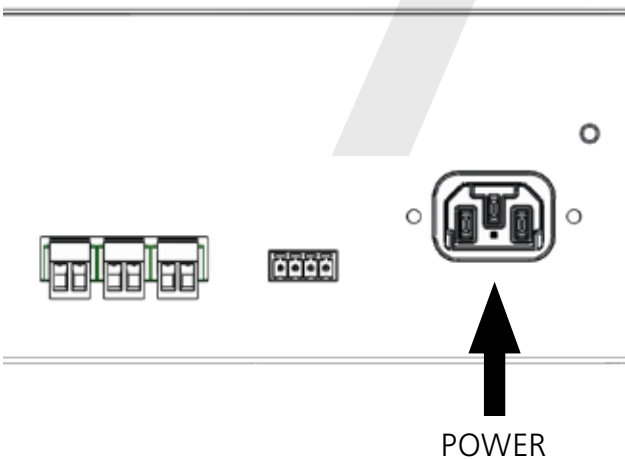


Installing a Converter Box—Wall Mount

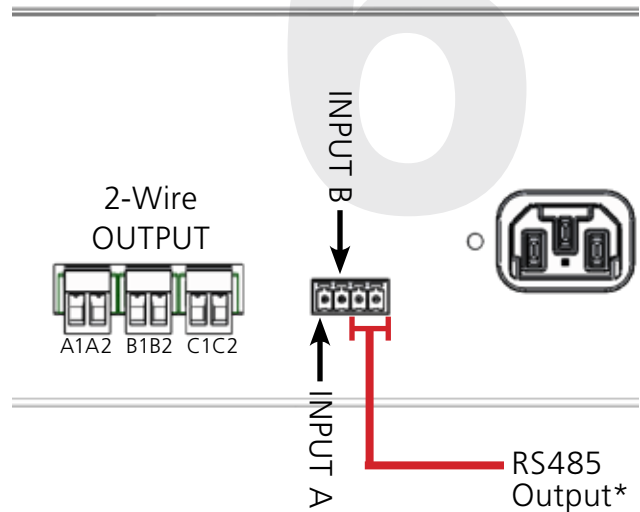
5) Hang the converter box on the wall screws. Do this by lining the screws up with the keyhole slots on the bottom of the box, and slipping the slots atop the screws.



7) Plug the power cord into the socket on the converter box.



6) Attach the signal wiring to the input ports and at least one pair of output ports.


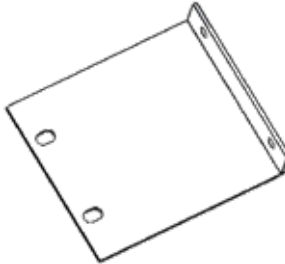
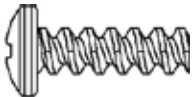
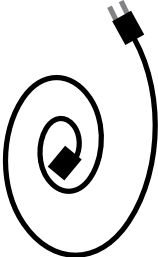


**The RS485 Output extends the RS485 signal to other converter boxes. It DOES NOT provide 2-wire power to clocks. Output A goes to Input A on the next box, and Output B goes to Input B.*

8) If the Master clock has been connected, powered, and configured, and the converter box is powered and operating normally, the colored LEDs on the front panel should be lit or not lit depending on their function. See the Status Panel section of this manual for more information.

Installing a Converter Box—Rack Mount

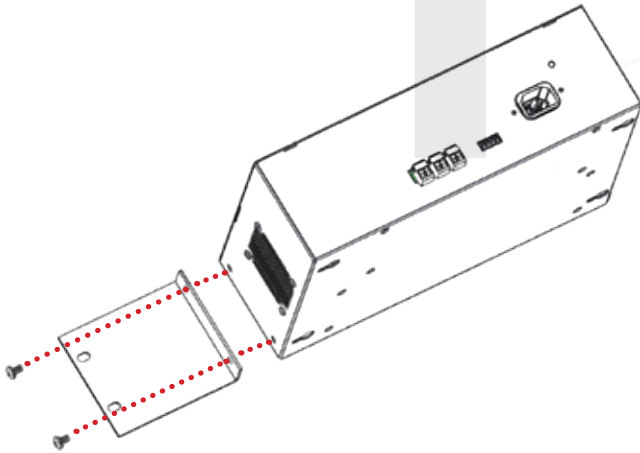
Included in Package

<u>Description</u>	<u>Quantity</u>	<u>Picture</u>
1) Converter Box	1	
2) Rack Mount Flaps	2	
3) #10-32x3/8 Truss Head Phillips Black Screw	4	
4) Power Cable	1	

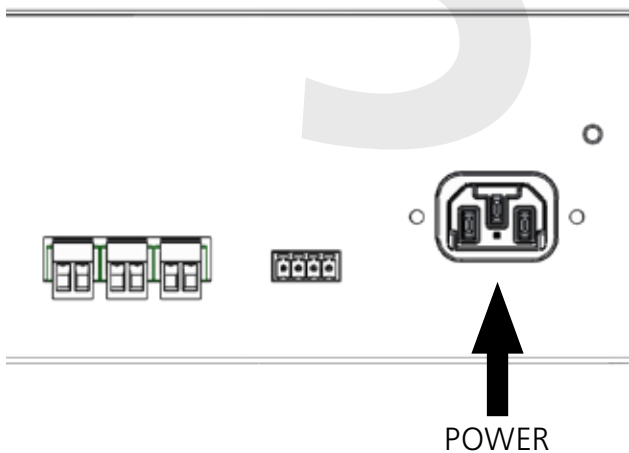
A user will also have to provide a Phillips-head screwdriver, a mounting rack, and the screws and bolts needed to attach the converter box to the rack.

Installing a Converter Box—Rack Mount

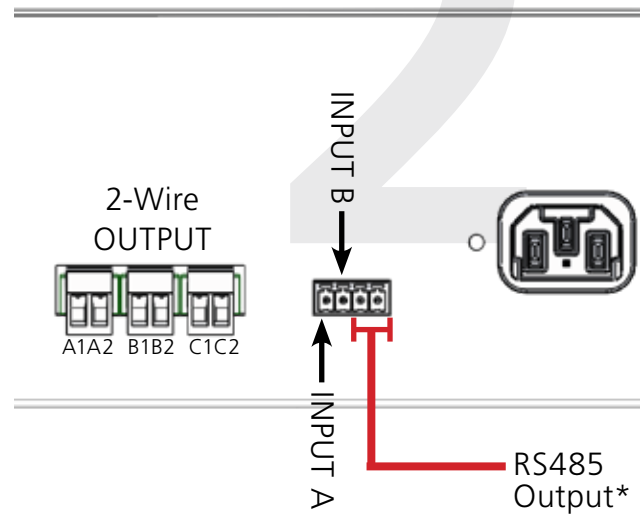
1) Use a screwdriver and the #10-32x3/8 Truss Head Phillips Black screws to attach the converter box rack panels to both sides of the converter box.



3) Plug the power cord into the socket on the converter box.

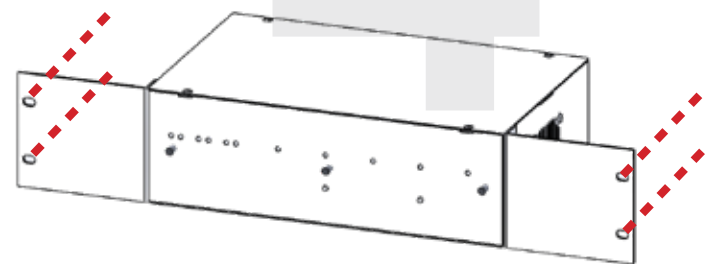


2) Attach the signal wiring to the input ports and at least one pair of output ports.



**The RS485 Output extends the RS485 signal to other converter boxes. It DOES NOT provide 2-wire power to clocks. Output A goes to Input A on the next box, and Output B goes to Input B.*

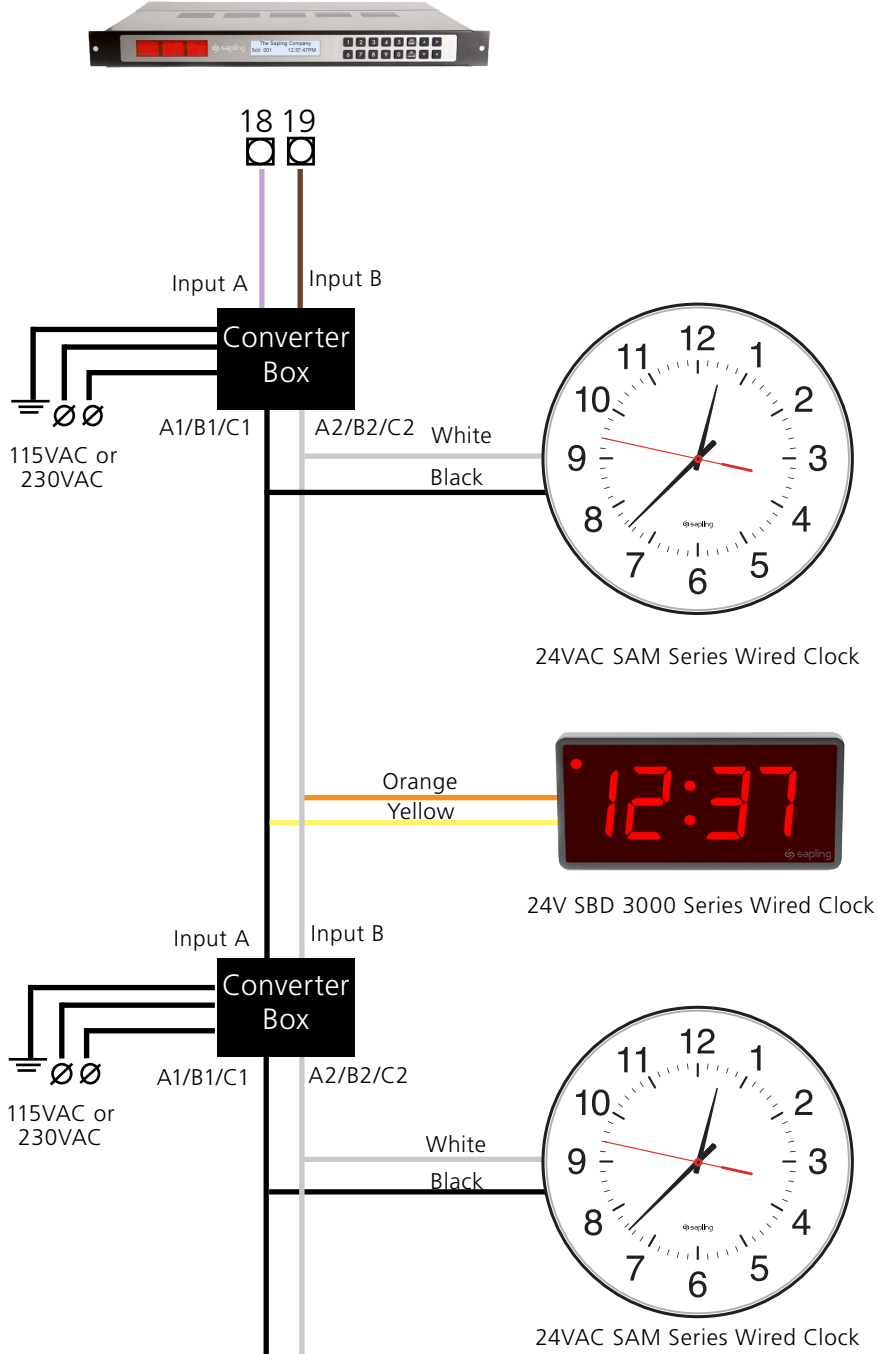
4) Use the rack screws and nuts to attach the converter box to the rack.



5) If the Master clock has been connected, powered, and configured, and the converter box is powered and operating normally, the colored LEDs on the front panel should be lit or not lit depending on their function. See the Status Panel section of this manual for more information.

2-Wire Digital Communication Wiring Information

SMA 2000 or 3000 Series Master Clock



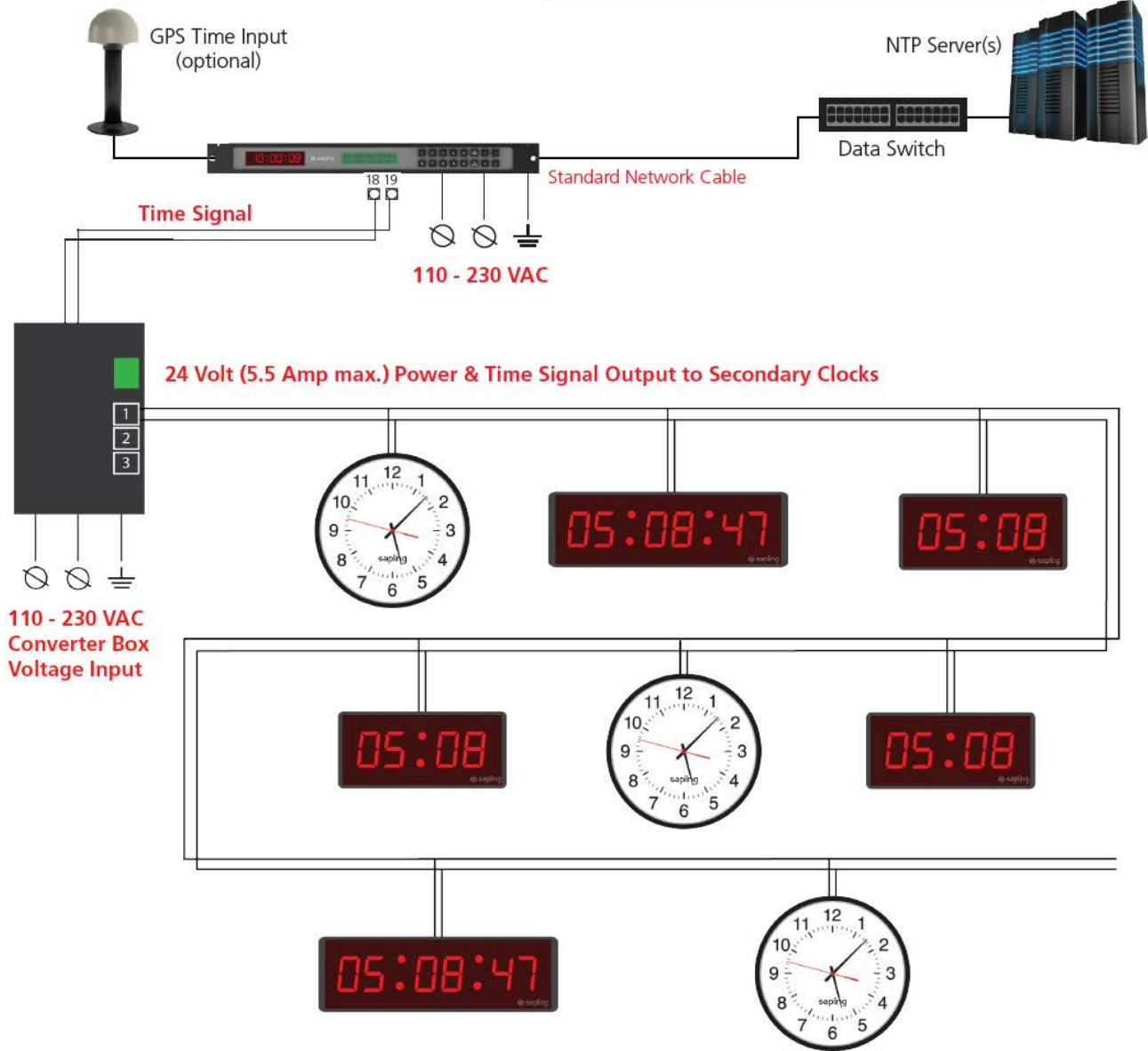
When translating systems from older converter boxes and wiring guides, the following values are equivalent:



2-Wire Digital Communication Wiring Information

Single Converter Box

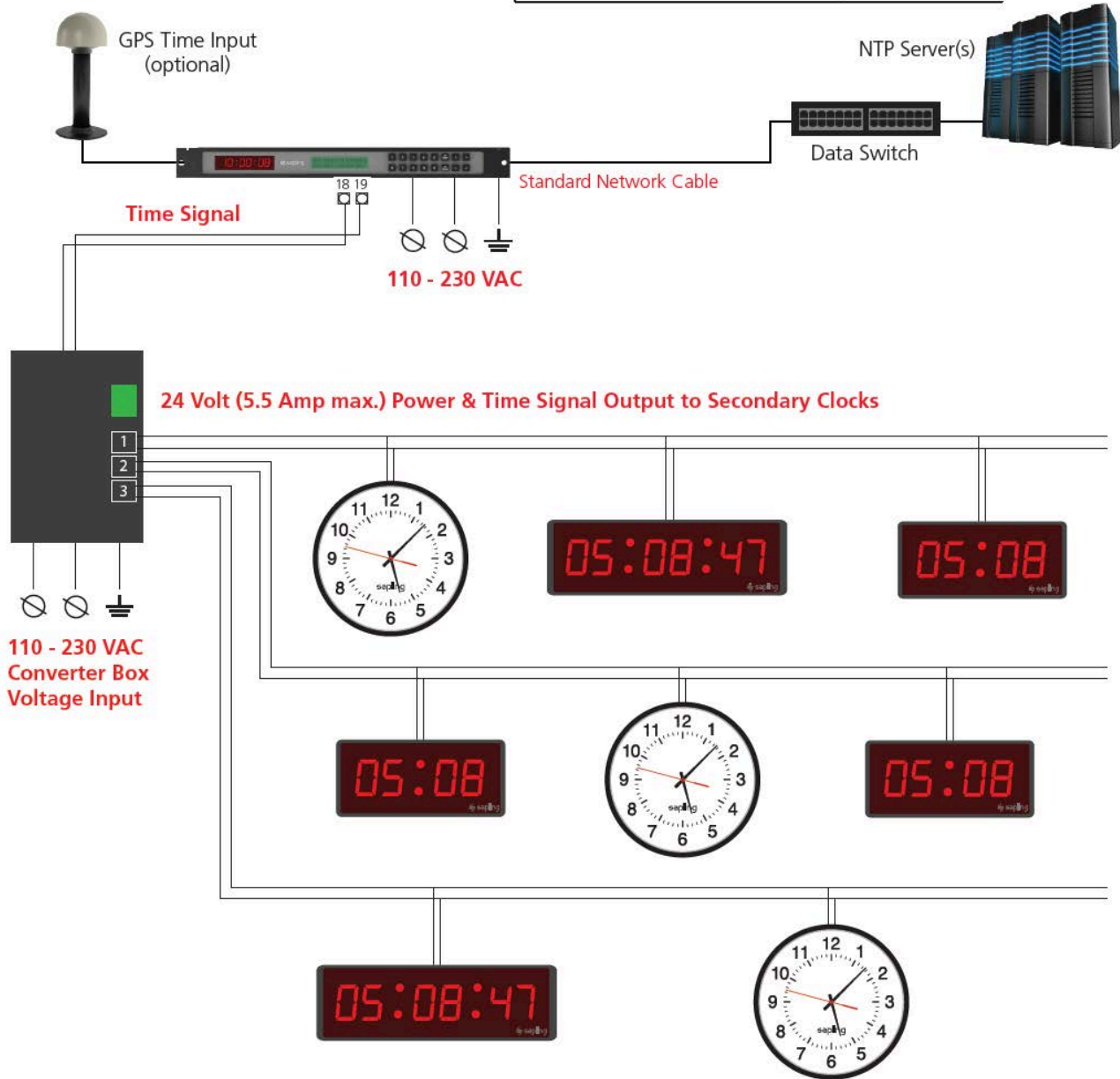
Configuration A - Small 2-Wire Clock System using one converter box on a single clock run.



2-Wire Digital Communication Wiring Information

Single Converter Box

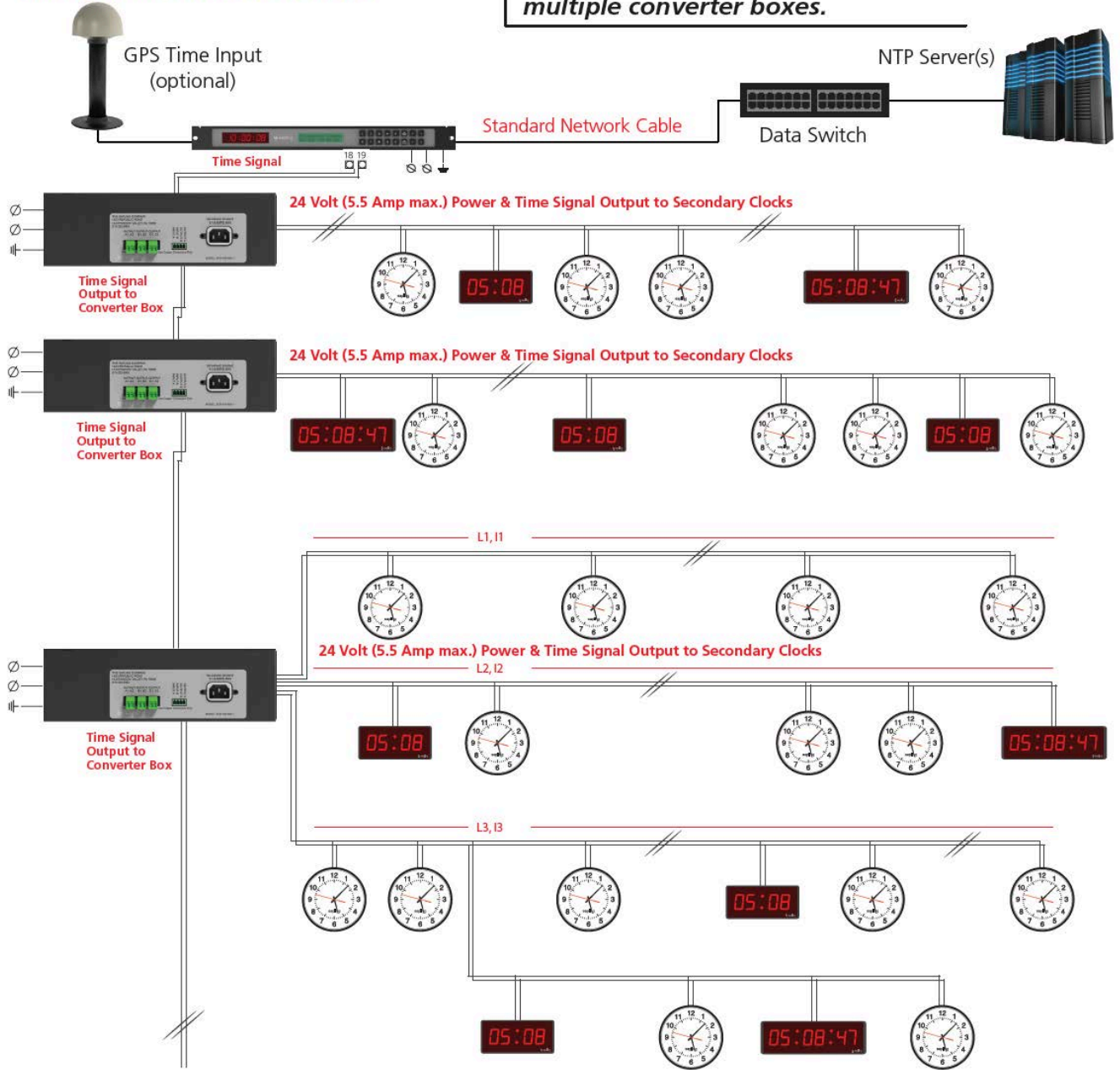
Configuration B - Small 2-Wire Clock System using one converter box on a triple clock run.



2-Wire Digital Communication Wiring Information

Multiple Converter Boxes

Configuration C - Large 2-Wire Clock System using multiple converter boxes.



Status Panel



A colored circle indicates that the LED in question is steadily on.

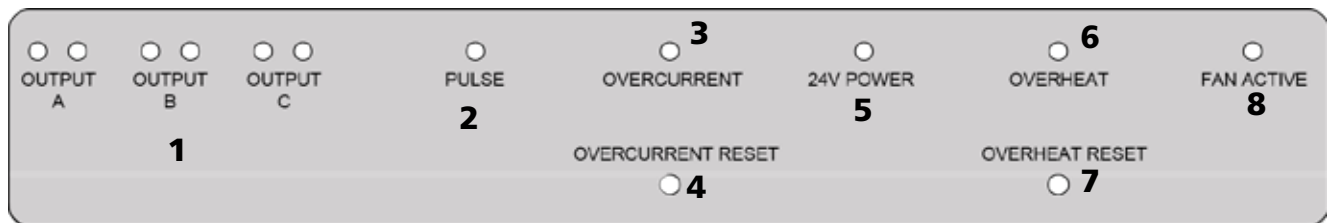


A black circle with a dashed halo indicates that the LED in question is blinking on and off.



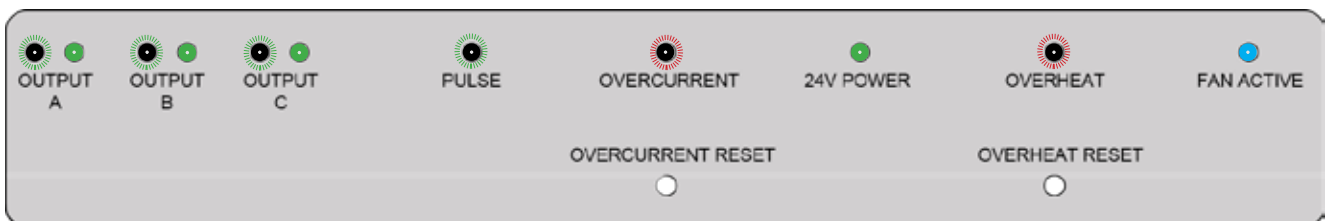
A black circle alone indicates that the LED in question is off.

Every potential concern relating to the converter box can be identified by examining the LEDs on the converter box front panel. The panel is arranged as follows:



- 1) **OUTPUT LED PAIRS**— The converter box has three Output LED pairs: A, B, and C. Each pair of output LEDs acts as an activity indicator for a pair of output ports on the back of the converter box.
- 2) **PULSE LED**—The pulse LED indicates that the converter box processor is active.
- 3) **OVERCURRENT LED**—Indicates the Overcurrent Status. During normal operation, the Overcurrent LED will blink once for each Amp being distributed (for example, two blinks means that two amps are being distributed). The converter box can distribute up to 5.5 Amps.
- 4) **OVERCURRENT RESET BUTTON**—Resets the Overcurrent Sensor (See Troubleshooting)
- 5) **24V POWER LED**—Indicates that the converter box is distributing 24V power.
- 6) **OVERHEAT LED**—Indicates the temperature status of the converter box. The Overheat LED displays the temperature inside the box by blinking once for each additional 10°C (for example, four blinks means that it is 40°C inside the converter box).
- 7) **OVERHEAT RESET BUTTON**—Resets the Overheat Sensors (See Troubleshooting)
- 8) **FAN ACTIVE LED**—Indicates whether or not the cooling fan is active.

If the converter box is functioning normally, the Pulse LED will flicker, the 24V LED will remain on, and in each pair of Output LEDs the LED nearest to the “P” in “OUTPUT” will remain on, while the LED nearest to the “O” shall occasionally flicker. The Overcurrent LED will blink once for each Amp being distributed. The Overheat LED displays the temperature inside the box by blinking once for each additional 10°C. The Fan LED may be on or off, depending on the internal temperature of the converter box.



Troubleshooting



A colored circle indicates that the LED in question is steadily on.

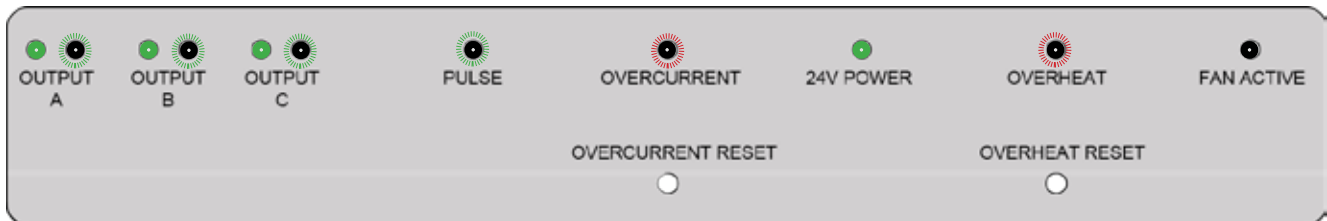


A black circle with a dashed halo indicates that the LED in question is blinking on and off.

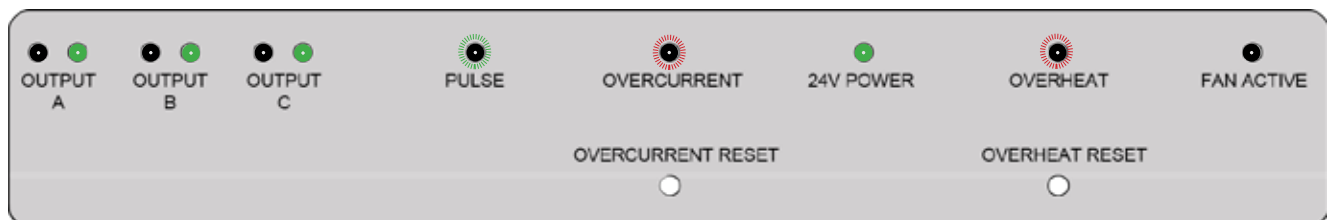


A black circle alone indicates that the LED in question is off.

For each pair of Output LEDs, if the Output LED nearest to the “O” in “OUTPUT” remains on, while the Output LED nearest to the “P” flickers, then the input wires were installed backwards and must be switched.



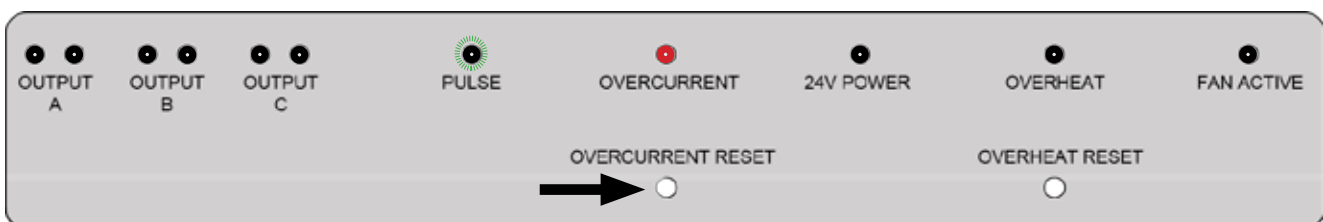
If the Output LED nearest to the “P” in “OUTPUT” remains on, and the Output LED nearest to the “O” remains off, then no data is being received by the converter box. If the Master Clock was configured correctly and there are no electrical shorts, contact Tech Support.



If the Overcurrent LED turns on and the 24V LED turns off, then either too many devices are drawing current from the converter box (5.5 Amps has been exceeded), or the wiring has been shorted. Remove a few clocks and press the reset switch to determine if the first case is the cause of the problem.

If the solid red light reappears, check the wiring for an electrical short.

If the reset button refuses to function, unplug the converter box from the power source, and plug it back in again.



Troubleshooting (continued)



A colored circle indicates that the LED in question is steadily on.



A black circle with a dashed halo indicates that the LED in question is blinking on and off.



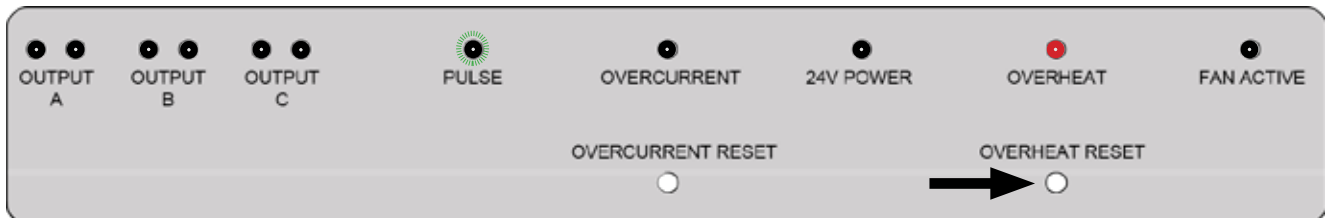
A black circle alone indicates that the LED in question is off.

If the Overheat LED turns on and remains steadily on for a period longer than five seconds, then the interior of the converter box has exceeded the temperature threshold. When this happens, Pulse and Overheat will remain active/on, but all other LEDs on the front panel should turn off. Give the converter box five minutes to cool down, then press the reset switch. If the solid red light reappears, check to confirm that the air vent is not blocked, and that the converter box has been installed in a room-temperature environment.

If both conditions have been proven true, and the red Overheat LED turns on and remains on a third time, contact Tech Support.

If, at any point, you reset the device by disconnecting and reconnecting the converter box from its power source, and the red Overheat LED remains on, contact Tech Support.

If the FAN ACTIVE LED never turns on **before** the Overheat LED activates and remains on, your converter box fan may be having a mechanical problem. Contact Tech Support.



If the converter box is powered, the Overcurrent and Overheat LEDs are off, and either the 24V LED or the Pulse LED remains completely dark, contact Tech Support.

If all of the LEDs are functioning normally, but a time signal is not reaching your clocks, check the wiring between the converter box and the clocks. If the wiring is sound, compare the number and position of the clocks you installed to the "Converter Box Table" at the beginning of this manual.

Warranty

Sapling Limited Warranty and Disclaimer

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

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

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

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

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

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