Installation Manual V5.0

SBP Series IP Clock

Current as of November 2016

SBP Series IP Clocks

Table of Contents

□ Available with 3200 and 3300 models

■ Available with 3300 model only

Important Safety Instructions

⚠ 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.

🚶 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 packaging

If your part number begins with SBP-31, you own a 3100 Series clock

If your part number begins with SBP-32, you own a 3200 clock

If your part number begins with SBP-33 you own a 3300 clock

If the second group in your part number ends in S (31S, 32S, 33S), you own a Surface Mount Clock, which can be attached to a pole as a Flag Mount or a Double Mount.

If the second group in your part number ends in F (31F, 32F, 33F), you own a Flush Mount Clock, which can only be used in a flush mount configuration.

If you wish to change the mounting type, contact your dealer.

Before Installation - System/Network Requirements

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

• This manual

• A Local Area Network (LAN) that either has access to at least one of the following:

  • An in-house NTP server

  • The Internet

• A firewall that is open on Ports 80, 123, and 1777

• At least one laptop or desktop computer with access to this LAN and a web browser.

• A router for the LAN that operates on the subnet 192.168.0.##.

• A copy of the Monitor.exe program.

• Security access to all of the above items.

• A crossover cable and PoE injector or for programming the clocks. (Optional - A clock can also be programmed over a network.)

• A means of keeping a record of the clock serial numbers, locations, and IP addresses. Create a table like the one shown below:

| SERIAL #	LOCATION	IP ADDRESS

Before Installation - Power over Ethernet (PoE)

PoE Power Classification

Power-over Ethernet Devices report the particular "Power Class" back to the power source, which is useful for system-wide power management or monitoring purposes.

The IP Digital Clocks are highly efficient products and consume 6-8.4 watts of power during normal operation, depending on the clock model.

Connecting when using a PoE Switch

1. Plug in the PoE switch to a power outlet.
2. Using a CAT5 or CAT6 data cable, connect one end to the switch/router on the network, and the other end to the IP clock.
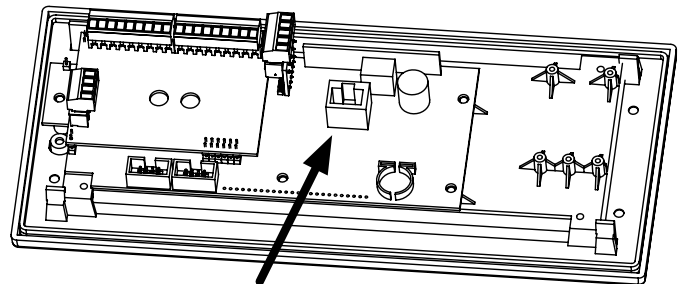
Connecting when using a PoE Injector

1. Plug in the power injector to a power outlet.
2. Using a CAT5 or CAT6 data cable, connect one end to the a switch/router on the network, and the other end to the IN port on the injector.
3. Using another CAT5 or CAT6 data cable, connect one end to the OUT port on the injector, and the other end to the port on the right side of the clock movement.
4. If using a multi-output power injector, continue to power the other IP clocks by repeating step 3.

Recommended PoE Injector Specification

48VDC @ 320mA

Before Installation - IP Monitor Software

1. Create a folder on your computer called **IP Monitor**
2. If you have the IP Monitor on a CD:
    a. Load the CD into your computer's CD Drive
    b. Open the file on the CD and select the IPMONITOR application file.
    c. Copy the file to your IP Monitor folder.
3. If you received the IP Monitor as a web download:
    a. Locate the IPMONITOR application file in your computer's Downloads folder.
    b. Select the file and copy it to your IP Monitor folder.
4. If you received the IP Monitor as an email attachment:
    a. Refer to your email provider's instructions for downloading email attachments.
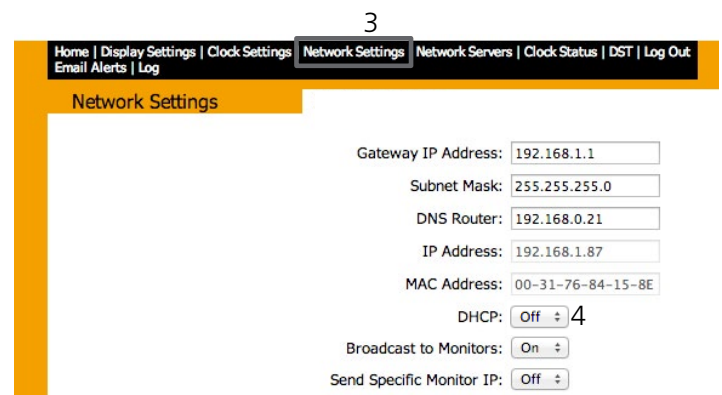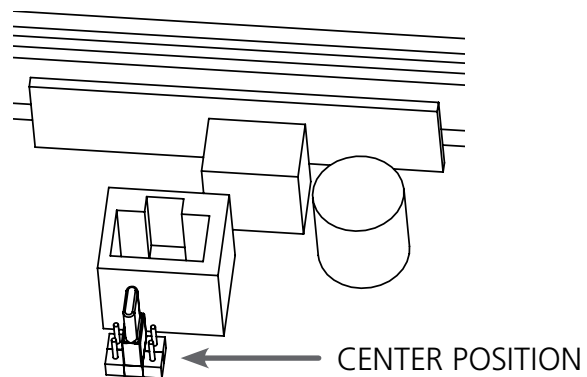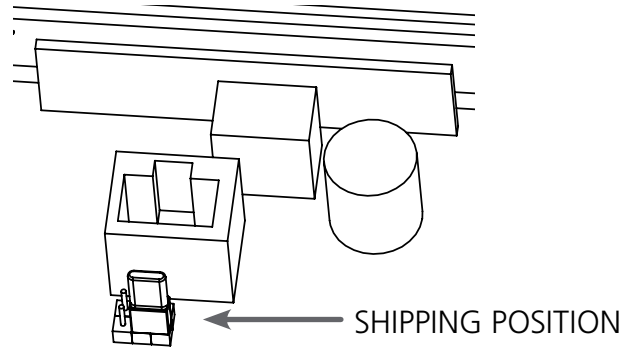
Before Installation - DHCP

If you are accessing an Internet NTP server, Port 123 must be open.

If you wish to be able to access the web interface from a computer that is not on the same subnet, Port 80 must be open.

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

The clock is set to DHCP by default. This means that once the clock is connected to the network, it is assigned the next available IP address by a DHCP server. If a user wishes to access the web interface while the clock is in DHCP mode, then there are two ways to find the IP address.

The first is to press and hold both buttons on the front of the clock simultaneously, and release them after two seconds. This will cause the IP address to appear on the clock display.

The second method is to use the monitor.exe program:
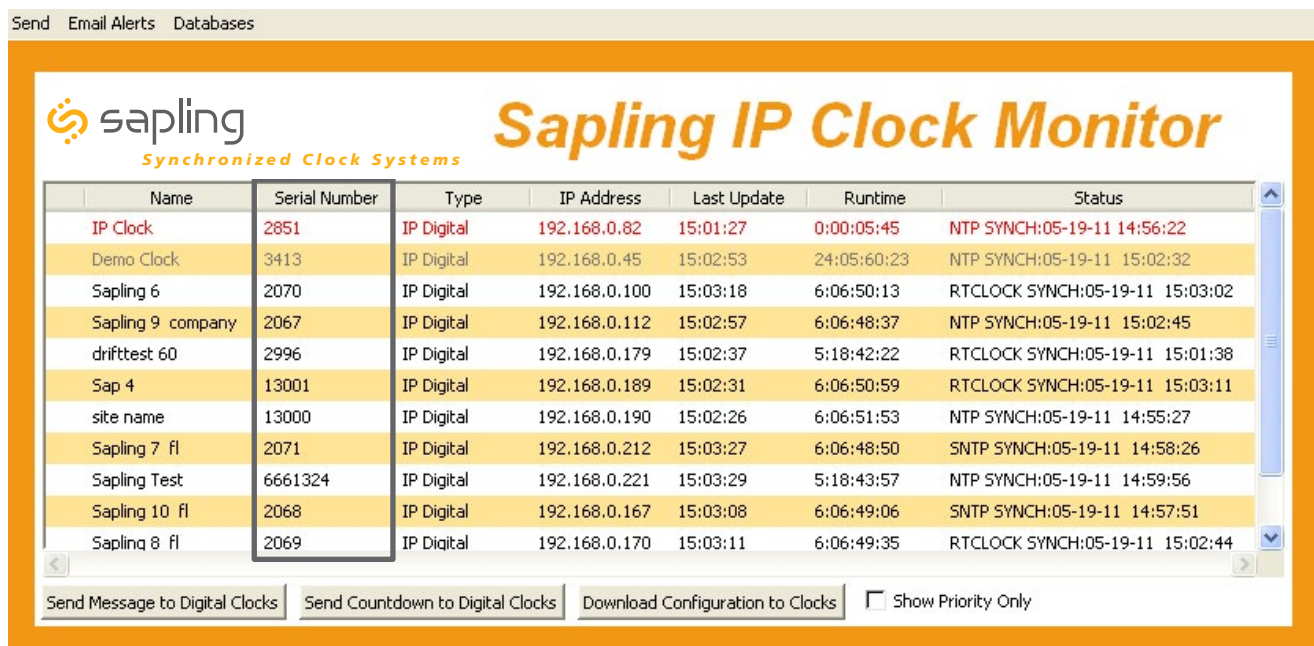
The clock can then be identified from its serial number, and then double clicked on to enter the web interface. The serial number of the clock can be found on a sticker attached to the back of the clock display.

If the user decides to use DHCP, and can confirm that they can access their clock by plugging it into the LAN with a PoE Injector/Switch, then they may proceed by installing the clock hardware at the desired location.

Before Installation - Static IP

If you are accessing an Internet NTP server, Port 123 must be open.

If you wish to be able to access the web interface from a computer that is not on the network, Port 80 must be open.

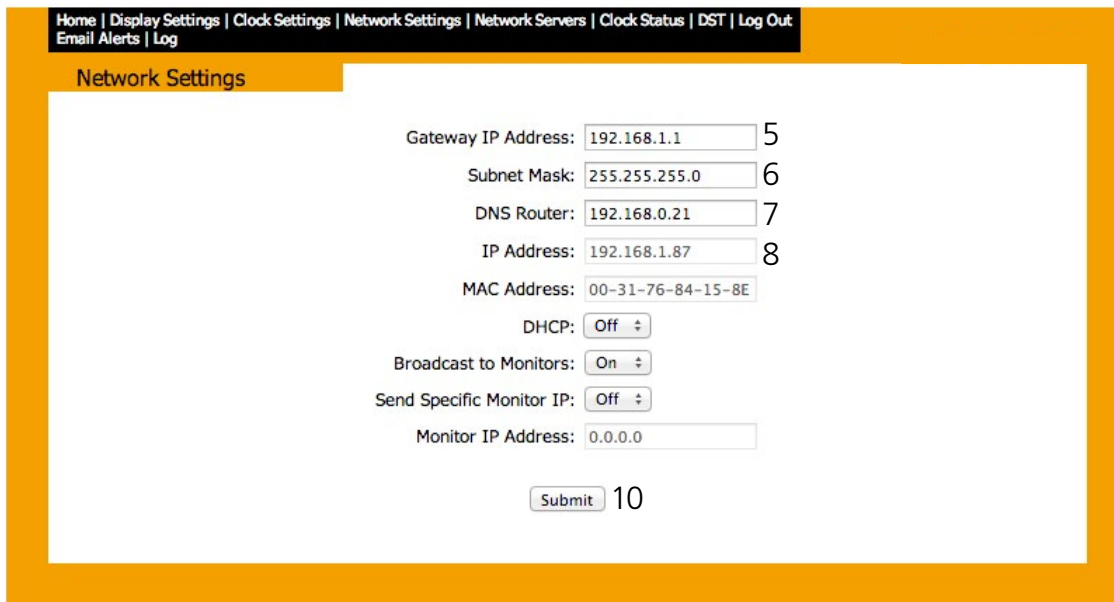If you wish your clock to be assigned an IP address via DHCP, see the previous page.

If the user wants to access the clock by using the same IP address each time, otherwise known as a Static IP, then the following steps should be performed:

1. Use a crossover cable to attach the SBP clock to a PoE injector, and the injector to your computer.

   a. If you are connecting from the clock to the computer using a PoE switch, the injector is not needed.

2. If you know the IP address for your clock, enter it into the address bar of a web browser to access the clock's Web Interface.

   a. If you do NOT know the IP address for your clock, power down the clock, then locate the jumper on the circuit board. Move the jumper from the SHIPPING POSITION the CENTER POSITION, as shown in the diagrams on the right.

   b. Power the clock. You should now be able to access the clock through a web browser at IP address 192.168.0.123.

3. Access the web interface using the password 6063, then click on the "Network Settings" tab.

4. Confirm that DHCP is set to OFF.

SHIPPING POSITION

CENTER POSITION

3

Home | Display Settings | Clock Settings | Network Settings | Network Servers | Clock Status | DST | Log Out
Email Alerts | Log

Network Settings

Gateway IP Address: 192.168.1.1
Subnet Mask: 255.255.255.0
DNS Router: 192.168.0.21
IP Address: 192.168.1.87
MAC Address: 00-31-76-84-15-8E
DHCP: Off ⇕ 4
Broadcast to Monitors: On ⇕
Send Specific Monitor IP: Off ⇕

Before Installation - Static IP (ctd.)

5. Next to "Gateway IP Address", set an appropriate IP address. The address you enter should be supplied by your network administrator.

6. Next to "Subnet Mask", enter appropriate information. . The numbers you enter should be supplied by your network administrator.

7. Next to "DNS Router", set an appropriate IP address. The address you enter should be supplied by your network administrator.

8. Next to "IP Address", set an appropriate IP address. The address you enter should be supplied by your network administrator. Do NOT use 192.168.0.123.

9. Write the Clock Number, IP Address, and intended installation location in your personal record.

10. Press Submit.

11. Exit the Web interface.

12. Detach the data cable.

13. Move the jumper back to SHIPPING POSITION.

14. Reattach the data cable and log in to the clock by using the new Static IP.

Before Installation - Quick Start

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 Clock Settings tab, enter an easy-to-identify name for the clock (like the clock's location), select the GMT offset for your time zone (for example, New York is -5), and press the submit button.
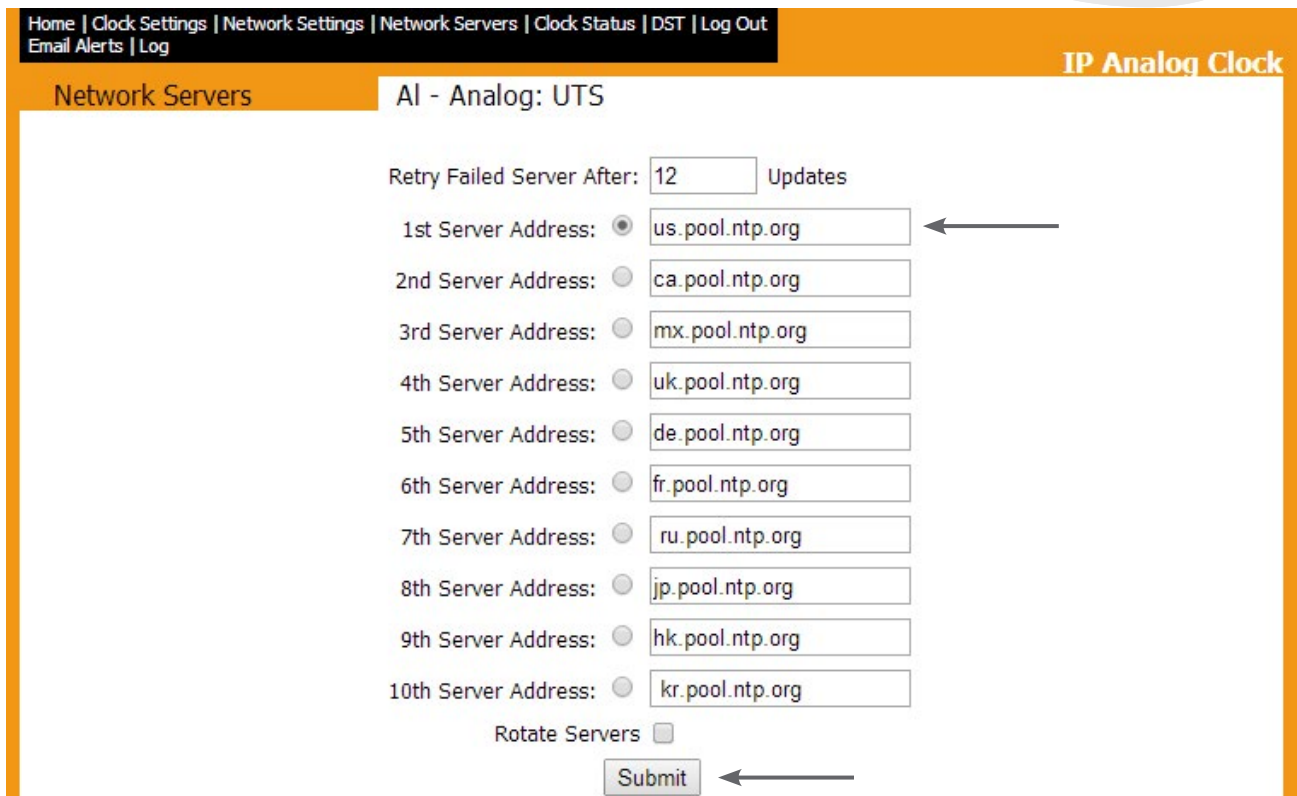
Before Installation - Quick Start (ctd.)

3) Select the Network Servers tab and confirm that the NTP servers listed are the servers you wish to use. If you wish, enter the URL or IP address of an NTP server or Sapling master clock of your preference. If using a Sapling master clock, and the master clock must be set to a static IP address, see the master clock manual for instructions on how to set the master clock to a static IP address. Use the circle next to the textbox to select it, and make sure that the "Rotate Servers" box is unchecked. Press the submit button when finished.

Please Note: Regardless of what server or master clock you are using as a time source, you must still set the GMT Offset and DST settings in your secondary clocks separately.

Home | Clock Settings | Network Settings | Network Servers | Clock Status | DST | Log Out
Email Alerts | Log

IP Analog Clock

Network Servers   AI - Analog: UTS

Retry Failed Server After: 12   Updates

1st Server Address: ⊙ us.pool.ntp.org ←

2nd Server Address: ○ ca.pool.ntp.org

3rd Server Address: ○ mx.pool.ntp.org

4th Server Address: ○ uk.pool.ntp.org

5th Server Address: ○ de.pool.ntp.org

6th Server Address: ○ fr.pool.ntp.org

7th Server Address: ○ ru.pool.ntp.org

8th Server Address: ○ jp.pool.ntp.org

9th Server Address: ○ hk.pool.ntp.org
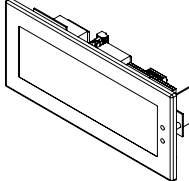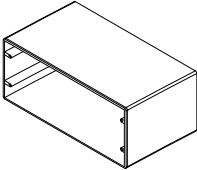
10th Server Address: ○ kr.pool.ntp.org
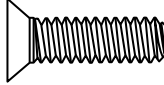
Rotate Servers ☐

Submit ←

4) Close the web interface and IP monitor. The clock should now be able to accurately display time when connected to your network. For information on more selectable IP clock settings, see the sections of the manual that follow.

Flush Mount Installation

Included in Package

Description	Quantity	Picture
SBD Digital Clock	1	
Digital Clock Wall Housing	1	

Included in Wiring Kit (D-MK-3-IP-F)

Description	Quantity	Picture
Grounding wire	1 (not used)	
Machine screw 6-32 x 1/2	4	
Hex nut 6-32	1	
Internal-tooth lock washer	1 (not used)	

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, any equipment needed to install the housing, and any additional wiring needed to extend the data 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.

Flush Mount Installation

1) Install the flush mount housing in the wall. Leave at least one inch between the top of the housing and ceiling. Confirm that the bottom of the housing is level with the floor.
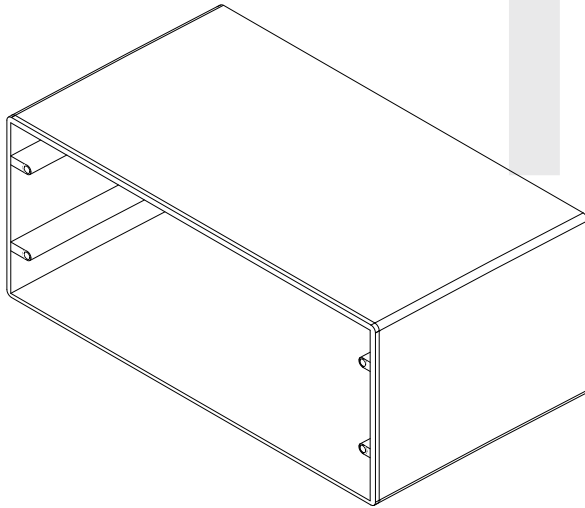
2) Run a CAT5 or CAT6 data cable from a PoE switch or PoE injector to the housing. Confirm that the switch or injector, and either an NTP server or internet modem, are connected to your network router. The clock-side of the cable should terminate in a male RJ45 connector.

KNOW YOUR NETWORK

Make sure that your network firewall is set to allow communication between the clocks and NTP servers. This means that Ports 80, 123, and 1777 must be open.

3) Detach the filter from the clock display board by pressing inward on the red tabs.
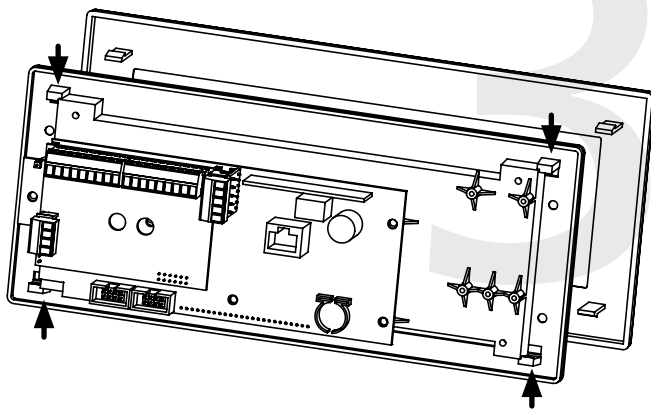
4) Attach a data cable to the port on the right side of the circuit board. If the clock is able to access the Internet, it will begin to correct itself. Make a note of the clock's Serial Number, which should be on a white sticker above the port. Add this information to your tracking chart.
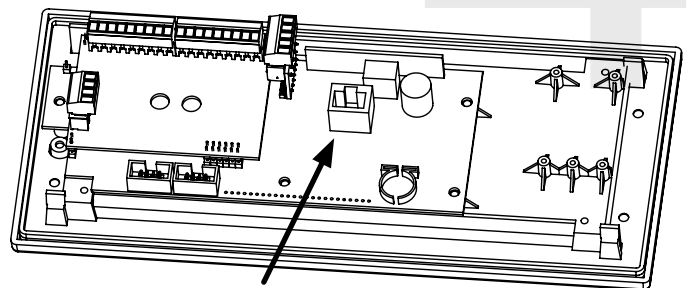
Flush Mount Installation

5) Use the 6-32x1/2 screws to attach the display board to the housing. One of these screws should be used along with the grounding wire, hex nut, and washer to help ground the housing.
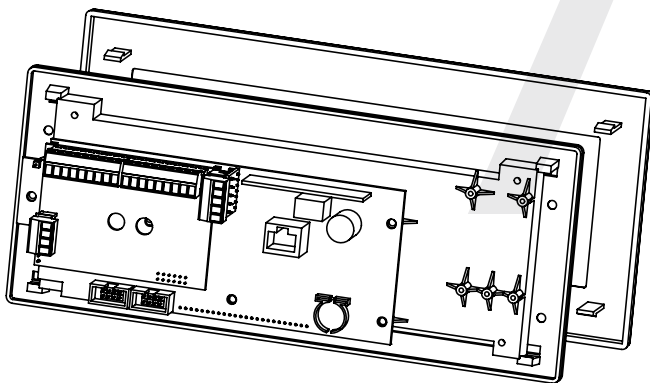
NOTE: For 2.5" Digit clocks, the holes for the screws will be on the left and right inner surfaces of the housing. For 4.0" Digit Clocks, the holes will be on the top and bottom surfaces.
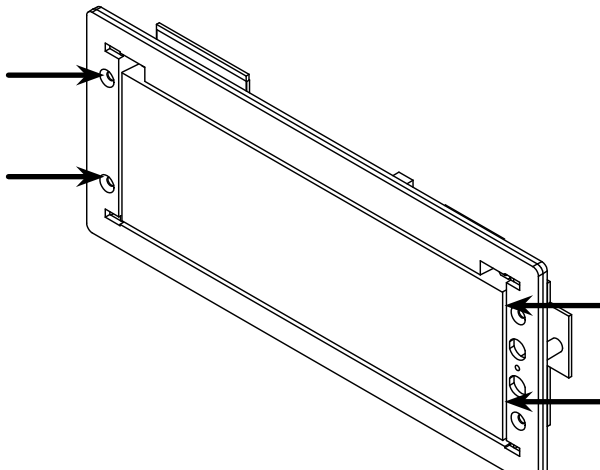
6) Remove the plastic cover from the display board
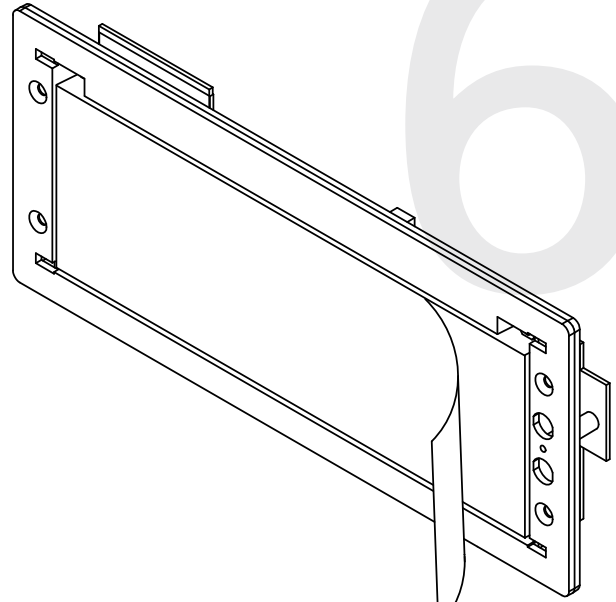
7) Place the filter over the display board by lining up the tabs with the holes. You should hear a snapping noise as the latches drop into place

8) Power the clock if you have not already done so. After testing the LED segments and presenting some diagnostic information, the clock will display the time based off if its internal quartz oscillator. It will correct itself to show synchronized time as soon as it receives data from an NTP server.

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Wall Mount Installation

Included in Package

| Description	Quantity	Picture
SBP Digital Clock	1	
Digital Clock Wall Housing	1	
6-19x1/2 screw	4	
6-32x1 screw	4	

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a double gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the data or ground cables. You may also need a 1/4 inch drill, 4 #8x1.5 self-tapping screws, and 4 wall anchors for those screws 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.

The Sapling Company, Inc.
1633 Republic Road
Huntingdon Valley, PA 19006
USA

P. (+1) 215.322.6063
F. (+1) 215.322.8498
www.sapling-inc.com

Wall Mount Installation

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 three inches away from the ceiling.
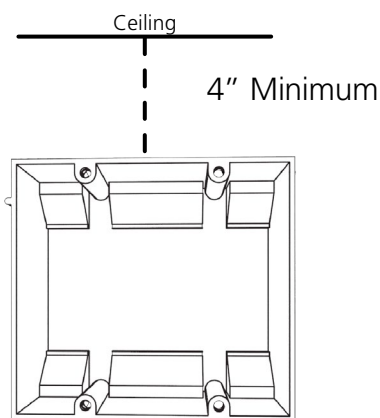
Ceiling

4" Minimum

2) Run a CAT5 or CAT6 data cable from a PoE switch or PoE injector to the gang box. Confirm that the switch or injector, and either an NTP server or internet modem, are connected to your network router. The clock-side of the cable should terminate in a male RJ45 connector.

KNOW YOUR NETWORK

Make sure that your network firewall is set to allow communication between the clocks and NTP servers. This means that Ports 80, 123, and 1777 must be open.

3) If you do not wish to attach the housing to the gang box, proceed to step 4A. Otherwise, go to step 5.
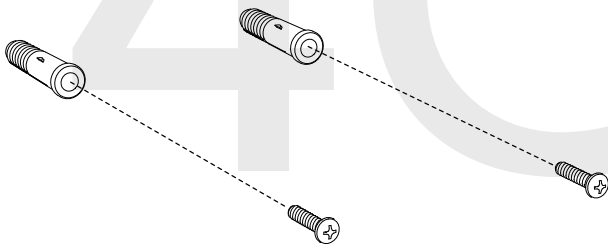
Wall Mount Installation

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


Ceiling

4" Minimum
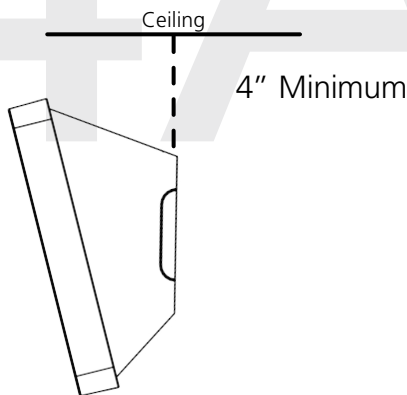
4B) Identify the keyholes towards the top of the back of the clock housing. Use a pencil to trace the top of each keyhole onto the wall, then use the 1/4 inch drill bit to drill holes at the locations of the two marks.
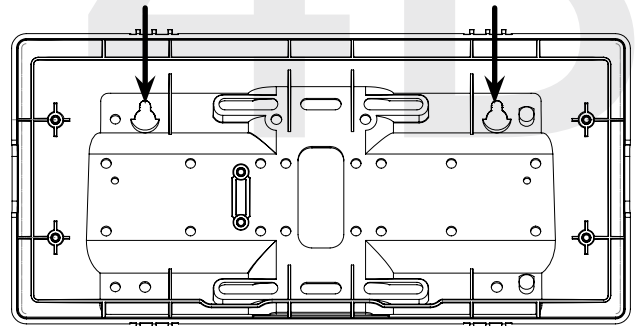
4C) Insert the wall anchors into the two holes, then place a #8 self-tapping screw into each wall anchor, leaving at least a 1/8" gap between the top of the screw and the wall.
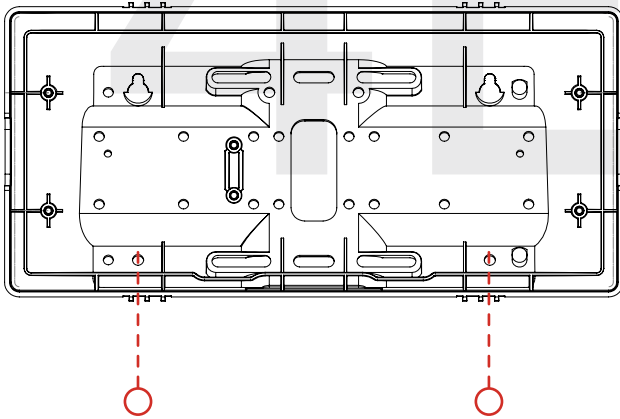

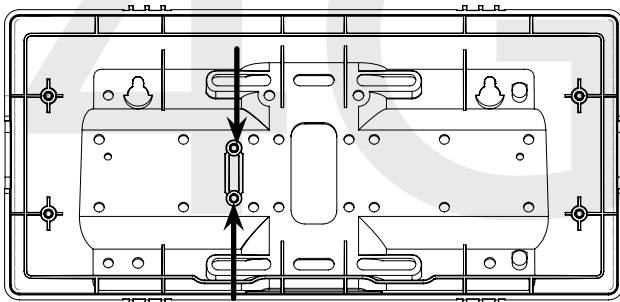4D) Use the keyholes in the back of the housing to hang the clock onto the screws.
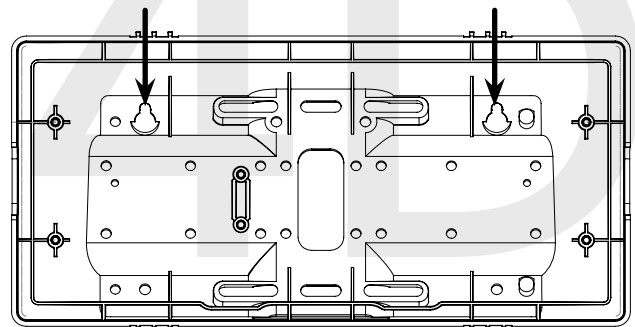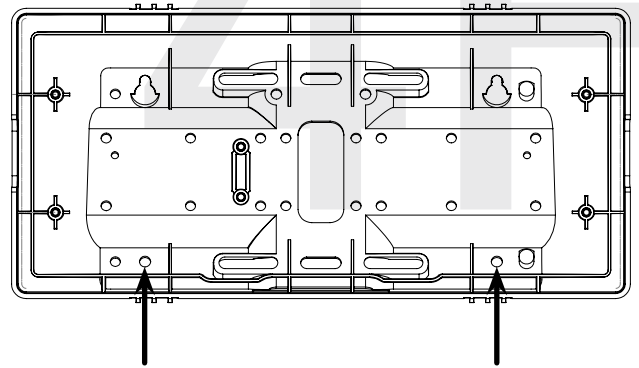
Wall Mount Installation

4E) Use a pencil to trace the holes beneath each keyhole onto the wall. Take the clock housing off the wall, drill holes at the marked locations, and add another two wall anchors.
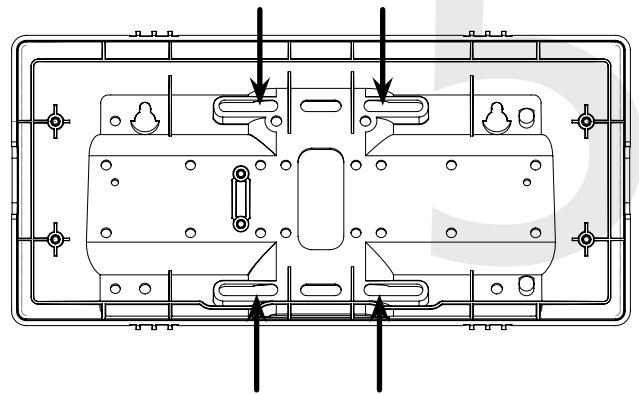

4F) Repeat step 5D, then pass another pair of #8 screws through the bottom holes and secure them in the remaining two wall anchors.

4G) Run data cable through the large hole in the back of the housing. Secure the data cable by passing them through the wire clamp.
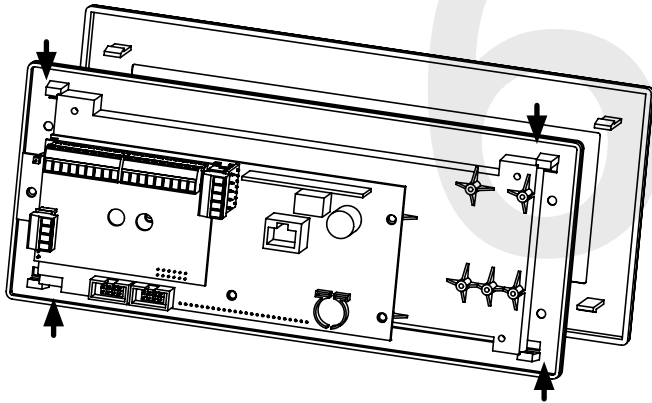

5) Perform step 4F, then attach the housing to the gang box using the #6-32x1 screws.

Wall Mount Installation

6) Detach the filter from the clock display board by pressing inward on the red tabs.

7) Attach a data cable to the port on the right side of the circuit board. If the clock is able to access the Internet, it will begin to correct itself. Make a note of the clock's Serial Number, which should be on a white sticker above the port. Add this information to your tracking chart.
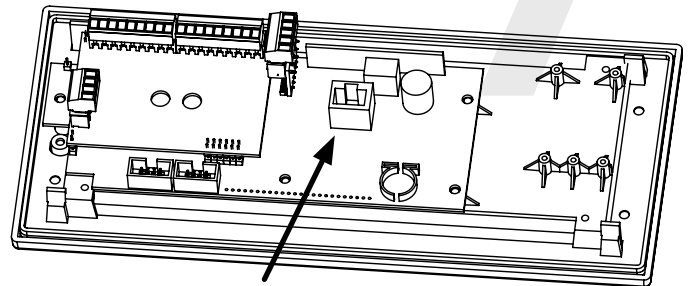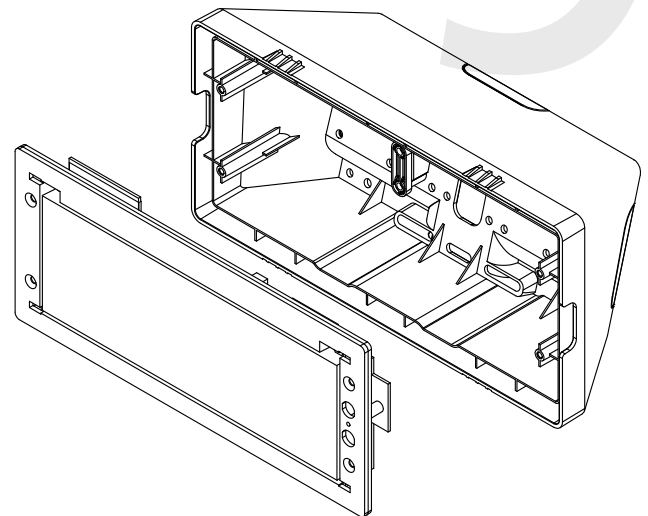

8) Detach the frame from the front of the clock housing by pulling the bottom and top edges away from the housing.
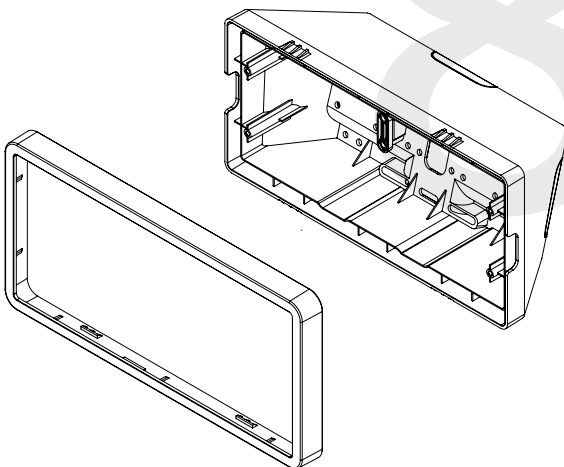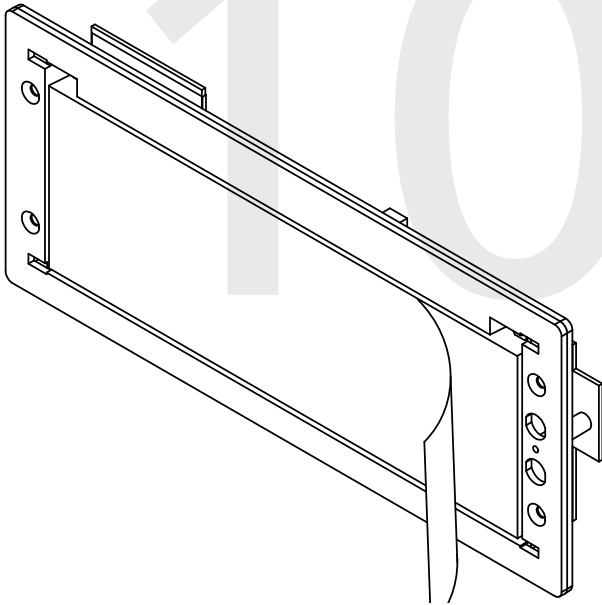

9) Use the 6-19x1/2 screws to attach the display board to the housing.

NOTE: For 2.5" Digit clocks, the holes for the screws will be on the left and right inner surfaces of the housing. For 4.0" Digit Clocks, the holes will be on the top and bottom surfaces.
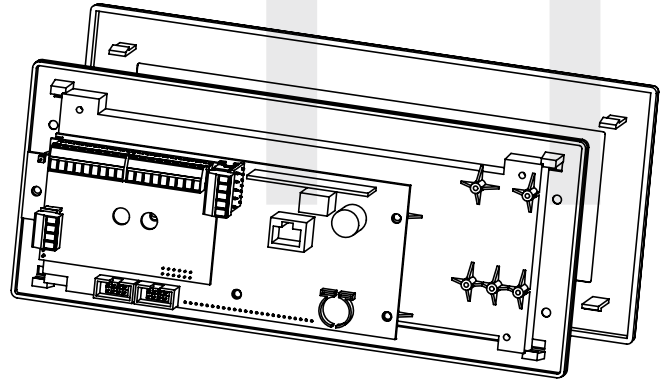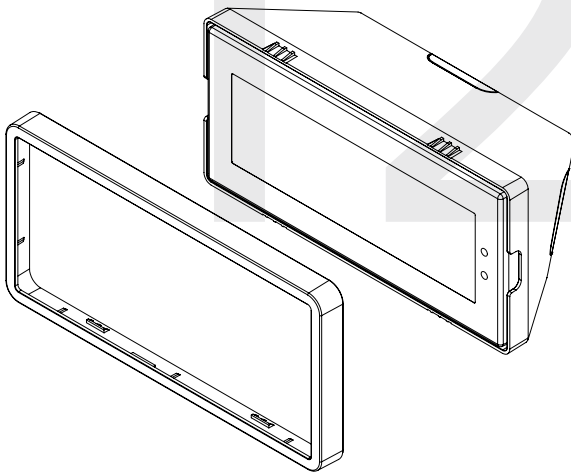
Wall Mount Installation

10) Remove the plastic cover from the display board.

11) Place the filter over the display board. You should hear a snapping noise as the latches drop into place.
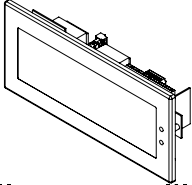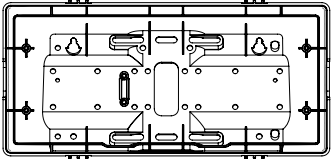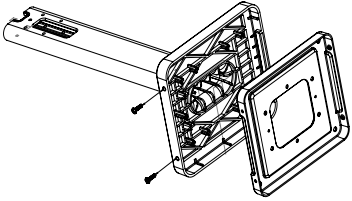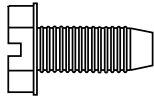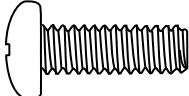
12) Place the housing frame onto the housing. You should hear a snapping noise as the latches drop into place.

13) Power the clock if you have not already done so. After testing the LED segments and presenting some diagnostic information, the clock will display the time based off if its internal quartz oscillator. It will correct itself to show synchronized time as soon as it receives data from an NTP server.

Flag Mount Installation

Included in Package

Description	Quantity	Picture
SBP Digital Clock	1	
Digital Clock Wall Housing	1	
6-19x1/2 screw	4	
6-32x1 screw	4	

Included in Pole Kit (SAB-4GD-00S-0 or SAB-1GD-00S-0)

Description	Quantity	Picture
Dual-mount pole, including mounting plate	1	
#10-32x3/8 green screw	1	
#8-32x7/16 screw	8	

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

Flag Mount Installation

M3.5-1.0x10 screw (black)   4 (not used)

Internal-tooth washer   8

#6-32x1 screw   4

Adapter tab screws   4 (not used)

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a double gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the data or ground cables. You may also need a 1/4 inch drill, 4 #8x1.5 self-tapping screws, and 4 wall anchors for those screws 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.

Flag Mount Installation

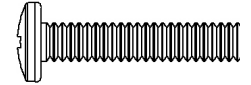1) Install the double gang box in the wall or ceiling. If you are installing the gang box in the wall, leave at least eleven inches between the top of the gang box and the ceiling. If you are installing the gang box in the ceiling, leave at least eleven inches between the gang box and the wall. The box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

Ceiling

11" Minimum

2) Run a CAT5 or CAT6 data cable from a PoE switch or PoE injector to the gang box. Confirm that the switch or injector, and either an NTP server or internet modem, are connected to your network router. The clock-side of the cable should terminate in a male RJ45 connector.

KNOW YOUR NETWORK

Make sure that your network firewall is set to allow communication between the clocks and NTP servers. This means that Ports 80, 123, and 1777 must be open.

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.

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Flag Mount Installation

Steps 5 and 6 only apply to metal mounting poles. If you have an ABS mounting pole, skip to step 7

5) Remove the mounting pole end cap and the plastic ring from one of the holes.
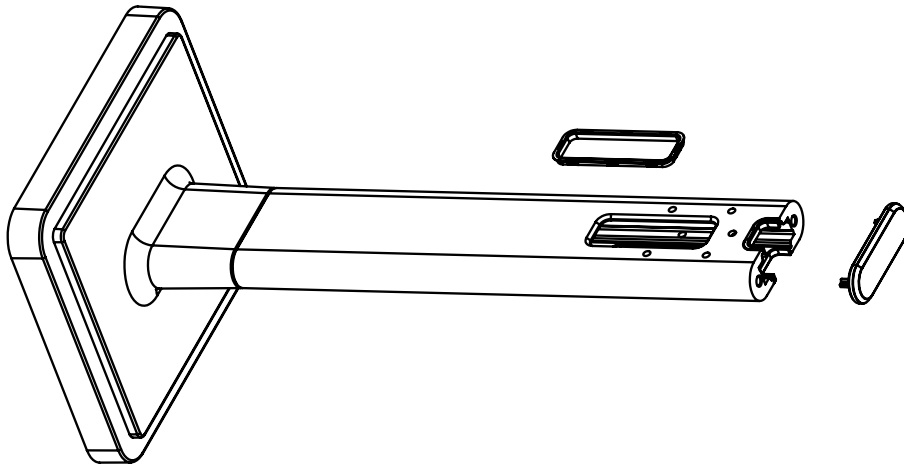
6) Attach the flag-mount end cap to the pole. Confirm that the covering flap is attached to the side where the plastic ring was removed.

Flag Mount Installation

7) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.
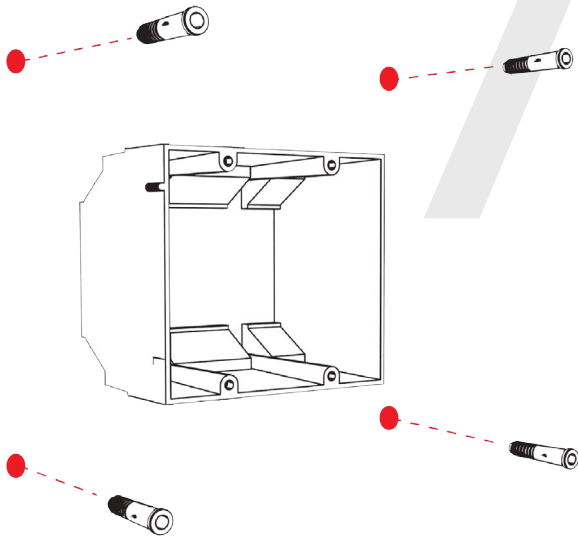
8) Reattach the mounting plate, this time using all four long, silver #6-32x1 screws, then insert the four #8 screws through the mounting plate and into the anchors.
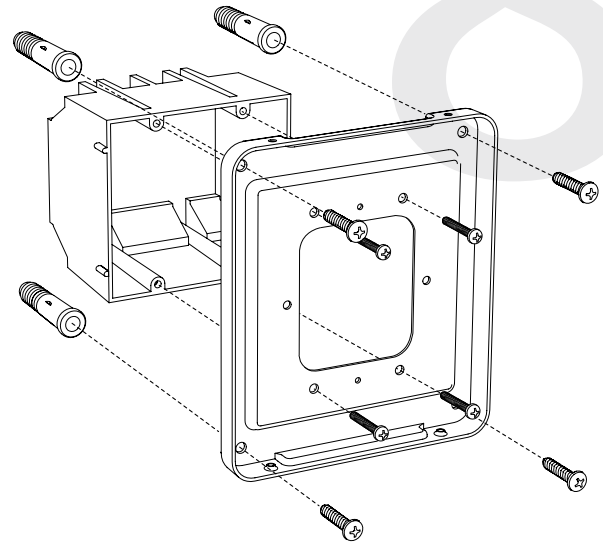
9) Thread the data cable through the mounting plate, and attach a grounding wire to the mounting plate using one of the larger centered holes and the #10-32x3/8 screw.

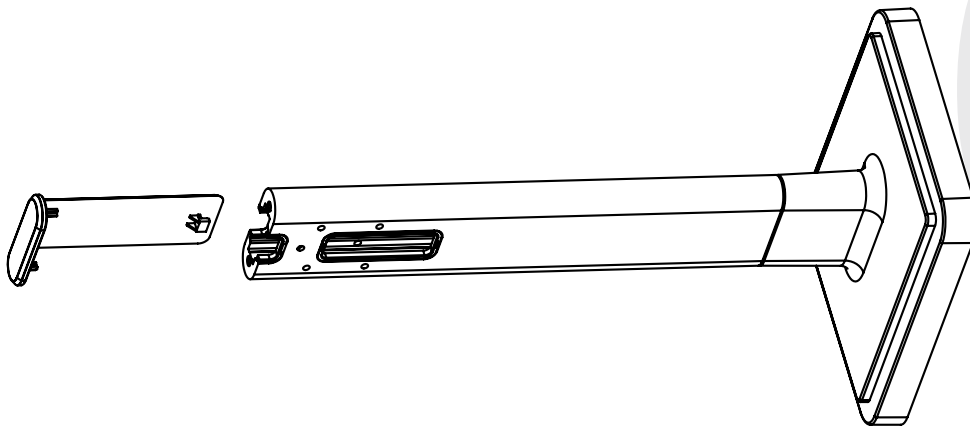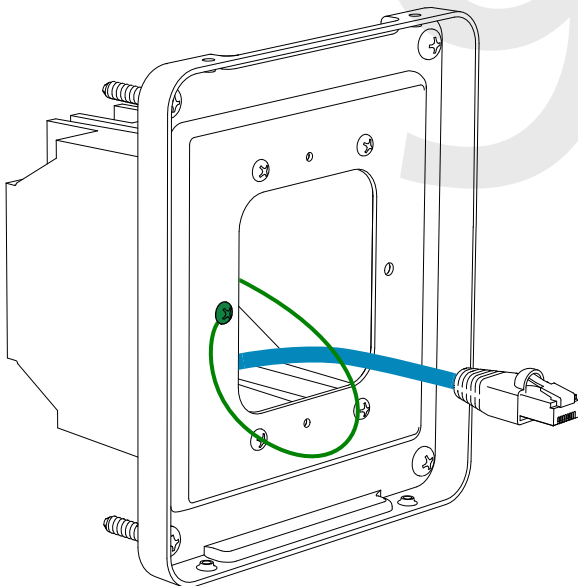10) Use a screwdriver to remove one of the end caps. The selected end cap should match the position of the orientation of the clock on the mounting pole; for example, if you wish to attach the clock to the pole in a ceiling-mount configuration, then the top end cap should be removed. The end cap and screw that was used to secure it will not be needed again during this installation.

Flag Mount Installation

11) Detach the frame from the front of the clock housing by pulling the bottom and top edges away from the housing.
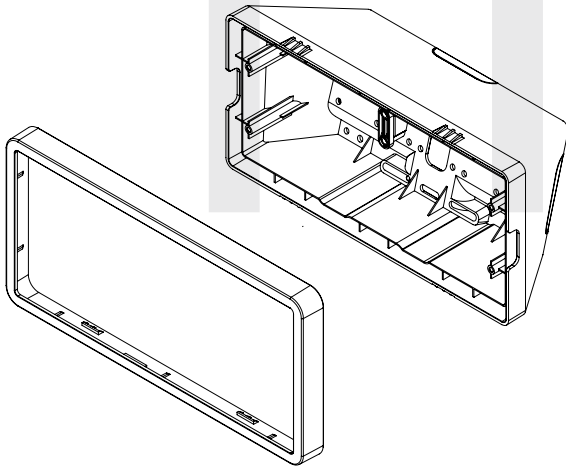
12) Insert the four #8-32x7/16 screws through the internal-tooth washers, then through the adapter, and finally into the pole. Use a screwdriver to tighten the screws so that the adapter does not move.
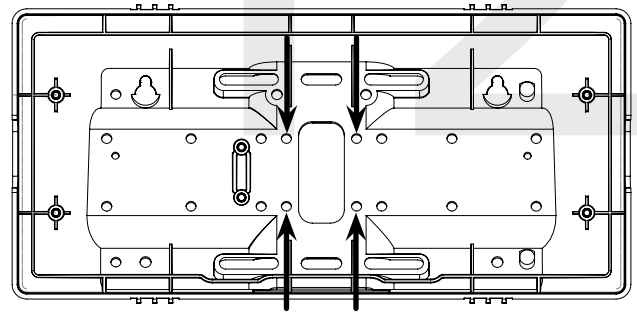
13) Thread at least fifteen inches (38.1cm) of wiring from the gang box through the bottom of the pole until each wire exits through the hole in the adapter. Secure the wires by passing them through the wire clamp.
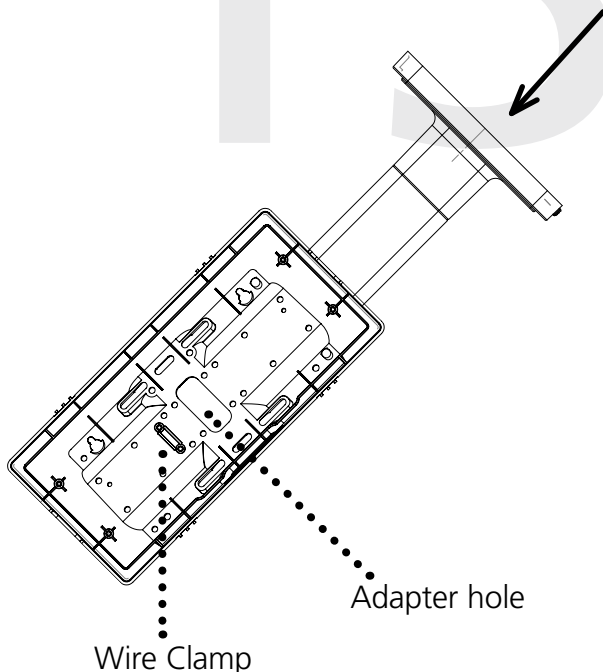
14) Detach the filter from the clock display board by pressing inward on the red tabs.

Adapter hole

Wire Clamp
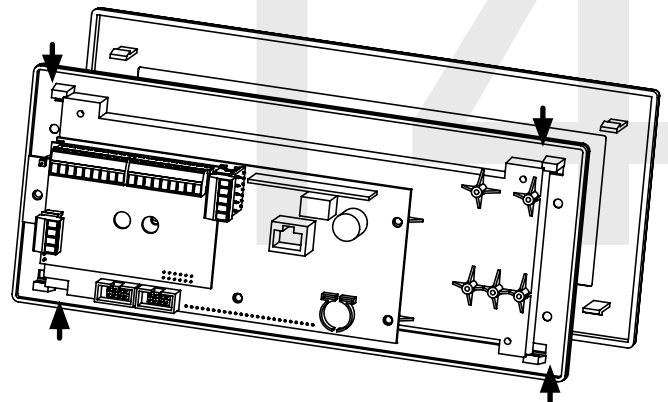
Flag Mount Installation

15) Attach a data cable to the port on the right side of the circuit board. If the clock is able to access the Internet, it will begin to correct itself. Make a note of the clock's Serial Number, which should be on a white sticker above the port. Add this information to your tracking chart.
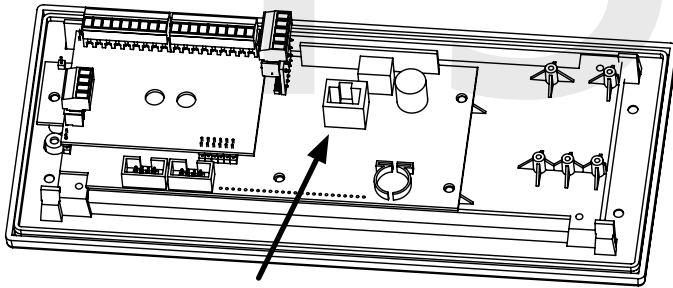
16) Use the 6-19x1/2 screws to attach the display board to the housing.

NOTE: For 2.5" Digit clocks, the holes for the screws will be on the left and right inner surfaces of the housing. For 4.0" Digit Clocks, the holes will be on the top and bottom surfaces.
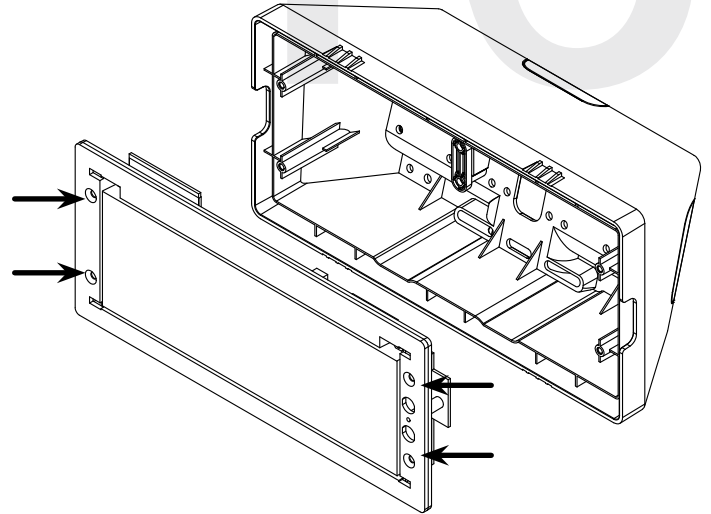
17) Remove the plastic cover from the display board.
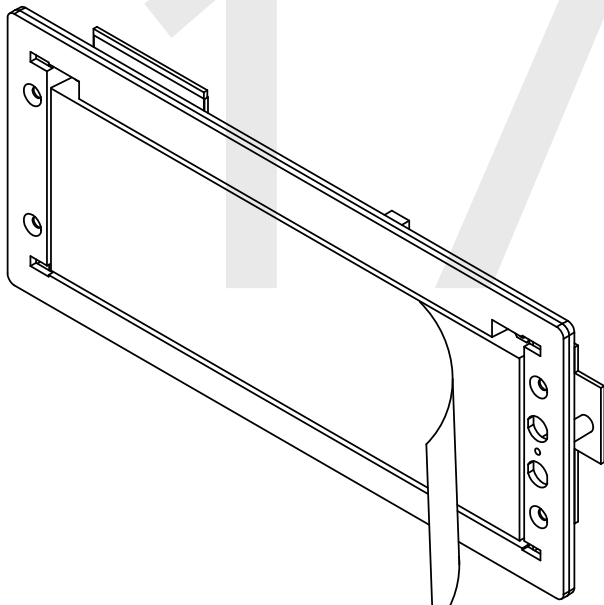
18) Place the filter over the display board. You should hear a snapping noise as the latches drop into place.
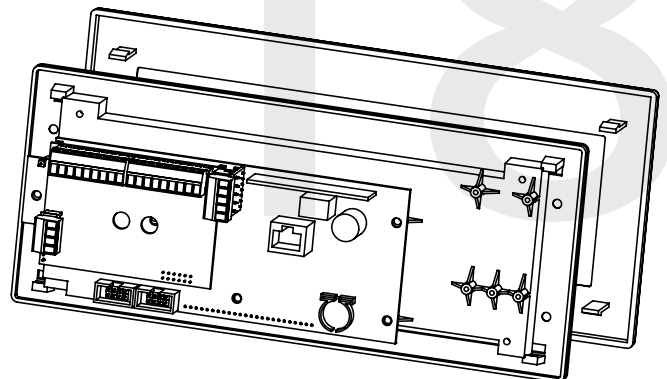
Flag Mount Installation

19) Place the housing frame onto the housing. You should hear a snapping noise as the latches drop into place.
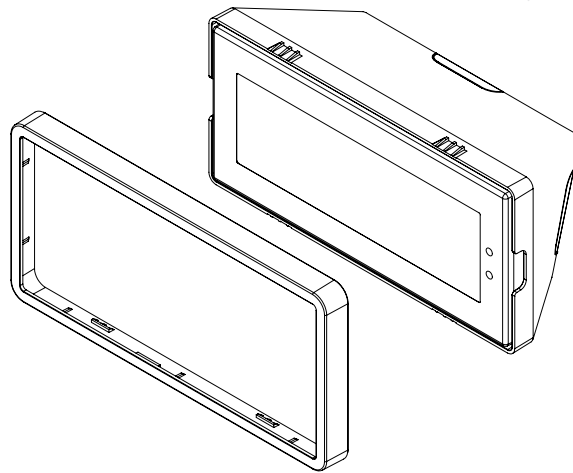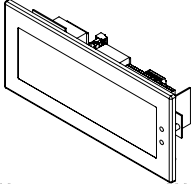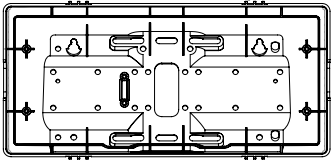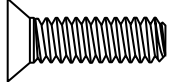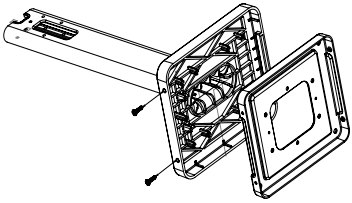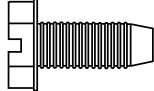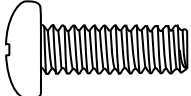
20) Hang the base of the pole on the mounting plate so that the lip is on top of the base, and the holes for the screws are on the bottom of the base. Attach the wires from the pole to the wires in the gang box, then use the two black base screws to attach the other side of the base to the mounting plate.

WALL

CEILING
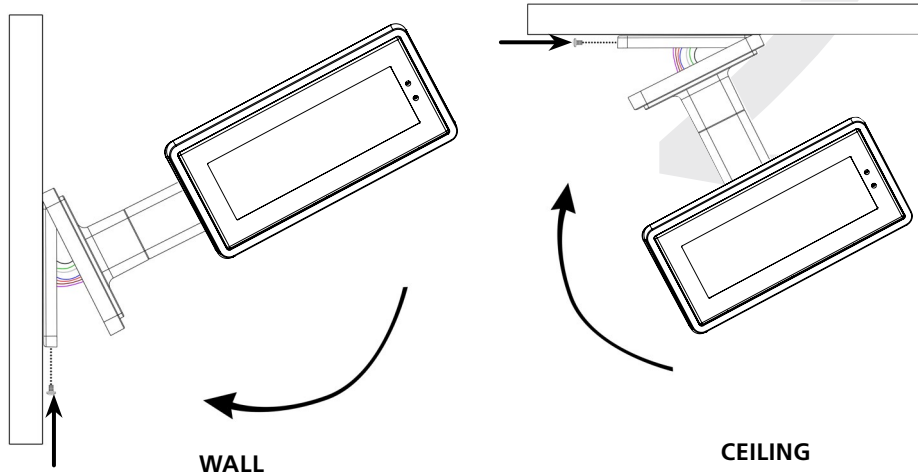
21) Power the clock if you have not already done so. After testing the LED segments and presenting some diagnostic information, the clock will display the time based off if its internal quartz oscillator. It will correct itself to show synchronized time as soon as it receives data from an NTP server.

Double Mount Installation

Included in Package

Description	Quantity	Picture
SBP Digital Clock	1	
Digital Clock Wall Housing	1	
6-19x1/2 screw	8	
6-32x1 screw	8	

Included in Pole Kit (SAB-4GD-00S-0 or SAB-1GD-00S-0)

Description	Quantity	Picture
Dual-mount pole, including mounting plate	1	
#10-32x3/8 green screw	1	
#8-32x7/16 screw	8	

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

Double Mount Installation

M3.5-1.0x10 screw (black)   4 (not used)

Internal-tooth washer   8

#6-32x1 screw   4

Adapter tab screws   4 (not used)

PLEASE NOTE: A user will also have to provide a Phillips-head screwdriver, a small flat-blade screwdriver, a double gang box, any equipment needed to install the gang box, and any additional wiring needed to extend the data or ground cables. You may also need a 1/4 inch drill, 4 #8x1.5 self-tapping screws, and 4 wall anchors for those screws 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.

Double Mount Installation

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.

Ceiling

11" Minimum

2) Run a CAT5 or CAT6 data cable from a PoE switch or PoE injector to the gang box. Confirm that the switch or injector, and either an NTP server or internet modem, are connected to your network router. The clock-side of the cable should terminate in a male RJ45 connector.

KNOW YOUR NETWORK

Make sure that your network firewall is set to allow communication between the clocks and NTP servers. This means that Ports 80, 123, and 1777 must be open.

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.

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Double Mount Installation

5) Remove the mounting plate and drill the four holes that were just traced. Insert the four wall anchors into the holes.
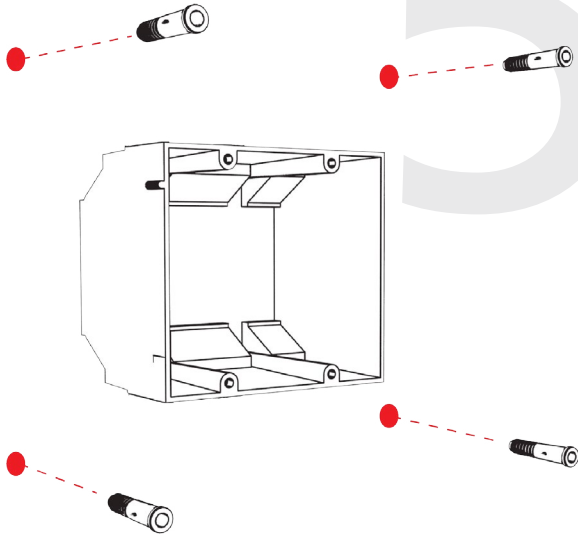
6) Reattach the mounting plate, this time using all four long, silver #6-32x1 screws, then insert the four #8 screws through the mounting plate and into the anchors.
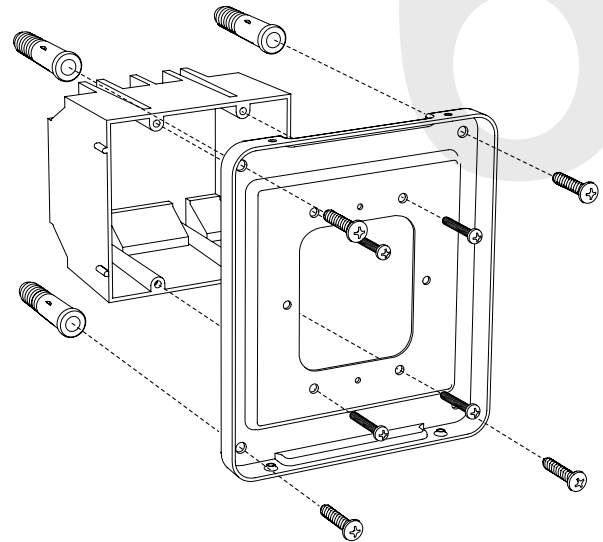
7) Thread the data cables through the mounting plate, and attach a grounding wire to the mounting plate using one of the larger centered holes and the #10-32x3/8 screw.
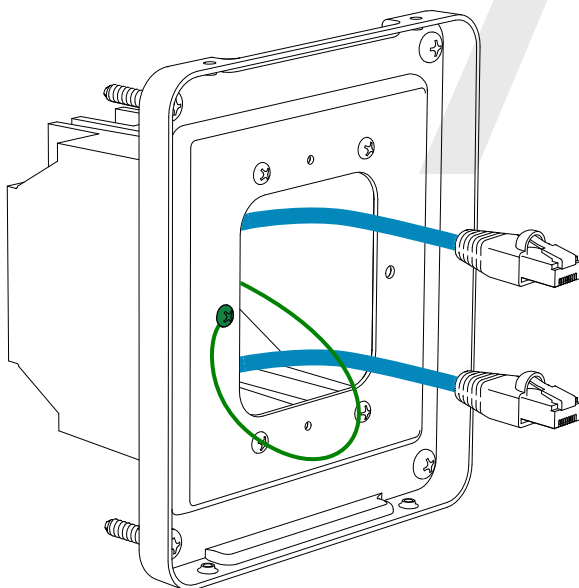
8) Use a screwdriver to remove one of the end caps. The selected end cap should match the position of the orientation of the clock on the mounting pole; for example, if you wish to attach the clock to the pole in a ceiling-mount configuration, then the top end cap should be removed. The end cap and screw that was used to secure it will not be needed again during this installation.

Double Mount Installation

9) Detach the frame from the front of each clock housing by pulling the bottom and top edges away from the housing.
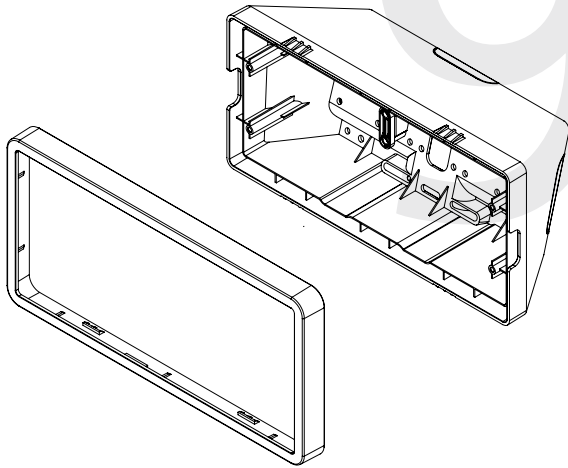
10) Insert the four #8-32x7/16 screws through the internal-tooth washers, then through each adapter, and finally into the pole. Use a screwdriver to tighten the screws so that the adapters do not move.
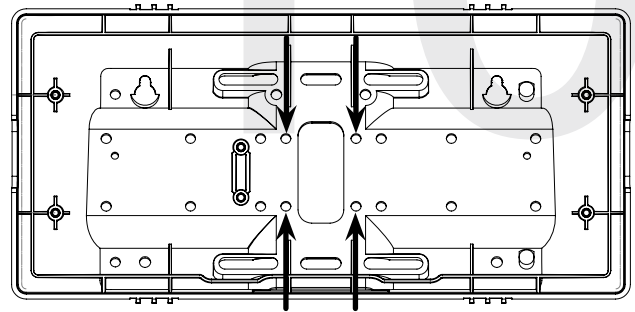
11) Attach adapters to each other using adapter tab screws, two on each side.
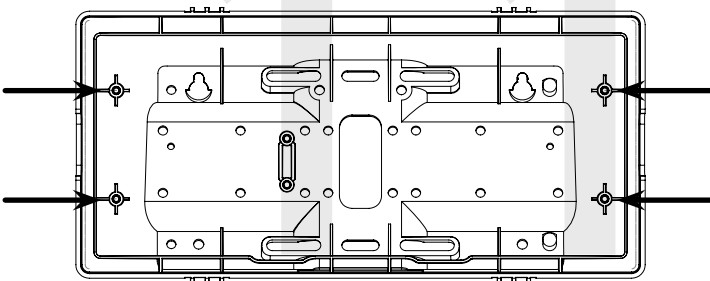
12) Thread at least fifteen inches (38.1cm) of wiring from the gang box through the bottom of the pole until each wire exits through the hole in each adapter. Secure the wires by passing them through the wire clamp.

Adapter hole

Wire Clamp
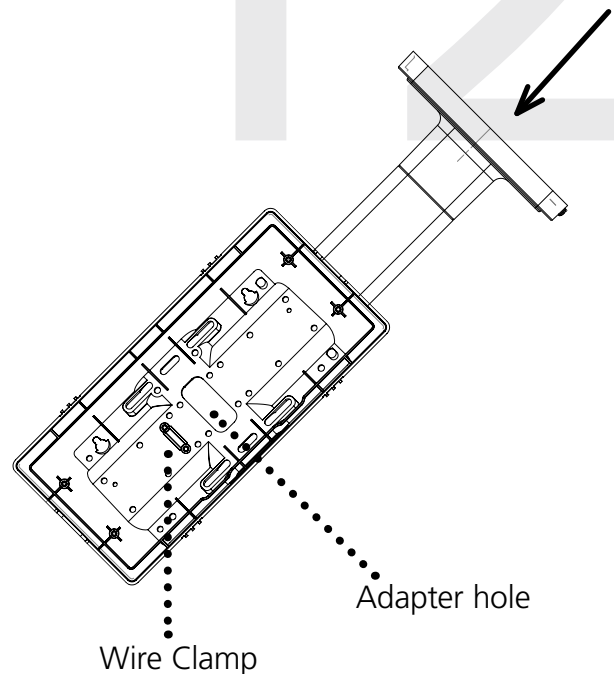
Double Mount Installation

13) Detach the filter from the clock display board by pressing inward on the red tabs.
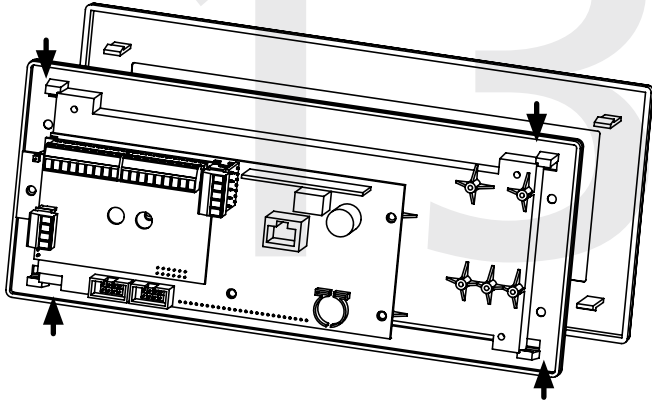
14) Attach a data cable to the port on the right side of the circuit board. If the clock is able to access the Internet, it will begin to correct itself. Make a note of the clock's Serial Number, which should be on a white sticker above the port. Add this information to your tracking chart.
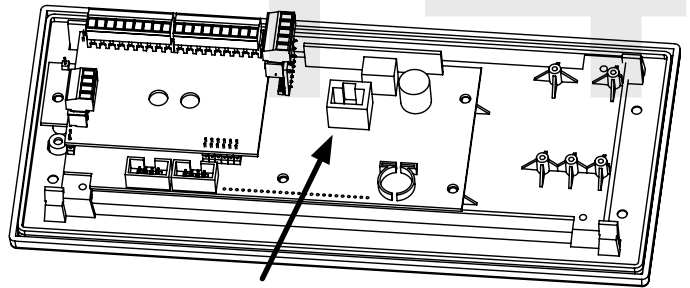
15) Use the 6-19x1/2 screws to attach each display board to the housing.

NOTE: For 2.5" Digit clocks, the holes for the screws will be on the left and right inner surfaces of the housing. For 4.0" Digit Clocks, the holes will be on the top and bottom surfaces.
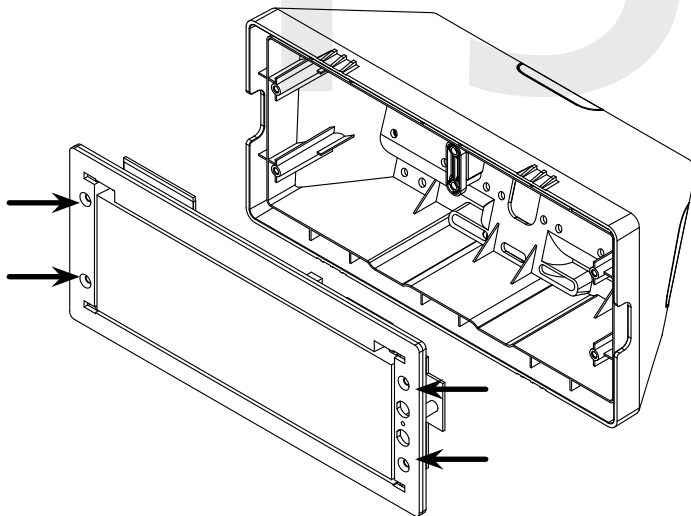
16) Remove the plastic cover from each display board.
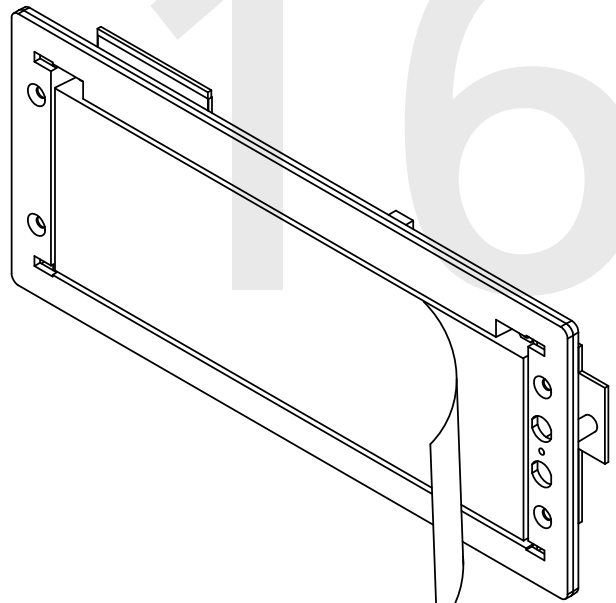
Double Mount Installation

17) Place a filter over each display board. You should hear a snapping noise as the latches drop into place.
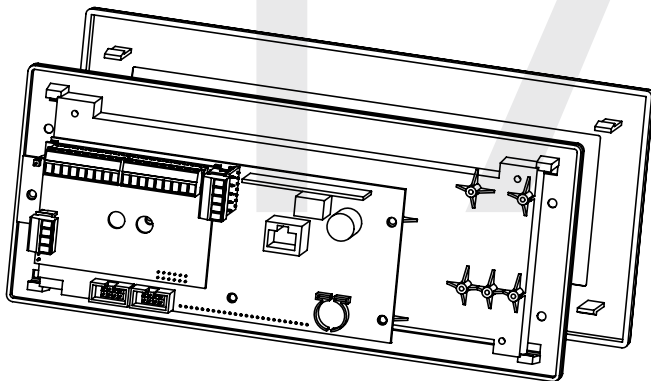
18) Place a housing frame onto each housing. You should hear a snapping noise as the latches drop into place.
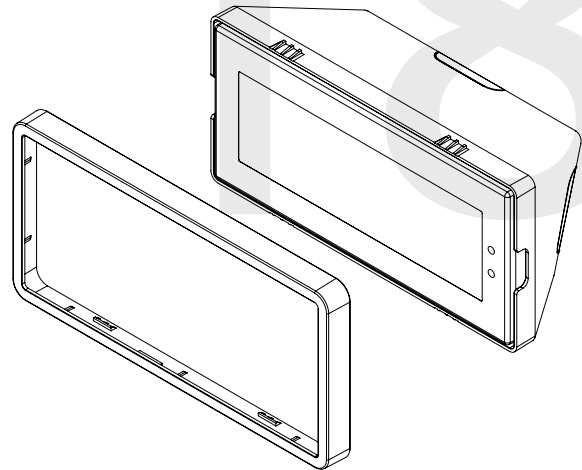
19) Hang the base of the pole on the mounting plate so that the lip is on top of the base, and the holes for the screws are on the bottom of the base. Attach the wires from the pole to the wires in the gang box, then use the two black base screws to attach the other side of the base to the mounting plate.

WALL

CEILING
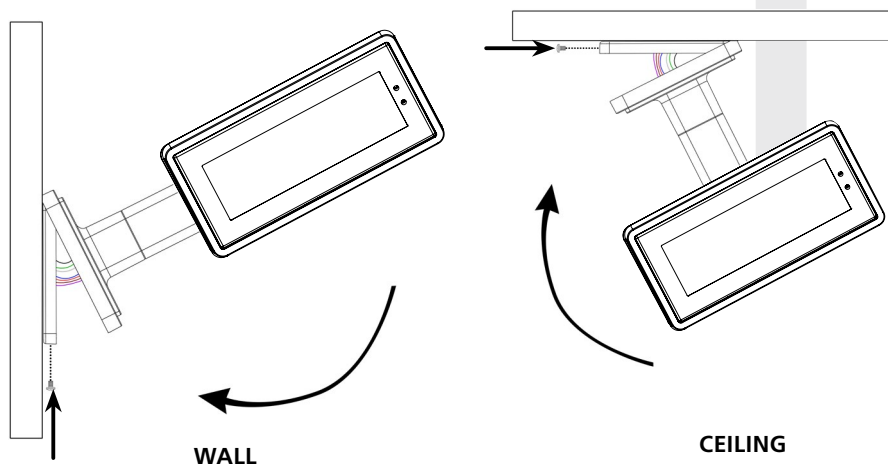
20) Power the clock if you have not already done so. After testing the LED segments and presenting some diagnostic information, the clock will display the time based off if its internal quartz oscillator. It will correct itself to show synchronized time as soon as it receives data from an NTP server.

Temperature Sensor Installation (3200/3300 Only)

(**IMPORTANT:** Detach clock from power source before installing new circuitry. DO NOT add new circuitry while the clock is operating)

Attach the end of the Temperature Sensor Wire to the circuit board in the following manner:
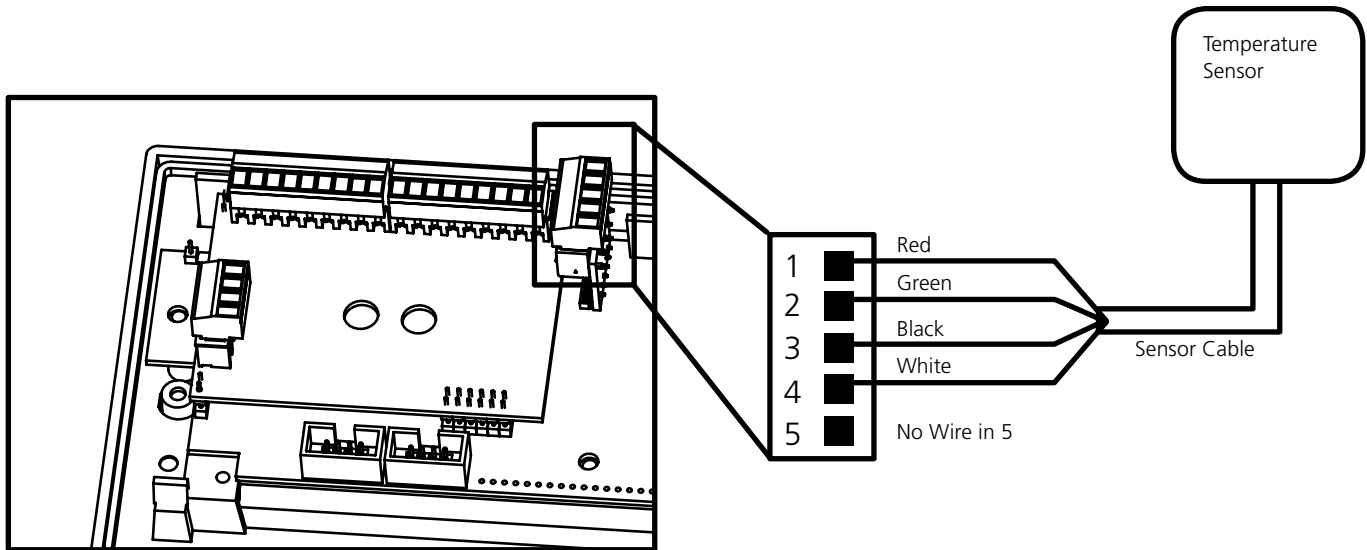
The Sensor Cable is 6 feet (1.83 meters) long, and so the sensor should be positioned within 6 feet of the clock. The cable is unshielded, 4 conductor, 22AWG (.33mm²). If longer than 6 feet is required, the wire would have to be terminated in an electrical box, and the longer wire would have to be provided by the customer.

Data from the temperature sensor will be sent to your clock when the clock is powered on. For more information on how to make the digital clock display temperature, please see the section labeled "Web Interface - Display Settings".

Buzzer Installation (3300 Only)

(**IMPORTANT:** Detach clock from power source before installing new circuitry. DO NOT add new circuitry while the clock is operating)

During installation, there are two port blocks mentioned. The block on the upper-left will be called J1, while the block on the bottom left will be called J3. Refer to the diagram for details. For J1, the ports in the block are listed as 1-9, starting with port 1 on the left, and ending with port 9 on the right. For J3, the ports in the block are listed as 1-4, starting with port 1 on the bottom and port 4 on the top.

The Buzzer can be installed on the clock circuit board with four easy steps:
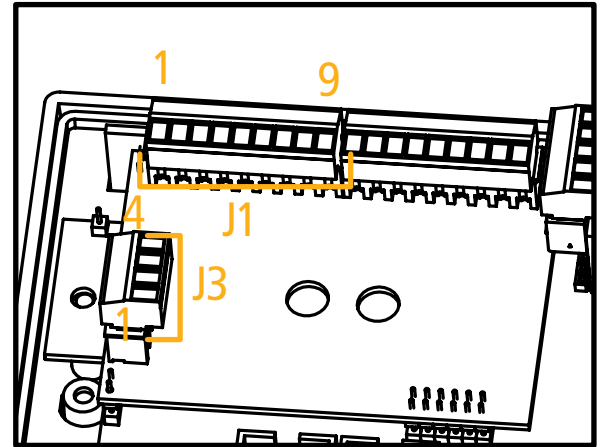
1. Attach the long green connector to the J1 Sync Input ports.
2. Confirm that the wires are attached to holes 7 and 8. The red wire should be in hole 7. The black wire should be in hole 8.
3. Attach the short green connector to the J3 Relay Output ports.
4. Confirm that the wires are attached to holes 1 and 2. The yellow wire should be in hole 1. The black wire should be in hole 2.

To program the buzzer, use a web browser on the same network as the clock to connect to it, log onto web interface and perform the following actions:

1. Click on the Elapsed Timer or Inputs tab.
2. Find the drop-down menu next to "On Countdown complete, close" and select "Relay 2"
3. In "for _____ seconds" set the amount of time that you wish the buzzer to sound when the countdown ends. The number must be a whole number from 1 to 60.
4. Press the Update Clock button.

For information on the Web Interface, refer to the sections labeled Web Interface - Elapsed Timer" or "Web Interface - Inputs"

User Input Installation (3300 Only)

(**IMPORTANT:** Detach clock from power source before installing new circuitry. DO NOT add new circuitry while the clock is operating)

Applying a dry contact closure to any input activates that input. To configure what a given input does to the clock when activated, refer to the section of this manual labeled "Web Interface - Inputs."

During installation, there is one port blocks mentioned. The block on the upper-right will be called J2. Refer to the diagram on the right for details. The four available inputs are assigned per the diagram below.

J2- 1 2 3 4 5 6 7 8 9

Input 1 Input 4

Input 2 Input 3
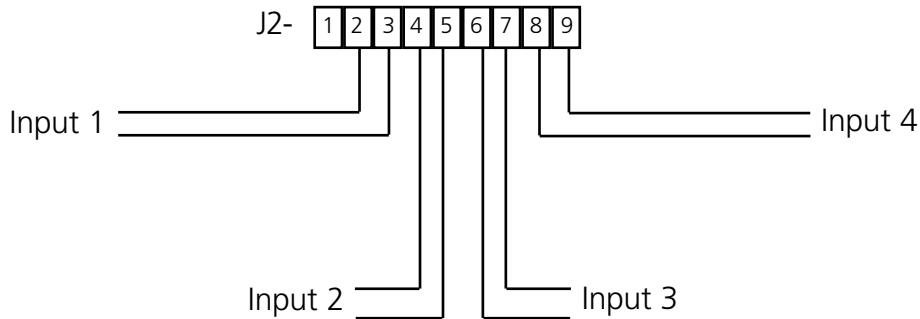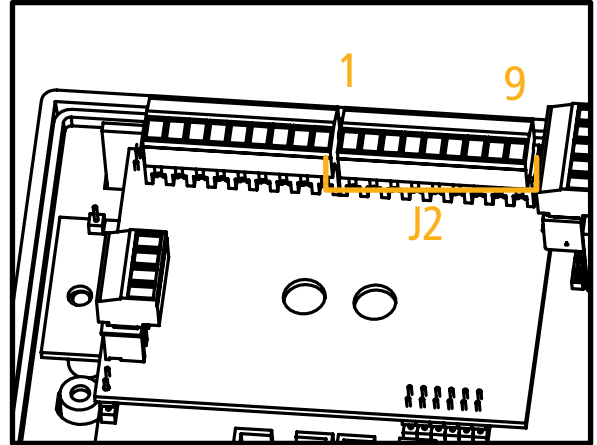
IP Monitor Software - Main Screen
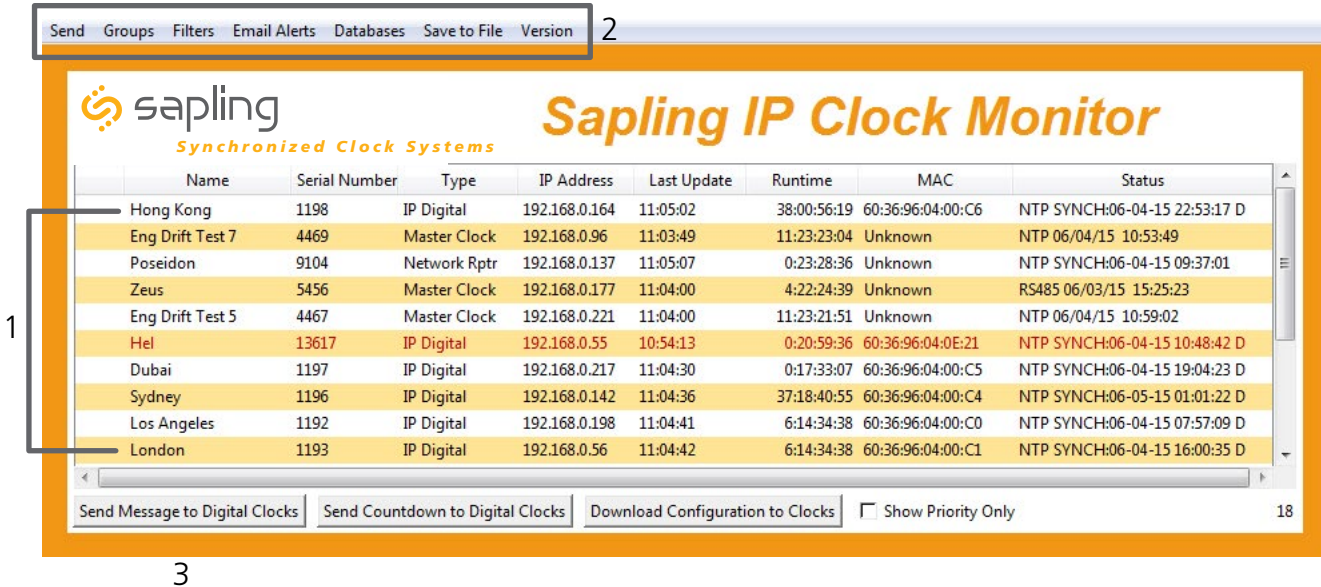
1. **Device List** - Displays all of the Sapling IP devices that are active in the system. The monitor screen displays the name of the clock, serial number, type of clock, IP address, last updated time, how long the clock has been running, the clock's MAC address, and the status of the clock. Double 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 "IP Monitor Software - Quick Access Menu" for more information.

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

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

   a. **Enter Password -** The default password is 6063

   b. **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.

   c. **Send to Selected Clocks -** Applies the message to whichever clocks have been highlighted on the Device List.

   d. **Send to All Valid Clocks -** Applies the message to all applicable devices on the Device List. For instance, a Round IP clock configuration file would be applied to every round IP clock on the Device List.
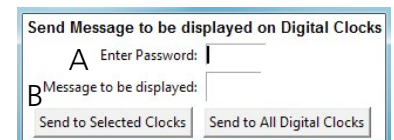
IP Monitor Software - Main Screen (ctd.)

1   2   3   4
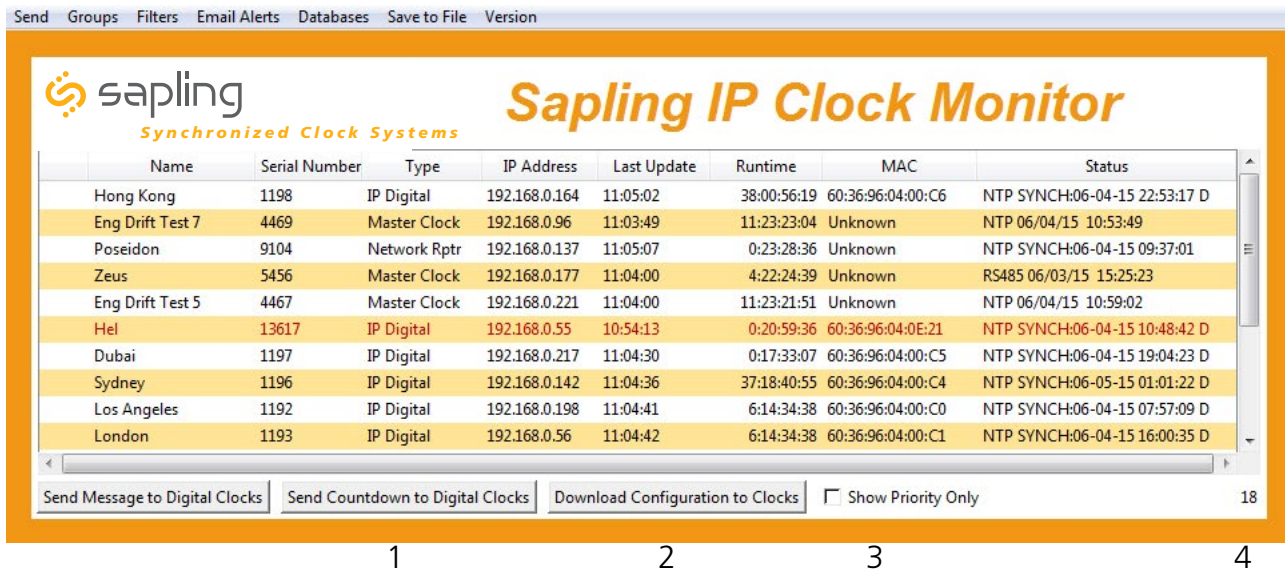
1. **Send Countdown to Digital Clocks** - Allows the user to generate a countdown that will be sent to digital clocks.

    a. **Enter Password -** The default password is 6063

    b. **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

    c. **Send to Selected Clocks -** Applies the countdown to whichever clocks have been highlighted on the Device List.

    d. **Send to All Valid Clocks -** Applies the countdown to all applicable devices on the Device List. For instance, a Round IP clock configuration file would be applied to every round IP clock on the Device List.
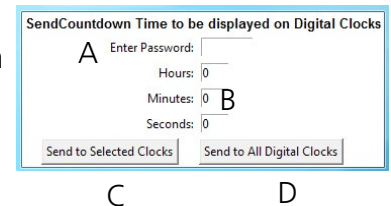
2. **Download Configuration to Clocks** - If a configuration file was created using "Upload and Save Configuration" on the Quick Access Menu, this option lets the user apply the configuration file to other clocks highlighted within the monitor. Pressing this button will cause the Download Configuration window to appear:

    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 Round IP clock configuration file would be applied to every round IP clock on the Device List.
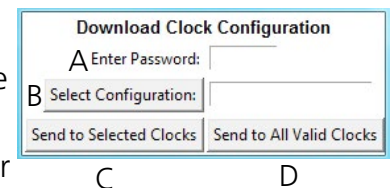
3. **Show Priority** - By selecting this option, the IP device(s) the user previously "marked as priority" will be the only clocks shown in the program window.

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

IP Monitor Software - Task Bar Options
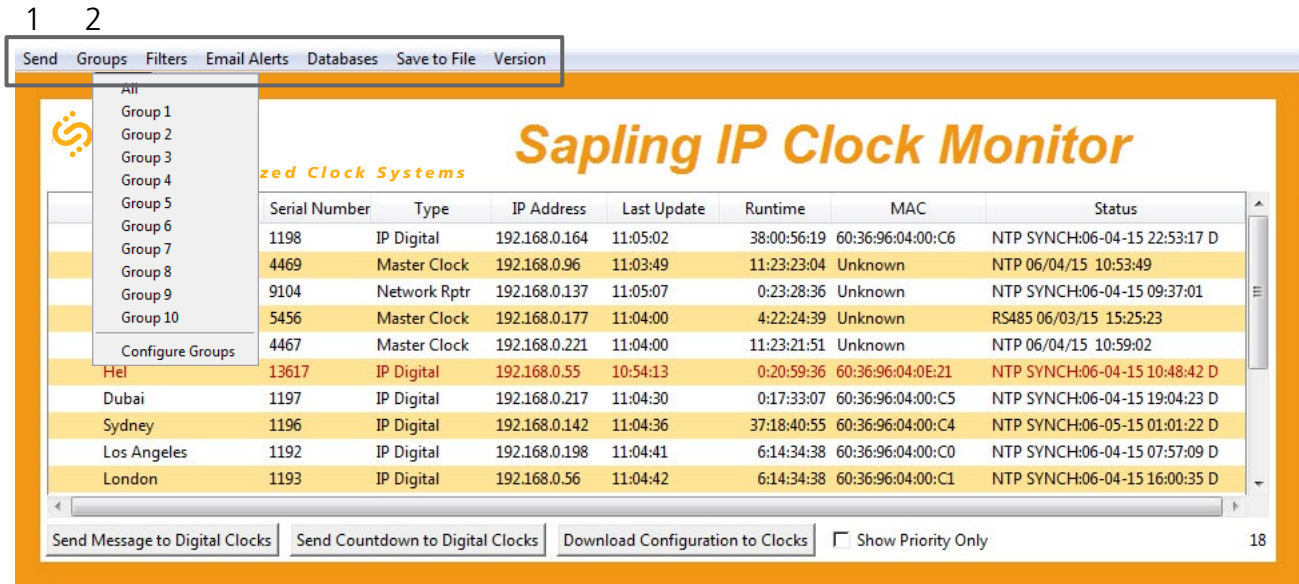
1. **Send -** When clicked, this button will display the following options:

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

Send Looping Message - Refer to the section of this manual, "IP Monitor Software - Quick Access Menu"

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

Find Hands - Does not apply to Digital clocks.

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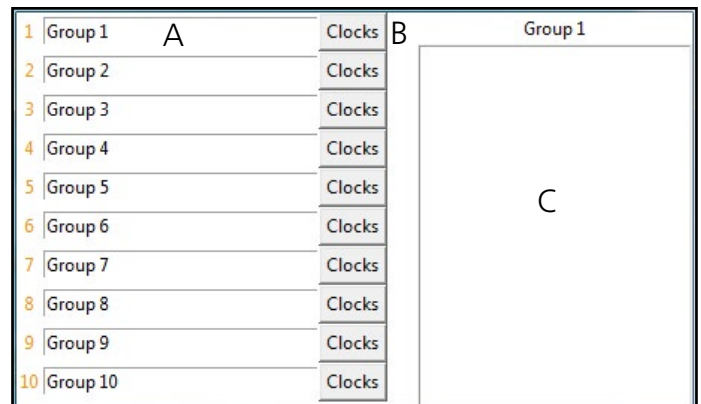
To add a device to the group, click on a device on the IP monitor. While holding down the button on the mouse, drag the name of the device over to the device box, then release the button on the mouse.

To remove a device from the group, click on a device in the device box. Whole 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.

IP Monitor Software - Task Bar Options (ctd.)

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, 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.

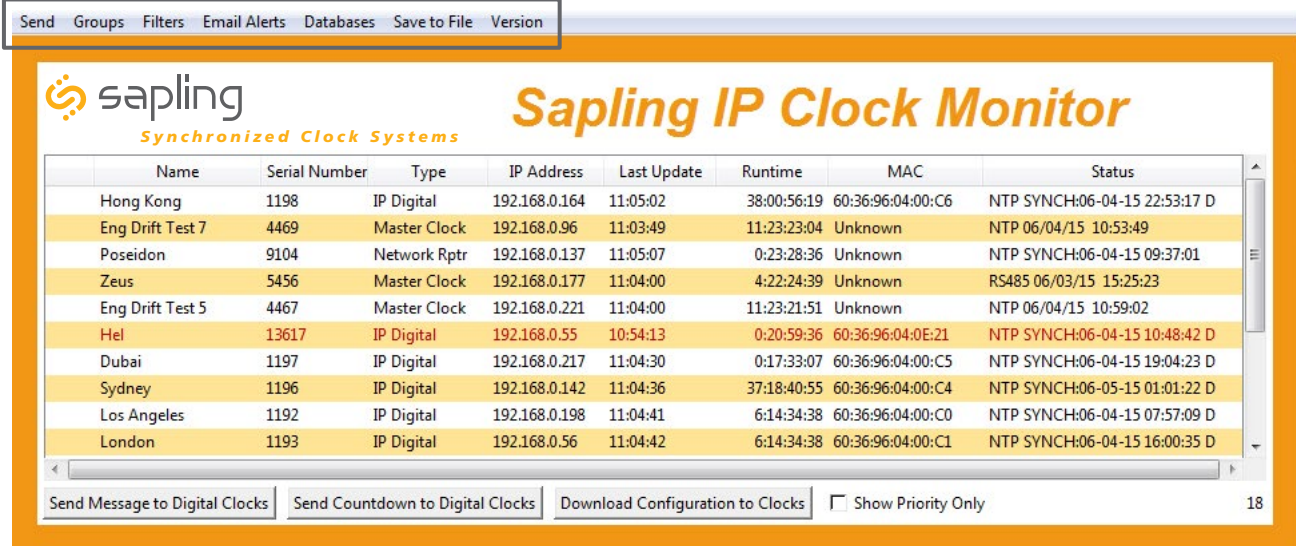**Filter By Name** - By selecting this option, the user is able to search for specific clocks by name on the Monitor Screen. The user must type in the name of a clock and check the box next to the word Enable. Once checked, the clocks that match the name will appear.

Please Note: When using this option, the submitted name must be identical to the name of the clock in order to receive a match. There are a few special sequences/characters listed below that may be used when filtering by name:

*	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.

IP Monitor Software - Task Bar Options (ctd.)
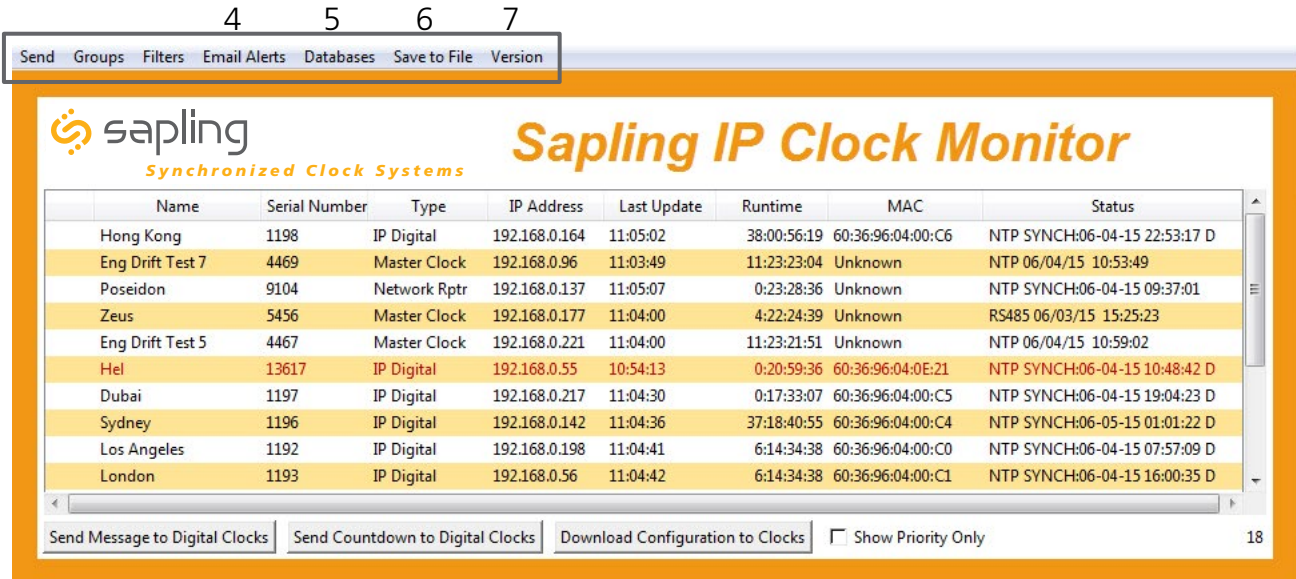
4. **Email Alerts** - When clicked, this button will display the following options:

Enable Email Alerts - By selecting this option, the user will receive an email alert if the IP Monitor Software hasn't heard from a clock in a certain amount of time.

Configure Email Alerts - By selecting this option, the user is able to choose which email address the alerts are sent to, 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

5. **Databases -** When clicked, this button will display the following options:
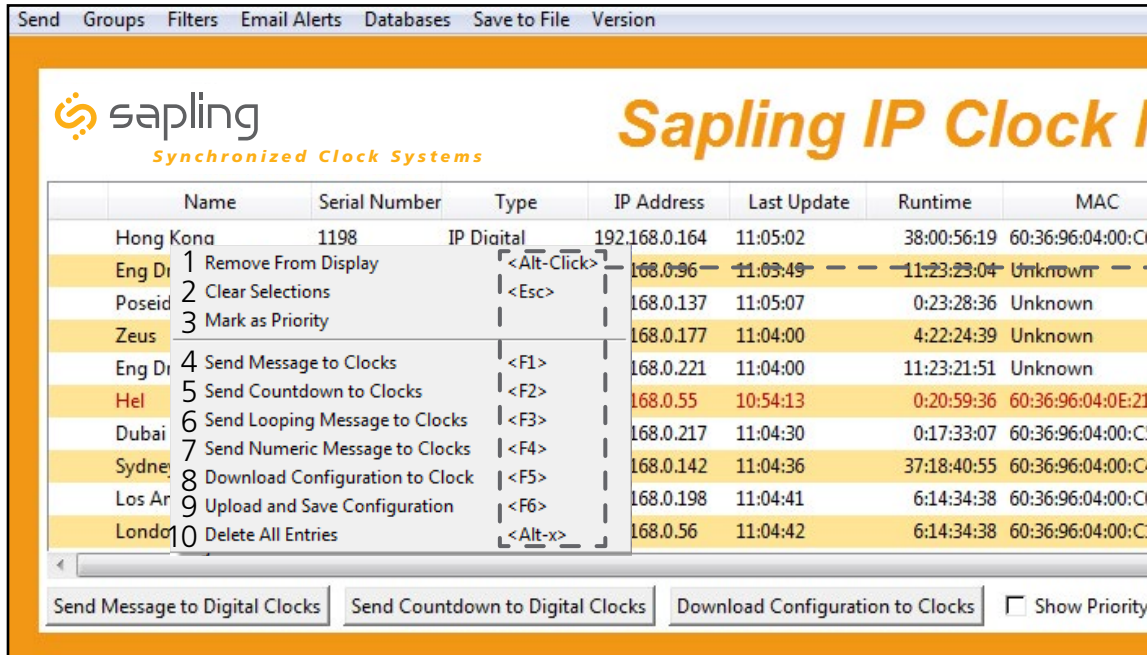
Download Configuration - By selecting this option, the user can load an IP clock's setting from a PC to another IP clock.

Upload Configuration - By selecting this option, the user can upload the settings from an IP clock and save them to a PC.

6. **Save to File** - When clicked, allows the user to save the all of the information in the IP 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 IP Monitor Software and the Software Version Number (SVN). This information is needed only when contacting Sapling technical support and will not affect your usage of the IP Monitor Software.

IP 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. See option 15 on page 17 for directions on how to filter the priority clocks on the monitor screen.

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.

8. **Download Configuration to Clock** - If a configuration file was created earlier using "Upload and Save Configuration", this option lets the user apply the configuration file to the highlighted device. Refer to the action with the same name on the "IP Monitor Software - Main Screen" page of this manual.

9. **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 IP Monitor. Your computer will automatically prompt you for the location of the saved configuration file.

10. **Delete All Entries** - By selecting this option, the user can remove all clocks from the Device List.

IP 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 IP Monitor, but upon launching the IP 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.

4. **"Unknown" MAC Address** - An IP device with older software will report its MAC address as "Unknown". This is a result of the data sent by the older software in the device. It does not indicate an error with the clock.

Web Interface - Log In
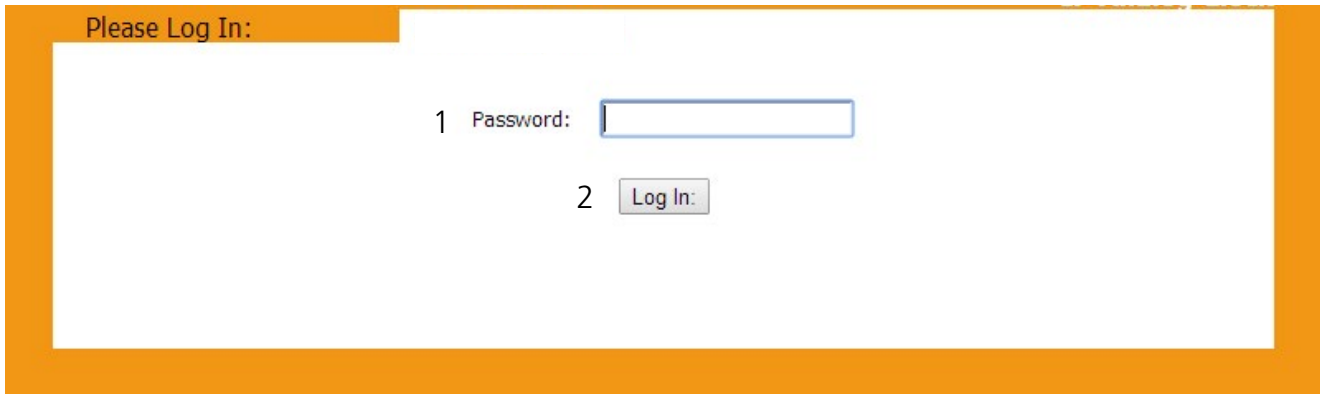
1. **Password** - Location where the password is entered. The default password is 6063, but this can be changed within the settings.

2. **Log In** - 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 - Date and Time
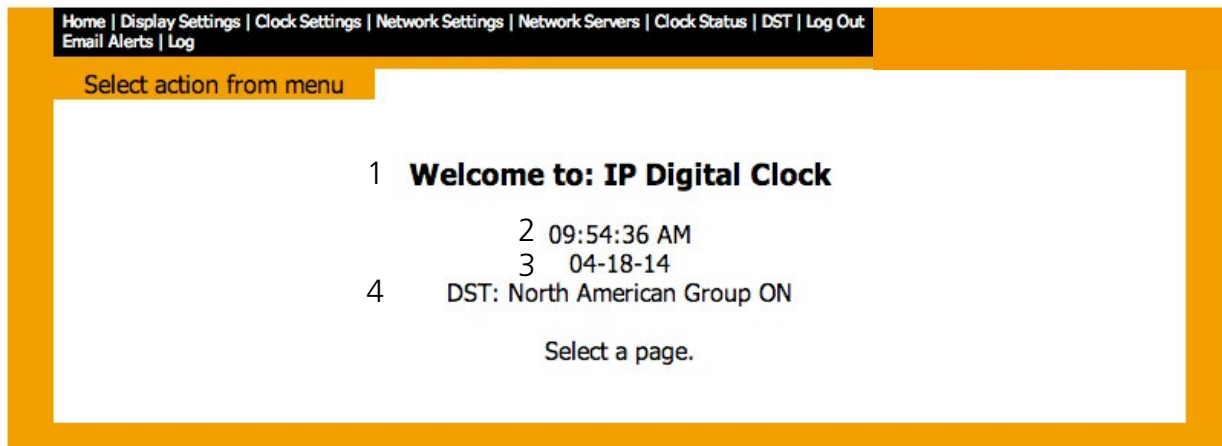
1. **Welcome Sign** - Displays the Clock name.

2. **Time** - Displays the clock's time at the moment the web page was loaded. This information does not update unless the page is refreshed.

3. **Date** - Displays the clock's date at the moment the web page was loaded. This information does not update unless the page is refreshed.

4. **DST** - Displays the current Daylight Saving Time setting.

Web Interface - Display Settings

1. **Display Format -** Allows the user to select how the time is displayed on the clock. There are two options: 12 hour format (3:00AM/3:00PM) or 24 hour format (3:00/15:00).

2. **Date Format -** Sets the date to display in either American style: MM:DD:YY or European style: DD:MM:YY. For 4 digit clocks, the date will display in either American style: MM:DD or European style: DD:MM.

3. **Brightness -** Sets the brightness level that the clock will display. There are four levels to choose from: High, Medium, Low or Off.

4. **Brightness Schedule** - When the button is pressed, the user is taken to the Brightness Schedule Page. Refer to the section of this manual labeled "Web Interface - Brightness Schedule" for further instructions.

5. **Seconds Time Displayed* -** The clock will display the time for the number of seconds entered in the box. After the selected amount of time passes, the clock will change to show Date or Temperature. If a time of 0 is selected, the clock will not display the time. If Date and Temp Displayed are set to 0, the clock will only display the time.

6. **Seconds Date Displayed* -** The clock will display the date for the number of seconds entered in the box. After the selected amount of time passes, the clock will change to show the Time or Temperature. If a time of 0 is selected, the clock will not display the date. If Time and Temp Displayed are set to 0, the clock will only display the date.

7. **Seconds Temp Displayed*** - If a temperature sensor was installed on the clock, the clock will display the temperature for the number of seconds entered in the box. After the selected amount of time passes, the clock will change to show the Time or Date. If a time of 0 is selected, the clock will not display the temperature. If Time and Date Displayed are set to 0, the clock will only display the temperature.

8. **Display Temp In -** If a temperature sensor was installed on the clock, this option allows a user to select whether the temperature appears in Fahrenheit or Celsius.

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

10. **Cancel -** Reverses any recent changes to the Display Settings tab without applying any changes to the clock.

*Note: If the Time, Date, and Temp Displayed are ALL set to 0, the display will turn completely blank. It will turn on for count down/up, and off again once the counting has been cleared.

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Web Interface - Brightness Schedule

1. **Date Column -** Allows the user to select dates where changes to the brightness schedule are active. If a date is not selected, the actions in the adjustment columns will not be applied to the clock.

2. **Adjustment 1 -** Allows the user to select a new brightness level for the clock, and the time when the new brightness level will take effect. Times are entered in 24 hour mode. Brightness options are High, Medium, Low, and Off.

3. **Adjustment 2 -** Allows the user to set a second time during a given day where the brightness level will change.

The time for Adjustment 2 may be set for any time before or after Adjustment 1 during the same day. For example, if Adjustment 1 is set to activate at 11:00 AM and Adjustment 2 is set to activate at 8:00 AM, Adjustment 2 will activate first at 8 AM, followed by Adjustment 1 at 11 AM.

If you wish for the brightness to only change once on a given day, set Adjustment 1 and Adjustment 2 to the same brightness level and time.

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

Web Interface - Clock Settings

1. **User Password** - Allows the user to set up a new password to the web interface. Users may view all tabs, but cannot change settings. The default user password is 1111.

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

3. **Technician Password** - Allows the user to set up a new password to the web interface. Technicians may change any setting. The default technician password is 6063.

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

5. **Clock Name** - Allows the user to set a unique name for the clock, so that it can be identified on the IP monitor. The name must be fewer than 20 characters.

6. **Clock Number** - Displays the serial number for the clock, so that it can be identified on the IP monitor. This number cannot be modified.

7. **Network Sync Every** - Allows the user to select how often the clock should attempt to synchronize with an NTP server.

8. **Bias Seconds** - This setting allows the user to alter how much faster or slower the IP clock will run in relation to synchronized time. The range permits -9999 seconds to +9999 seconds. (This translates to a range of 2 hours, 46 minutes, and 39 seconds either way, but the time must be entered as a number of seconds). The clock may be configured to function as part of a Zone Clock through this option.

Web Interface - Clock Settings (ctd.)

9. **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.

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

Web Interface - Network Settings
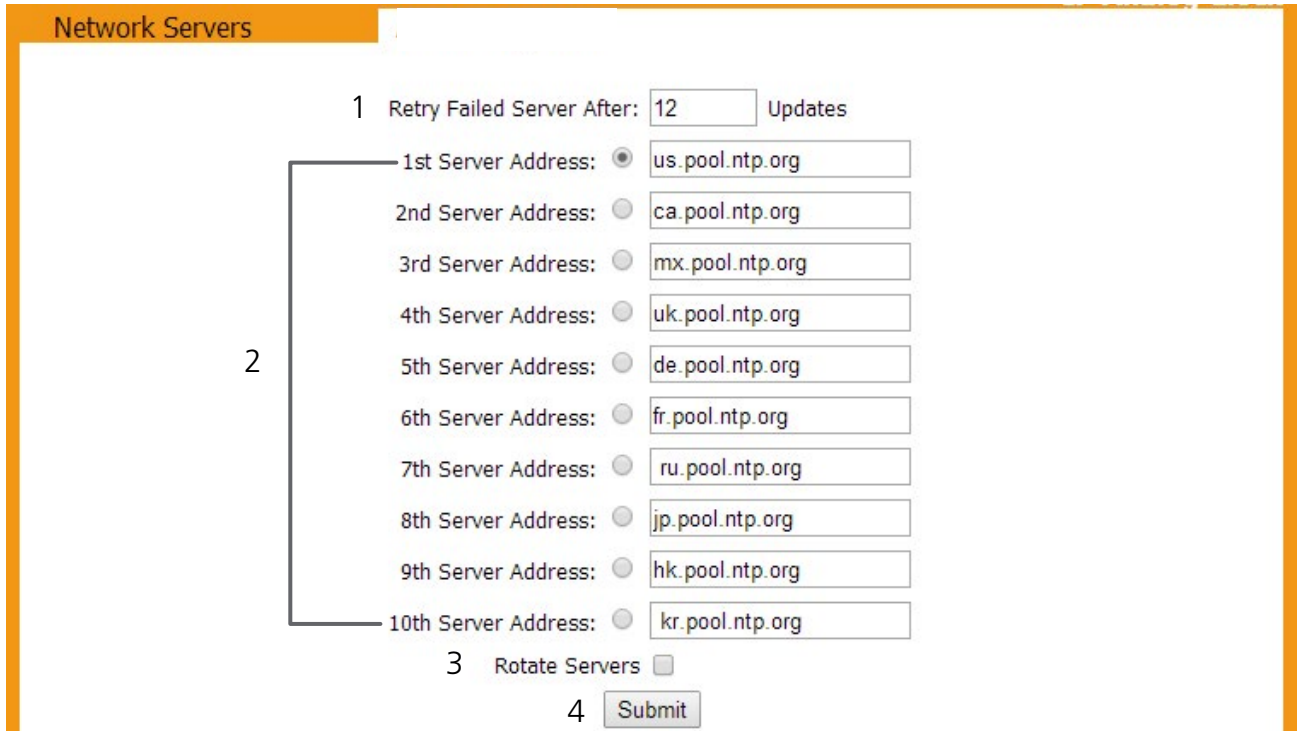
1. **Gateway IP Address** - This field allows the user to set the gateway IP address.

2. **Subnet Mask** - This field allows the user to set the subnet mask for their clock.

3. **DNS Router** - This field allows the user to set the DNS Router IP address.

4. **IP Address** - This field will display the clock's IP address. If DHCP is enabled, this address will be assigned by the DHCP server. If DHCP is disabled, then the user may set their own static IP address.

5. **MAC Address** - This field shows the clock's permanent machine address. It cannot be changed.

6. **DHCP** - Allows the user to set whether or not the clock will use a DHCP server to determine the IP address for the clock.

7. **Broadcast to Monitors** - Allows the user to set whether or not the clock may send data to the IP Monitor

8. **Send Specific Monitor IP** - Allows the user to set an IP address that can be used to access the IP monitor.

9. **Monitor IP Address** - This field shows the IP Monitor's IP address. It cannot be changed.

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

Web Interface - Network Servers

1. **Retry Failed Server After** - This field will allow the user to set how often the clock will attempt to contact a NTP server that has failed to communicate time data to the clock.

2. **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.

3. **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.

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

Web Interface - Clock Status

1. **NTP Details** - This button provides additional details about NTP synchronization when clicked.

2. **Resync NTP Now** - This button forces a synchronization with the NTP server when clicked.

3. **Reset NTP History** - This button resets all of the data in the NTP details window when clicked.

4. **Reset Adjustment Data** - This button resets the statistics of previous time drifts when checked.

Web Interface - Daylight Saving Time

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.
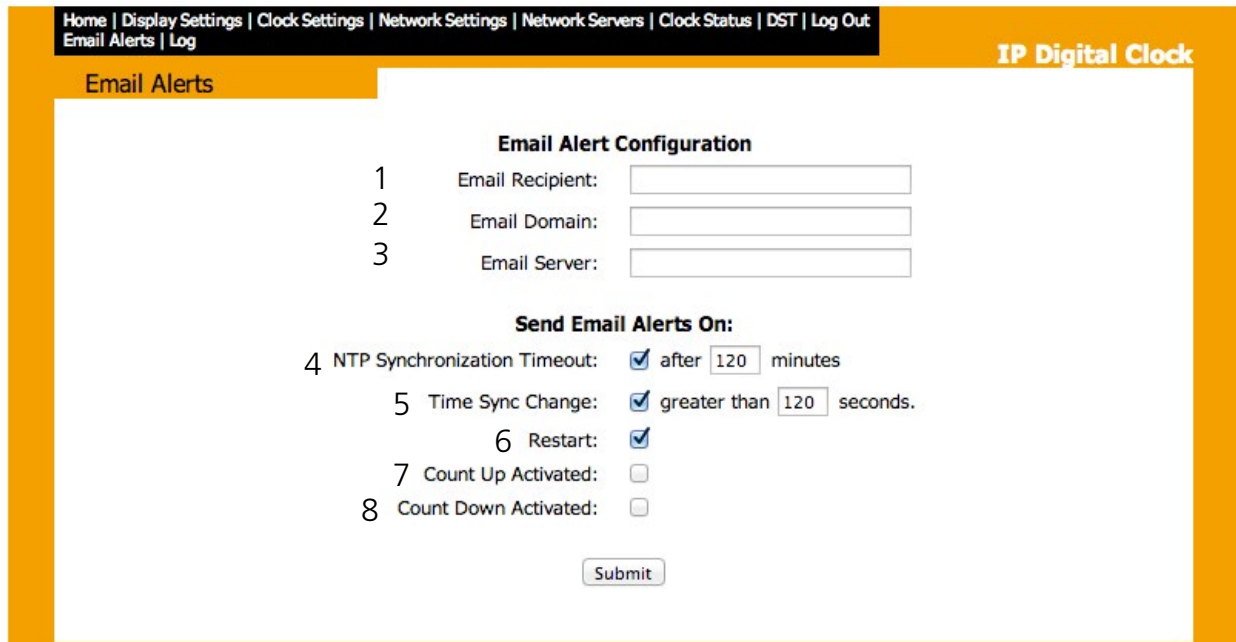
- **Day of the Week in the Month** - This mode allows the user to select the day of the week, month, and time for when the clock will switch to daylight Saving Time. Once the day, month, and time have been set, click Submit to apply the settings to the clock. Example: Second Sunday of March at 2:00.

- **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 - Email Alerts

1. E**mail Recipient** - This field is where the user enters the name of the email alert recipient. Only the name should be entered, not the domain or suffix (*Correct:* jsmith | *Incorrect:* jsmith@domainname.com)

2. **Email Domain** - This field is where the user enters the domain of the email alert recipient. Only the domain and suffix should be entered, not the name
(*Correct:* domainname.com | *Incorrect:* jsmith@domainname.com).

3. **Email server** - This field is where the user enters the address of the local outgoing email server for the email recipient. Consult with the network administrator for the email server address. Emails are sent using SMTP.

FIELDS 1, 2, AND 3 MUST BE COMPLETED FOR THE EMAIL FEATURE TO FUNCTION

4. **Email Alert - NTP Synchronization Timeout** - When selected, the clock will send an email alert if the clock hasn't received a time synchronization after the number of minutes listed in the field next to the selection box.

5. **Email Alert: Time Sync Change** - When selected, the clock will send an email alert whenever the difference between the original time and most recent time synchronization data is greater than the listed number of seconds. The number of seconds may be changed using the field next to the selection box.
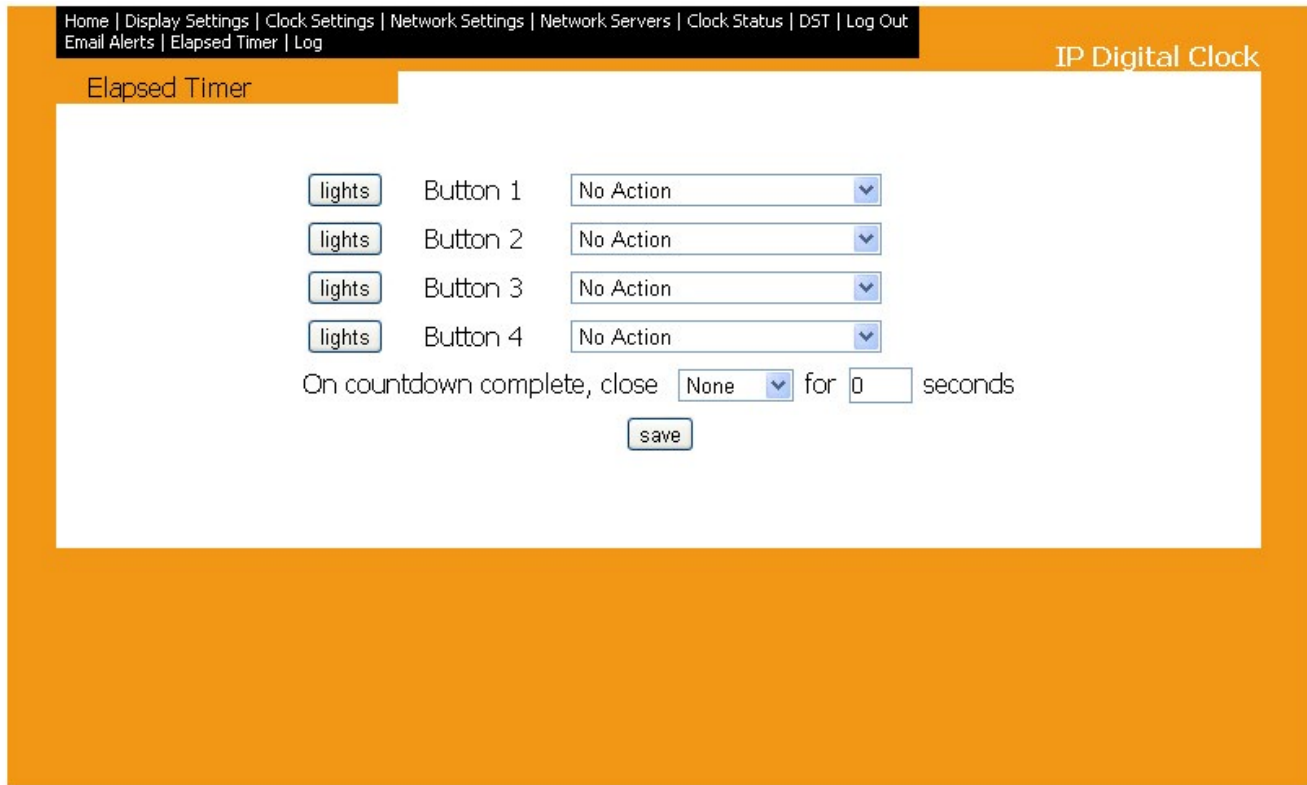
6. **Email Alert: Restart** - When selected, the clock will send an email alert whenever the clock has lost and regained power, either through intentional disconnection or a power outage.

7. **Email Alert: Count Up Activated** - When selected, the clock will send an email alert whenever the clock begins a Count Up.

8. **Email Alert: Count Down Activated** - When selected, the clock will send an email alert whenever the clock begins a Countdown.

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

Web Interface - Elapsed Timer

A user may set up and configure the Elapsed Timer control panel through this tab. For detailed instructions on the many functions and uses of the Elapsed Timer, refer to the Elapsed Timer Manual.

Web Interface - Inputs (3300 only)
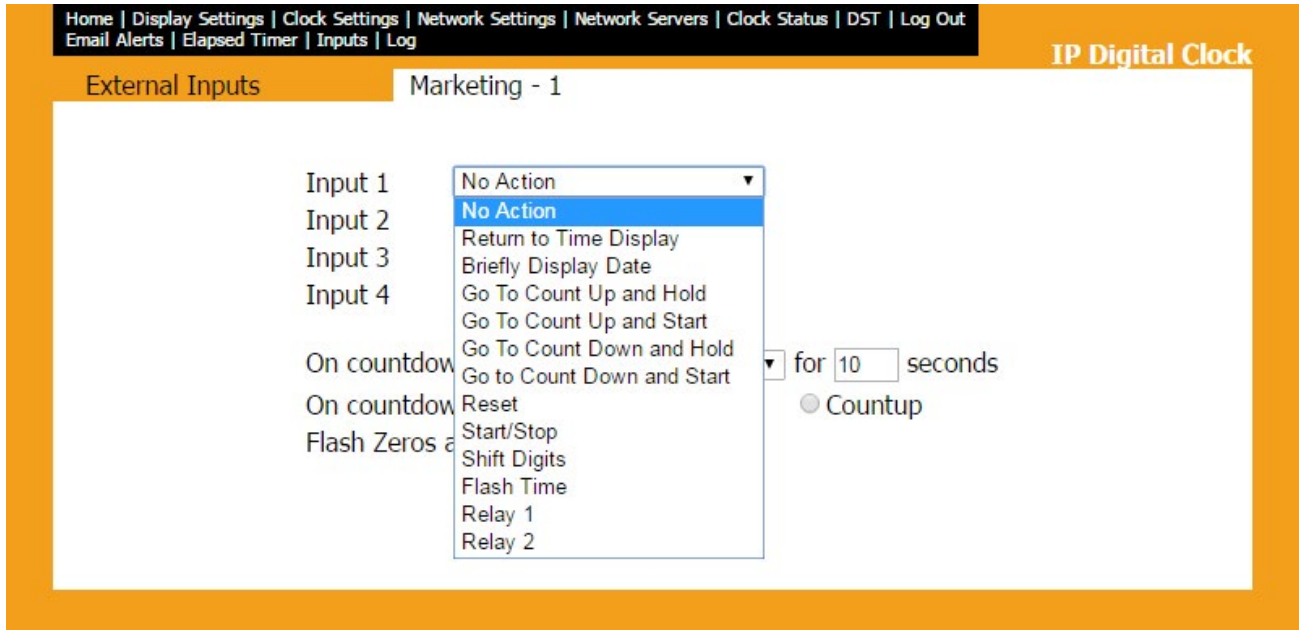
The 'Inputs' tab allows a user to program the clock to perform a certain function through a switch or relay contact closure from an outside device such as Code Blue, Nurses Call, etc. Program the first Input on the 3300 digital clock by selecting one of the options in the drop down list next to Input 1. Listed below are the options and the function of each one:

No Action - This function does nothing if the input is activated.

Return to Time Display - Activating the input causes the clock to display the time. If a countdown or count up is in progress, the function is reset when the input is activated.

Briefly Display Date - Activating the input causes the clock to briefly display the date. This only works if the clock is displaying the time, not a countdown.

Go to Count Up and Hold - Activating the input causes the clock to display and hold at zero.

Go to Count Up and Start - Activating the input causes the clock to switch from its current display and begin a count up from zero.

Go to Count Down and Hold - Activating the input causes the clock to display and hold at a start time specified by the user.

Go to Count Down and Start - Activating the input causes the clock display to begin counting down from a time specified by the user.

Reset - Activating the input restarts whichever countdown/count up is in progress.

Start/Stop - Activating the input causes the timer to pause or resume its counting functions.

Shift Digits - Activating the input causes the digits to shift from displaying Hour/Minutes to Minutes/Seconds (Applies to 4 digit clocks only).

Flash Time - Activating the input causes the clock to briefly display the time while another function, such as count up or count down, is occurring. Activating the input does not pause, stop, or reset whichever function is occurring at the same time.

Relay 1 - Activating the input causes Output Relay 1 to activate.

Relay 2 - Activating the input causes Output Relay 2 to activate.

Code Blue - Performs a special-purpose count up. Refer to the section on the next page labeled "Code Blue"

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Web Interface - Inputs (3300 only)

Code Blue:

Code Blue is a special-purpose count up designed for use in hospitals and other medical facilities. This function overrides the control panel LED settings. The lights are green while the timer is running and red when the timer has been paused.
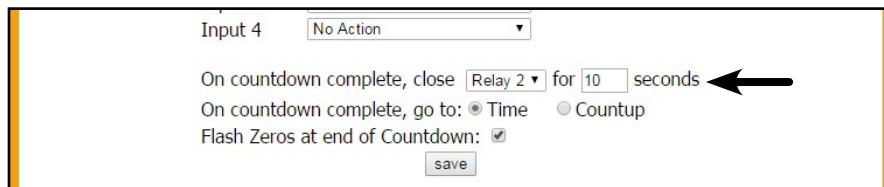
When an input programmed with Code Blue is activated for the first time, the count up starts.

When the input is activated a second time, the count up pauses. If the input is activated a third time, the count up will resume.

When the input is activated for a period longer than three seconds, the count up resets to zero and the display goes back to showing the time.

If a button programmed with the Start/Stop function is pressed while Code Blue is running, the count up will pause. If Start/Stop is pressed again, the count up will resume.

On countdown complete, close: This option allows a user to choose how many seconds a relay will be closed for.
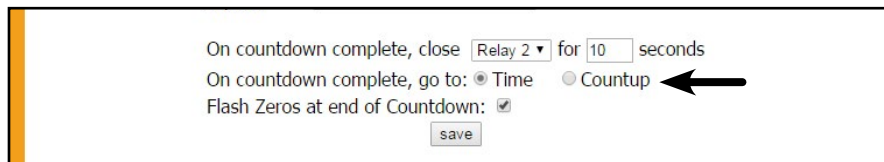
At end of Countdown, go to: This option allows a user to choose between having the clock display the time or start a count up when a countdown completes.
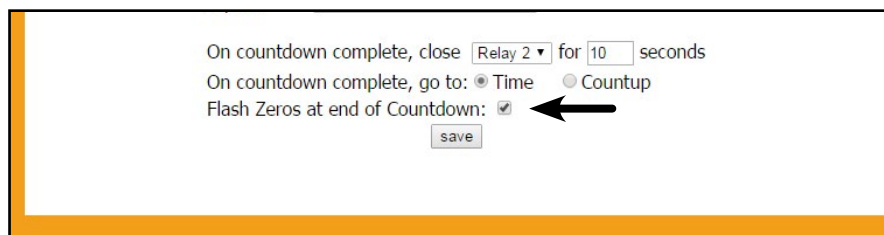
Flash Zeros at end of Countdown: This option allows a user to command the clock to have the zeros on the clock display blink on and off to indicate the end of a countdown.

Once all of the Input settings are chosen, click the 'Submit' button to store the selected options or, when all the tabs have been programmed, click the 'submit' button located at the bottom to store all changes..

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Web Interface - Log

1. **Clear Log** - When clicked, this button deletes all of the information on the Log page.

2. **Next** - When clicked, this button displays the next page of log entries.

Each log entry will display the date and time of the event, along with a note describing the event being logged.

Reading the Display

The digital clock is designed to display time in either a 12-hour or 24-hour format. When the display is set to the 12-hour format, a circular light will appear in the top left corner of the display to indicate PM, or disappear to indicate AM. When the display is set to the 24 hour format, the full 24-hour time will appear on the display; no other lights should appear.

Some examples:

5:30 AM (12-hour format)

5:30 PM (12-hour format)

5:30 AM (24-hour format)

5:30 PM (24-hour format)

The factory default setting for all digital clocks is the 12-hour format. If you wish to set the clock to display time in a 24-hour format, see the section labeled "Jumper Settings" or "sbdconfig - Display Settings", included earlier in this manual.

Manual Controls

Some functions of the IP Digital Clock can be controlled through the two push-buttons on the face of the clock. That said, it is ALWAYS preferable to use the Web Interface and IP monitor software when commanding the clock, as these buttons become difficult to access when the clock has been installed on a high wall.

Top Button
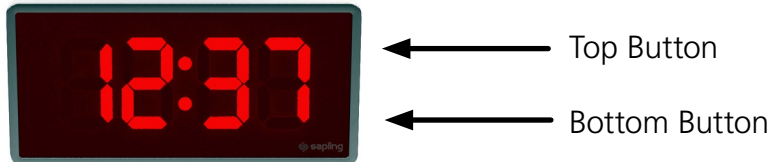
Bottom Button

Display IP Address

When the top and bottom buttons are simultaneously pressed and held for two seconds, the clock will display the number groups of the IP address. For example, if the IP address of the clock is 192.168.0.80, then the following groups will appear:

[192]   [168]   [000]   [080]

The clock will cycle through the groups twice, then automatically return to displaying the time.

Simple Count Up

A user can set the clock to simple count-up mode by pressing and releasing the bottom button. When activated, the clock will switch to 00:00:00 (or 00:00 on a 4-digit clock) and the colons will blink.

Pressing the bottom button again will start or resume count up if the count-up is not running, or pause the count-up if the count up is running.

To exit this mode, quickly press and release the top button and the clock will show the time again.

Set Time

It is possible to manually set the time on the IP Clock. However, the clock will automatically override the manually-set time whenever NTP time is acquired (usually less than a second after the time is manually changed). To prevent the clock from acquiring NTP time, a user must either go into the web interface and remove all the NTP server addresses, or they must disconnect the clock from the network. Either method is not advised, as the clock relies on an internal quartz oscillator while in this mode and will drift by a few seconds each year. A better option wild be to go into the Clock Settings on the Web Interface and adjust the displayed time through the GMT Offset and Bias Seconds fields.

However, if a user still wishes to manually adjust the time on an IP clock without a network connection, then the user can enter manual time configuration by pressing and holding the top button.

Press the bottom button to cycle through hr (Hours), m (Minutes), SC (Seconds), SET (sets the time to the values entered in the previous three groups and exits to the time display), and CLr (clears the changes to the time and exits to the time display without making any changes)

Press the top button to advance the value listed for Hours/Minutes/Seconds, or to execute the SET or CLr command.

Frequently Asked Questions

Can this digital clock be used as a standalone clock?

The digital clock can be used as a standalone clock, but it will not keep synchronized time in this configuration. Instead, it will rely on an internal quartz oscillator for keeping the time. The clock will drift by a few seconds each year while in this mode, and will need to be readjusted manually.

What happens to the digital clock if a power failure occurs?

If a power failure occurs, the display will shut off but the clock will continue to keep time with its internal quartz oscillator. This oscillator will continue to run on a tiny battery backup for about ten years. In this mode, it may drift from synchronized time by a few seconds for each year that the clock is without power. Once power is restored to the clock, the display will turn on and display the time on the quartz oscillator. It will correct this to accurate, synchronized time once a signal from an NTP server is received.

What happens to the digital clock if contact with the NTP server is lost?

The digital clock will rely on an internal quartz oscillator for keeping the time until time data is received. The clock will drift by a few seconds each year while in this mode, and will need to be readjusted manually.

How do I take advantage of the 3200/3300 chronograph functions?

The Chronograph functions can be engaged through Sapling's Elapsed Timer (part# SBD-ELT-001-0), or by using a dry contact closure with the configurable user inputs (3300 only). Refer to the respective selections of this manual for setup instructions.

How can I display messages like "BELL" and "FirE" on the clock?

Messages can be sent by using the messaging feature on the IP Monitor program. These messages must be created and sent by the user, and cannot be configured to send automatically through this method.

Frequently Asked Questions

How do IP clocks get their time?

IP clocks independently acquire time from a Network Time Protocol (NTP) server. Many public NTP servers are maintained by government and research institutions, and they are accessible over the Internet. It is also possible to set up an in-house NTP server for a network that is not connected to the Internet.

If a change is made on the web interface, does it affect one IP clock or all of them?

The web interface allows the user to adjust settings for only one IP clock.

If a user wishes to apply the changes from one web interface to all clocks on the system, they may do so through the IP monitor program.

How many power injectors will I need if I am installing the clocks using Power over Ethernet (PoE)?

Each clock will need an injector, however there are products that exist, such as PoE switches, which provide multiple PoE ports.

What type of cable is used for PoE?

PoE is typically carried through a CAT5, CAT5e, or CAT6 patch cable.

May I use any NTP/SNTP server for downloading time?

Yes. Any server that sends out Network Time Protocol can be used.

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, the digital clock will run an LED display test to allow the user to confirm that each segment of the display is functioning properly. This should only last a few seconds.

Can I manually set the time on the SBP?

A user can use the front buttons from the "Manual Controls" section. In this mode, however, the clock will immediately revert to synchronized time whenever it performs an NTP update. To get around this, a user would need to disconnect the clock from the network, which would cause the clock to drift over time.

Instead, a user should modify settings on the Web Interface to adjust the time displayed on an individual IP clock. A combination of the GMT Offset and Bias Seconds options can be adjusted to set the clock to the user's preferred time.

What is the default password for the web interface?

The default user password is 1111. The default technician password is 6063.

Can I connect this clock to my WiFi?

No. This is not a WiFi clock, and third party adapters cannot be used to turn it into a WiFi clock.

Troubleshooting

The clock is not powering up. What should I do?

If you are using a power injector or PoE switch, confirm that the injector or switch is powered. If you can confirm that the injector is powered, but the clock is still not powering up, confirm that the cable from the network router has been inserted into the INPUT socket, and that the cable leading to the clock has been inserted into the OUTPUT socket.

I cannot connect to the web interface. What should I do?

Use a cross-over cable to confirm that you are trying to access the correct IP address. If you were using the correct IP address, reexamine your network firewall for settings that could prevent you from accessing the clock.

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

Attempt the following corrections in numerical order until the clock properly synchronizes:

1. Confirm that the clock is on the network by finding it with your IP monitor.
2. Confirm that the clock is able to communicate over your network. Be mindful of passwords and firewalls, and be sure that Port 123 is open if you are getting NTP time from the Internet.
3. On the web interface, click on the tab 'Clock Status' and press the 'Resync NTP Now' button.
4. On the web interface, click on the tab 'Clock Settings' and review the text box labeled "GMT Offset". Confirm that the number matches your time zone. If it does not, revise the number, press submit, and then press the "Resync NTP Now" button on the 'Clock Status' page.
5. On the web interface, click on the tab 'Network Servers', confirm that the 'Rotate Servers' box is selected, then press submit. Return to the 'Clock Status' page and press the "Resync NTP Now" button.
6. If the problem persists, contact technical support.

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