping noise as the internal latches disengage.



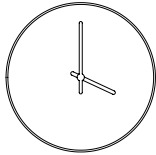
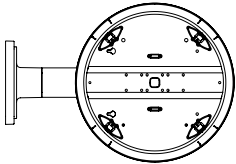
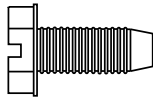
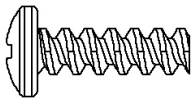
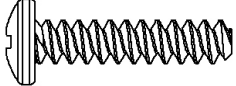


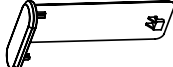
Flag Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

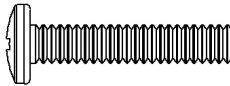

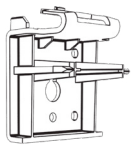
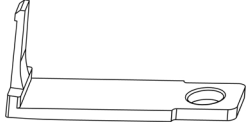



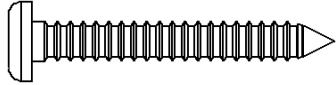
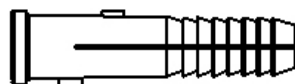
Included in Package

Description	Quantity	Picture
Round SlimLine analog clock	1	
Included in Double Mount Kit (SAH-1BD-12R-0 or SAH-1BD-16R-0)		
Dual-mount pole, including mounting plate.	1	
#10-32x3/8 green screw	1	
#8-32x7/16 screw	8 (not used)	
M3.5-1.0x10 screw (black)	4	
Internal-tooth washer	8 (not used)	
#6-32x1 screw	4	
Flag Mount Endcap	1	

Continued on next page

If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Flag Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

Description	Quantity	Picture
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2 (not used)	
#6-19x3/8 screw	1 (not used)	
Included in Mounting Kit (A-SLM-MK-S-1) or (A-SLM-MK-AW)		
Mounting Piece	1 (not used)	
Release lever	0 or 1 (not used)	
#6-19x7/16 screw	2	
Strain relief	1	
Included in Wiring Kit (A-WK-12-1V)		
Power/grounding wires And connector	1	
#8x1.5 Self-tapping screw	2 (not used)	
Wall anchor	2 (not used)	

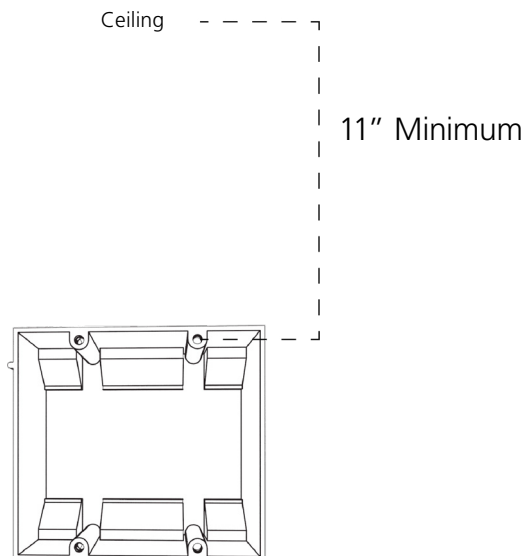
PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small slot-head screwdriver, a drill with a 1/4 inch drill bit, a pencil, a double gang box, four wall anchors that can support 50 lbs and a maximum screw size of 10x1.5", four #8 screws for the wall anchors, four #6-32x1 screws for attaching the mounting plate to the gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the ground cables.

If any of the items listed in the wiring kit are missing, you may contact your dealer and order a replacement kit.

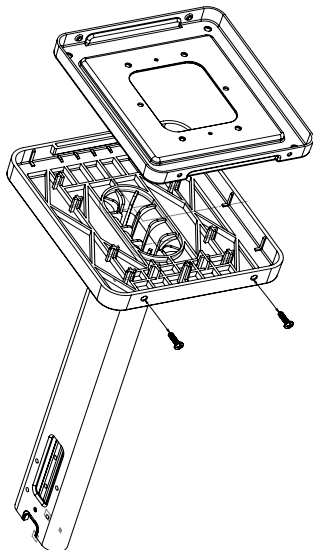
SlimLine and Aluminum Clocks use the same installation procedures for flag mount housings.

Flag Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

1) Install the double gang box in the wall or ceiling. If you are installing the gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall. The box should be installed level and plumb with the wall and ceiling.



3) Detach the mounting plate from the mounting pole by unscrewing the two screws. Set the screws and pole aside for later.



2) Run power wiring to the gang box.

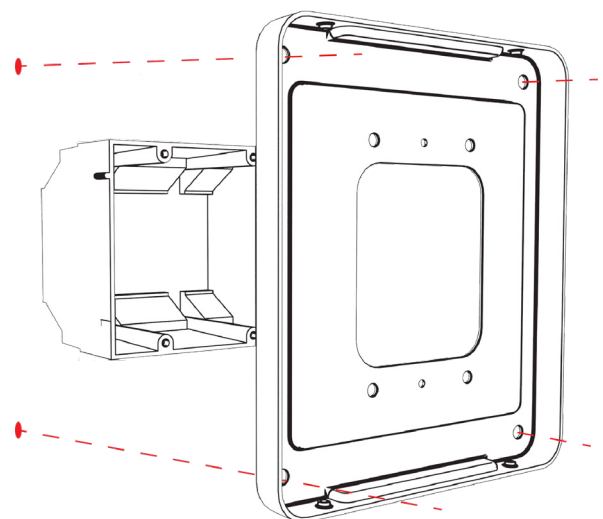
For 24V power use the ORANGE and YELLOW wires
For 110VAC or 230VAC power use the BLACK and WHITE wires

CHECK YOUR WIRING

The voltage between the white and black wires should measure 105-126 volts AC in the 115 volt model, 207-253 volts AC in the 230 volt model, or 21.5-26.5 volts AC/DC in the 24 volt model.

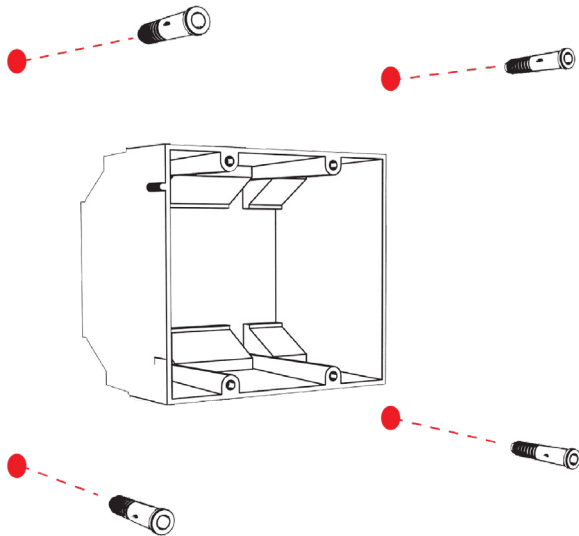
If you are using the 24 volt model, make sure that the wiring leading to the clock is from an ISOLATED transformer.

4) Attach the mounting plate to the gang box using only two of the four long, silver #6-32x1 screws. With the mounting plate as a guide, use the pencil to trace the locations of the four larger holes at the outer corners.

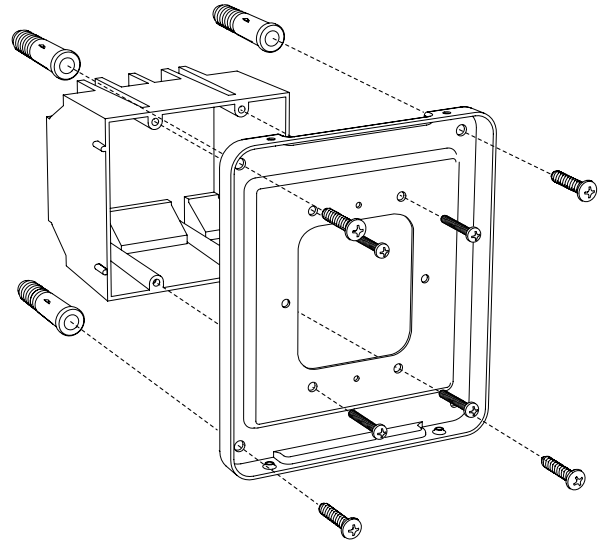


Flag Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

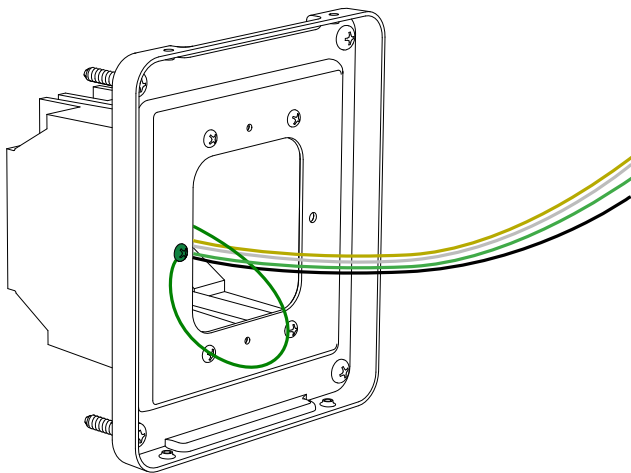
5) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.



6) Reattach the mounting plate, this time using all four long, silver #6-32x1 screws, then insert the four #8 screws through the mounting plate and into the anchors.

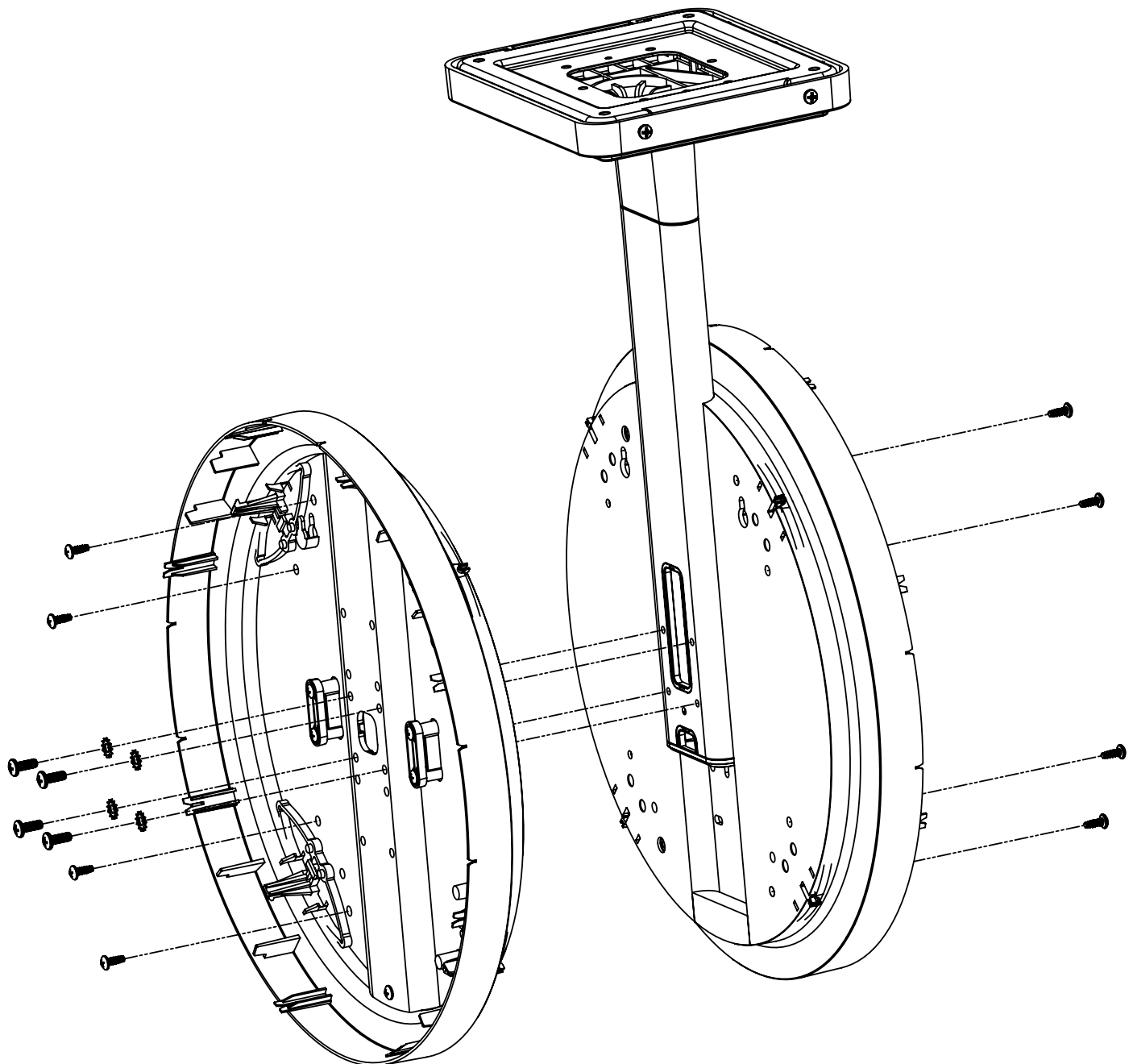


7) Thread any wiring through the mounting plate, and attach a grounding wire to the mounting plate using one of the larger centered holes and the #10-32x3/8 screw.



Flag Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

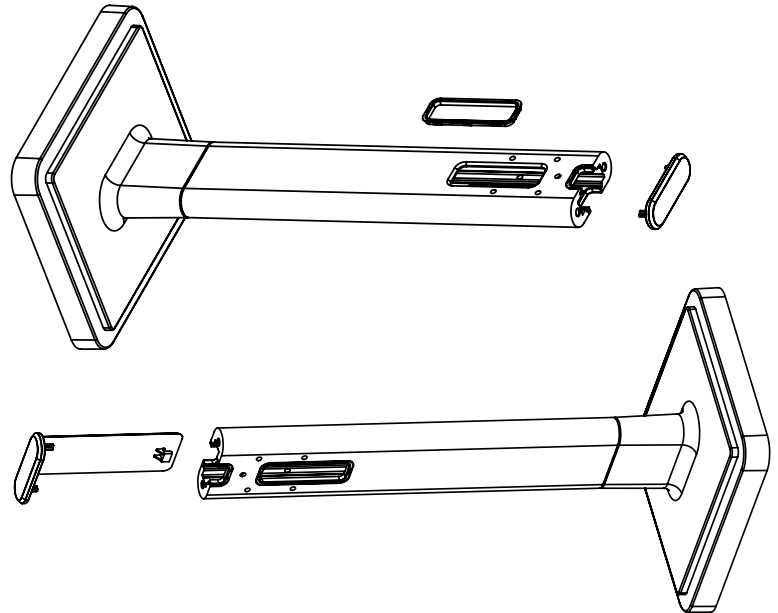
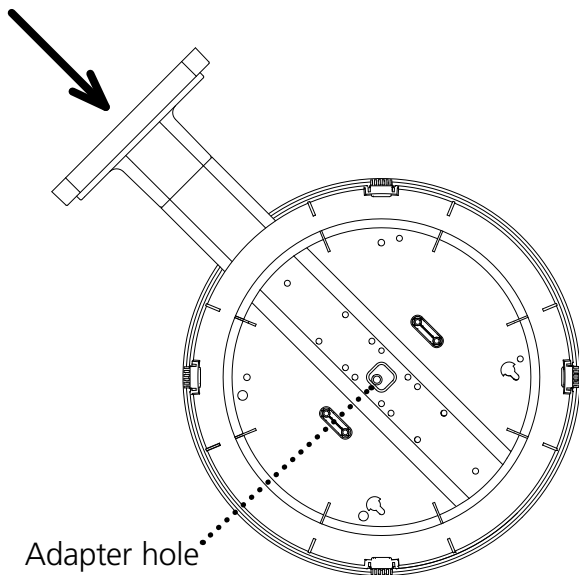
8) Remove one of the included adapters. Unscrew the four screws that connect the adapter to the pole, and the eight screws that hold the two adapters to each other. You may keep the removed adapter and screws or throw them away, at your preference.



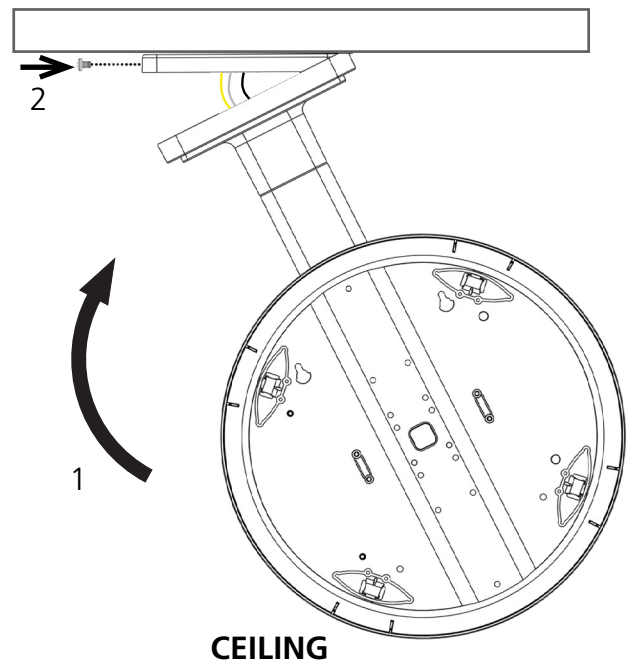
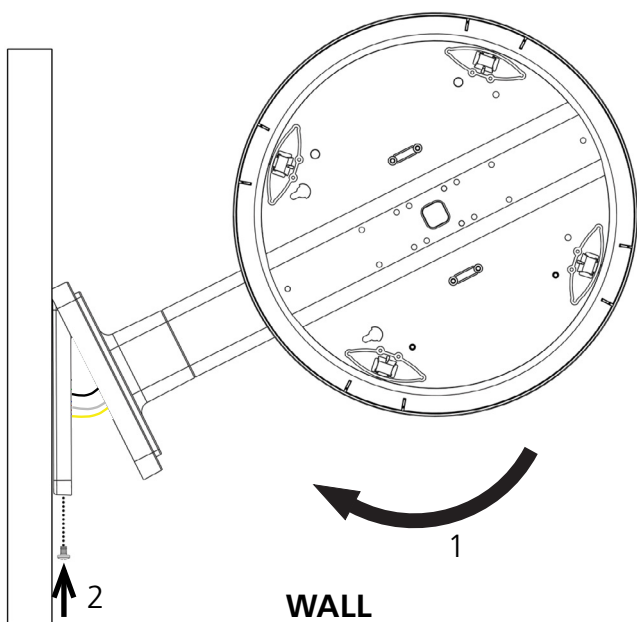
Flag Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

9) Thread at least fifteen inches (38.1cm) of wiring from the gang box through the bottom of the pole until each wire exits through the hole in the adapter.

10) Remove the pole endcap and plastic ring from the exposed pole side. Place the flag mount endcap on the end of the pole so that it covers the exposed large rectangular hole.



11) Attach the base of the pole to the mounting plate so that the lip is on the top of the base, and the holes for the screws are on the bottom of the base. Hang the base on the mounting plate, attach the wires from the bottom of the pole to the wires in the gang box, then screw the other side of the base onto the mounting plate using the two black screws you set aside before.



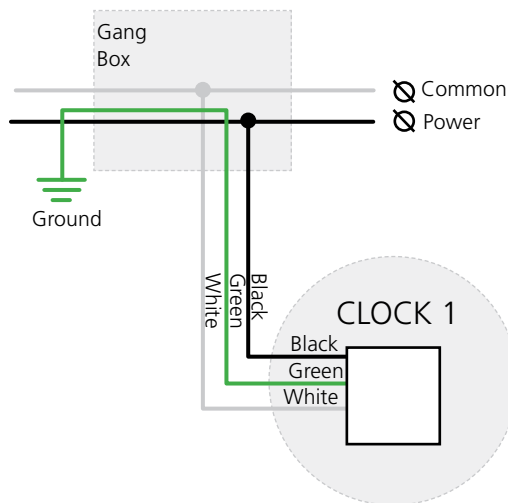
Flag Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

12) Attach the power wires from your kit to the wires you threaded through the pole.

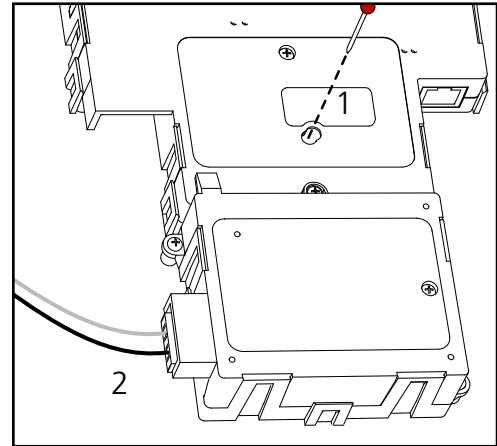
- Attach the Hot wire to the connector's black wire.
- Attach the Common wire to the connector's white wire.
- Attach the Ground wire to the connector's green wire.

Consult the diagram for additional help.

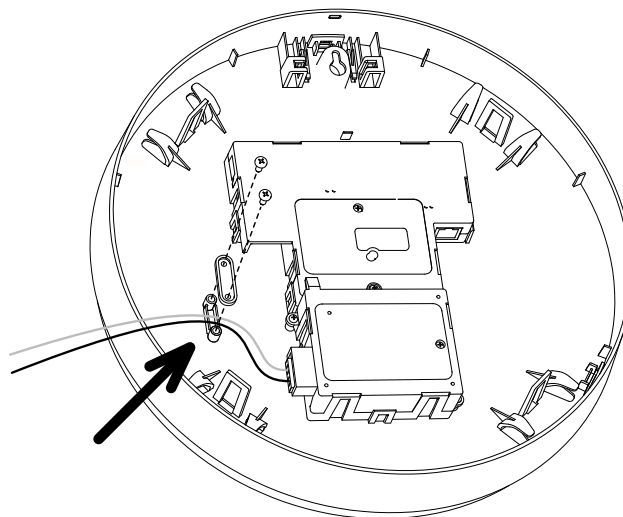
For 24V power use the ORANGE and YELLOW wires
For 110VAC or 230VAC power use the BLACK and WHITE wires



13) **First remove the gearbox pin**, then attach a power connector to the port on the side of the movement.

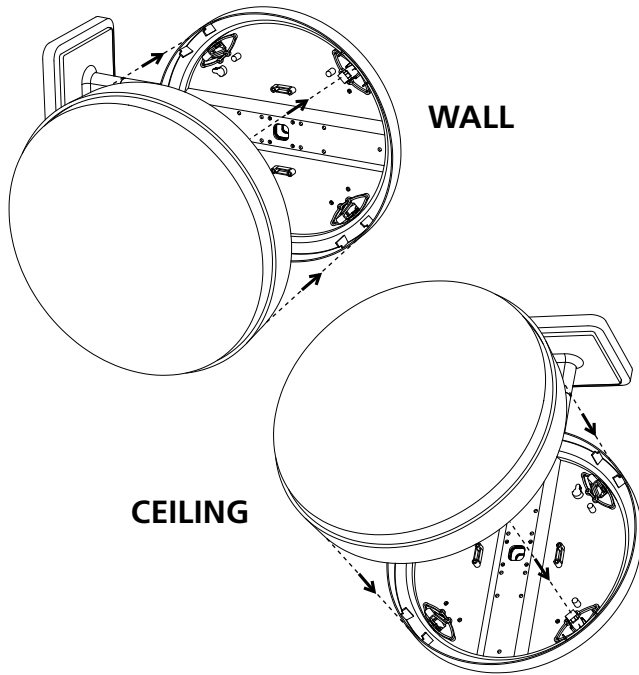


14) Lay any excess wiring across the strain relief base, then attach the strain relief to the clock with the two #6-19x7/16 screws. The strain relief should be tight enough to prevent the wire from sliding.

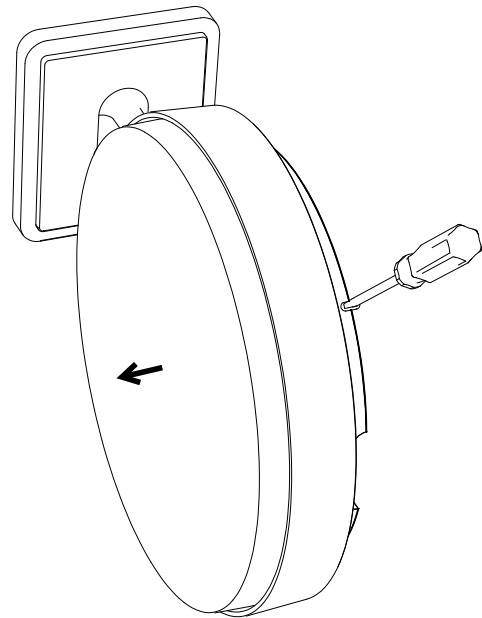


Flag Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

15) Slide the clock onto the adapter in the rotation that you wish it to be viewed. You should hear a snapping noise as the four clips on the adapter secure the clock in place.



16) If you feel the need to detach the clock from the housing after the installation has been completed, use a flat-blade screwdriver on the four slots around the outside of the housing. You may hear a snapping noise as the internal latches disengage.



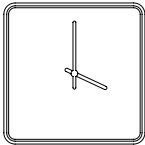
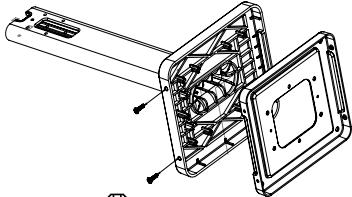
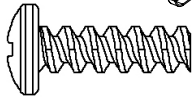
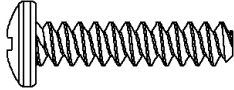

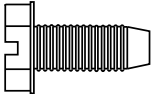
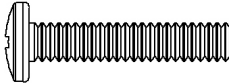
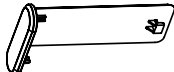
Flag Mount Installation - Square Clock - Battery Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

Description	Quantity	Picture
Square analog clock	1	
Included in Pole Kit (SAB-1BD-00S-0 or SAB-1BD-01S-0)		
Dual-mount pole, including mounting plate.	1	
#8-32x7/16 screw	8 (4 used)	
M3.5-1.0x10 screw (black)	4 (not used)	
Internal-tooth washer	8 (4 used)	
#10-32x3/8 green screw	1	
#6-32x1 screw	4	
Flag Mount Endcap	1	

Continued on next page

If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Flag Mount Installation - Square Clock - Battery Powered

Included in Wiring Kit (A-WK-MTG-1)

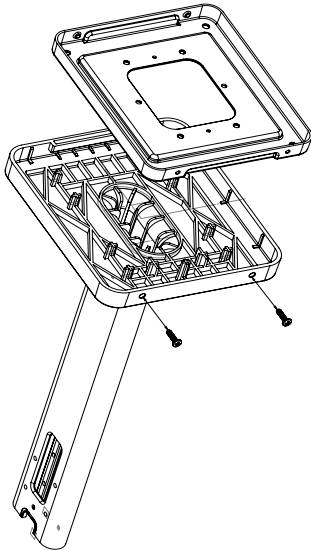
Description	Quantity	Picture
#10x1.5 Self-tapping screw	2	
Wall anchor	2	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2 (not used)	
#6-19x3/8 screw	1 (not used)	

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small slot-head screwdriver, a drill with a 1/4 inch drill bit, a pencil, a double gang box, four wall anchors that can support 50 lbs and a maximum screw size of 10x1.5", four #8 screws for the wall anchors, four #6-32x1 screws for attaching the mounting plate to the gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the ground cables.

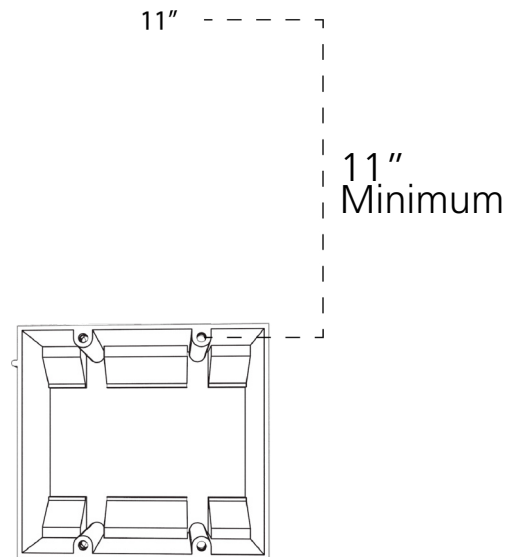
If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Flag Mount Installation - Square Clock - Battery Powered

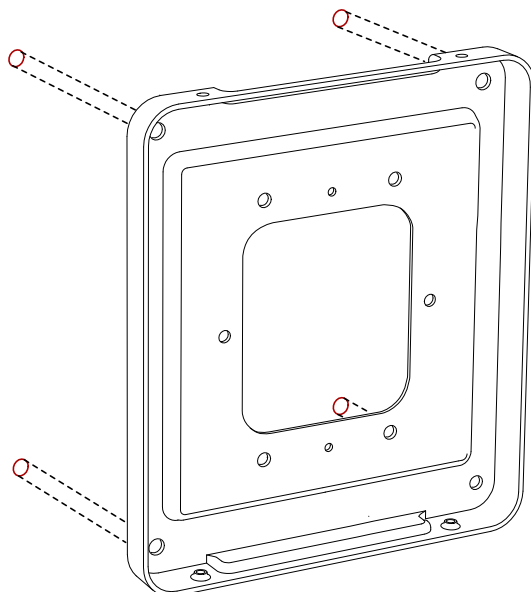
1) Detach the mounting plate from the mounting pole by unscrewing the two screws. Set the screws and pole aside for later.



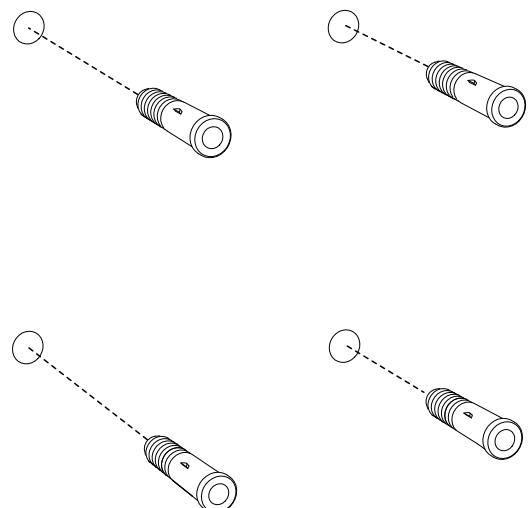
2) Place the mounting plate on the wall or ceiling. If you are installing a gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall.



3) Confirm that the mounting plate is level with the floor. With the mounting plate as a guide, use the pencil to trace the locations of the four larger holes at the outer corners of the plate.

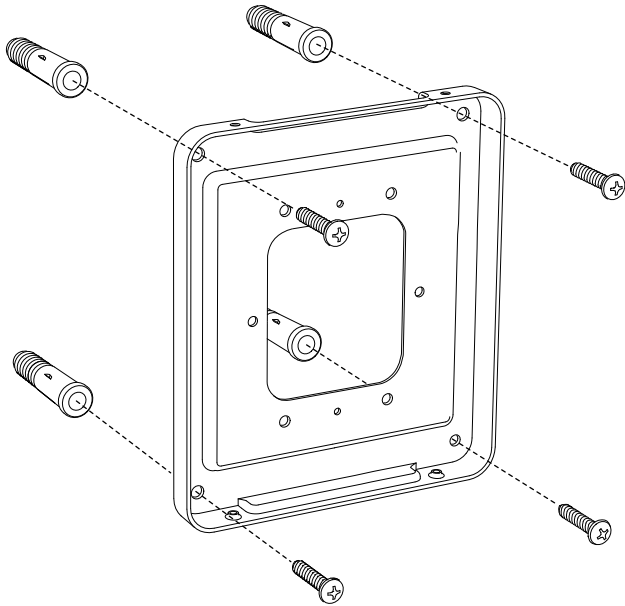


4) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.

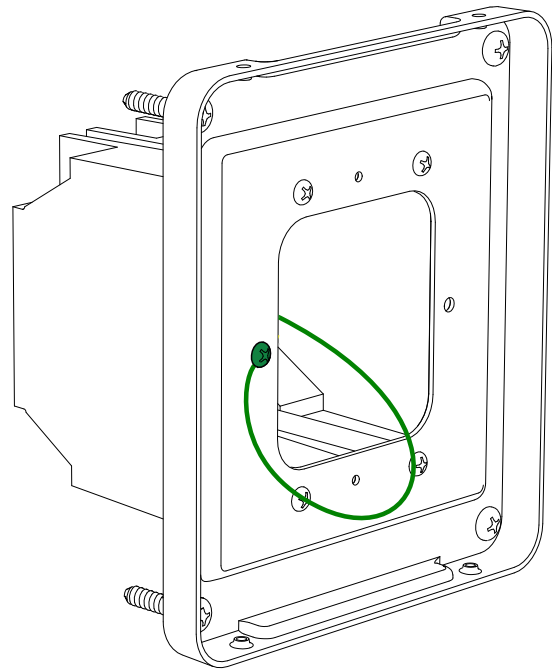


Flag Mount Installation - Square Clock - Battery Powered

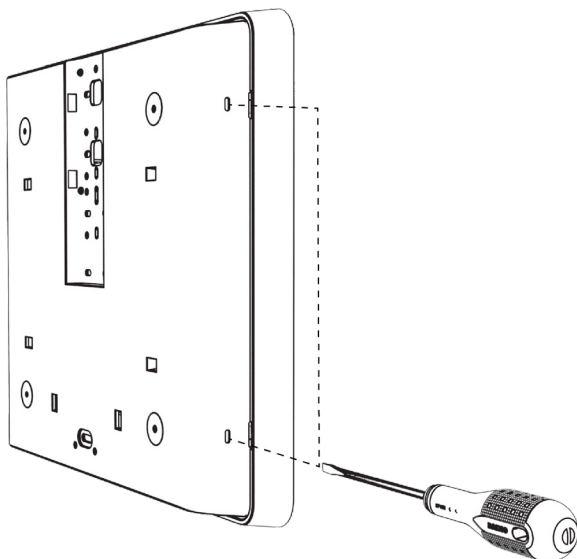
5) Insert the #8 screws through the mounting plate and into the anchors.



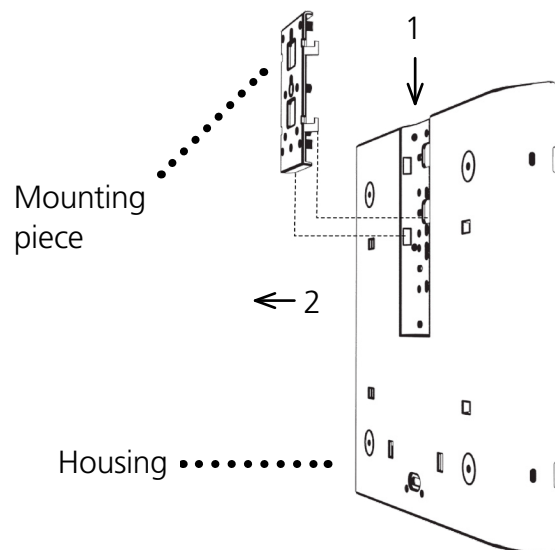
5b) If you are installing the clock atop an gang box, use the green screw to attach a grounding wire to the mounting plate.



6) Detach the housing from the back of each clock. Do this by inserting a flat-blade screwdriver about 1/8 inch into each of the slot holes until the piece detaches. You may hear a snapping noise as the latches disengage.

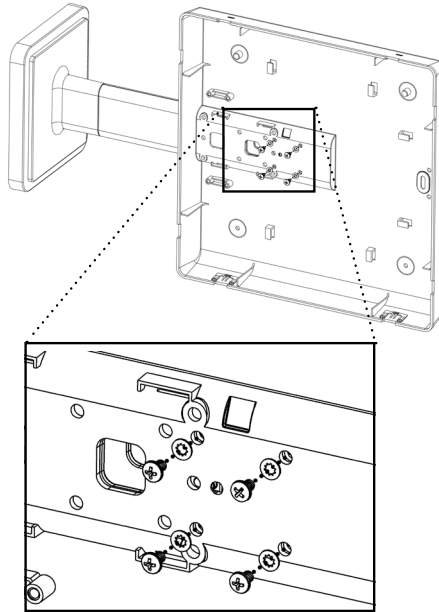


7) Release the mounting piece from the back of the housing by sliding it towards the center of the housing, then pulling it back and away from the housing. You will not need the mounting pieces later; either store them or throw them away at your discretion. **DO NOT THROW AWAY THE HOUSINGS.**

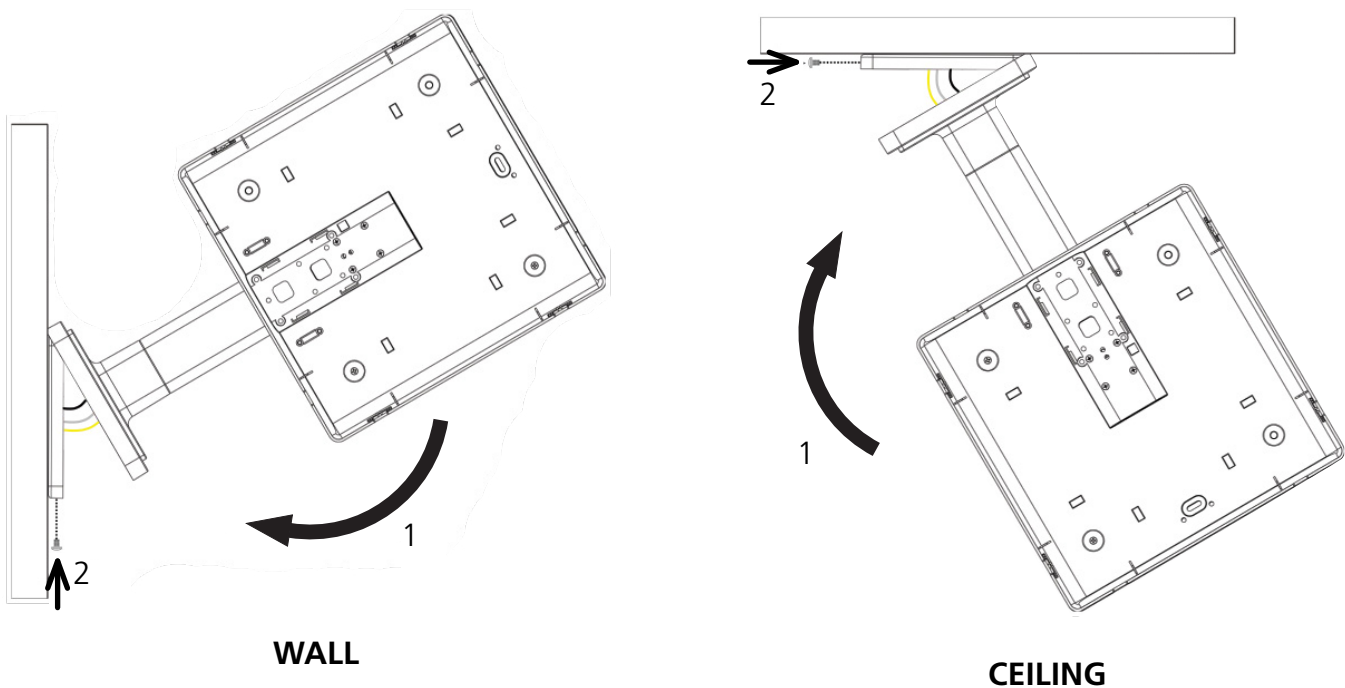


Flag Mount Installation - Square Clock - Battery Powered

8) Attach the clock housing to the pole using four black #8-32x7/16 screws and four internal-tooth washers.

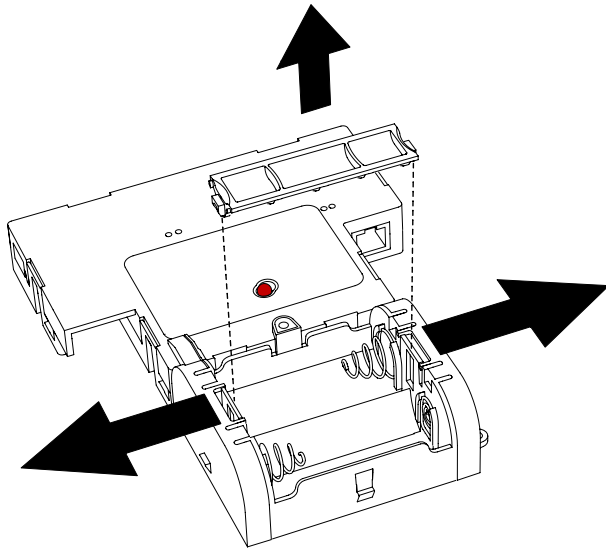


9) Attach the base of the pole to the mounting plate, so that the lip is on the top of the base, and the holes for the screws are on the bottom of the base. Hang the base on the mounting plate, attach the wires from the bottom of the pole to the wires in the gang box, then screw the other side of the base onto the mounting plate using the two black screws you set aside before.

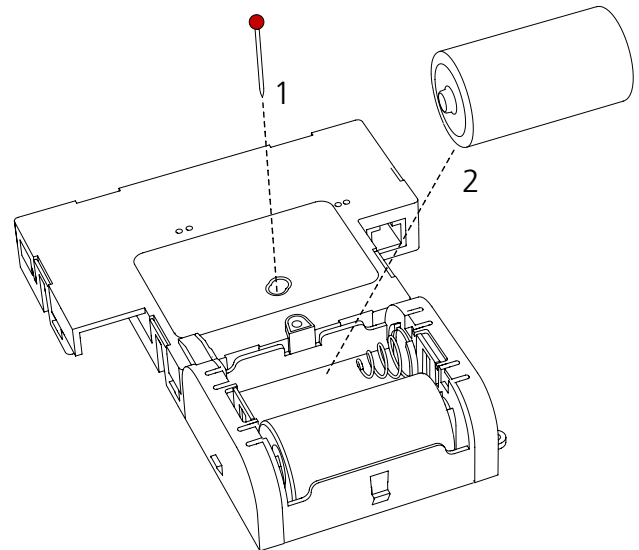


Flag Mount Installation - Square Clock - Battery Powered

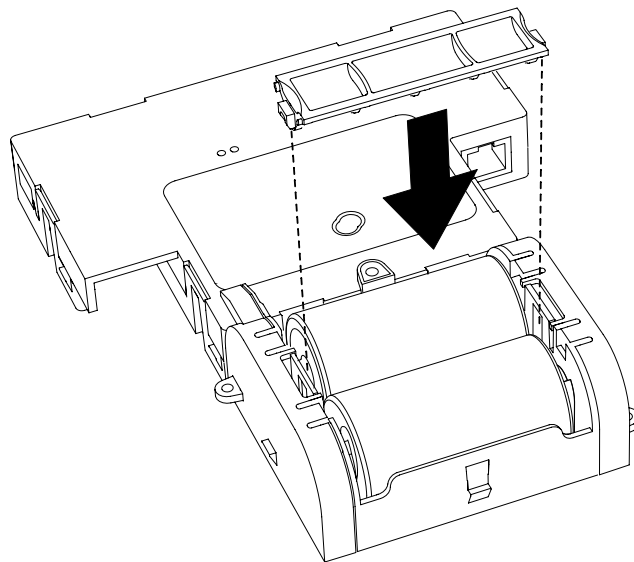
10) Remove the back covers from the battery pack by pulling the two latches away to either side and sliding the cover out.



11) **Remove the gearbox pin**, then insert the batteries into the clock.

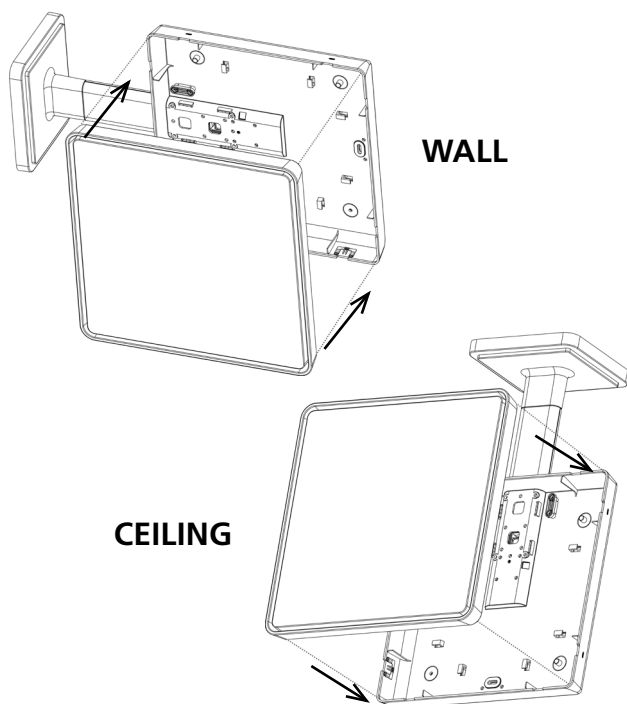


12) Place the cover back onto the battery pack. You should hear a snapping noise as the latches engage.

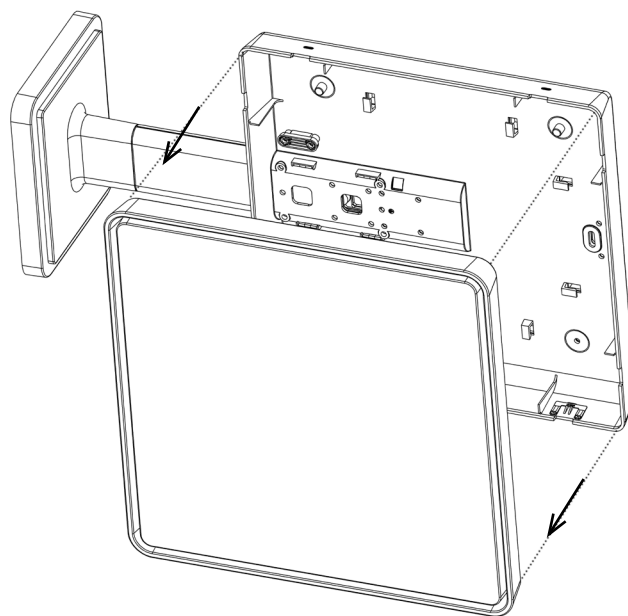


Flag Mount Installation - Square Clock - Battery Powered

13) Rotate the clock so that it is right-side up. Slide the clock back into its housing. You should hear a snapping noise as the latches reengage.



14) If you feel the need to detach the clock from the housing after the installation has been completed, use a flat-blade screwdriver on the four slots around the outside of the housing. You may hear a snapping noise as the internal latches disengage.



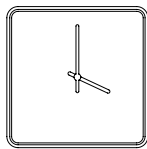
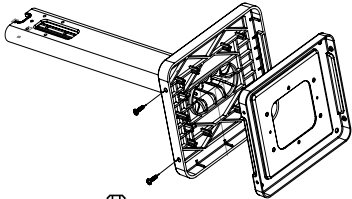
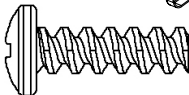
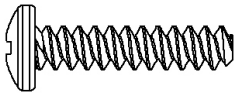

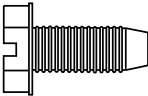
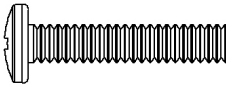

Flag Mount Installation - Square Clock - Locally Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

Description	Quantity	Picture
Square analog clock	1	
Included in Pole Kit (SAB-1BD-00S-0 or SAB-1BD-01S-0)		
Dual-mount pole, including mounting plate.	1	
#8-32x7/16 screw	8 (4 used)	
M3.5-1.0x10 screw (black)	4 (not used)	
Internal-tooth washer	8 (4 used)	
#10-32x3/8 green screw	1	
#6-32x1 screw	4	
Flag Mount Endcap	1	

Continued on next page

If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Flag Mount Installation - Square Clock - Locally Powered

Included in Package

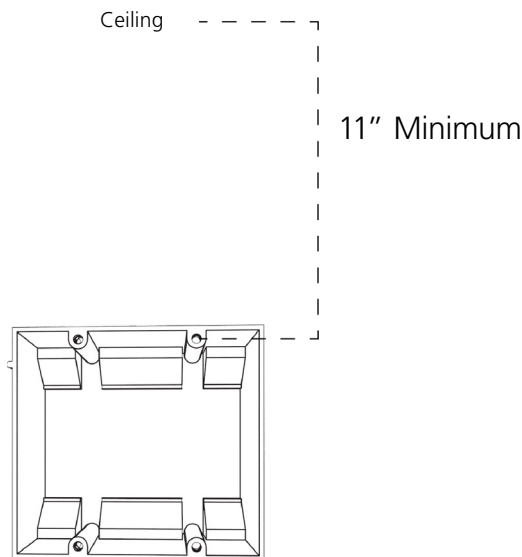
Description	Quantity	Picture
Power/grounding wires And connector	1	
#8x1.5 Self-tapping screw	2 (not used)	
Wall anchor	2 (not used)	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	2 (not used)	
#6-19x3/8 screw	1 (not used)	

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a drill with a 1/4 inch drill bit, a pencil, a double gang box, four wall anchors (must support 50 lbs, #8 screw size, 1.5" (3.8cm) screw length), four #8 screws for the wall anchors, two additional #6-32x1 screws for attaching the mounting plate to the gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the power or ground cables.

If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Flag Mount Installation - Square Clock - Locally Powered

1) Install the double gang box in the wall or ceiling. If you are installing the gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall. The box should be installed level and plumb with the wall and ceiling.



2) Run power wiring to the gang box.

For 24V power use the ORANGE and YELLOW wires.

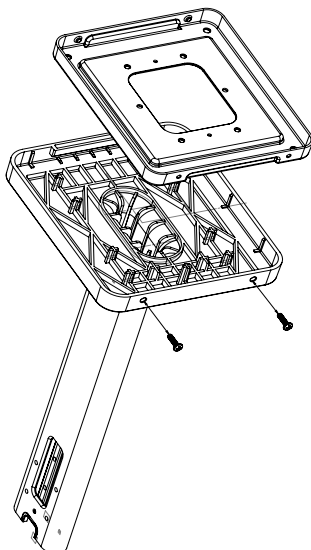
For 110V power use the BLACK and WHITE wires.

CHECK YOUR WIRING

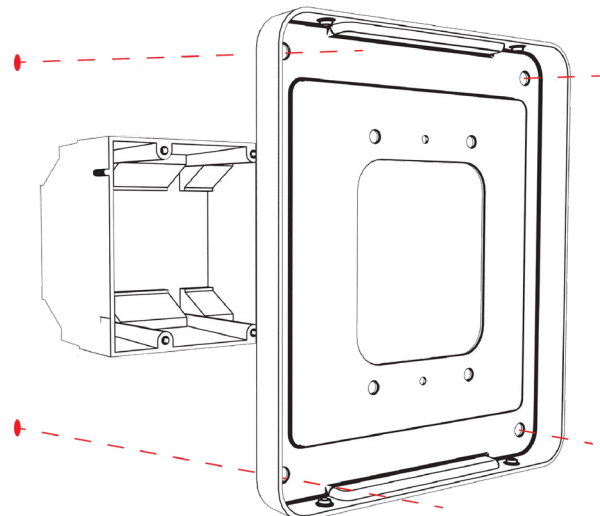
The voltage between the white and black wires should measure 105-126 volts AC in the 115 volt model, 207-253 volts AC in the 230 volt model, or 21.5-26.5 volts AC/DC in the 24 volt model.

If you are using the 24 volt model, make sure that the wiring leading to the clock is from an ISOLATED transformer.

3) Detach the mounting plate from the mounting pole by unscrewing the two screws. Set the screws and pole aside for later.

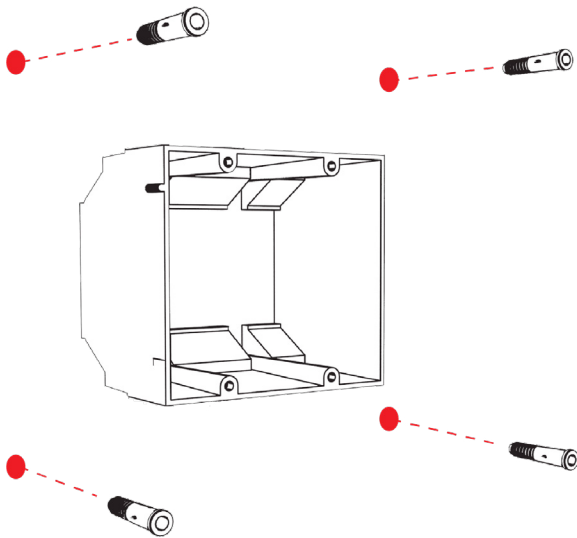


4) Attach the mounting plate to the gang box using only two of the four long, silver #6-32x1 screws. With the mounting plate as a guide, use the pencil to trace the locations of the four larger holes at the outer corners.

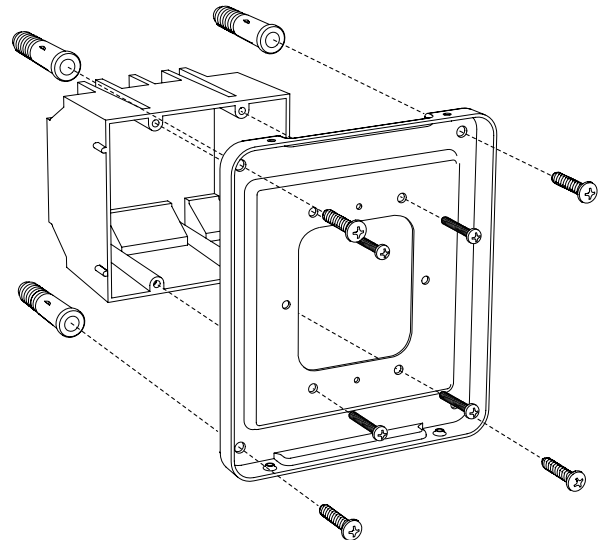


Flag Mount Installation - Square Clock - Locally Powered

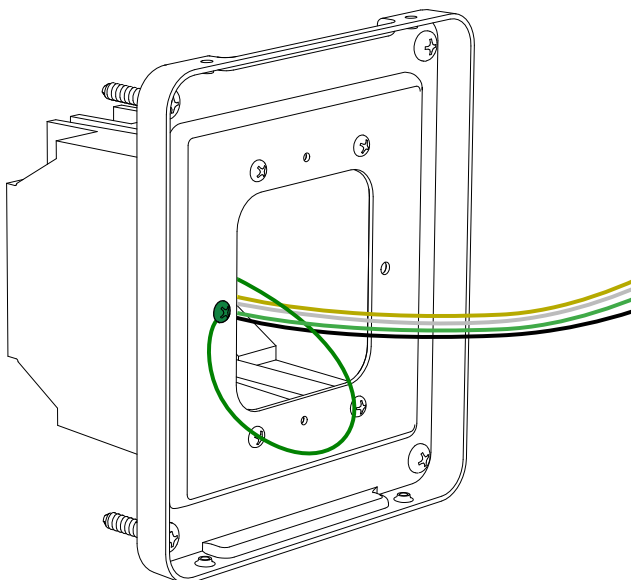
5) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.



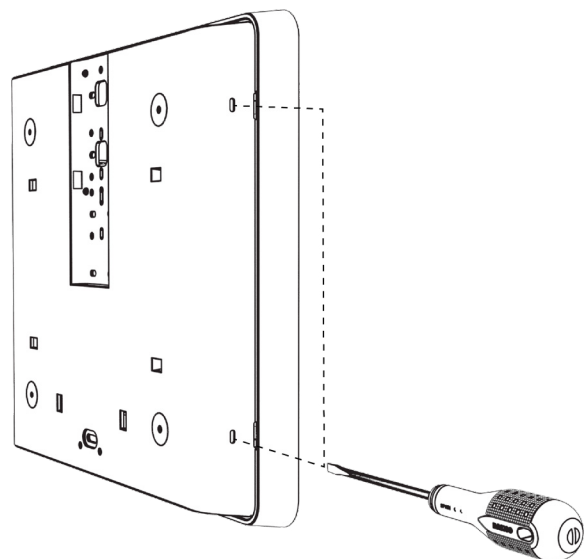
6) Reattach the mounting plate, this time using all four long, silver #6-32x1 screws, then insert the four #8 screws through the mounting plate and into the anchors.



7) Thread any wiring through the mounting plate, and attach a grounding wire to the mounting plate using one of the larger centered holes and the #10-32x3/8 screw.

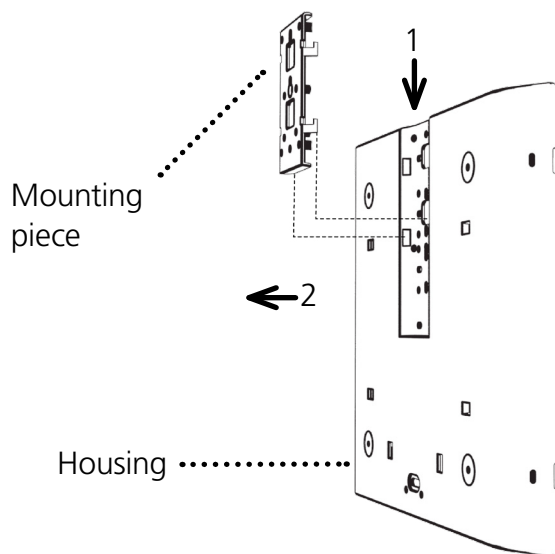


8) Detach the housing from the back of each clock. Do this by inserting a flat-blade screwdriver about 1/8 inch into each of the slot holes until the piece detaches. You may hear a snapping noise as the latches disengage.

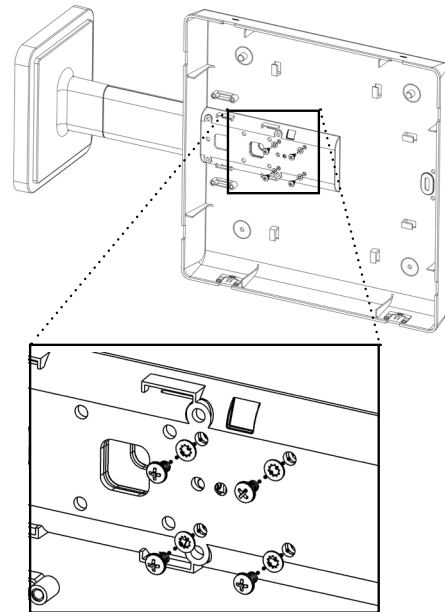


Flag Mount Installation - Square Clock - Locally Powered

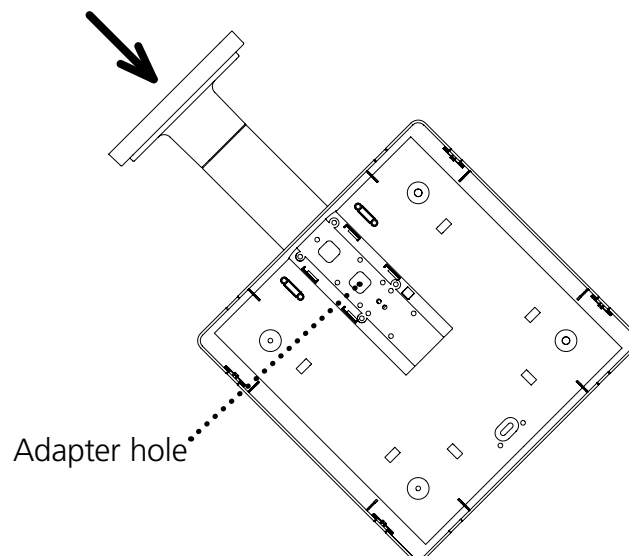
9) Release the mounting piece from the back of the housing by sliding it towards the center of the housing, then pulling it back and away from the housing. You will not need the mounting pieces later; either store them or throw them away at your discretion. **DO NOT THROW AWAY THE HOUSINGS.**



10) Attach the clock housing to the pole using four black #8-32x7/16 screws and four internal-tooth washers.

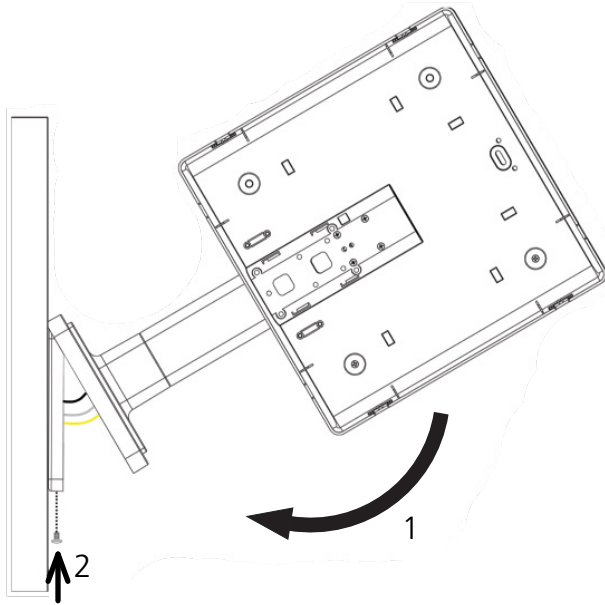


11) Thread at least fifteen inches (38.1cm) of wiring from the gang box through the bottom of the pole until each wire exits through the hole in the adapter.

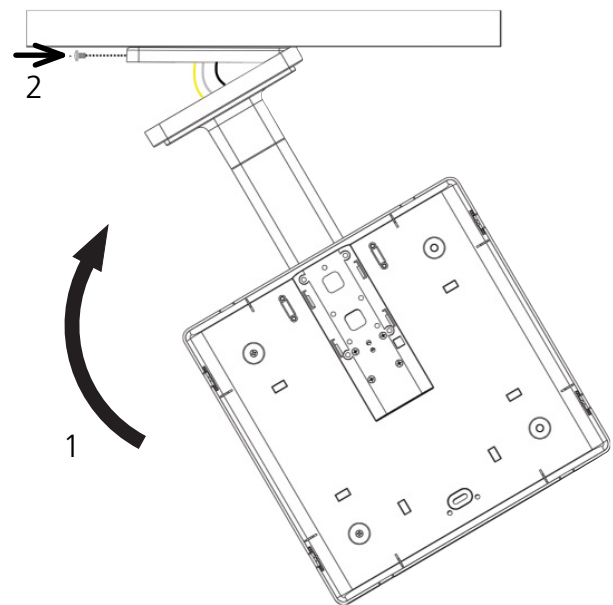


Flag Mount Installation - Square Clock - Locally Powered

12) Attach the base of the pole to the mounting plate, so that the lip is on the top of the base, and the holes for the screws are on the bottom of the base. Hang the base on the mounting plate, attach the wires from the bottom of the pole to the wires in the gang box, then screw the other side of the base onto the mounting plate using the two black screws you set aside before.



WALL

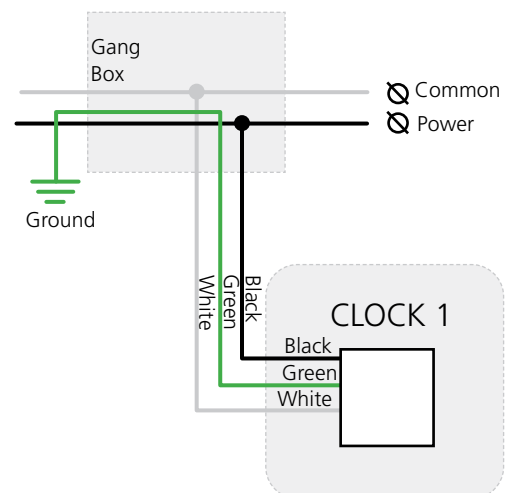


CEILING

13) Attach the power wires from your kit to the wires you threaded through the pole.

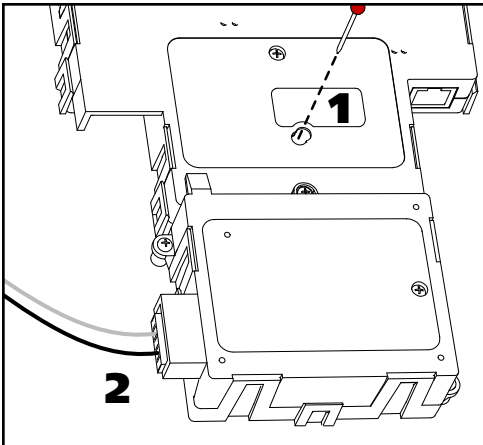
- Attach the Hot wire to the connector's black/orange wire.
- Attach the Common wire to the connector's white/yellow wire.
- Attach the Ground wire to the connector's green wire.

Consult the diagram on the right for additional help.

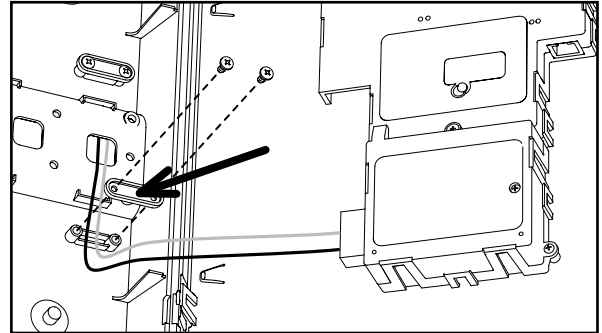


Flag Mount Installation - Square Clock - Locally Powered

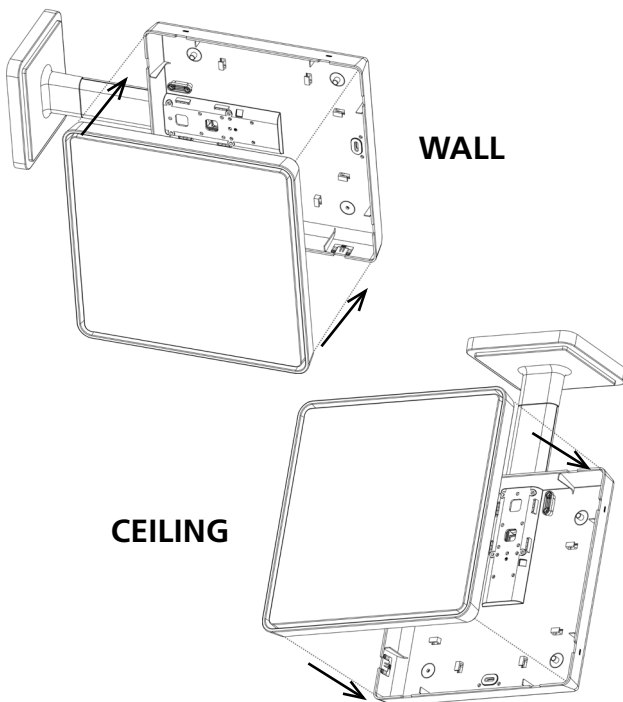
14) **First remove the gearbox pin**, then attach the power connector to the port on the movement.



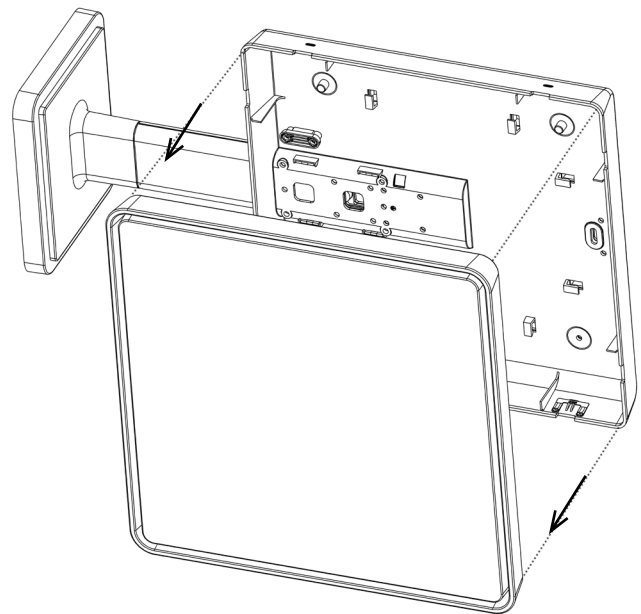
15) Loosen the strain relief by unscrewing the two screws. Slip any excess wiring through them, then tighten the strain relief by reinserting and tightening the screws.



16) Rotate the clock so that it is right-side up. Slide the clock back into its housing. You should hear a snapping noise as the latches reengage.



17) If you feel the need to detach the clock from the housing after the installation has been completed, use a flat-blade screwdriver on the four slots around the outside of the housing. You may hear a snapping noise as the internal latches disengage.



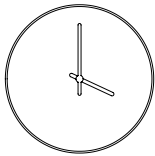
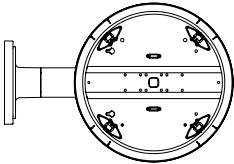
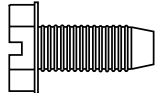
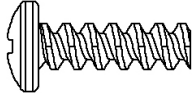
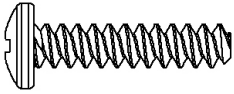

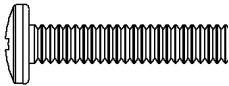
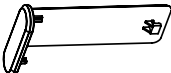
Double Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

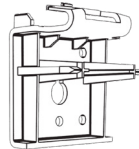
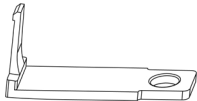


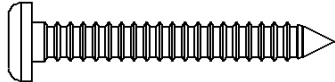
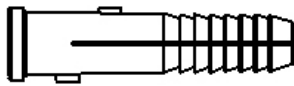
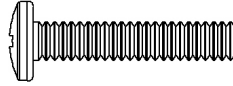

Description	Quantity	Picture
Round SlimLine analog clock	2	
Included in Double Mount Kit (SAH-1BD-12R-0 or SAH-1BD-16R-0)		
Dual-mount pole, including mounting plate.	1	
#10-32x3/8 green screw	1	
#8-32x7/16 screw	8 (not used)	
M3.5-1.0x10 screw (black)	4 (not used)	
Internal-tooth washer	8 (not used)	
#6-32x1 screw	4	
Flag Mount Endcap	1 (not used)	

Continued on next page

If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Double Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

Included in Mounting Kits (A-SLM-MK-S-1) or (A-SLM-MK-AW)

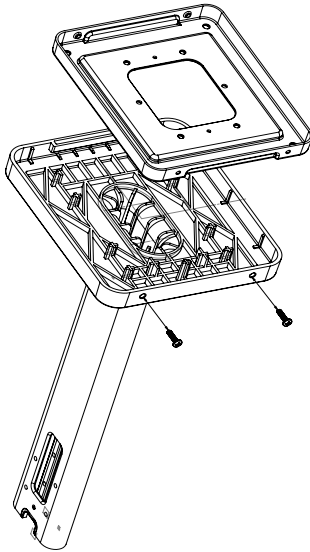
Description	Quantity	Picture
Mounting Piece	2 (not used)	
Release lever	0 or 2 (not used)	
#6-19x7/16 screw	4	
Strain relief	2	
Included in Wiring Kit (A-WK-MTG-1)		
#10x1.5 Self-tapping screw	2	
Wall anchor	2	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	4 (not used)	
#6-19x3/8 screw	2 (not used)	

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small slot-head screwdriver, a drill with a 1/4 inch drill bit, a pencil, a double gang box, four wall anchors that can support 50 lbs and a maximum screw size of 10x1.5", four #8 screws for the wall anchors, four #6-32x1 screws for attaching the mounting plate to the gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the ground cables.

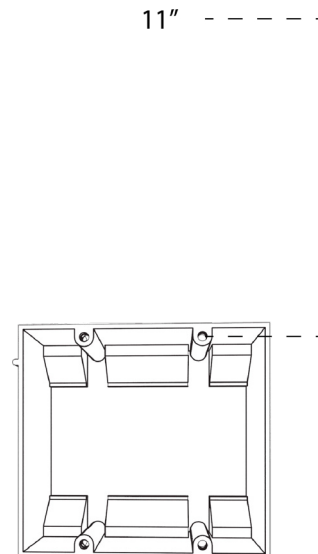
SlimLine and Aluminum Clocks use the same installation procedures for double mount housings.

Double Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

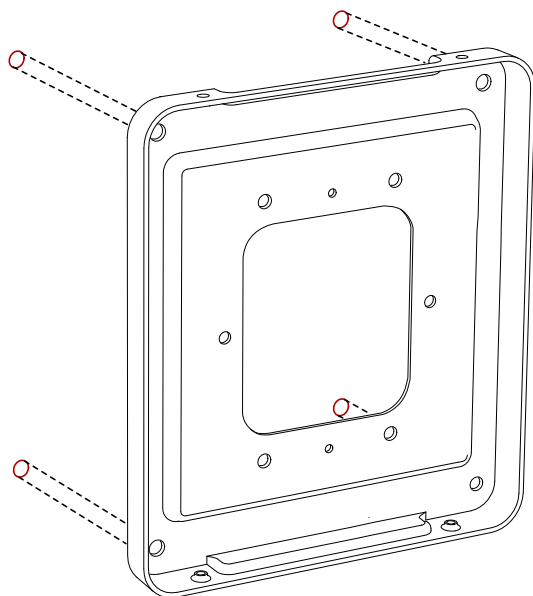
1) Detach the mounting plate from the mounting pole by unscrewing the two screws. Set the screws and pole aside for later.



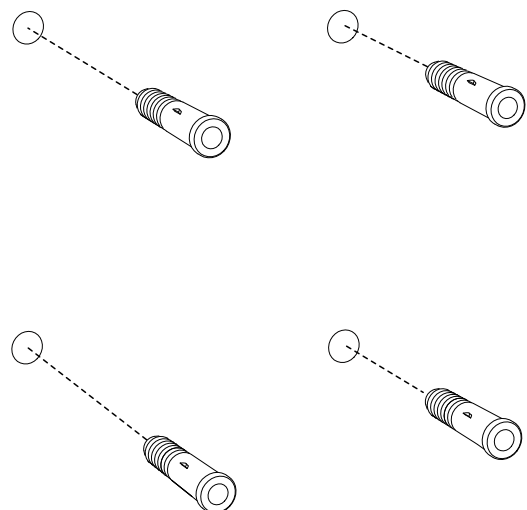
2) Place the mounting plate on the wall or ceiling. If you are installing a gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall.



3) Confirm that the mounting plate is level with the floor. With the mounting plate as a guide, use the pencil to trace the locations of the four larger holes at the outer corners of the plate.

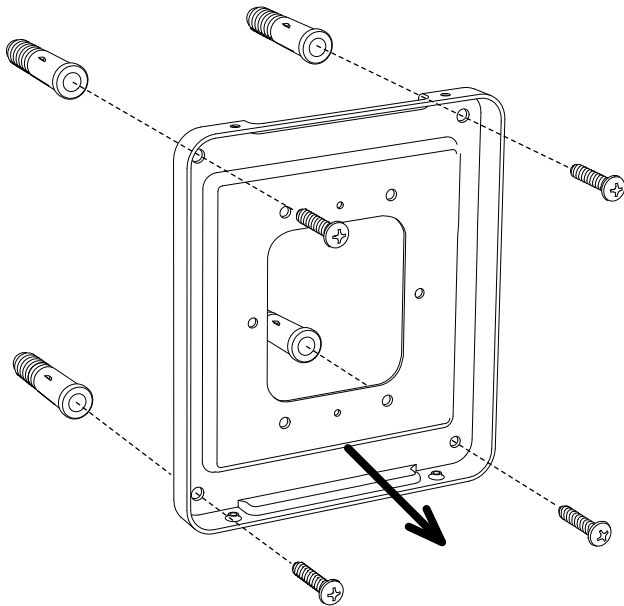


4) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.

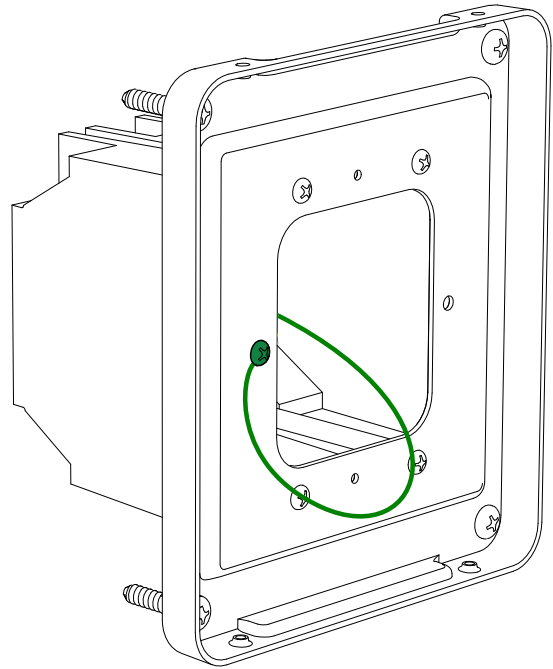


Double Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

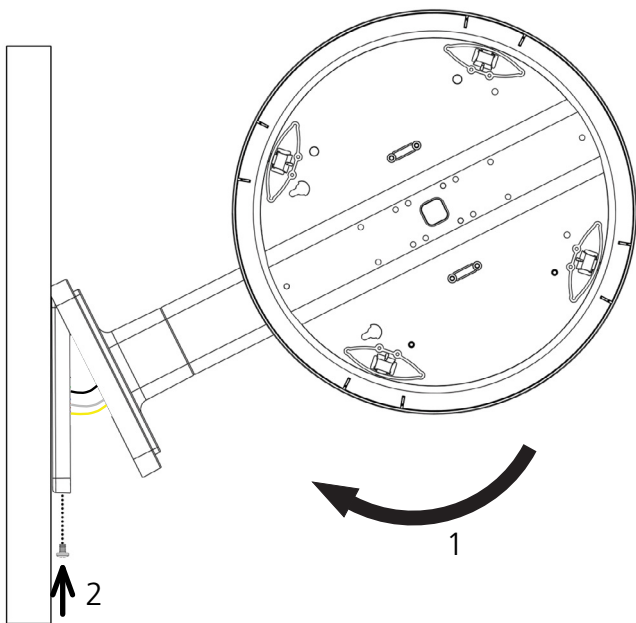
5) Insert the #8 screws through the mounting plate and into the anchors.



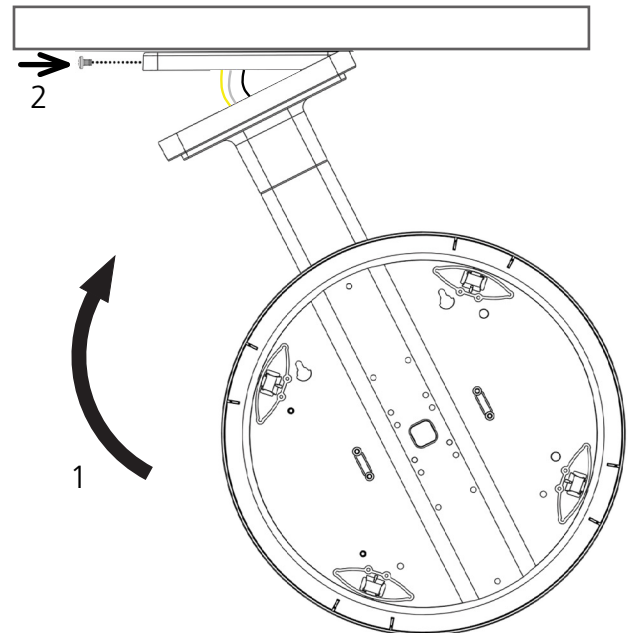
5B) If you are installing the clock atop an gang box, use the green screw to attach a grounding wire to the mounting plate.



6) Attach the base of the pole to the mounting plate so that the lip is on the top of the base, and the holes for the screws are on the bottom of the base. Hang the base on the mounting plate, attach the wires from the bottom of the pole to the wires in the gang box, then screw the other side of the base onto the mounting plate using the two black screws you set aside before.



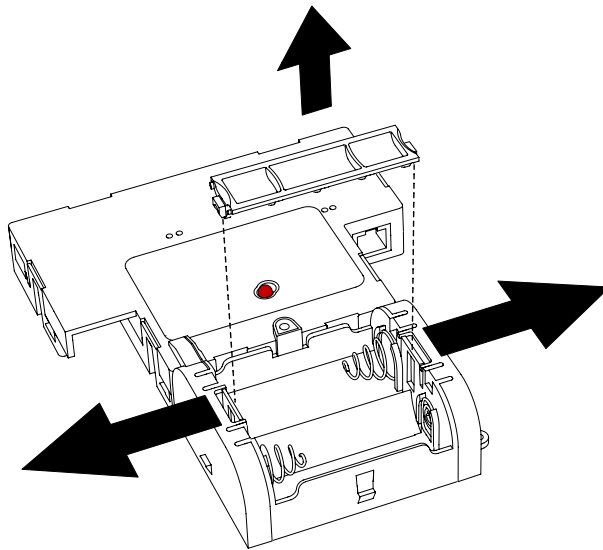
WALL



CEILING

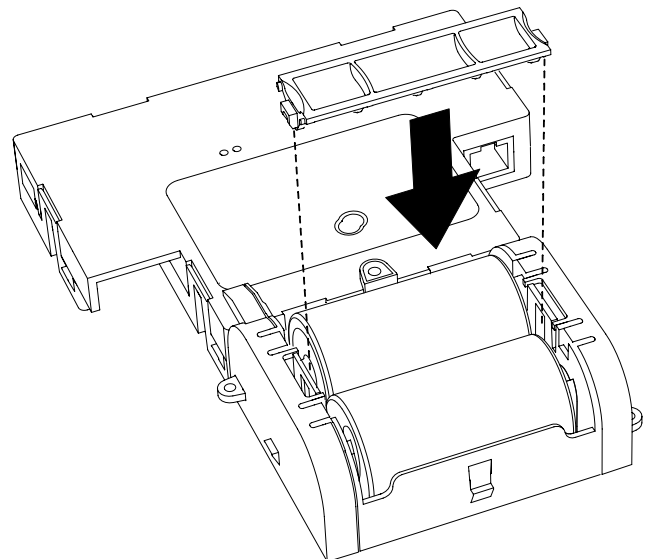
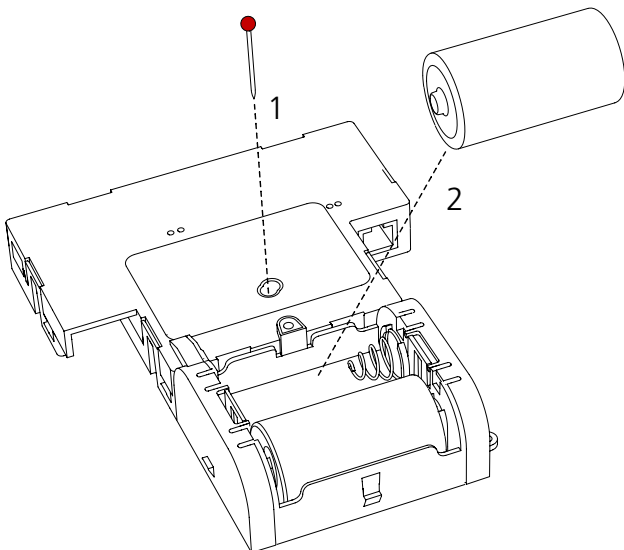
Double Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

7) Remove the back covers from the battery pack by pulling the two latches away to either side and sliding the cover out.



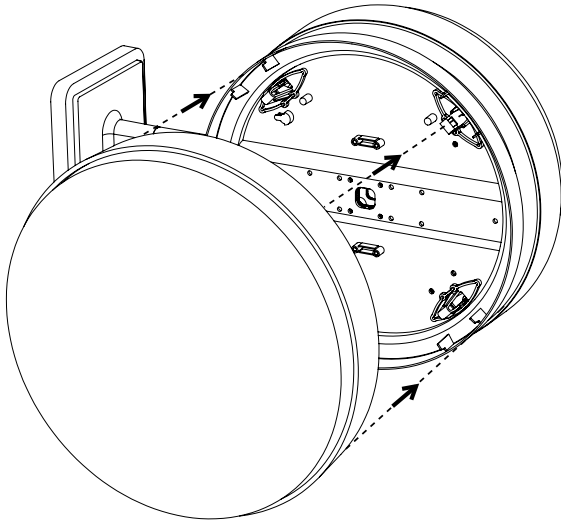
8) **First remove the gearbox pins**, then insert the batteries into the clock.

9) Place the cover back onto the battery pack. You should hear a snapping noise as the latches engage.

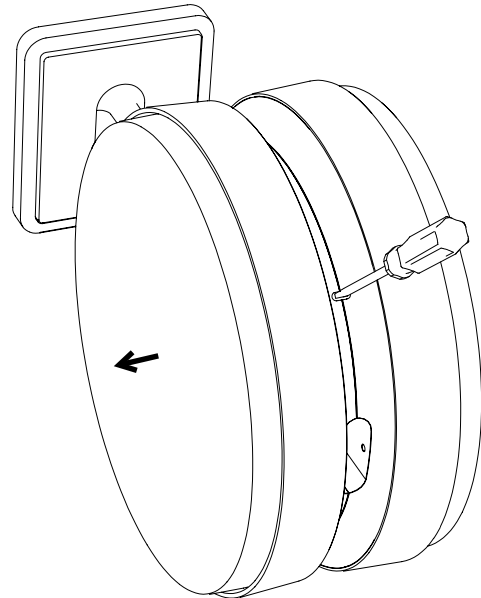


Double Mount Installation - Round SlimLine/Aluminum Clock - Battery Powered

10) Slide each clock onto the adapter in the rotation that you wish it to be viewed. You should hear a snapping noise as the four clips on the adapter secure the clock in place.



11) If you feel the need to detach the clock from the housing after the installation has been completed, use a flat-blade screwdriver on the four slots around the outside of the housing. You may hear a snapping noise as the internal latches disengage.



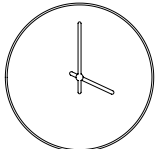
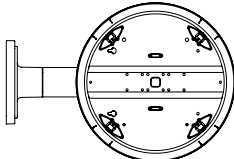
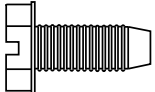
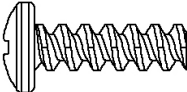
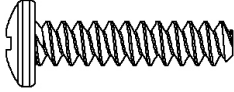

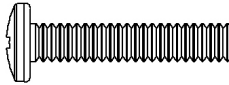
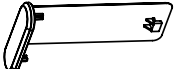
Double Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

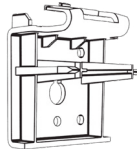
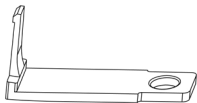



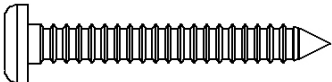
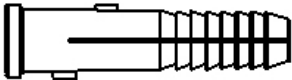


Description	Quantity	Picture
Round SlimLine analog clock	2	
Included in Double Mount Kit (SAH-1BD-12R-0 or SAH-1BD-16R-0)		
Dual-mount pole, including mounting plate.	1	
#10-32x3/8 green screw	1	
#8-32x7/16 screw	8 (not used)	
M3.5-1.0x10 screw (black)	4 (not used)	
Internal-tooth washer	8 (not used)	
#6-32x1 screw	4	
Flag Mount Endcap	1 (not used)	

Continued on next page

If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Double Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

Included in Mounting Kits (A-SLM-MK-S-1) or (A-SLM-MK-AW)

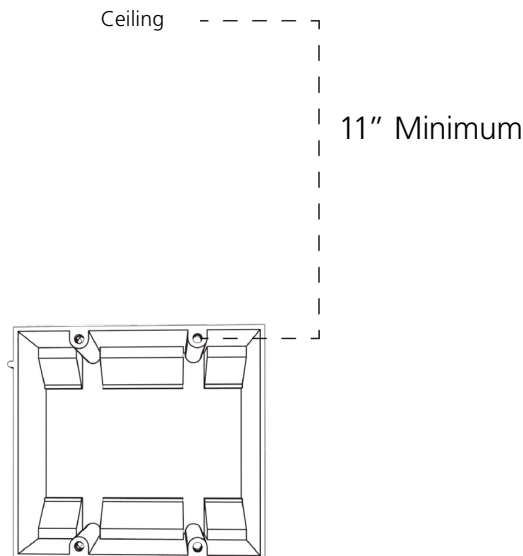
Description	Quantity	Picture
Mounting Piece	2 (not used)	
Release lever	0 or 2 (not used)	
#6-19x7/16 screw	4	
Strain relief	2	
Included in Wiring Kit (A-WK-12-1V)		
Power/grounding wires And connector	2	
#8x1.5 Self-tapping screw	4 (not used)	
Wall anchor	4 (not used)	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	4 (not used)	
#6-19x3/8 screw	2 (not used)	

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a drill with a 1/4 inch drill bit, a pencil, a double gang box, four wall anchors (must support 50 lbs, #8 screw size, 1.5"(3.8cm) screw length), four #8 screws for the wall anchors, any equipment needed to install the gang box, and any additional wiring needed to extend the power or ground cables.

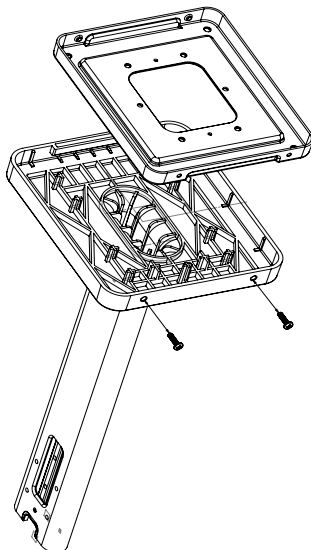
SlimLine and Aluminum Clocks use the same installation procedures for double mount housings.

Double Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

1) Install the double gang box in the wall or ceiling. If you are installing the gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall. The box should be installed level and plumb with the wall and ceiling.



3) Detach the mounting plate from the mounting pole by unscrewing the two screws. Set the screws and pole aside for later.



2) Run power wiring to the gang box.

For 24V power use the ORANGE and YELLOW wires.

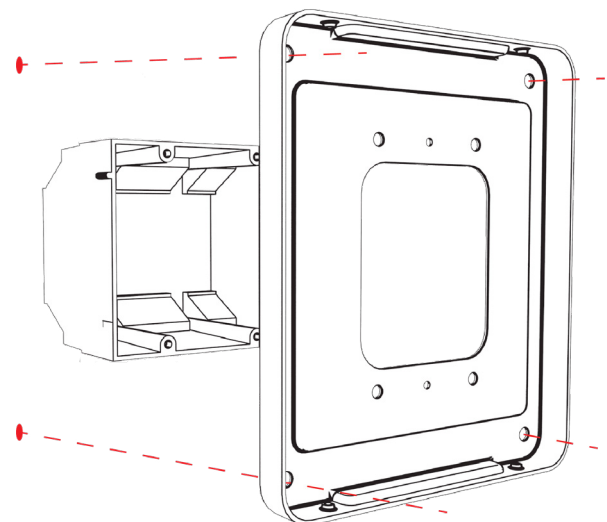
For 110V power use the BLACK and WHITE wires.

CHECK YOUR WIRING

The voltage between the white and black wires should measure 105-126 volts AC in the 115 volt model, 207-253 volts AC in the 230 volt model, or 21.5-26.5 volts AC/DC in the 24 volt model.

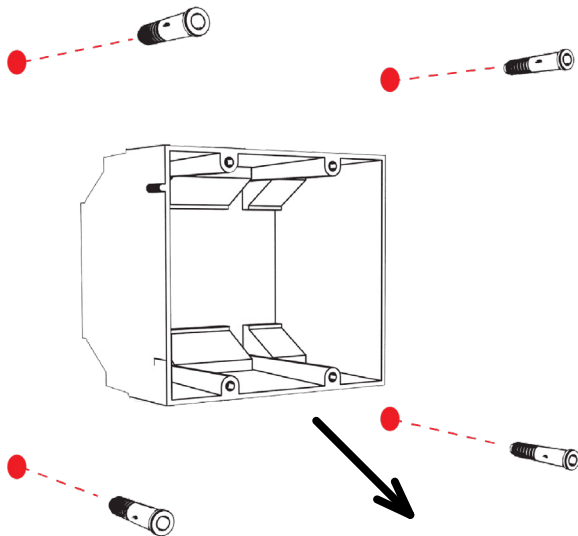
If you are using the 24 volt model, make sure that the wiring leading to the clock is from an ISOLATED transformer.

4) Attach the mounting plate to the gang box using only two of the four long, silver #6-32x1 screws. With the mounting plate as a guide, use the pencil to trace the locations of the four larger holes at the outer corners.

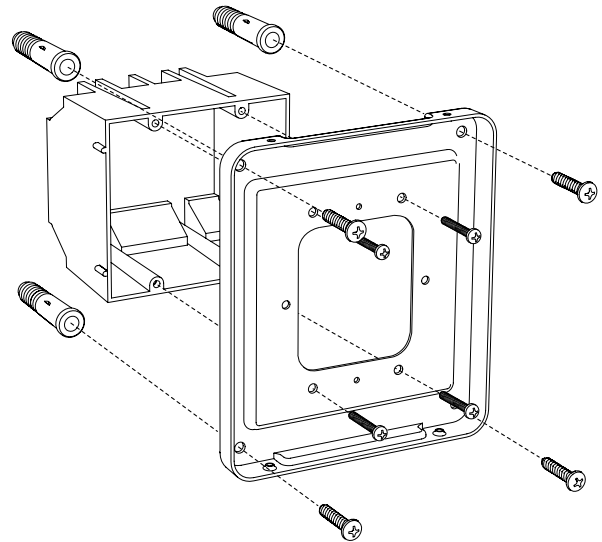


Double Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

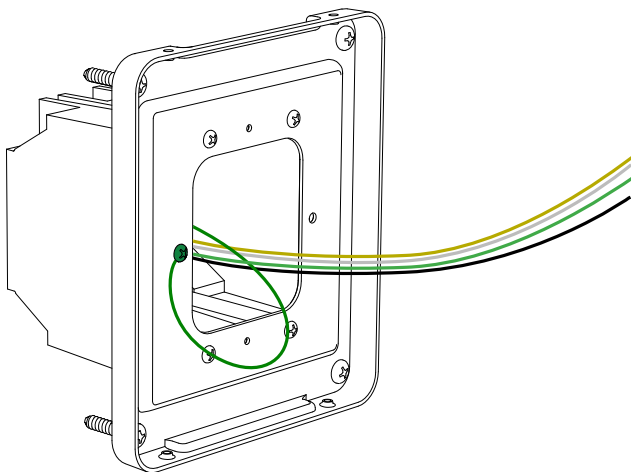
5) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.



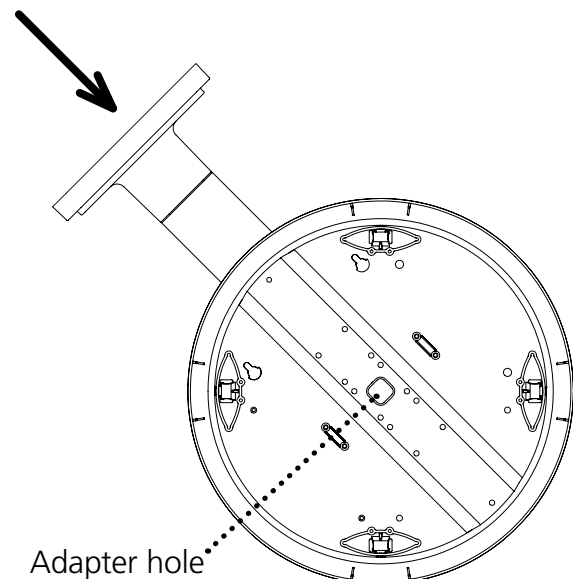
6) Reattach the mounting plate, this time using all four long, silver #6-32x1 screws, then insert the four #8 screws through the mounting plate and into the anchors.



7) Thread any wiring through the mounting plate, and attach a grounding wire to the mounting plate using one of the larger centered holes and the #10-32x3/8 screw.

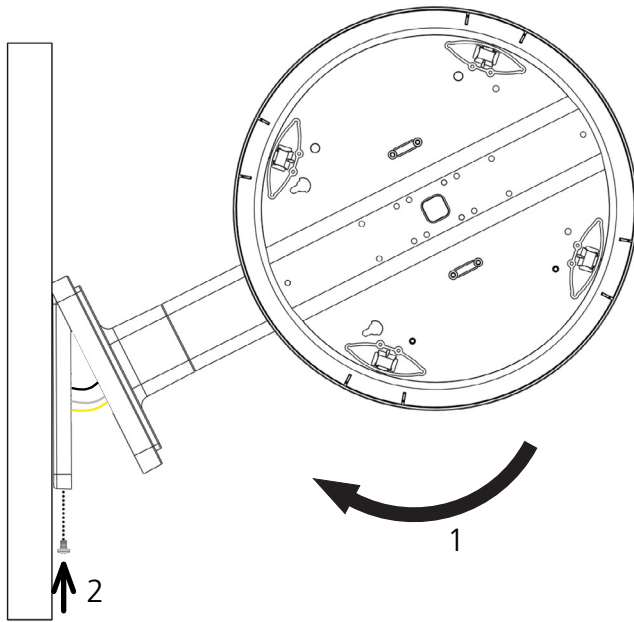


8) Thread at least fifteen inches (38.1cm) of wiring from the gang box through the bottom of the pole until each wire exits through the hole in the adapter.

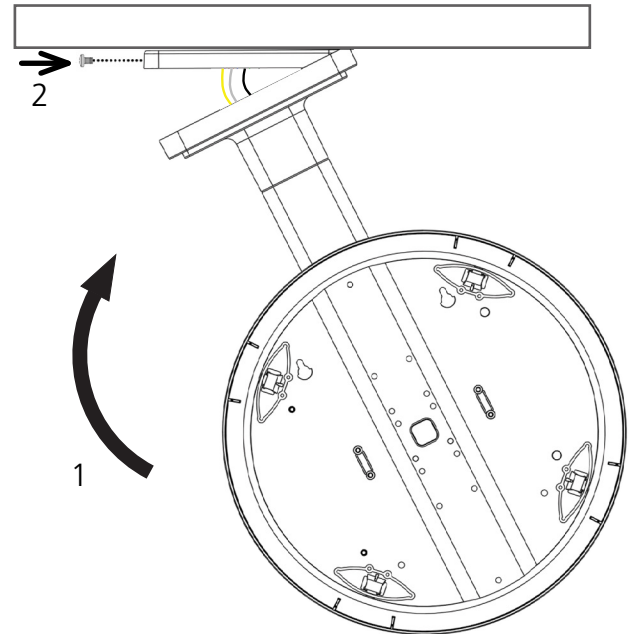


Double Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

9) Attach the base of the pole to the mounting plate so that the lip is on the top of the base, and the holes for the screws are on the bottom of the base. Hang the base on the mounting plate, attach the wires from the bottom of the pole to the wires in the gang box, then screw the other side of the base onto the mounting plate using the two black screws you set aside before.



WALL

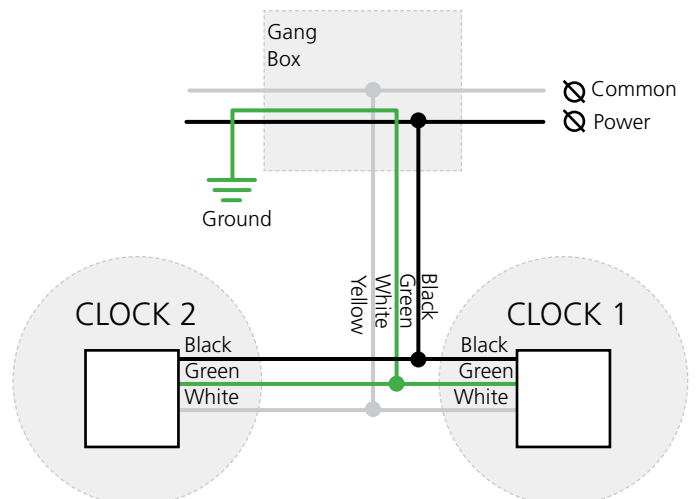


CEILING

10) Attach the power connectors to the wires you threaded through the pole.

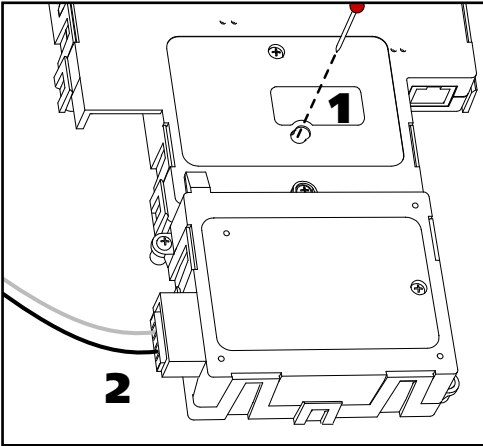
- Attach the Hot wire to the connector's black/orange wire.
- Attach the Common wire to the connector's white/yellow wire.
- Attach the Ground wire to the connector's green wire.

Consult the diagram on the right for additional help.

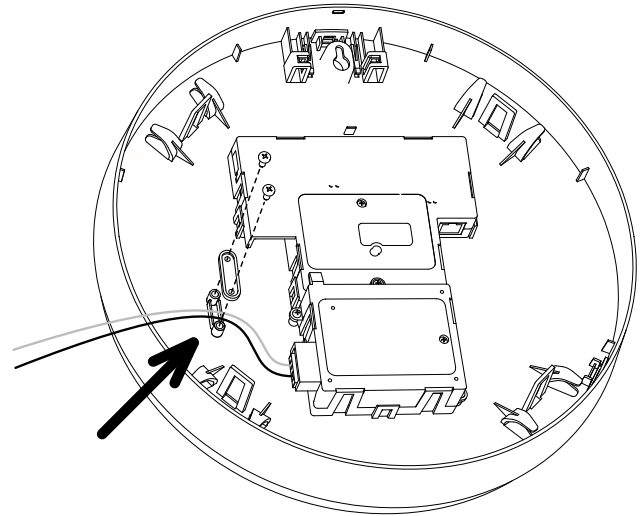


Double Mount Installation - Round SlimLine/Aluminum Clock - Locally Powered

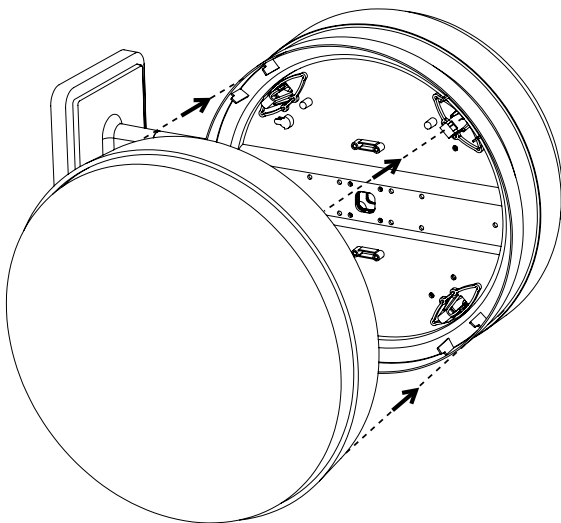
11) **First remove the gearbox pins**, then attach a power connector to the ports on the side of each movement.



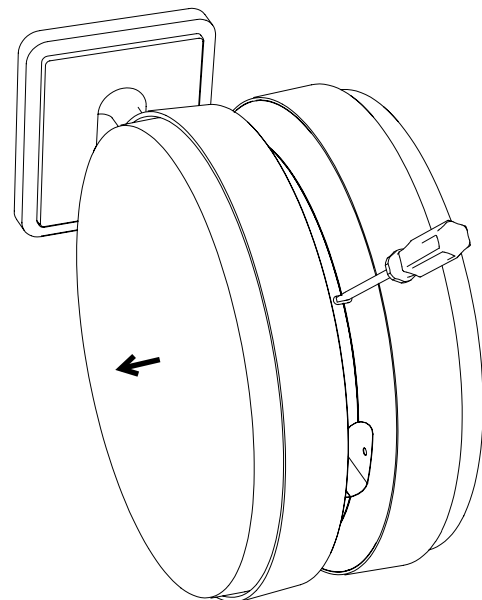
12) Lay any excess wiring across the strain relief base, then attach the strain relief to the clock with the two #6-19x7/16 screws. The strain relief should be tight enough to prevent the wire from sliding.



13) Slide each clock onto the adapter in the rotation that you wish it to be viewed. You should hear a snapping noise as the four clips on the adapter secure the clock in place.



14) If you feel the need to detach the clock from the housing after the installation has been completed, use a flat-blade screwdriver on the four slots around the outside of the housing. You may hear a snapping noise as the internal latches disengage.



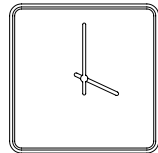

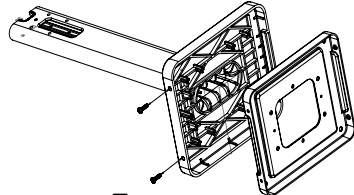
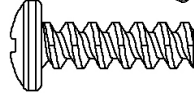
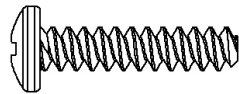

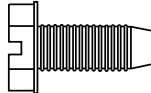
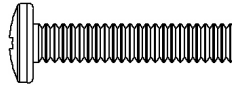

Double Mount Installation - Square Clock - Battery Powered

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

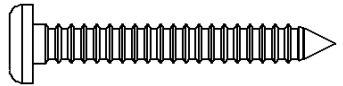
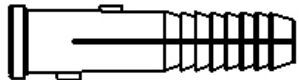
Description	Quantity	Picture
Square analog clock	2	
Mounting Piece-already attached to clock housing	2 (not used)	
Included in Pole Kit (SAB-1BD-00S-0 or SAB-1BD-01S-0)		
Dual-mount pole, including mounting plate.	1	
#8-32x7/16 screw	8	
M3.5-1.0x10 screw (black)	4	
Internal-tooth washer	8	
#10-32x3/8 green screw	1	
#6-32x1 screw	4	
Flag Mount Endcap	1	

Continued on next page



If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Double Mount Installation - Square Clock - Battery Powered

Included in Wiring Kit (A-WK-MTG-1)

Description	Quantity	Picture
#10x1.5 Self-tapping screw	4	
Wall anchor	4	

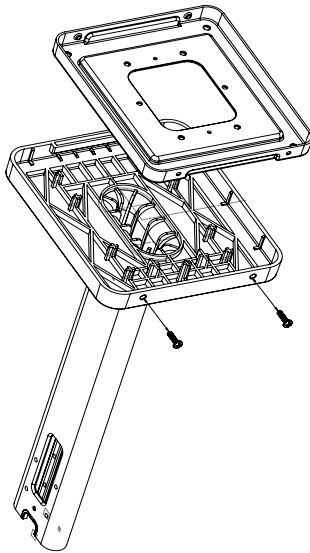
Included in Gang Box Kit (A-GB-MK-1)

#6-32x1 screw	4 (not used)	
#6-19x3/8 screw	2 (not used)	

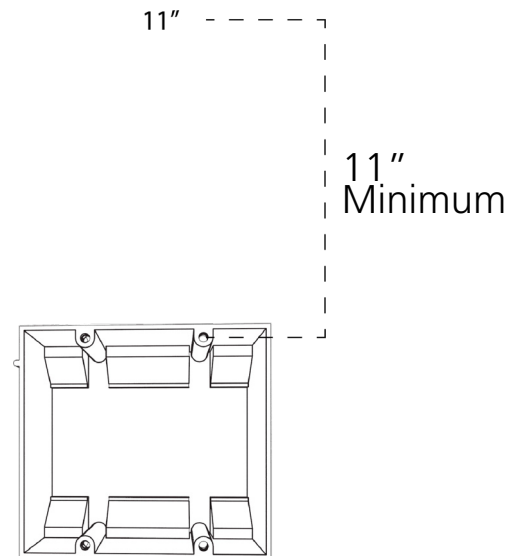
PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small slot-head screwdriver, a drill with a 1/4 inch drill bit, a pencil, a double gang box, four wall anchors that can support 50 lbs and a maximum screw size of 10x1.5", four #8 screws for the wall anchors, four #6-32x1 screws for attaching the mounting plate to the gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the ground cables.

Double Mount Installation - Square Clock - Battery Powered

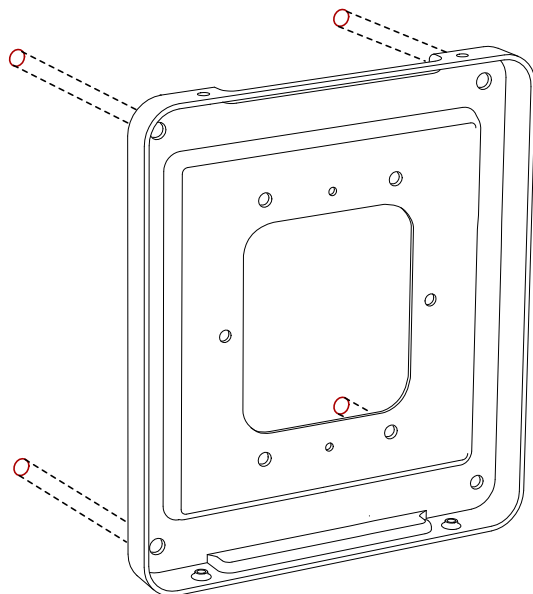
1) Detach the mounting plate from the mounting pole by unscrewing the two screws. Set the screws and pole aside for later.



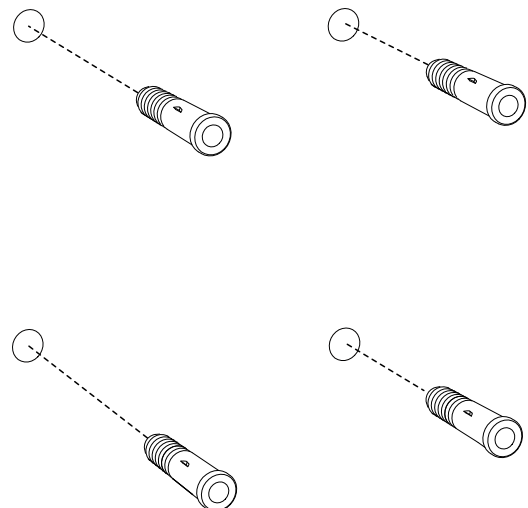
2) Place the mounting plate on the wall or ceiling. If you are installing a gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall.



3) Confirm that the mounting plate is level with the floor. With the mounting plate as a guide, use the pencil to trace the locations of the four larger holes at the outer corners of the plate.

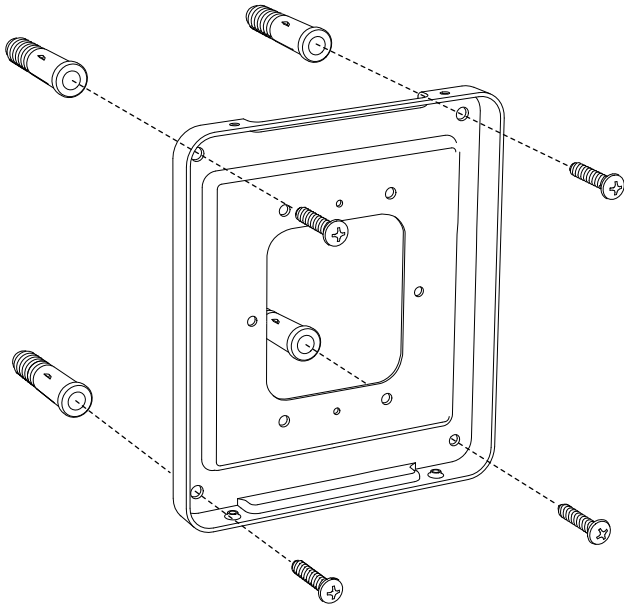


4) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.

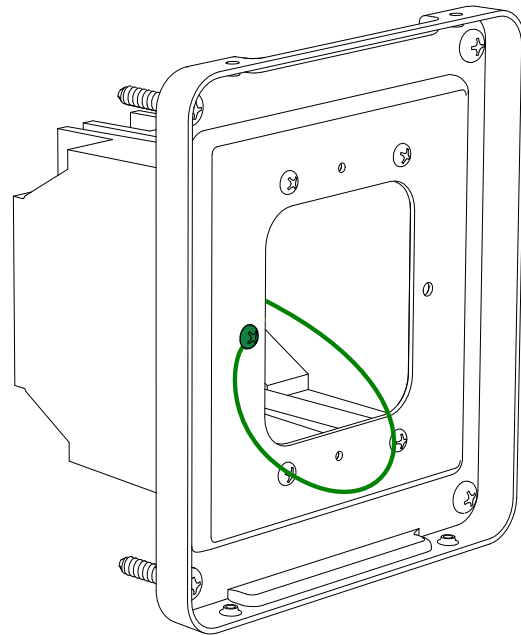


Double Mount Installation - Square Clock - Battery Powered

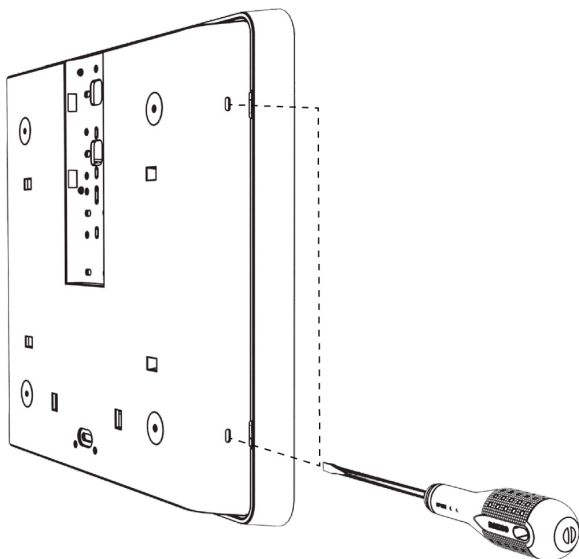
5) Insert the #8 screws through the mounting plate and into the anchors.



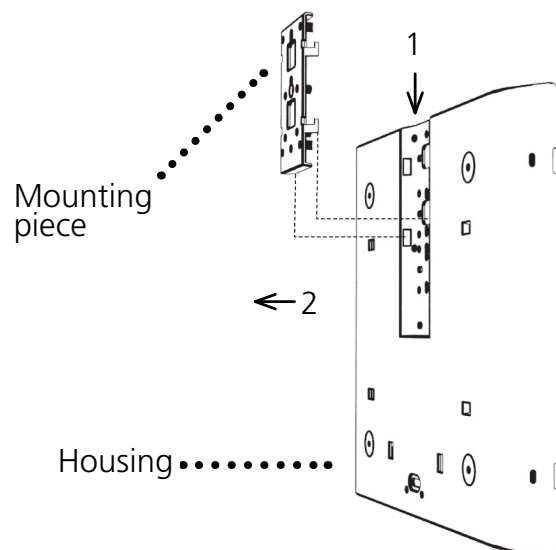
5B) If you are installing the clock atop an gang box, use the green screw to attach a grounding wire to the mounting plate.



6) Detach the housing from the back of each clock. Do this by inserting a flat-blade screwdriver about 1/8 inch into each of the slot holes until the piece detaches. You may hear a snapping noise as the latches disengage.

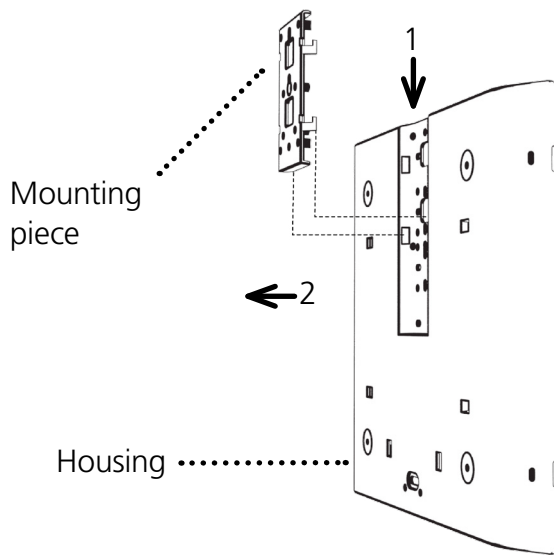


7) Release the mounting piece from the back of each housing by sliding it away from the center of the housing, then pulling it back and away from the housing. You will not need the mounting pieces later; either store them or throw them away at your discretion. **DO NOT THROW AWAY THE HOUSINGS.**

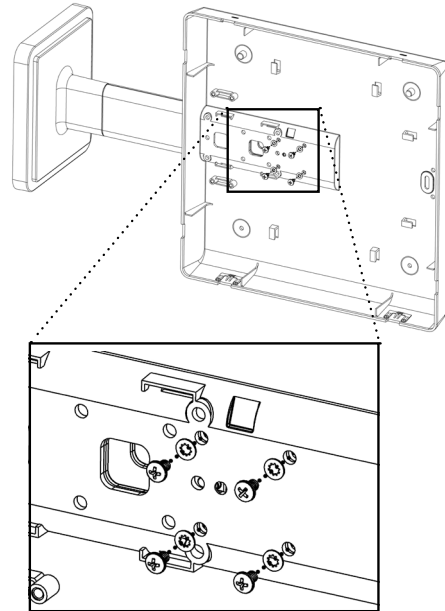


Double Mount Installation - Square Clock - Battery Powered

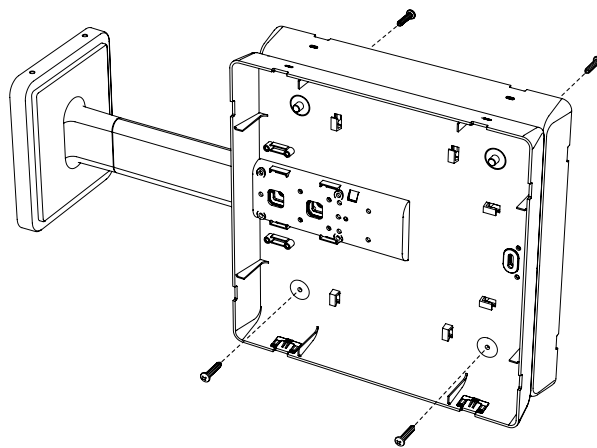
8) Release the mounting piece from the back of each housing by sliding it away from the center of the housing, then pulling it back and away from the housing. You will not need the mounting pieces later; either store them or throw them away at your discretion. **DO NOT THROW AWAY THE HOUSINGS.**



9) Attach both housings to the pole using four black 8-32x7/16 screws and four internal-tooth washers on each side.

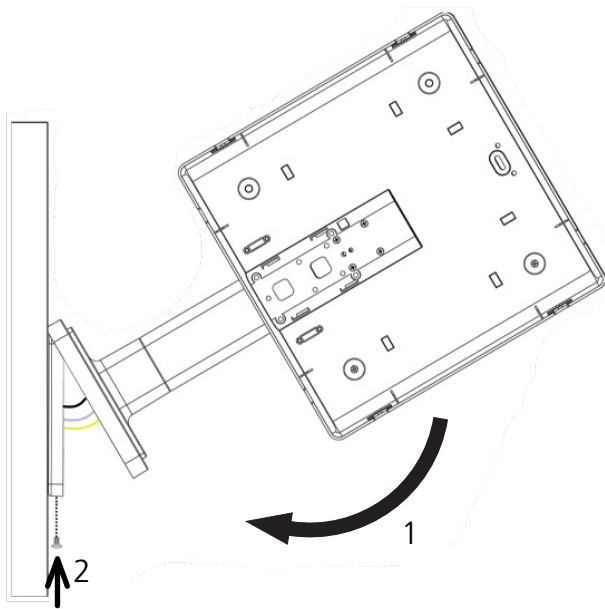


10) Attach the housings to each other using the four black M3.5-1.0x10 screws, two on each housing.

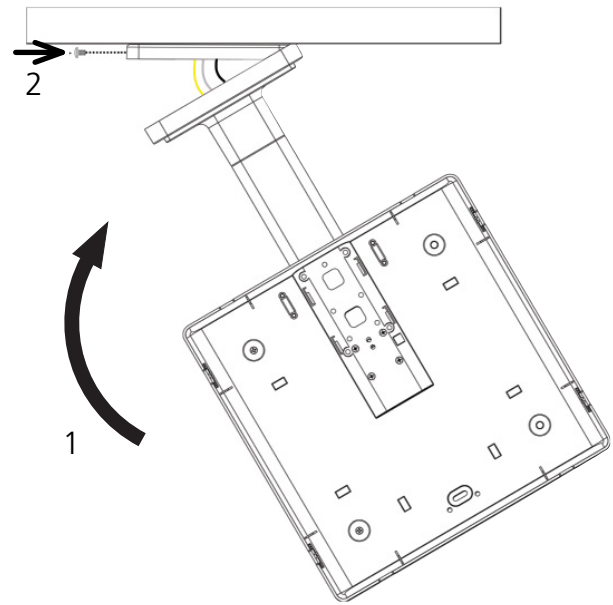


Double Mount Installation - Square Clock - Battery Powered

11) Attach the base of the pole to the mounting plate, so that the lip is on the top of the base, and the holes for the screws are on the bottom of the base. Hang the base on the mounting plate, attach the wires from the bottom of the pole to the wires in the gang box, then screw the other side of the base onto the mounting plate using the two black screws you set aside before.

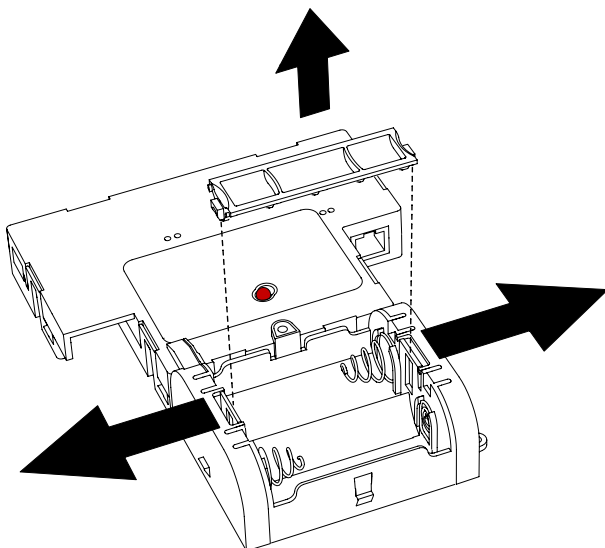


WALL

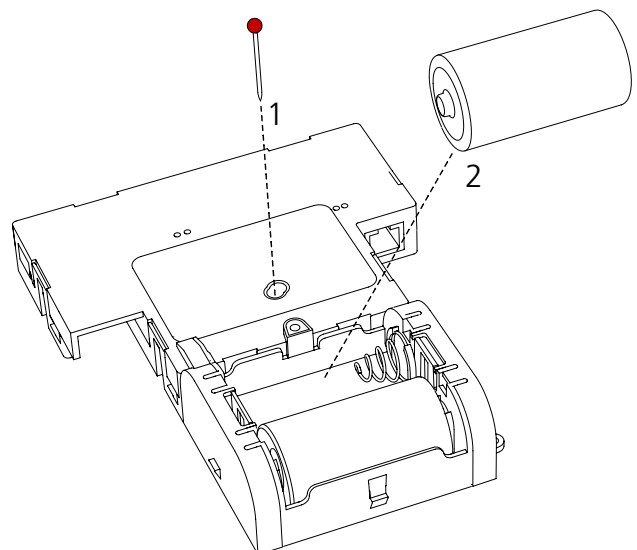


CEILING

12) Remove the back covers from the battery packs by pulling the two latches away to either side and sliding the cover out.

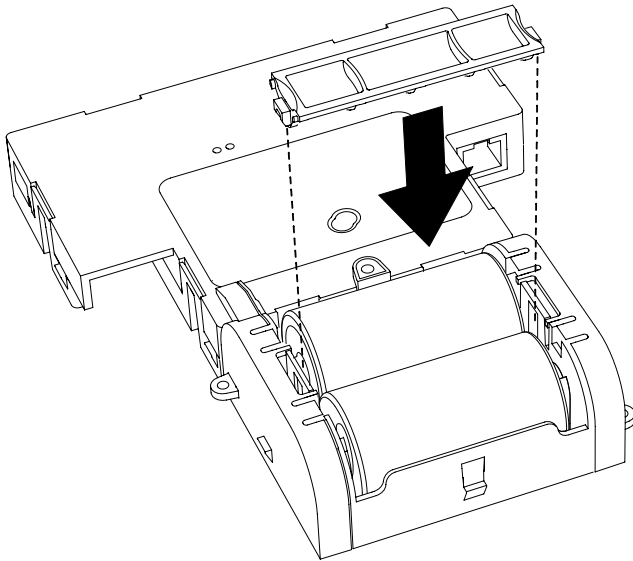


13) **First remove the gearbox pins**, then insert the batteries into the clock.

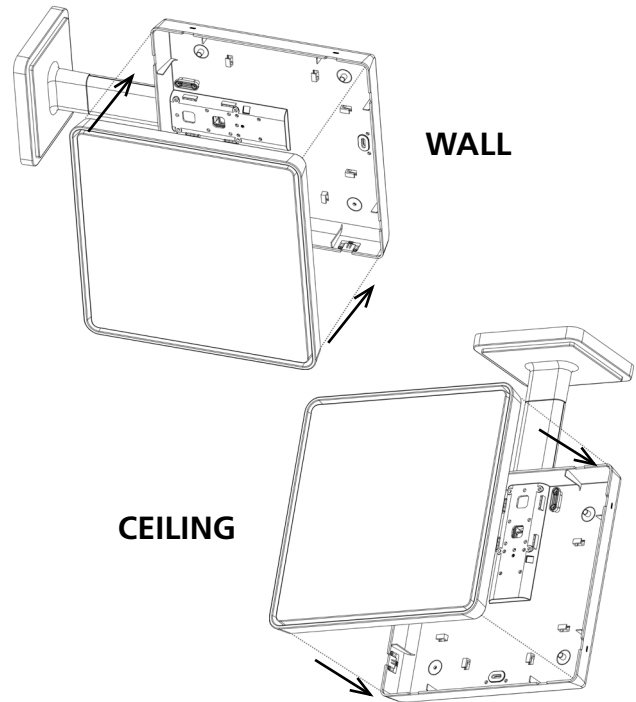


Double Mount Installation - Square Clock - Battery Powered

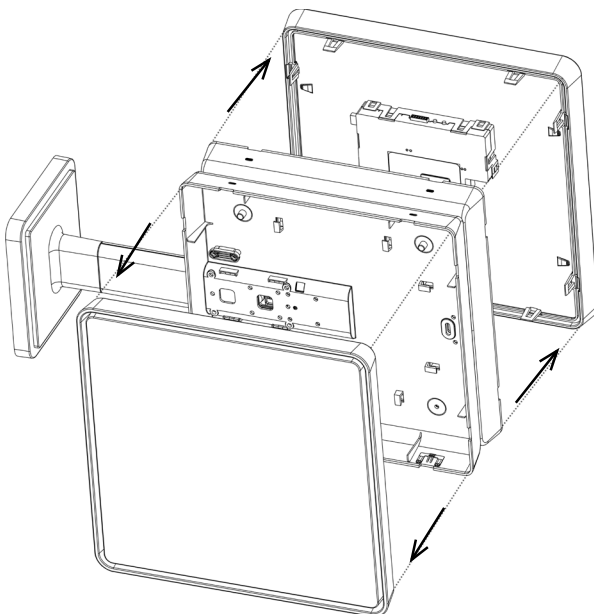
14) Place the cover back onto the battery pack. You should hear a snapping noise as the latches engage.



15) Slide both clocks back into their housings. You should hear a snapping noise as the latches reengage.



16) If you feel the need to detach the clock from the housing after the installation has been completed, use a flat-blade screwdriver on the four slots around the outside of the housing. You may hear a snapping noise as the internal latches disengage.



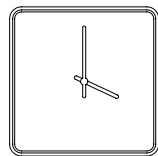
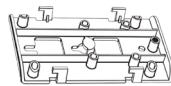
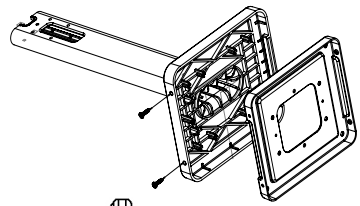
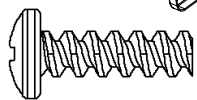
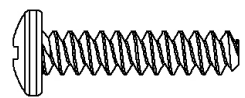

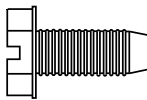

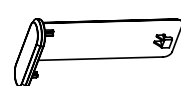
Double Mount Installation - Square Clock - Locally Powered

VERY IMPORTANT:

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The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

Included in Package

Description	Quantity	Picture
Square analog clock	2	
Mounting Piece-already attached to clock housing	2 (not used)	
Included in Pole Kit (SAB-1BD-00S-0 or SAB-1BD-01S-0)		
Dual-mount pole, including mounting plate.	1	
#8-32x7/16 screw	8	
M3.5-1.0x10 screw (black)	4	
Internal-tooth washer	8	
#10-32x3/8 green screw	1	
#6-32x1 screw	4	
Flag Mount Endcap	1	

Continued on next page

If any of the items listed in the kits are missing, you may contact your dealer and order a replacement kit.

Double Mount Installation - Square Clock - Locally Powered

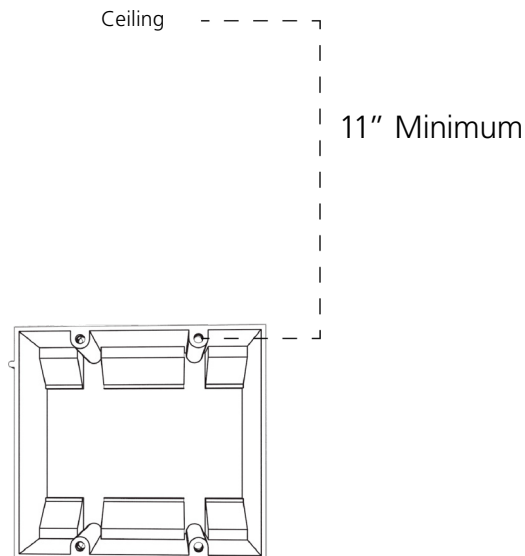
Included in Wiring Kit (A-WK-12-1V)

Description	Quantity	Picture
Power/grounding wires And connector	2	
#8x1.5 Self-tapping screw	4 (not used)	
Wall anchor	4 (not used)	
Included in Gang Box Kit (A-GB-MK-1)		
#6-32x1 screw	4 (not used)	
#6-19x3/8 screw	2 (not used)	

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a drill with a 1/4 inch drill bit, a pencil, a double gang box, four wall anchors (must support 50 lbs, #8 screw size, 1.5" (3.8cm) screw length), four #8 screws for the wall anchors, any equipment needed to install the gang box, and any additional wiring needed to extend the power or ground cables.

Double Mount Installation - Square Clock - Locally Powered

1) Install the double gang box in the wall or ceiling. If you are installing the gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall. The box should be installed level and plumb with the wall and ceiling.



2) Run power wiring to the gang box.

For 24V power use the ORANGE and YELLOW wires.

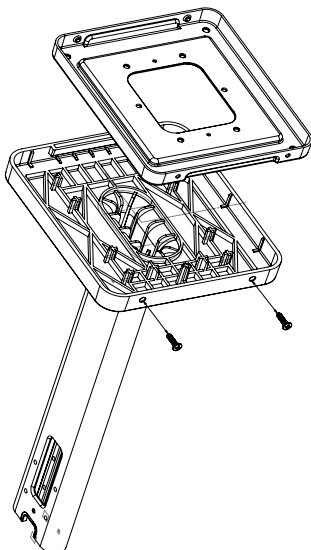
For 110V power use the BLACK and WHITE wires.

CHECK YOUR WIRING

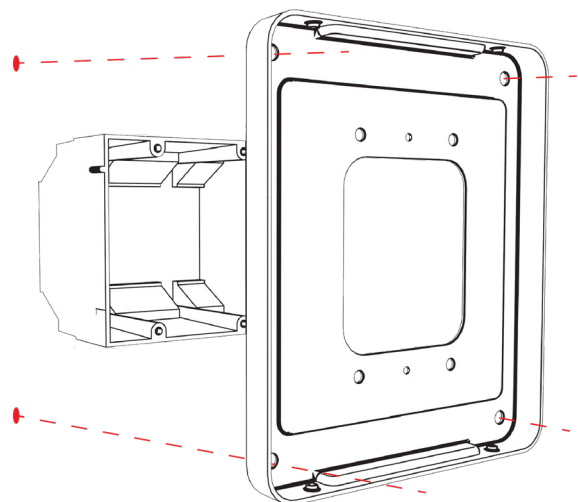
The voltage between the white and black wires should measure 105-126 volts AC in the 115 volt model, 207-253 volts AC in the 230 volt model, or 21.5-26.5 volts AC/DC in the 24 volt model.

If you are using the 24 volt model, make sure that the wiring leading to the clock is from an ISOLATED transformer.

3) Detach the mounting plate from the mounting pole by unscrewing the two screws. Set the screws and pole aside for later.

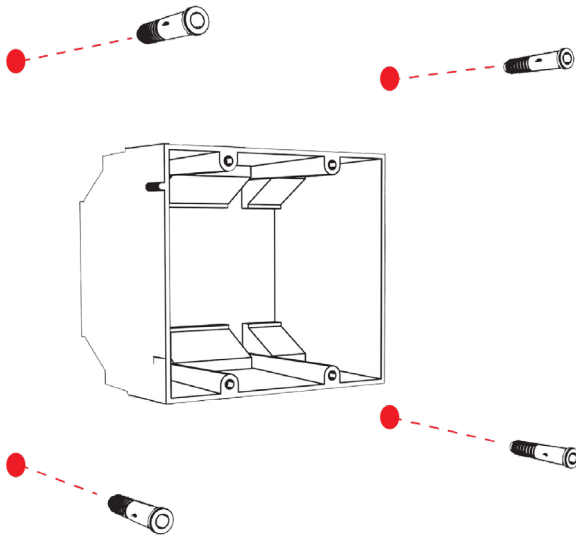


4) Attach the mounting plate to the gang box using only two of the four long, silver #6-32x1 screws. With the mounting plate as a guide, use the pencil to trace the locations of the four larger holes at the outer corners.

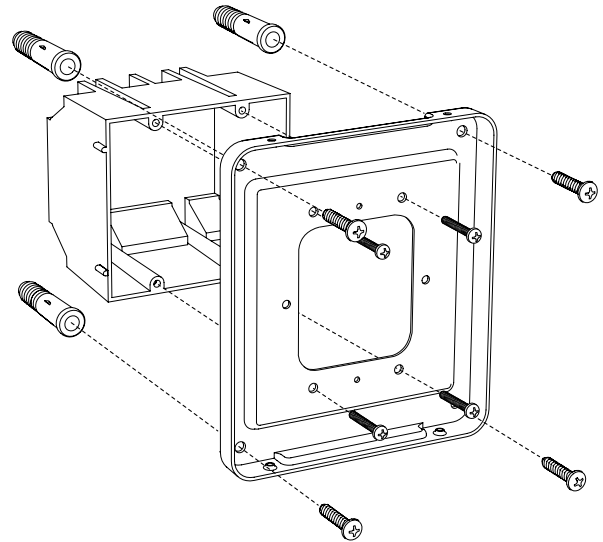


Double Mount Installation - Square Clock - Locally Powered

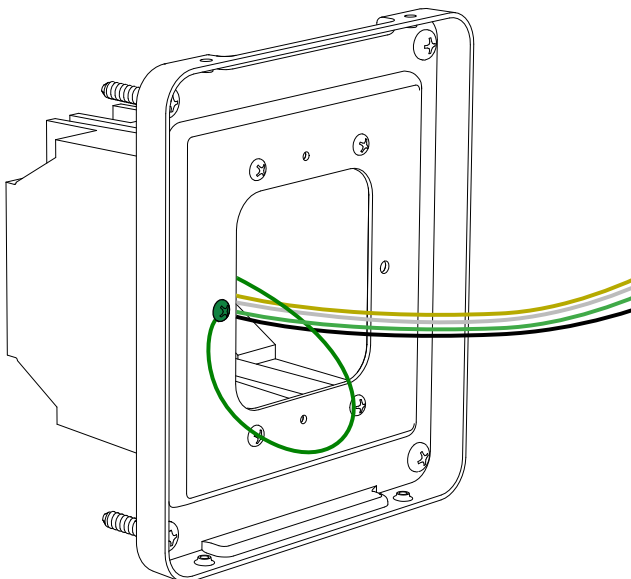
5) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.



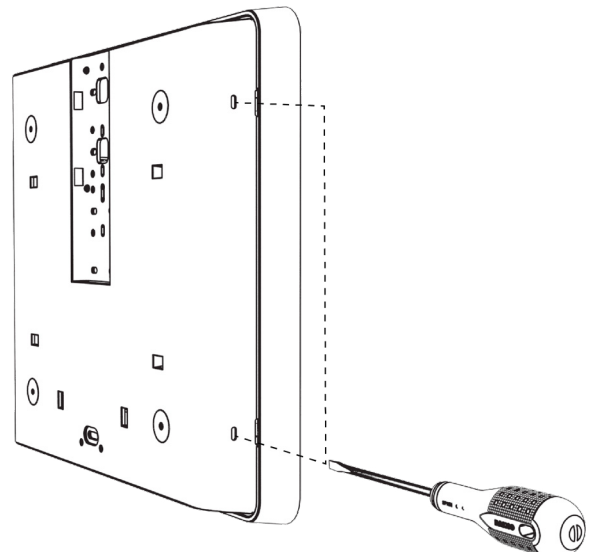
6) Reattach the mounting plate, this time using all four long, silver #6-32x1 screws, then insert the four #8 screws through the mounting plate and into the anchors.



7) Thread any wiring through the mounting plate, and attach a grounding wire to the mounting plate using one of the larger centered holes and the #10-32x3/8 screw.

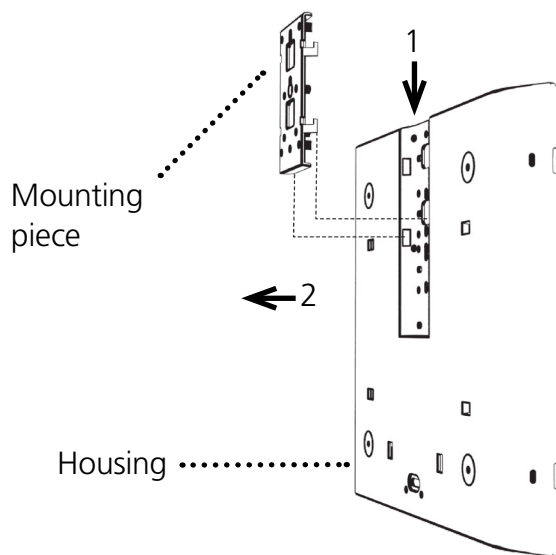


8) Detach the housing from the back of each clock. Do this by inserting a flat-blade screwdriver about 1/8 inch into each of the slot holes until the piece detaches. You may hear a snapping noise as the latches disengage.

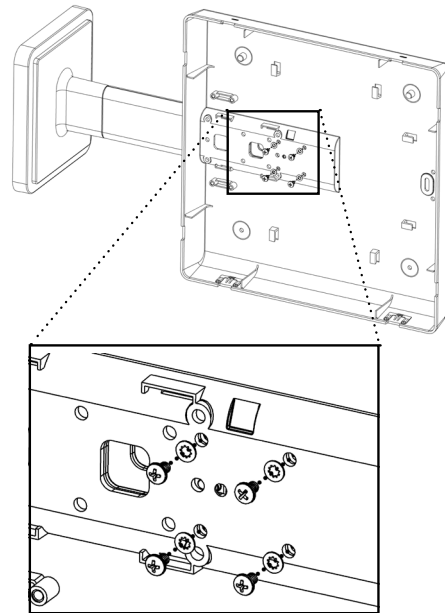


Double Mount Installation - Square Clock - Locally Powered

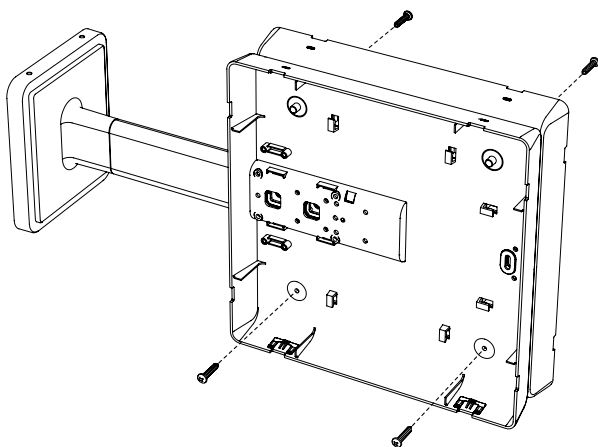
9) Release the mounting piece from the back of each housing by sliding it away from the center of the housing, then pulling it back and away from the housing. You will not need the mounting pieces later; either store them or throw them away at your discretion. **DO NOT THROW AWAY THE HOUSINGS.**



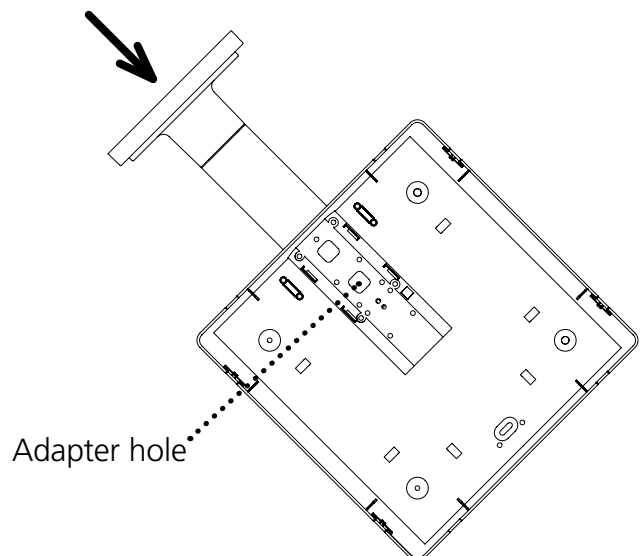
10) Attach both housings to the pole using four black 8-32x7/16 screws and four internal-tooth washers on each side.



11) Attach the housings to each other using the four black M3.5-1.0x10 screws, two on each housing.

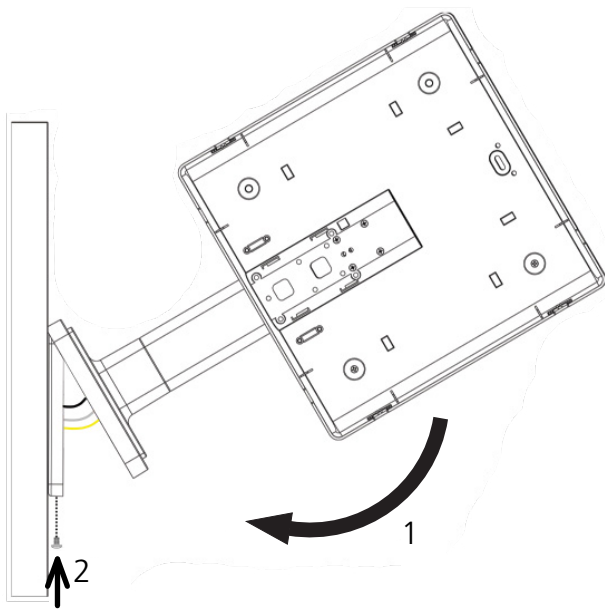


12) Thread at least fifteen inches (38.1cm) of wiring from the gang box through the bottom of the pole until each wire exits through the hole in the adapter.

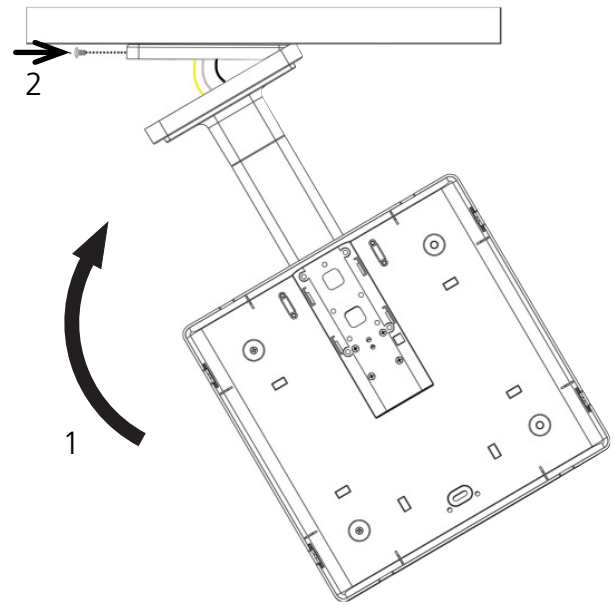


Double Mount Installation - Square Clock - Locally Powered

13) Attach the base of the pole to the mounting plate, so that the lip is on the top of the base, and the holes for the screws are on the bottom of the base. Hang the base on the mounting plate, attach the wires from the bottom of the pole to the wires in the gang box, then screw the other side of the base onto the mounting plate using the two black screws you set aside before.



WALL

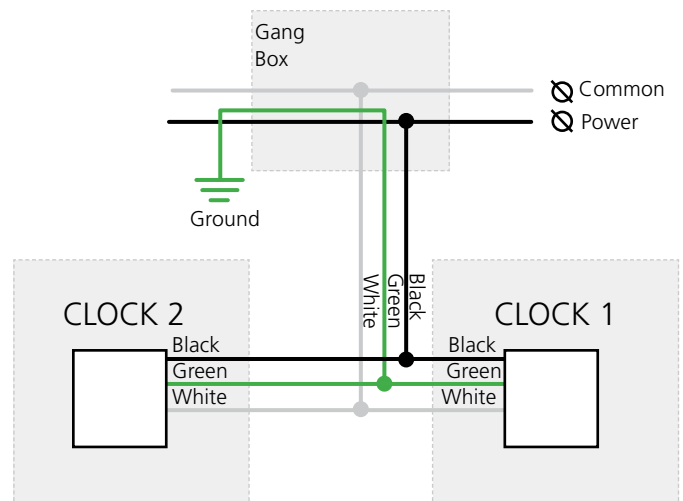


CEILING

14) Attach the power connectors to the wires you threaded through the pole.

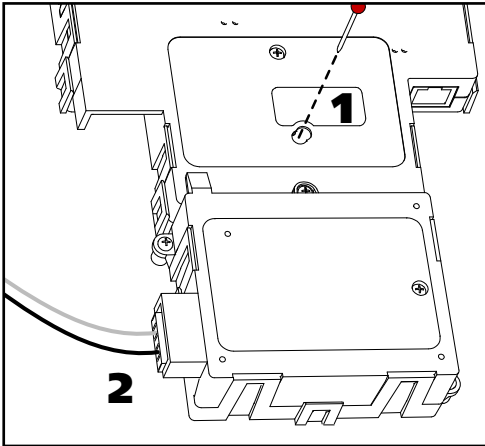
- Attach the Hot wire to the connector's black/orange wire.
- Attach the Common wire to the connector's white/yellow wire.
- Attach the Ground wire to the connector's green wire.

Consult the diagram on the right for additional help.

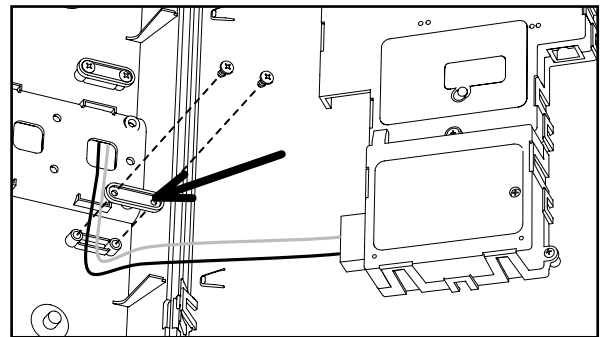


Double Mount Installation - Square Clock - Locally Powered

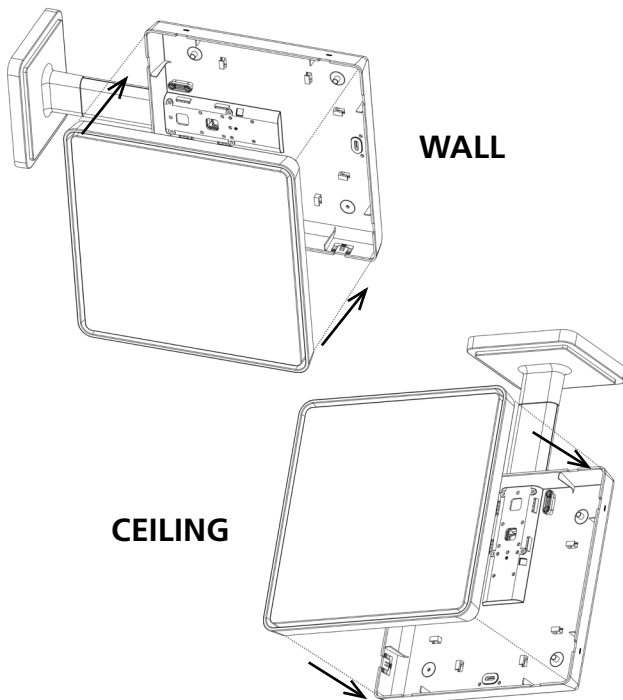
15) **First remove the gearbox pins**, then attach a power connector to the ports on the side of each movement.



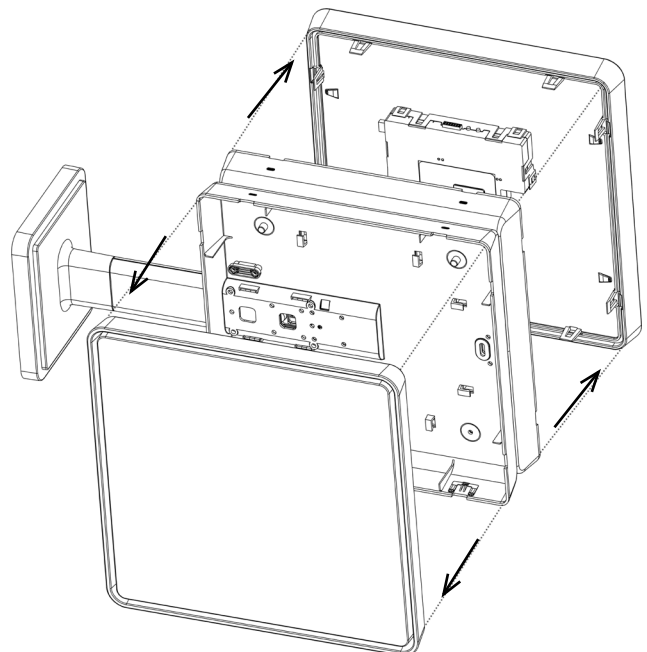
16) Loosen the strain relief by unscrewing the two screws. Slip any excess wiring through them, then tighten the strain relief by reinserting and tightening the screws.



17) Slide both clocks back into their housings. You should hear a snapping noise as the latches reengage.



18) If you feel the need to detach the clock from the housing after the installation has been completed, use a flat-blade screwdriver on the four slots around the outside of the housing. You may hear a snapping noise as the internal latches disengage.

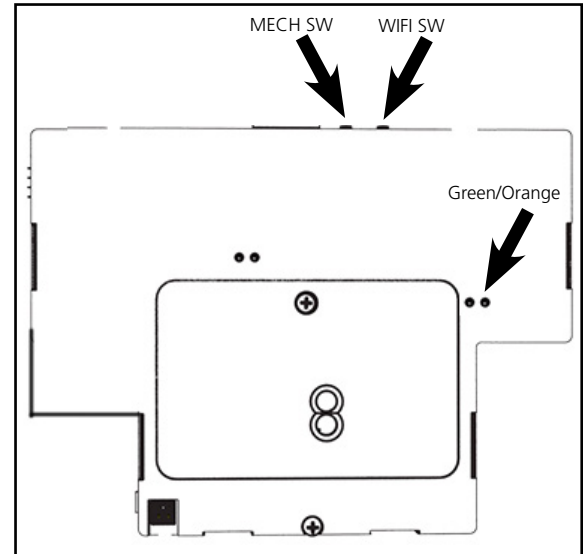


Connecting to the Clock

Access to the clock can be controlled through the WIFI SW button. Pressing the button a given number of times will perform the following actions.

1. **Start Wi-Fi transmitter in Connection Mode.**
2. **Start Wi-Fi transmitter in Direct Mode**
3. **Cancel Current Mode and resume normal operation.**

The functions of each mode are as follows:



Connection Mode - In connection mode, a properly configured Wi-Fi clock is accessible over the facility's network, and will appear on a Network Monitor located on the same subnet. The green LED on the far right side will turn on and remain on when Connection Mode is enabled.

If the web interface is not accessed within four minutes of Connection Mode being activated, the clock will automatically Cancel Current Mode and resume normal operations.

Direct Mode - In Direct mode, a Wi-Fi clock acts as its own Wireless Access Point and can be accessed directly from any Wi-Fi capable computer in range of it. In this mode, a clock will wait four minutes for the user to access it before automatically deactivating its Wi-Fi transceiver. The Orange LED on the far right side will turn on and remain on when Direct Mode is enabled.

While in Direct mode, the clock will temporarily change its IP address to 192.168.240.1. It will revert to whichever IP address is listed on the Network Settings address page once Direct mode has been ended.

If the web interface is not accessed within four minutes of Direct Mode being activated, the clock will automatically Cancel Current Mode and resume normal operations.

Cancel Current Mode - When the WIFI SW button has been pressed three times, the Wi-Fi transceiver will cancel its current mode.

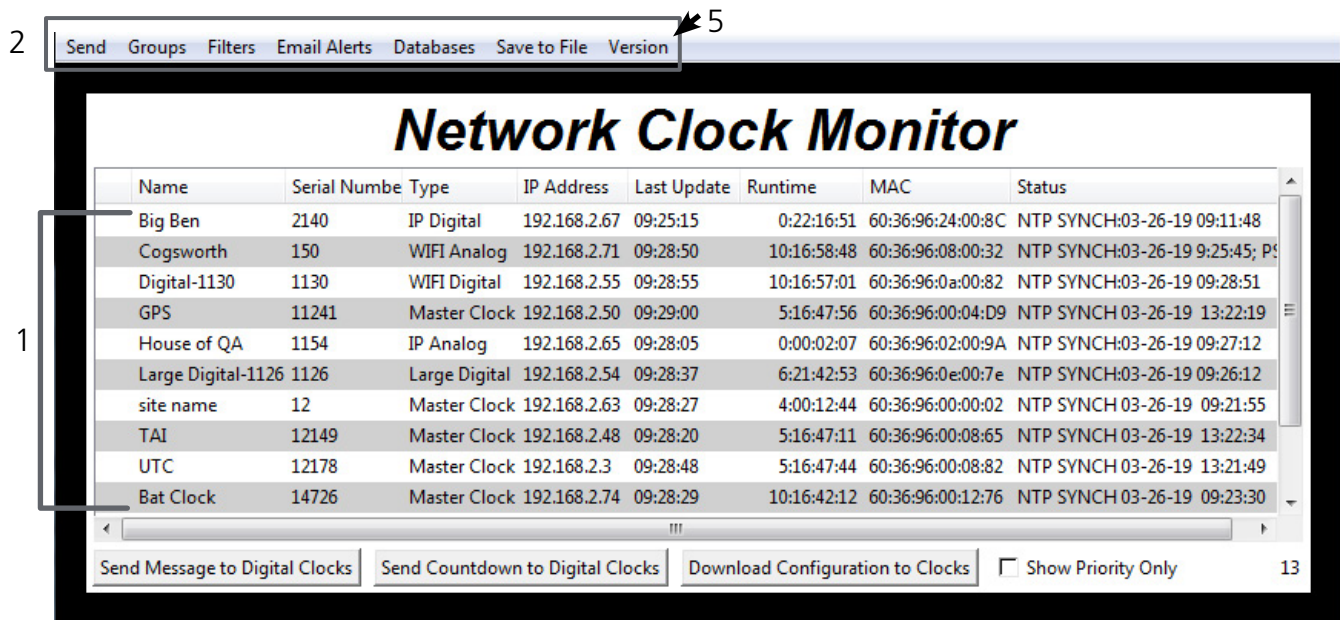
In battery-powered clocks, the transceiver will continue to obtain time data at the scheduled intervals, but the web interface will remain inaccessible until Connection Mode or Direct mode is enabled again.

In locally-powered clocks, the web interface will continue to be accessible. This action would simply cancel Direct Mode and revert the clock to Connection mode.

If the clock loses power for any reason, it will enter Connection Mode for one minute after power is restored to the clock. If the web interface is not accessed within that minute, the clock will automatically Cancel Current Mode and resume normal operations.

Network Monitor Software - Main Screen

YOUR COPY OF THE NETWORK MONITOR MAY HAVE ADDITIONAL COLORS OR BRANDING.
THE MONITOR SHOWN IN THIS MANUAL CONTAINS NO BRANDING OR COLORS.
ALL FEATURES REMAIN THE SAME.



1. **Device List** - Displays all of the relevant IP devices that are active on the system subnet. The monitor screen displays the name of the clock, serial number, type of clock, IP address, last updated time, how long the clock has been running, and the status of the clock. Double clicking on a device in the device list will open the web interface for that device.

Using a right-handed mouse to right-click on any row in the Device List will open the **Quick Access Menu**. See the section in this manual labeled "Network Monitor Software - Quick Access Menu" for more information.

2. **Task Bar** - See the section in this manual labeled "Network Monitor Software - Task Bar Options"

3. **Show Priority** - By selecting this option, the IP device(s) that the user previously "marked as priority" will be the only clocks shown in the program window.

4. **Device Count** - This number is the amount of IP devices that are displayed on the Network Monitor Software.

The Network Monitor has two subtypes:

CFA - Intended for use with Wi-Fi Clocks, Master Clocks, Network Repeaters, Wi-Fi and Wired-IP Large Digital Clocks, and Network Repeaters.

CFL - Intended for use with IP-PoE Digital and IP-PoE Analog Clocks.

You can check the type by clicking on "Version" (5) at the top of the Monitor window.

Network Monitor Software - Main Screen

Send Groups Filters Email Alerts Databases Save to File Version

Network Clock Monitor

Name	Serial Numbe	Type	IP Address	Last Update	Runtime	MAC	Status
Big Ben	2140	IP Digital	192.168.2.67	09:25:15	0:22:16:51	60:36:96:24:00:8C	NTP SYNCH:03-26-19 09:11:48
Cogsworth	150	WIFI Analog	192.168.2.71	09:28:50	10:16:58:48	60:36:96:08:00:32	NTP SYNCH:03-26-19 9:25:45; P
Digital-1130	1130	WIFI Digital	192.168.2.55	09:28:55	10:16:57:01	60:36:96:0a:00:82	NTP SYNCH:03-26-19 09:28:51
GPS	11241	Master Clock	192.168.2.50	09:29:00	5:16:47:56	60:36:96:00:04:D9	NTP SYNCH 03-26-19 13:22:19
House of QA	1154	IP Analog	192.168.2.65	09:28:05	0:00:02:07	60:36:96:02:00:9A	NTP SYNCH:03-26-19 09:27:12
Large Digital-1126	1126	Large Digital	192.168.2.54	09:28:37	6:21:42:53	60:36:96:0e:00:7e	NTP SYNCH:03-26-19 09:26:12
site name	12	Master Clock	192.168.2.63	09:28:27	4:00:12:44	60:36:96:00:00:02	NTP SYNCH 03-26-19 09:21:55
TAI	12149	Master Clock	192.168.2.48	09:28:20	5:16:47:11	60:36:96:00:08:65	NTP SYNCH 03-26-19 13:22:34
UTC	12178	Master Clock	192.168.2.3	09:28:48	5:16:47:44	60:36:96:00:08:82	NTP SYNCH 03-26-19 13:21:49
Bat Clock	14726	Master Clock	192.168.2.74	09:28:29	10:16:42:12	60:36:96:00:12:76	NTP SYNCH 03-26-19 09:23:30

Send Message to Digital Clocks Send Countdown to Digital Clocks Download Configuration to Clocks ☐ Show Priority Only 13

1

2

1. Send Message to Digital Clocks - Allows the user to generate a message that will be sent to digital clocks.

- Enter Password** - The default password is 6063
- Message to be displayed** - Lets the user enter a message to be displayed on digital clocks. Messages may consist of the digits 0-9 and the English letters A-Z. The message is generated in a font that matches its appearance on the clock, so you can preview the appearance of each message before sending it. The message will repeat ten times once sent.
- Send to Selected Clocks** - Applies the message to whichever clocks have been highlighted on the Device List.
- Send to All Digital Clocks** - Applies the message to all IP-PoE Digital, Wi-Fi Digital, and Large Digital Clocks.

Send Message to be displayed on Digital Clocks

A Enter Password:

B Message to be displayed:

Send to Selected Clocks Send to All Digital Clocks

C

D

2. Send Countdown to Digital Clocks - Allows the user to generate a countdown that will be sent to digital clocks.

- Enter Password** - The default password is 6063
- Start values** - Enter the starting hour, minute, and second into the fields. For example, entering a 1 into each field will start a countdown from 1:01:01
- Send to Selected Clocks** - Applies the countdown to whichever clocks have been highlighted on the Device List.
- Send to All Digital Clocks** - Applies the countdown to all IP-PoE Digital, Wi-Fi Digital, and Large Digital Clocks.

Send Countdown Time to be displayed on Digital Clocks

A Enter Password:

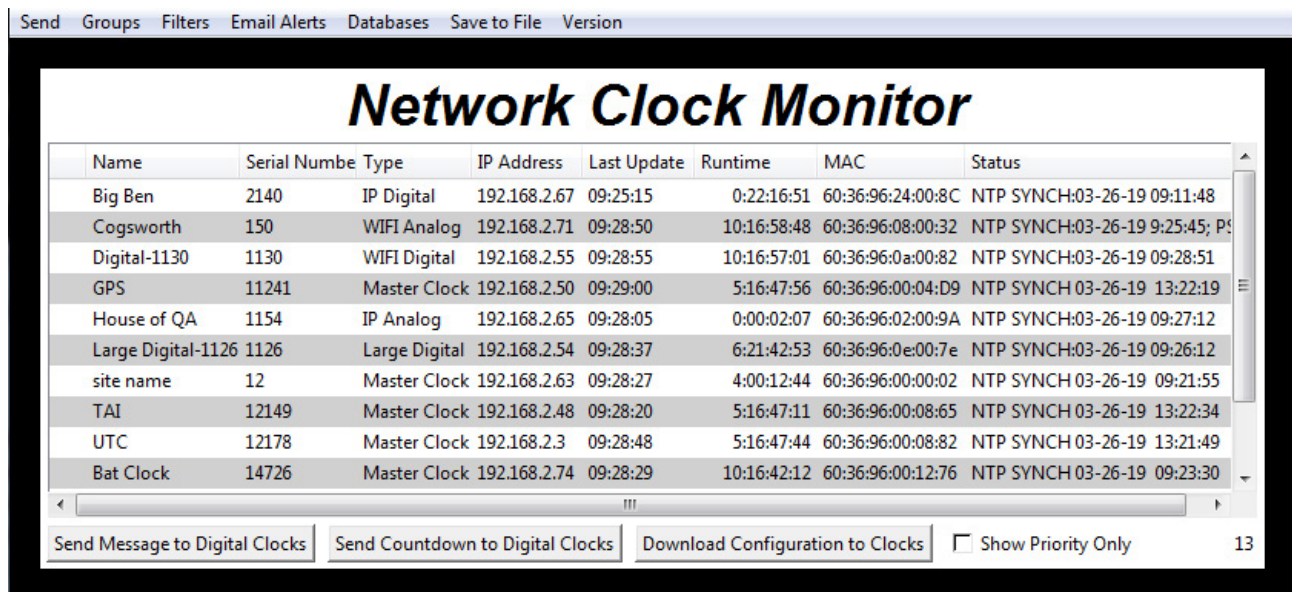
Hours: Minutes: Seconds: B

Send to Selected Clocks Send to All Digital Clocks

C

D

Network Monitor Software - Main Screen (ctd.)



1

1. Download Configuration to Clocks - If a configuration file was created using "Upload and Save Configuration" on the Quick Access Menu, this option lets the user apply the configuration file to other clocks highlighted within the monitor. For more information, see the section of this manual labeled "Network Monitor Software - Quick Access Menu."

Pressing this button will cause the Download Configuration window to appear:

- Enter Password** - The default password is 6063
- Select Configuration** - Pressing the button allows the user to browse their computer for a previously-saved configuration file.
- Send to Selected Clocks** - Applies the configuration file to whichever clocks have been highlighted on the Device List.
- Send to All Valid Clocks** - Applies the configuration file to all applicable devices on the Device List. For instance, an Analog IP clock configuration file would be applied to every Analog IP clock on the Device List.

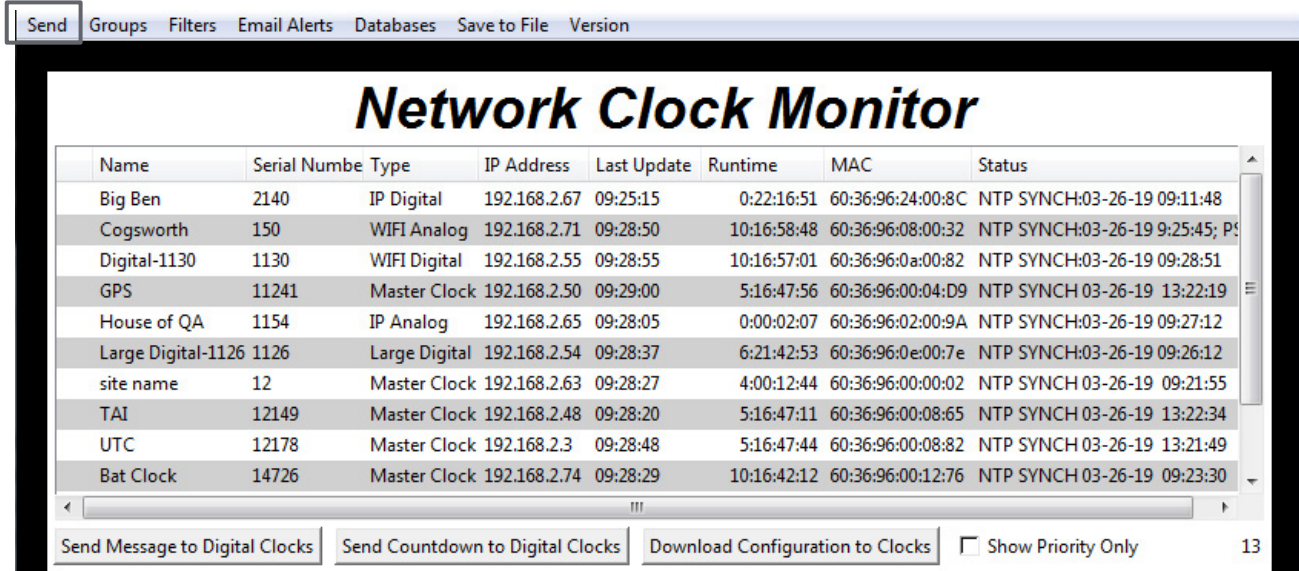


C

D

Network Monitor Software - Task Bar Options

1



1. **Send** - When clicked, this button will display the following options:

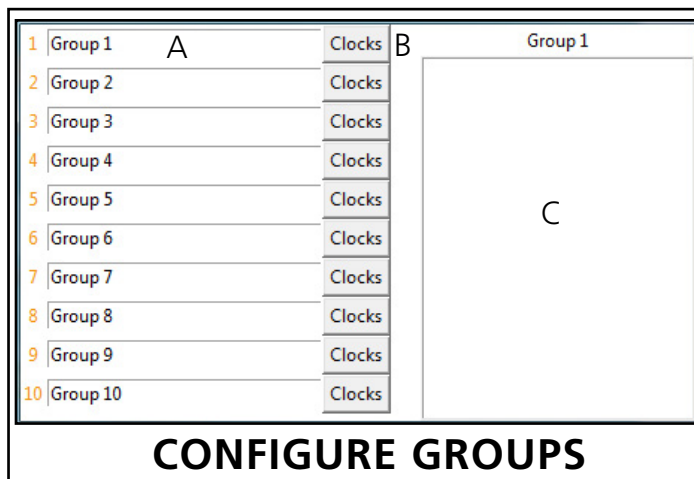
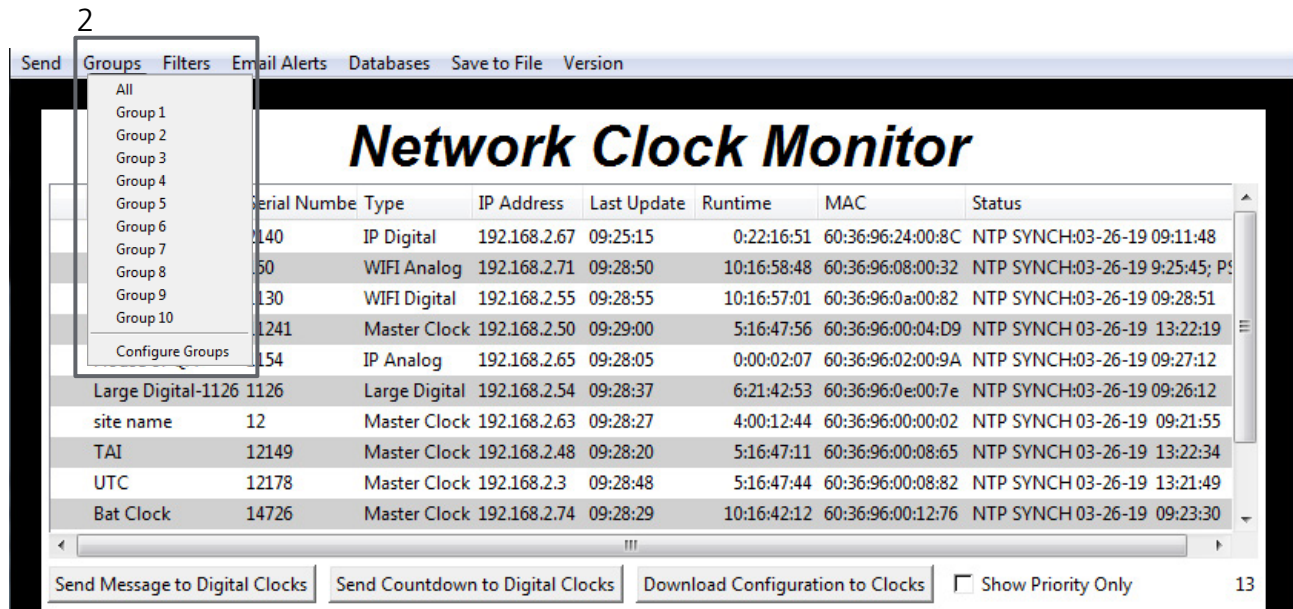
Send Message - Performs the same action as the Send Message to Digital Clocks button. Applies only to Digital Clocks.

Send Looping Message - Refer to the section of this manual, "Network Monitor Software - Quick Access Menu." Applies only to Digital Clocks.

Send Countdown - Performs the same action as the Send Countdown to Digital Clocks button. Applies only to Digital Clocks.

Find Hands - Commands Analog Clocks to resynchronize their hands. The user will be prompted to enter a password to authenticate their permissions. This command can be sent to one analog clock, a selected group of analog clocks, or all of the analog clocks in the system. Applies only to analog clocks.

Network Monitor Software - Task Bar Options



2. Groups - When clicked, this button will open the Groups drop-down menu.

All - Clicking on this option will cause the monitor to display all compatible IP devices on the network.

"Group Name" - Clicking on the name of a group will cause the monitor to display all of the IP devices in that group. Example: Clicking on "Group 1" will cause the monitor to show only the devices that have been added to Group 1 through the Configure Groups menu.

Configure Groups - Opens the group configuration menu (see left).

A. Text Boxes - Entering a name into the text box will change

the name of the group. For example, the first text box currently contains the name "Group 1". This will cause the first group to be shown as "Group 1" in the drop-down menu.

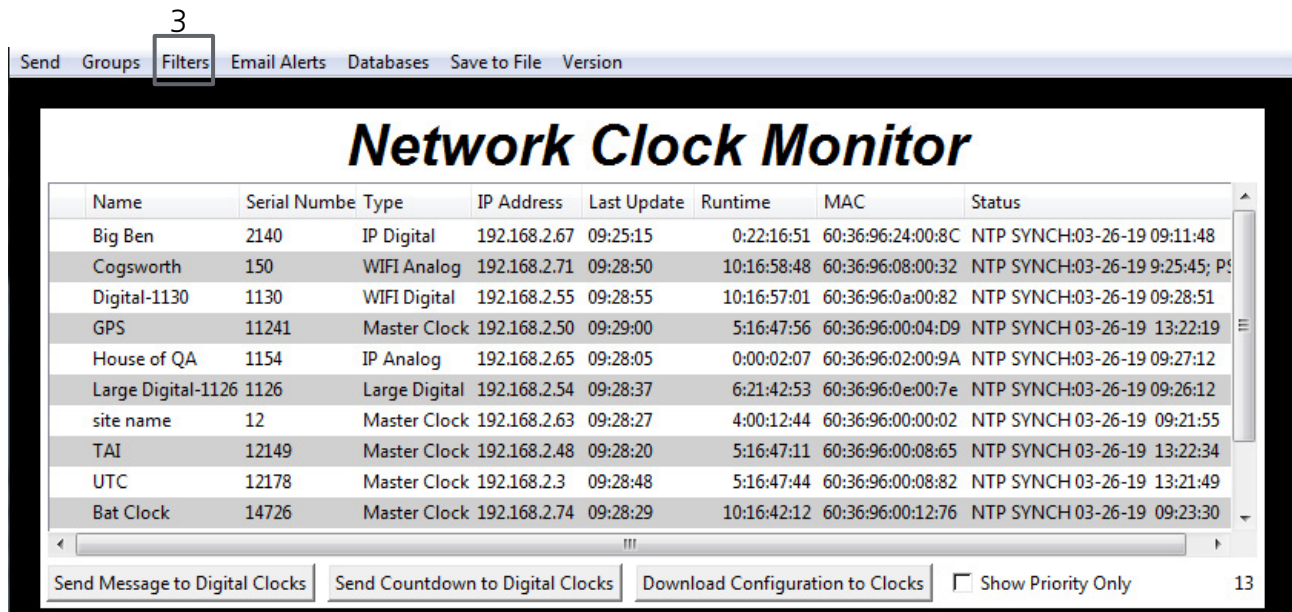
B. Clocks buttons - Clicking on a Clocks button will display each of the group's devices in the box to the right.

C. Device Box - Displays the devices for the selected group. The name of the selected group will appear above the device box.

To add a device to the group, click on a device on the Network Monitor. While holding down the button on the mouse, drag the name of the device over to the device box, then release the button on the mouse.

To remove a device from the group, click on a device in the device box. While holding down the button on the mouse, drag the name of the device outside of the device box, then release the button on the mouse.

Network Monitor Software - Task Bar Options

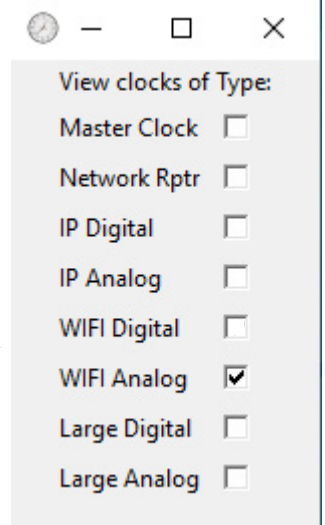


3. Filters - When clicked, this button will display the following options:

Filter By Clock Type - By selecting this option, the user is able to view specific clock types on the Monitor Screen. The clock types users can filter through are: Master Clocks, Network Repeaters, Wi-Fi Analog, Wi-Fi Digital, IP Analog, and/or IP Digital clocks. When the box next to the clock type is checked, the user will be able to view that clock type on the Monitor Screen.

Filter By Name - By selecting this option, the user is able to search for specific clocks by name on the Monitor Screen. The user must type in the name of a clock and check the box next to the word Enable. Once checked, the clocks that match the name will appear.

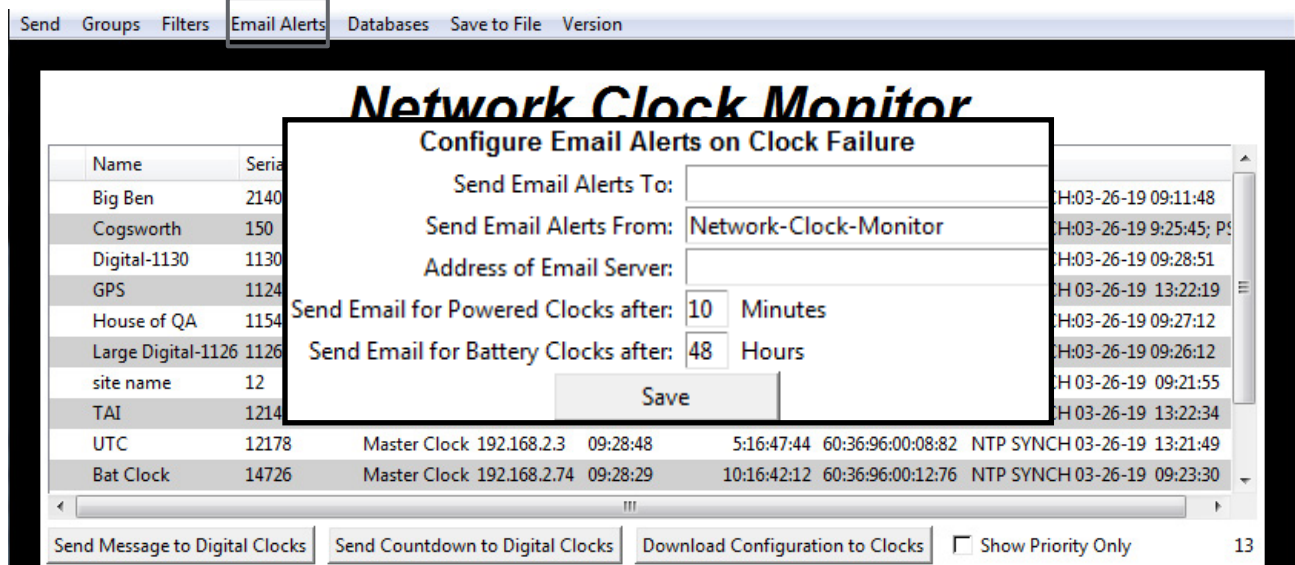
Please Note: When using this option, the submitted name must be identical to



*	Matches any sequence of 0 or more characters in the name
?	Matches any single character in the name
[chars]	Matches any character in the set given by chars. If a sequence of the form x-y appears in chars, then any character between x and y, inclusive, will match.
{[A-Za-z]}	Will match any alphabetical character.
\x	Matches the single character x. This provides a way of avoiding the special interpretation of the characters *?[\ in pattern.

Network Monitor Software - Task Bar Options

4



4. Email Alerts - When clicked, this button will display the following options:

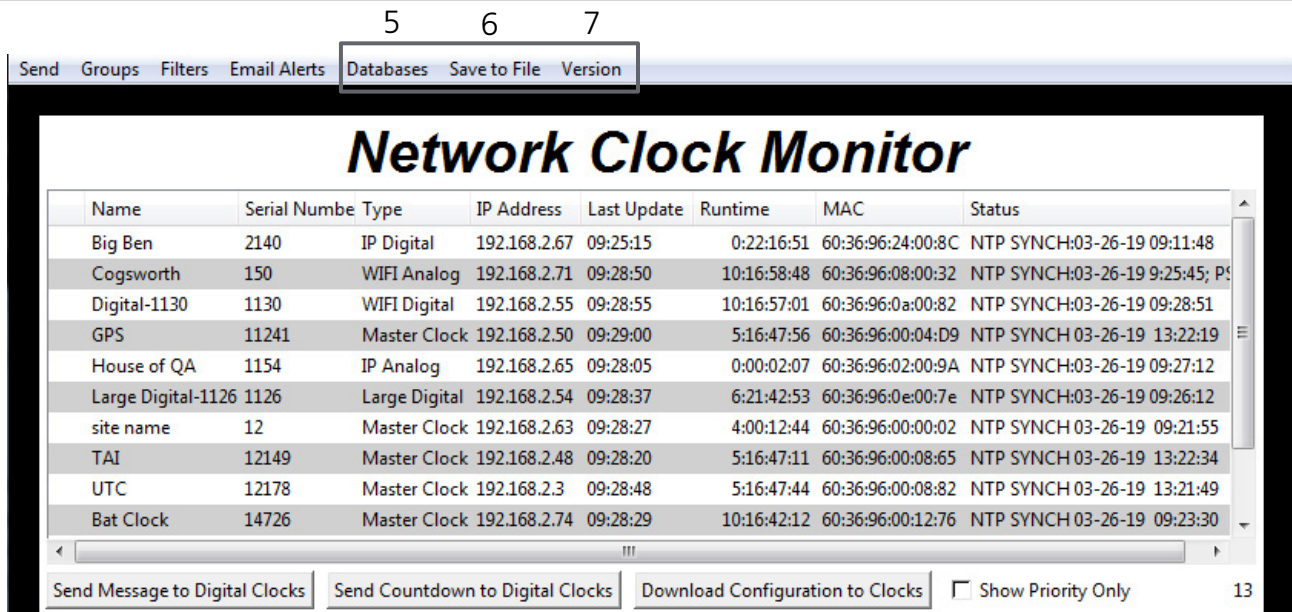
Enable Missing Clock Email Alerts - By selecting this option, the user will receive an email alert if the Network Monitor Software hasn't heard from a listed clock or other network device after a certain amount of time. This function will not work if the monitor is turned off. Does not apply to battery-powered clocks.

Enable Low Battery Email Alerts - By selecting this option, the user will receive an email alert if a battery-powered Wi-Fi Analog clock is synchronizing while low on batteries. This function will not work if the monitor is turned off. Applies only to battery-powered analog clocks. This option is not available with the CFL version of the monitor.

Configure Email Alerts - By selecting this option, the user is able to choose which email address the alerts are sent to, the email identity of the sender, the address of the email server, and the amount of time between an event and the email being sent. Once the information is filled in, click the save button. When pressed, this will save all of the settings that were entered.

Send Test Email - By selecting this option, the user is able to send a test email to the email address specified in the Configure Email Alerts option.

Network Monitor Software - Task Bar Options



5. Databases - When clicked, this button will display the following options:

Download Configuration - By selecting this option, the user can load a clock's setting from a PC to another clock of the same type.

Upload Configuration - By selecting this option, the user can load the settings from a Wi-Fi clock and save them to a PC.

Get Wi-Fi Clock Firmware From Server - Updates software on the selected clock by downloading the latest version from Internet update servers. Applies only to Wi-Fi enabled clocks. This option is not available with the CFL version of the monitor.

Get Wi-Fi Clock Web Pages From Server - Updates software on the selected clock's network card and web interface by downloading the latest version from Internet update servers. Applies only to Wi-Fi enabled clocks. This option is not available with the CFL version of the monitor.

6. Save to File - When clicked, allows the user to save the all of the information in the Network Monitor device list as a .CSV file, which can be printed from Microsoft Excel. If the monitor is showing devices from a specific Group, then the .CSV file will contain only the devices in that group.

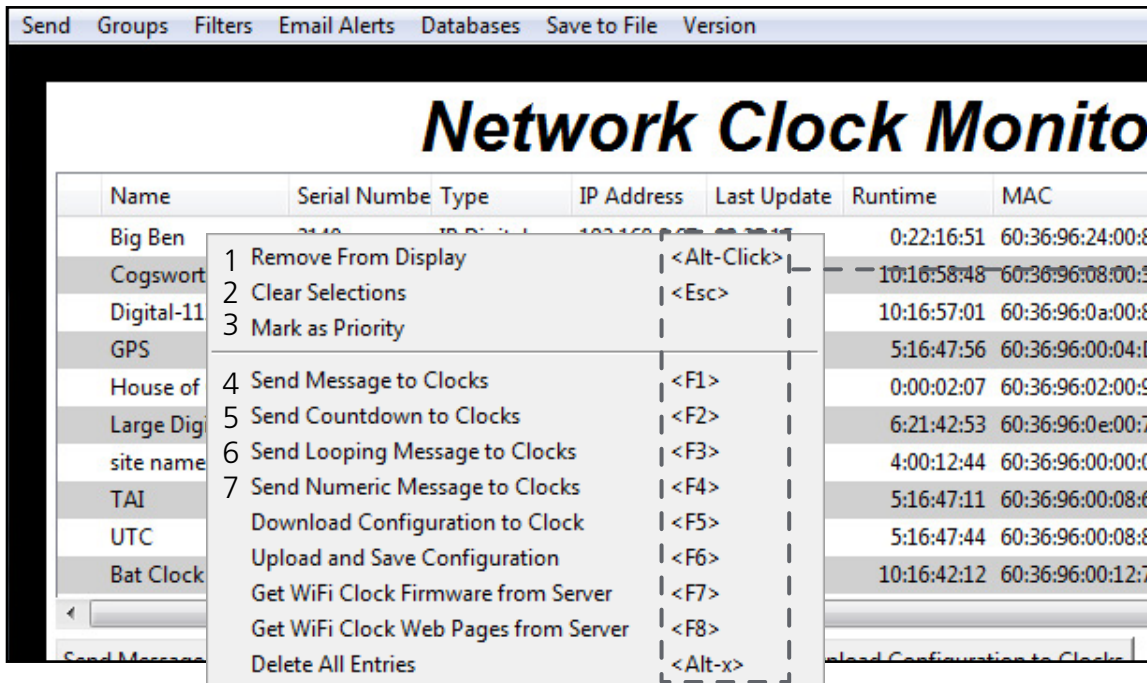
7. Version - When clicked, this button will display version number information of the Network Monitor Software and the Software Version Number (SVN). This information is needed only when contacting technical support and will not affect your usage of the Network Monitor Software. This button will also display the Monitor subtype.

The Network Monitor has two subtypes:

CFA - Intended for use with Wi-Fi Clocks, Master Clocks, Network Repeaters, Wi-Fi Large Digital Clocks, and Network Repeaters.

CFL - Intended for use with IP-PoE Digital, Wired IP Large Digital, and IP-PoE Analog Clocks.

Network Monitor Software - Quick Access Menu

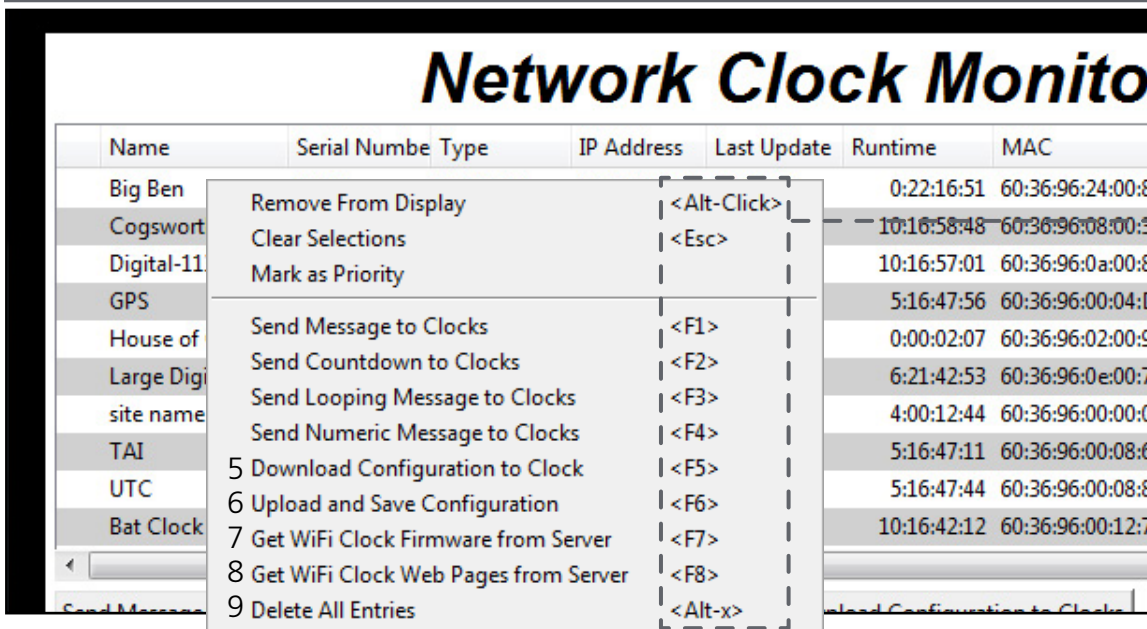


Please note: These options can also be accessed by using the keyboard shortcuts noted in the Quick Access Menu

Using a right-handed mouse to right-click on any row in the Device List will open the Quick Access Menu.

1. **Remove from Display** - When clicked, this option will remove the selected clock from the Device List.
2. **Clear Selections** - This option will deselect any highlighted items on the Device List.
3. **Mark as Priority** - Marking a clock(s) as priority is another filtering option for a user to segment the clocks. Once a clock is marked as priority, there will be an asterisk (*) next to the chosen clock.
4. **Send Message to Clocks** - Performs the same action as the Send Message to Digital Clocks button.
5. **Send Countdown to Clocks** - Performs the same action as the Send Countdown to Digital Clocks button.
6. **Send Looping Message to Clocks** - Performs a similar action to the Send Message to Digital clocks, but allows the user to select the number of times that the message will repeat. It also provides a longer text box for sending longer messages.
7. **Send Numeric Message to Clocks** - Performs the same action as the Send Message to Digital Clocks button, but messages are limited to four digits consisting of numbers 0-9.

Network Monitor Software - Quick Access Menu



Please note: These options can also be accessed by using the keyboard shortcuts noted in the Quick Access Menu

Using a right-handed mouse to right-click on any row in the Device List will open the Quick Access Menu.

5. Download Configuration to Clock - If a configuration file was created using "Upload and Save Configuration" on the Quick Access Menu, this option lets the user apply the configuration file to other clocks highlighted within the monitor. This function will not work with Wi-Fi enabled clocks in Direct Mode. Clicking on this item will cause the Download Configuration window to appear:

Download Clock Configuration

A Enter Password:

B Select Configuration:

C

- A. Enter Password - The default password is 6063
- B. Select Configuration - Pressing the button allows the user to browse their computer for a previously-saved configuration file.
- C. Send to Selected Clocks - Applies the configuration file to whichever clocks have been highlighted on the Device List.
- D. Send to All Valid Clocks - Applies the configuration file to all applicable devices on the Device List. For instance, a Digital IP clock configuration file would be applied to every Digital IP clock on the Device List.

6. Upload and Save Configuration - By selecting this option, the user can copy the settings from an IP device and save them to whichever computer is running the Network Monitor. Your computer will automatically prompt you for the location of the saved configuration file. This function will not work with Wi-Fi enabled clocks in direct mode.

7. Get Wi-Fi Clock Firmware From Server - Updates software on the clock by downloading the latest version from the manufacturer's cloud server. Applies only to Wi-Fi enabled clocks. This option is not available with the CFL version of the monitor.

8. Get Wi-Fi Clock Web Pages From Server - Updates software on the network card and web interface by downloading the latest version from the manufacturer's cloud server. Applies only to Wi-Fi enabled clocks. This option is not available with the CFL version of the monitor.

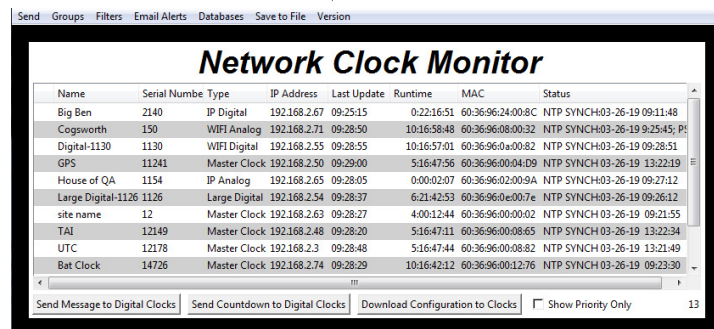
9. Delete All Entries - Clears all clocks from the Monitor. Clocks will be re-added to the monitor as they check in.

Network Monitor Software - Error messages

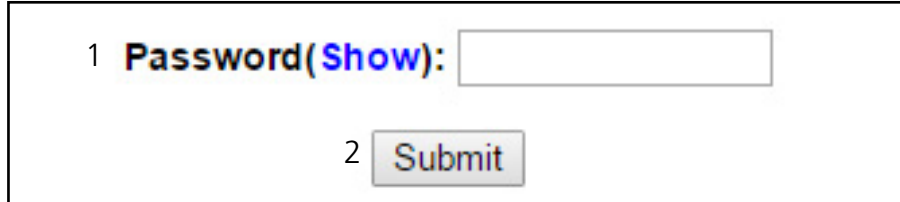
1. **Characters are Red** - When the characters of a clock have turned red, then the clock has not sent its status within the last 10 minutes.
2. **Characters are Gray** - When the characters of a clock have turned gray, then the clock was once displayed on the Network Monitor, but upon launching the Network Monitor program this most recent time, the clock cannot be found on the network.
3. **Characters are Black** - When the characters of a clock are black, this means that the clock is working normally.

The CFA and CFL versions of the Monitor cannot run at the same time. If managing Wi-Fi clocks and IP clocks at the same time, use the CFA Network Monitor instead of the CFL Network Monitor. Be aware, not all features on the CFA Monitor will function on IP-LAN clocks.

You can check if you have the CFA or CFL version by clicking on "Version" at the top of the monitor window.



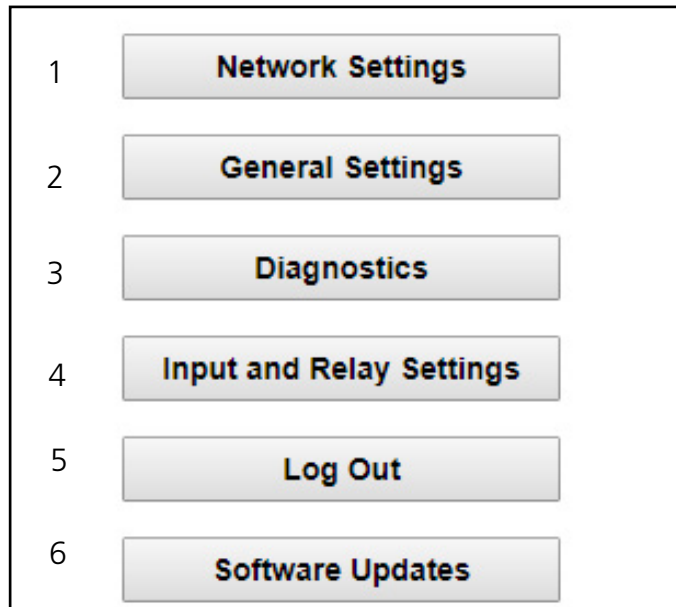
Web Interface - Log In



A screenshot of a web interface login form. It consists of a rectangular box containing two elements: a text input field and a submit button. The text '1 Password(Show):' is positioned to the left of the input field. The number '2' is positioned to the left of the 'Submit' button.

1. **Password** - Location where the password is entered. The default password is **6063**, but this can be changed within the settings.
2. **Submit** - When pressed, the program will check the password. If the password is correct, it will grant the user access to the Web Interface.

Web Interface - Home Page



A screenshot of a web interface home page menu. It features a vertical list of six buttons, each with a number to its left. The buttons are: '1 Network Settings', '2 General Settings', '3 Diagnostics', '4 Input and Relay Settings', '5 Log Out', and '6 Software Updates'.

1. **Network Settings** - Takes the user to the Network Settings page. Network Settings includes any setting used by the clock to communicate with the network.
2. **General Settings** - Takes the user to the General Settings page. General Settings includes settings for Time Configuration, Daylight Saving Time, NTP Servers, and Login Settings.
3. **Diagnostics** - Takes the user to the Diagnostics page and troubleshooting options.
4. **Input and Relay Settings** - Takes the user to the Input and Relay Settings page.
5. **Log Out** - Logs the user out of the clock software. The user will need to log back in before they are able to change any settings.
6. **Software Updates** - Takes the user to the Software Updates page.

Web Interface - Network Settings

NETWORK SETTINGS

1	Clock Name:	Room 302
2	Serial Number:	1109
3	MAC Address:	60:36:96:0a:00:6d
4	Select Network:	Series1 ▼
5	Network:	Series1
6	Network Password (Show):	
7	DHCP Auto On:	On ▼
8	IP Address:	192.168.4.4
	Subnet Mask:	255.255.255.0
	Gateway Address:	192.168.4.1
	Auto DNS:	On ▼
	DNS Address:	192.168.0.31
	Broadcast to Monitors:	On ▼
	Send Specific Monitor IP:	Off ▼
	Monitor IP Address:	0.0.0.0

Enterprise Settings

Submit

- Clock Name** - This field allows the user to set a name used to identify the clock on the Network Monitor. This name is also used to identify the clock in a network list while the clock is in Direct-Connect mode. The name must be fewer than 26 characters.
- Serial Number** - The clock's serial number. It cannot be changed.
- MAC Address** - This field shows the clock's permanent machine address. It cannot be changed.
- Select Network** - The clock scans for access points that are broadcasting their network name (SSID), and allows the user to select one instead of manually entering the name in the Network box. You may need to refresh the web page for more network names to appear. **SSIDs must use only English letters, numbers, and spaces. No symbols.**
- Network** - This field allows the user to connect the clock to a wireless network by entering the network name (SSID). The information in this field is overridden if a value was selected in the Select Network field. **SSIDs must use only English letters, numbers, and spaces. No symbols.**
- Network Password** - This field allows the user to connect the clock to a wireless network by entering the network password. Network passwords must be 32 characters or fewer. The characters of the password can be shown by placing the computer's cursor over the word "show"**THIS IS ALSO USED AS THE PASSWORD FIELD FOR WPA2-Enterprise NETWORKS.**
- DHCP Auto On** - Allows the user to set whether or not the clock will use a DHCP server to determine the IP address for the clock.
- IP Address** - This field will display the clock's IP address. If DHCP Auto On is enabled, this address will be assigned by the DHCP server. If DHCP Auto On is disabled, then the user may set their own static IP address.

Web Interface - Network Settings (ctd.)

NETWORK SETTINGS

	Clock Name:	Room 302
	Serial Number:	1109
	MAC Address:	60:36:96:0a:00:6d
	Select Network:	Series1 ▼
	Network:	Series1
	Network Password (Show):	
	DHCP Auto On:	On ▼
	IP Address:	192.168.4.4
9	Subnet Mask:	255.255.255.0
10	Gateway Address:	192.168.4.1
11	Auto DNS:	On ▼
12	DNS Address:	192.168.0.31
13	Broadcast to Monitors:	On ▼
14	Send Specific Monitor IP:	Off ▼
15	Monitor IP Address:	0.0.0.0

16 17

9. Subnet Mask - This field allows the user to set the subnet mask for their clock. If DHCP Auto On is enabled, this address will be assigned by the DHCP server. If DHCP Auto On is disabled, then the user may set their own subnet mask.

10. Gateway Address - This field allows the user to set the gateway IP address. If DHCP Auto On is enabled, this address will be assigned by the DHCP server. If DHCP Auto On is disabled, then the user may set their own Gateway Address.

11. Auto DNS - Allows the user to set whether or not the clock will obtain an Domain Name Server (DNS) address from the network's DHCP server.

12. DNS Address - This field allows the user to set the DNS Server IP address. If Auto DNS is enabled, this address will be assigned by the DHCP server. If Auto DNS is disabled, then the user may set their own DNS Address.

13. Broadcast to Monitors - Broadcasts the clock's presence to all instances of Network Monitor Software running on the network.

14. Send Specific Monitor IP - When set to ON, broadcasts the clock's presence to an instance of the Network Monitor Software running on a specific IP address.

15. Monitor IP Address - When Send Specific Monitor IP is set to ON, the clock will broadcast its presence to the IP address entered in this field. If Send Specific Monitor IP is set to off, this field is not accessible.

16. Enterprise Settings - Takes the user to a page for WPA2 Enterprise Encryption Settings.

17. Submit - Applies any changes to the previous options when pressed. Note that changes to some fields, including IP Address, Subnet Mask, and DNS Address will not be applied until the clock is power-cycled.

Web Interface - Enterprise Encryption Settings

WPA ENTERPRISE SETTINGS

1 **User Name:**

2 **Outer Authentication:**

3 **Inner Authentication:**

THIS SECTION IS REQUIRED ONLY IF YOUR NETWORK USES WPA2-ENTERPRISE ENCRYPTION

WPA2-PSK NETWORKS DO NOT REQUIRE USE OF THESE SETTINGS. IF YOUR WI-FI NETWORK PROMPTS YOU FOR A PASSWORD BUT NO USER NAME WHEN CONNECTING, YOU ARE LIKELY USING A WPA2-PSK NETWORK. CONSULT WITH YOUR ORGANIZATION'S NETWORK ADMINISTRATOR FOR QUESTIONS ABOUT YOUR NETWORK SECURITY SETTINGS.

1. User Name - This field allows the user to enter a username for RADIUS Authentication.

Password - Is entered on the main network page.

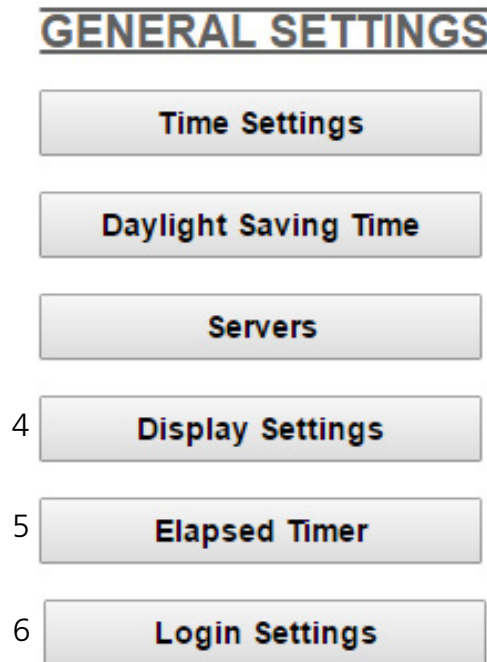
2. Outer Authentication - Allows the user to set the outer authentication scheme. The available protocols are EAP-FAST, EAP-TTLS, and EAP-PEAP

3. Inner Authentication - Allows the user to see the inner authentication scheme. The only available protocol is EAP-MSCHAP.

4. Submit - Applies any changes to the previous options when pressed.

WPA2-PSK Networks will ignore all settings entered on this page.

Web Interface - General Settings



1. **Time Settings** - Takes the user to the Time Settings page.
2. **Daylight Saving Time** - Takes the user to the Daylight Saving Time page.
3. **Servers** - Takes the user to the Servers page.
4. **Display Settings** - Takes the user to the Display Settings page.
5. **Elapsed Timer** - Takes the user to the Elapsed Timer page. This button will only appear if the Elapsed timer is attached to the clock.
6. **Login Settings** - Takes the user to the Login Settings page.

Web Interface - Time Settings

TIME SETTINGS

1	Set Time	02 ▾ : 08 ▾ PM ▾
2	Set Date	09/27/2016
3		<input type="button" value="Change Time"/>
4	GMT Offset	-4
5	Bias Seconds	0
6		<input type="button" value="Change Bias/Offset"/>

1. **Set Time** - This setting allows the user to set the clock to a specific time. Fields for each portion of the time may be accessed via the drop-down menu. New NTP data will override this information.
2. **Set Date** - This setting allows the user to set the clock to a specific date. The date must be entered in the following multi-digit format: mm/dd/yyyy where m is a month digit, d is a day of the month digit, y is a digit of the year. New NTP data will override this information.
3. **Change Time** - Applies the information configured in the Set Time and Set Date settings.
4. **GMT Offset** - This setting allows the user to set which time zone the clock will use when displaying the time. For instance, London is an offset of 0, New York is an offset of -5 and Hong Kong is an offset of +8. The clock may be configured to function as part of a Zone Clock through this option.
5. **Bias Seconds** - This setting has two applications:

The first application: is to allow the user to set a fraction of an hour for GMT/UTC offset when the clock is used as a time zone clock and required to present a time where the GMT offset is less than an hour. For example, the city of Adelaide in Australia has a +10:30 GMT/UTC offset. In this scenario, the clock would be configured with +10 hours in field number 9, while for adjusting the half hour difference, the value 1800 seconds should be entered, which reflects 30 minutes.

The second application: Some applications require the clock to display an offset time with a set value from the actual time. For example, if the time received is 12:00, offsetting the bias second + or – will cause the clock to display this offset time from the actual received time. This range permits -9999 seconds to +9999 seconds.

6. **Change Bias/Offset** - Applies the information configured in the GMT Offset and Bias Seconds settings.

Web Interface - Daylight Saving Time

DST SETTINGS

1 Day of Week in Month ▼

Daylight Saving Time Starts

Second ▼ Sunday ▼

Of: March ▼ at: 2:00 ▼

Daylight Saving Time Ends

First ▼ Sunday ▼

Of: November ▼ at: 2:00 ▼

2 Submit

DST SETTINGS

1 Day of Month ▼

Daylight Saving Time Starts

▼ January ▼ at: 0:00 ▼

Daylight Saving Time Ends

▼ January ▼ at: 0:00 ▼

2 Submit

DST SETTINGS

1 By Country ▼

North American Group ▼

North American Group

US

Canada (most)

Baja California

Bermuda

Turks and Caicos

2 Submit

1. **Method for Defining DST** - There are four methods for defining Daylight Saving Time. The method can be selected from the drop-down menu. Clicking on the Select button displays additional options for that method.

- **Day of the Week in the Month** - This mode allows the user to select the day of the week, month, and time for when the clock will switch to daylight Saving Time. Once the day, month, and time have been set, click Submit to apply the settings to the clock. Example: Second Sunday of March at 2:00.
- **Day of the Month** - This mode allows the user to select the specific day of the month and time for when the clock will switch to daylight saving time. Once the date, month, and time are set, click Submit to apply the settings to the clock. Example: March 1st at 2:00.
- **By Country** - This mode allows the user to select preset Daylight Saving Time information associated with a specific country or group of countries. Select the preset from the drop-down menu, then click Submit to apply the settings to the clock.
- **None** - This mode does not change the clock for Daylight Saving Time.

2. **Submit** - Applies any changes to the previous options when pressed.

Web Interface - Servers

SERVER SETTINGS

1	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">1st Server Address:</td> <td><input type="text" value="us.pool.ntp.org"/></td> </tr> <tr> <td>2nd Server Address:</td> <td><input type="text" value="ca.pool.ntp.org"/></td> </tr> <tr> <td>3rd Server Address:</td> <td><input checked="" type="radio"/> <input type="text" value="de.pool.ntp.org"/></td> </tr> <tr> <td>4th Server Address:</td> <td><input type="text" value="ru.pool.ntp.org"/></td> </tr> <tr> <td>5th Server Address:</td> <td><input type="text" value="uk.pool.ntp.org"/></td> </tr> </table> </div>	1st Server Address:	<input type="text" value="us.pool.ntp.org"/>	2nd Server Address:	<input type="text" value="ca.pool.ntp.org"/>	3rd Server Address:	<input checked="" type="radio"/> <input type="text" value="de.pool.ntp.org"/>	4th Server Address:	<input type="text" value="ru.pool.ntp.org"/>	5th Server Address:	<input type="text" value="uk.pool.ntp.org"/>	Server Performance EXCELLENT EXCELLENT EXCELLENT EXCELLENT EXCELLENT
1st Server Address:	<input type="text" value="us.pool.ntp.org"/>											
2nd Server Address:	<input type="text" value="ca.pool.ntp.org"/>											
3rd Server Address:	<input checked="" type="radio"/> <input type="text" value="de.pool.ntp.org"/>											
4th Server Address:	<input type="text" value="ru.pool.ntp.org"/>											
5th Server Address:	<input type="text" value="uk.pool.ntp.org"/>											
2	Rotate Servers: <input checked="" type="checkbox"/>	Server Performance 1-20% POOR 20-40% SATISFACTORY 40-60% FAIR 60-80% GOOD 80-100% EXCELLENT										
3	Network Sync Every: <input type="text" value="4 Hours"/>											
4	<input type="button" value="Submit"/>											

Sapling Web Server: V.0.0.0

1. **Server Addresses** - These fields allow a user to set the address that the clock will use to obtain NTP time. Web addresses may be entered as a URL or IP number. The active server is identified by the red dot.
2. **Rotate Servers** - When left unchecked, the clock will only attempt to obtain time from the selected NTP server, and will only attempt to try other servers if the selected server fails. When checked, the clock will rotate through the listed addresses each time the clock performs a synchronization check.
3. **Network Sync Every** - Allows the user to decide how often the clock will power its Wi-Fi transmitter in an attempt to acquire NTP time.
4. **Submit** - Applies any changes to the previous options when pressed.

If a Server Address entry is left blank, that entry will be skipped. If all entries are set to blank, the clock will function as an unsynchronized quartz clock. It will leave the network adapter powered down unless it has been activated by a movement button-press command.

Web Interface - Login Settings

1

2

3

LOGIN SETTINGS

Viewer Password:

Confirm Password:

Select User Level Viewer ▼

Submit

1. **Viewer/Technician/Administrator Password** - Allows the Administrator to set up a new password to the web interface.

2. **Confirm Password** - The new password must also be entered here for a change to be made.

3. **Select User Level** - Allows the Administrator to select an access level for the new password to be applied to. The user levels have the following permissions:

Viewer - Allows the user to view all of the settings in the clock Web Interface, but does not allow the user to add, remove, or change any setting. The default Viewer password is 1111

Technician - Allows the user to view all of the settings in the clock Web Interface and allows the user to change any setting except for those listed on the Login Settings page. The default Technician password is 6063.

Administrator - Allows the user to view and change any setting in the clock Web Interface, including the passwords on the Login Settings page. The default Administrator password is 8085.

4. **Submit** - Applies any changes to the previous options when pressed.

Web Interface - Diagnostics

DIAGNOSTICS

1	Software Version: 1.0.1
2	Web Page Version: 1.0.1
3	SVN Revision: 2624
4	Webpage SVN: 2622
5	Run Time From Last Power Up [d h:m:s]: 0 22:19:23
6	Total Run Time [d h:m]: 6 01:02
7	Last Received Signal at [m-d-y h:m:s]: 02-01-17 14:20:12
8	Network Sync Every [m]: 5
9	Worst Server: jp.pool.ntp.org
10	WiFi Signal Strength [dBm]: -37
11	Display [date time status]: 01-31-17 16:05:29 - OK
12	Troubleshooting
13	Home

1. **Software Version** - Lists the software version for the main processing board of the clock.
2. **Web Page Version** - Lists the software version for the clock's web interface and network card.
3. **Firmware SVN Revision** - Lists the SVN number for the Firmware.
4. **Web Page SVN Revision** - Lists the SVN number for the Web Page.
5. **Run Time From Last Power Up** - Lists the amount of time that has passed since the clock started receiving power.
6. **Total Run Time** - Lists the total amount time that the clock has been powered since it was built.
7. **Last Received Signal at** - Lists the time and date when the clock last received NTP data.
8. **Network Sync Every** - Lists the number of minutes that pass between each time that the clock powers its transmitter to get NTP data.
9. **Worst Server** - Lists the number of the NTP server that has responded the least often when contacted for NTP data. See "Web Interface - Servers" to see the server address/domain associated with each number. When using only 1 server, it will always be shown as the "worst server," as there are no other servers to compare its performance to.
10. **Wi-Fi Signal Strength** - Lists the signal strength between the clock and wireless access point or wireless router in dBm. The closer the number is to 0, the stronger the signal is.
11. **Display [date time status]** - Lists the date and time of the last instance where the display LEDs were tested, and whether or not the test was successful. This time will usually correspond to the last time that the clock was first powered on, or the last time that the Check Display button was pressed on the Troubleshooting page.
12. **Troubleshooting** - Takes the user to the Troubleshooting page. On this page, the user can have the clock check the display for errors, force a time synchronization update, or restore the clock to the factory default settings.
13. **Home** - Returns the user to the "WIFICONFIG" Home Page.

Web Interface - Troubleshooting



1. **Check Hands** - When clicked, this button causes the clock to test the position and accuracy of the hands as they travel around the clock. If an error is detected, the clock will stop and the Red LED on the back of the clock will start to blink. Refer to the table below for the meaning of each blink:

NUMBER OF FLASHES

ERROR MESSAGE

1,2

Error detected in second hand. Confirm that hands are not hitting each other, then repeat the test.

3,4,5

Error detected in the minute or hour hand. Confirm that hands are not hitting each other, then repeat the test.

6,7,8

Call tech support. (+1) 215.322.6063

The clock will return to showing the time after ten minutes.

2. **Set to 12:00** - When clicked, this button causes the clock to set the hour, minute, and second hands to the 12 o'clock position. The clock will return to showing the time after four hours.

3. **Restore Default settings** - When clicked, this button causes the clock to revert to the factory default settings. All data entered by the user will be lost, including network and security parameters. Once the clock has rebooted, it will go into Direct Mode, and will no longer be accessible over the network until new network settings have been entered.

Web Interface - Software Updates

<u>FIRMWARE UPDATE</u>		<u>FIRMWARE UPDATE</u>	
<div>No Webpage Updates Avail</div>	1	<div>Update Web Pages From Sapling</div>	
<div>Choose File No file chosen</div>	2	<div>Choose File No file chosen</div>	
<div>Update Webpages From File</div>	3	<div>Update Webpages From File</div>	
<div>No Firmware Updates Avail</div>	4	<div>Update Firmware From Sapling</div>	

***PLEASE NOTE:** If the buttons are grayed out, it means that there are either no updates available or no internet connection.

1. **Update Web Pages From Sapling** - Updates software on the clock's network card and web interface by downloading the latest version from Sapling's servers.
2. **Choose File** - Allows the user to select a new copy of the network card and web interface software to be uploaded to the Wi-Fi clock. This does not upload the file, it only selects the file.
3. **Update Webpages From File** - Takes whichever file was selected with the Choose File button and applies the update file to the clock.
4. **Update Firmware From Sapling** - Updates software on the clock by downloading the latest version from Sapling's servers.

Frequently Asked Questions

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

What battery size do I use for the battery-powered clocks?

Wi-Fi battery-operated clocks use two “D” cell batteries. Duracell Procell D Alkaline Batteries have been found to produce the best results.

What size utility/gang box is needed?

A standard single gang box is required for wall mounting a clock. However, if you are installing a locally-powered double mount or flag mount clock, then a standard double gang box is required.

Will the Wi-Fi clock cause interference with other wireless devices?

No. The Wi-Fi clock operates a low-power transmitter on the 2.4GHz spectrum, and does not broadcast often enough or powerfully enough to cause interference.

What advantages are there to having a locally-powered wireless clock instead of a battery-operated one?

Locally-powered Wi-Fi clocks receive NTP time every five minutes. Battery-powered clocks receive and transmit signals once every two hours at most. Less time between synchronization signals means a greater guarantee of timekeeping accuracy.

Additionally, the web interface on a locally-powered Wi-Fi clock is always accessible. The web interface of a battery-powered clock is accessible only after a user manually presses the Web interface switch on the clock movement.

Is the clock compatible with other Wireless Clock systems?

No. A Wi-Fi clock obtains data directly from an NTP server through a computer network. It does not and cannot communicate with other wireless secondary clocks.

Frequently Asked Questions (ctd.)

How long does it take for a clock to receive correction data?

On initial power up, the clock will open its receiver for one minute until the signal is acquired. If everything is installed and configured correctly, the clock should get NTP data and begin correcting itself within five seconds.

If the user wants to manually cause the clock to do this, press and release the WIFI SW button once. Please refer the section “Diagnostic Test 1 - Signal Information” for a diagram displaying the location of the button. Once the clock has been configured, time correction is based on the clock’s power source and settings.

- If the clock is locally-powered, it will attempt to acquire NTP data once every five minutes. This interval can be altered by a user with Technician or Administrator access to the clock.
- If the clock is battery-powered, it will attempt to acquire NTP data once every twelve hours. This interval can be altered by a user with Technician or Administrator access to the clock.

If the clock and network are properly configured, the clock should receive NTP data within five seconds, and will correct itself if a correction is needed.

When I power my clock, it seems to be running a test instead of showing the time. What is it doing?

Immediately after power up a clock will check the position of its hands against sensors in the movement. This is a short test, and the clock will automatically reposition the hands to show accurate time after the test is completed.

Can I manually set the time on the clock?

No. Furthermore, attempting to open the front crystal or moving the hands manually will damage the clock and void the warranty.

Instead, please use the GMT Offset and Bias Seconds options in the Web Interface. Refer to the section “Web Interface - Time Settings” for more information.

Troubleshooting

VERY IMPORTANT:

CONFIGURE YOUR CLOCK BEFORE MOUNTING IT TO A WALL OR HOUSING. REFER TO THE SYNCHRONIZATION SYSTEM SETUP SECTION OF THIS MANUAL FOR INSTRUCTIONS.

The Clock and all network equipment must be powered and configured before you install the clock. If the network equipment is not properly installed and powered, and if the clocks have not been configured to communicate with the network equipment, the clocks will not synchronize.

The clock is attached to the power source, but it is not running. What should I do?

- a. Make sure that the movement's gearbox pin is removed.
- b. If a battery-powered model, check to be sure that the battery has been properly inserted into the battery pack and that the battery has the proper voltage.
- c. If a locally-powered model, check to make sure that the wiring in the connector complies with the installation instructions. This information is usually included in step #2.
- d. Make sure that the transformer is an isolated transformer if using a 24 volt model.
- e. Measure the voltage between the power (black) wire and the neutral (white) wire. The voltage between the white and black wires should measure 105-126 volts AC in the 115 volt model, 207-253 volts AC in the 230 volt model, or 21.5-26.5 volts AC/DC in the 24 volt model.

Failure to follow instructions c and d can result in a blown fuse.

The clock is not showing the right time. What should I do?

Enter the web interface and confirm that the GMT Offset, Bias Seconds section, DST Selection have been properly set in accordance with your nation and time zone.

If you have an in-house NTP server, confirm that the NTP server has been set as a time source, and that the server is distributing the correct time.

You may also perform Diagnostic #1 to check the last time that a signal was received, or Diagnostic #3 to perform a mechanical test.

How can it be determined if the clock is receiving a good signal?

Perform Diagnostic #2.

The clock is in a location with a poor signal or no signal at all. What should I do?

You have two options:

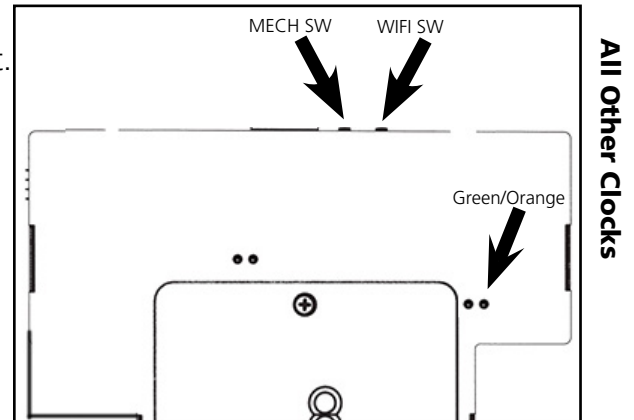
1. Boost the transmitter power output of the closest Wireless Router or Wireless Access Point.
2. Install a Wireless Access Point closer to the clock.

Troubleshooting

I am uncertain if my clock is accessing my wireless network. How to I check this?

Press and release the WIFI SW button once and observe the Red and Green LEDs on the right side of the clock movement. If the clock is able to connect to the network, the Green LED will blink green, briefly turn Orange, then turn steady green while the connection is available. On a battery powered clock, it will remain on for four minutes or until the WIFI SW button is pressed and released three times.

If the clock is not able to connect to the network, the Green LED will blink a few times, and will NOT change to Orange. Instead, the light will completely turn off. This could mean that the wrong network name or password was entered in the web interface, and needs to be changed. This could also be a sign of a network failure. Be sure to check both the clock settings and your network appliances to confirm that they are properly configured and in working order.



I have mounted my Aluminum/Wood clock on the wall, but forgot to attach the release lever. How do I get it off the wall?

Take a thin flathead screwdriver, thin ruler, or eyeglass screwdriver and insert the end between the clock and the wall. Press down on the latch until you are able to slide the clock off the mounting piece.

The clock is not receiving data from the NTP server, despite the fact that other nearby clocks are receiving data and properly adjusting. What should I do?

First, check the battery voltage if the clock is battery powered. Low battery voltage may prevent the clock from operating correctly.

Next, enter the clock's Web Interface and confirm that the network and server settings are configured correctly. Ask your network administrator to help you confirm the settings.

If the clock still does not correct, call technical support at (+1) 215.322.6063.

The clock is keeping old settings after I rebooted it. Did I miss something?

After entering and submitting new settings for the clock that demand a reboot, disconnect the clock from its power source and wait for ten seconds. After ten seconds have passed, power the clock. **Always wait ten seconds when rebooting the clock.**

Troubleshooting

Why isn't the Wi-Fi clock showing up on my Network Monitor?

Perform these steps in order until a step causes the clock to appear on the Network Monitor:

1. Confirm that the clock can connect to the network and is within signal range by pressing WIFI SW once and observing the orange and green LEDs on the right side of the clock movement. If the clock is able to connect to the network, the Green LED will blink green, briefly turn orange, then turn steady green while the connection is available.
2. Confirm that the clock is currently transmitting to the network. **If the clock does not have its wireless transmitter active, it will not appear on the Network Monitor.** Remember: battery powered clocks are not continuously transmitting, and may require the user to press and release the WIFI SW button once to activate it. Keep in mind that the transmitter will deactivate after four minutes if not accessed.
3. If the clock is a battery powered clock, confirm that the batteries are not low. Press the WIFI SW button once. If the batteries are too low for a connection, a red LED will flash three times.
4. Confirm that the viewing filters on the Monitor software are set to display Wi-Fi Clocks.
5. Confirm that you have the latest version of the Network Monitor software, as older versions are not able to detect Wi-Fi clocks. Your version should be 1.3.1 or newer.
6. Log on to the Clock and, on the Network Settings page, set Broadcast to Monitors to OFF, set Send Specific Monitor IP to ON, enter your computer's IP address into the Monitor Address field, then press Submit followed by Log Out. Wait about two minutes for a result.
7. Confirm that the computer or network firewall is not blocking ports 80, 123, or 1777. On Windows machines, the user may receive a prompt the first time that the Network Monitor is used inquiring about network access. Ensure that the monitor software has unrestricted access.
8. Confirm that the computer running the Network Monitor software is on the same subnet as the Wi-Fi clocks. If the clock and computer are on different subnets, one will not see the other. For instance, assuming that a computer has IP address 192.168.1.3, a clock has IP address 192.168.0.4, and both devices have subnet masks of 255.255.255.0, then a Network Monitor on the computer will not be able to see the clock.
9. If the clock has a recorded Static IP, log into the clock's Web Interface and confirm under Network Settings that the clock is broadcasting to all monitors on the network.
10. If all else fails, reconfigure the clock by following the instructions written in the section of this manual named "Synchronization System Setup." Once finished, repeat steps 1 and 2.
11. Confirm that the Wireless Access point is broadcasting using 802.11b, g, or n protocol, and that the SSID does not contain any symbols. The SSID may only consist of letters, numbers, and spaces.
12. Check with your System Administrator to confirm that your security policies permit the clock to be on your network. This includes confirmation of your encryption settings if your clock uses WPA2-Enterprise security protocols.
13. If the clock is still not communicating with the Network Monitor, contact tech support.

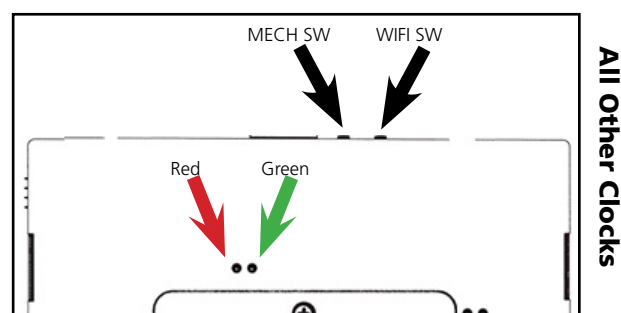
Diagnostic Test #1 - Signal Information

The purpose of Diagnostic #1 is to determine how long it has been since the clock last received a synchronization signal.

Diagnostic #1 may be enabled by pressing the MECH SW button once. If the clock is performing this diagnostic, then a green LED on the movement will flash once every three seconds. It will continue to flash once every three seconds until the diagnostic is complete.

While in diagnostic mode, the hour and minute hands will continue to run normally. After two minutes, the Diagnostic will end and the clock will continue normal operation.

During the diagnostic, the second hand will display how long it has been since the clock received a synchronization signal.



Second Hand Position	Time Since Clock Last Received Data
12	Within the last hour
1	Between 1 and 2 hours ago
2	Between 2 and 3 hours ago
3	Between 3 and 4 hours ago
4	Between 4 and 5 hours ago
5	Between 5 and 6 hours ago
6	Between 6 and 7 hours ago
7	Between 7 and 8 hours ago
8	Between 8 and 9 hours ago
9	Between 9 and 10 hours ago
10	Between 10 and 11 hours ago
11	Over 11 hours... may also signify that the clock is set to manufacturing default.

The second hand will remain on this number for two minutes, and then the clock will revert to displaying the accurate time.

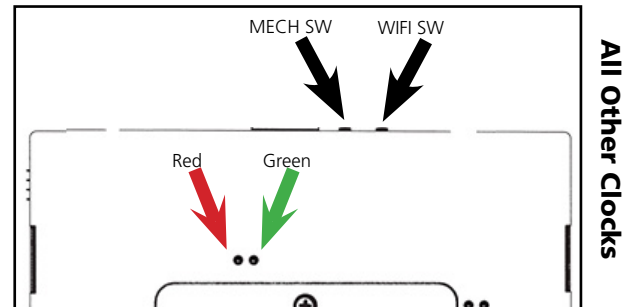
Diagnostic Test #2 - Signal Quality

The purpose of Diagnostic #2 is to determine the quality of the Wi-Fi signal.

Diagnostic #2 may be enabled by pressing the diagnostic button twice. If the clock is performing this diagnostic, then a green LED on the movement will flash twice every three seconds. It will continue to flash twice every three seconds until the diagnostic is complete.

During the diagnostic, the second hand will display the signal quality by pointing to a number from 1 to 10. On this scale, 1 indicates the best signal quality while 10 indicates poor signal quality.

While the second hand is indicating the signal quality, the hour and minute hands will continue to display the time. After two minutes, the Diagnostic will end and the second hand will return to displaying the time.



Diagnostic Test #3 - Full Mechanical Test

The purpose of Diagnostic #3 is to bring the clock back to 12:00:00.

Diagnostic #3 may be enabled by pressing the MECH SW button three times. If the clock is performing this diagnostic, then a green LED on the back will flash three times with a one second break between each flash. The LED will continue to flash green until the diagnostic is complete. The clock will confirm that the diagnostic is complete when the LED shines a different color.

If the LED is flashing red:

If the LED is a solid green, the test was completed successfully.

NUMBER OF FLASHES

ERROR MESSAGE

1,2

Error detected in second hand. Confirm that hands are not hitting each other, then repeat the test.

3,4,5

Error detected in the minute or hour hand. Confirm that hands are not hitting each other, then repeat the test.

6,7,8

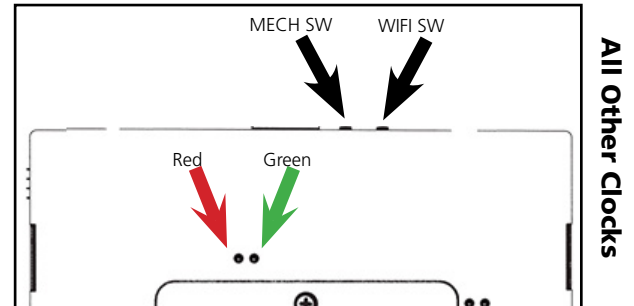
Call tech support. (+1) 215.322.6063

At the end of Diagnostic three, the clock hands will be set to 12:00:00. The clock will resume normal operation after four hours have passed.

Diagnostic Test #3 - Full Mechanical Test (ctd.)

While performing Diagnostic #3, an observer may see the clock do the following actions:

1. The clock moves the second hand to 00
2. The clock moves the second hand around to 00 again, to verify that the hand arrived after 60 pulses.
3. The clock moves the minute and hour hands to the next known position.
4. The clock moves the minute and hour hands around to the same position, to verify that the hands arrived after 720 pulses.
5. The clock moves the minute and hour hands to 12, so that the clock reads 12:00:00.
6. The clock tests frequency.



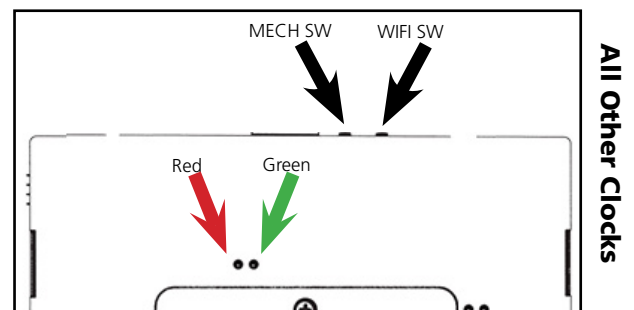
Diagnostic Test #4 - Battery Voltage

The purpose of Diagnostic #4 is to check the voltage level of the batteries on a battery-powered clock.

Diagnostic #4 may be enabled by pressing the MECH SW button four times. If the clock is performing this diagnostic, then a green LED on the back will flash twice every three seconds. The output of the test is displayed by the second hand.

Some examples.

- Second hand is on 2, the battery level is 2.2V
- Second hand is on 5, the battery level is 2.5V
- Second hand is on 9, the battery level is 2.9V
- Second hand is on 10, the battery level is 3.0V
- Second hand is on 11, the battery level is more than 3.0V



Restore Clock to Manufacturing Default

Pressing and holding the MECH SW and WIFI SW buttons simultaneously for ten seconds and then releasing them will reset the clock to its manufacturing default settings. You will know that the command was successful if the green LED turns on. All data entered by the user will be lost, including network and security parameters.

Warranty

Sapling Limited Warranty and Disclaimer

The Sapling Company, Inc. warrants only that at the time of delivery and for a period of 24 calendar months after delivery or the period stated in this invoice, if different, the Goods shall be free of defects in workmanship and materials, PROVIDED that this warranty shall not apply:

To damage caused by Buyer's or any third party's act, default or misuse of the Goods or by failure to follow any instructions supplied with the Goods.

Where the Goods have been used in connection with or incorporated into equipment or materials the specification of which has not been approved in writing by The Sapling Company, Inc.;

To Goods which are altered, modified or repaired in any place other than a Sapling Company, Inc. factory or by persons not expressly authorized or approved in writing by The Sapling Company, Inc.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WITH RESPECT TO GOODS DELIVERED UNDER THIS CONTRACT, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The foregoing warranty runs only to Buyer. There are no oral or written promises, representations or warranties collateral to or affecting this contract. Representatives of The Sapling Company, Inc. may have made oral statements about products described in this contract. Such statements do not constitute warranties, shall not be relied on by Buyer and are not part of the contract.

Note: An extended 5 year (60 month) warranty is also available at the time of the system purchase with a surcharge.

FCC Statements

The Federal Communications Commission (FCC) wants you to know:

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

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

FCC Warnings:

Changes or modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 5.78 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC ID Number: YOPGS2011MIZ