Ion Pro™ Benchtop Ionizer Installation, Operation and Maintenance

Made in the United States of America

Figure 1. SCS Ion Pro™ Benchtop Ionizer

Description

The SCS Ion Pro™ Benchtop Ionizer is used for neutralizing electrostatic charges on insulators and ungrounded conductors. Its fast discharge times (< 1.5 seconds at 12 inches) and ±3 volt offset voltage exceed the required limits of ANSI/ESD S20.20 and ESD TR53. The Ion Pro™ Benchtop Ionizer monitors both its offset voltage (balance) and discharge time. The ionizer will alarm should its offset voltage exceed the required limits defined by ANSI/ESD S20.20 or discharge time take longer than 4.5 seconds. Steady-state DC emitters are spaced farther apart to prevent ion recombination, increase decay efficiency, and provide a broader coverage area of ionization. The Ion Pro™ Benchtop Ionizer's dual-speed fan produces consistent airflow performance. The Ion Pro™ Benchtop Ionizer features a stainless steel enclosure and multi-mount stand to minimize contamination and corrosion when used in clean or sensitive areas.

The SCS Ion Pro™ Benchtop Ionizer operates on Steady-state DC. Steady-state DC systems consist of separate negative and positive ion emitters connected by a pair of high-voltage cables to their respective high-voltage power supplies. DC power is constantly applied to the emitter points. The ionizer utilizes patented capacitance-based sampling from its internal sensor to continuously adjust the output, maintain its offset voltage, and minimize maintenance.

"The primary method of static charge control is direct connection to ground for conductors, static dissipative materials, and personnel. A complete static control program must also deal with isolated conductors that cannot be grounded, insulating materials (e.g., most common plastics), and moving personnel who cannot use wrist or heel straps or ESD control flooring and footwear. Air ionization is not a replacement for grounding methods. It is one component of a complete static control program. Ionizers are used when it is not possible to properly ground everything and as backup to other static control methods. In clean rooms, air ionization may be one of the few methods of static control available." [ESD Handbook ESD TR20.20 Ionization, section 5.3.6.1 Introduction and Purpose / General Information]

The Ion Pro™ Benchtop Ionizer and its accessories are available as the following item numbers:

Item	Description
770116	Ion Pro™ Benchtop Ionizer, 120 VAC
770117	Ion Pro™ Benchtop Ionizer, 220 VAC
770000	Power Cord, North America Plug
770001	Power Cord, UK Plug
770002	Power Cord, Europe Plug
770003	Power Cord, China Plug
770118	Power Cord, Daisy Chain
770047	Benchtop Ionizer Boom Arm
770055	SMP Software

SMP Static Management Program

The SCS Ion Pro™ Benchtop Ionizer is compatible with SCS Static Management Program (SMP). SMP continuously monitors your ESD process control system throughout all stages of manufacturing. SMP captures data from SCS workstation, equipment and ESD event continuous monitors and provides a real-time picture of critical manufacturing processes. All activity is stored into a database for on-going quality control purposes. SMP allows you to pinpoint areas of concern and prevent ESD events. Quantifiable data allows you to see trends, become more proactive and prove the efficiency of your ESD process control system. When paired with the Ion Pro Benchtop™ Ionizer, SMP will monitor its balance (offset voltage) and discharge time statuses.

SMP is sold separately. Click here to learn more.

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Packaging

1 Ion Pro™ Benchtop Ionizer
1 Power Cord with North America Plug (770116 only)
1 Emitter Point Cleaner
1 Certificate of Calibration

Features and Components

Figure 2. Ion Pro™ Benchtop Ionizer features and components

A. Status LEDs: The blue LED will illuminate when the ionizer is powered and its balance and discharge times are below the alarm thresholds. The negative red LED will illuminate and audible alarm will sound when the balance exceeds the negative balance alarm threshold. The positive red LED will illuminate and audible alarm will sound when the balance exceeds the positive balance alarm threshold. Both the negative and positive red LEDs will illuminate and audible alarm will sound when the discharge time exceeds the alarm threshold.

B. Volume Pushbutton Switch: Toggles the ionizer's settings for the audible alarm and balance alarm.

Feature	Procedure
Buzzer Volume	1. Push and release the switch while the ionizer is powered. 2. The ionizer will toggle its buzzer volume through 8 different settings. The 8th setting disables the buzzer.
Balance Alarm (CE Mode)	1. Power the ionizer OFF. 2. Push and hold the switch while restoring power to the ionizer. 3. The buzzer will chirp once to indicate that it is in Critical Environment Mode.
Balance Alarm (Standard Mode)	1. Power the ionizer OFF. 2. Push and hold the switch while restoring power to the ionizer. 3. The buzzer will chirp twice to indicate that it is in Standard Mode.

C. Ethernet Port: Provides network communication between the Ion Pro™ Benchtop Ionizer and SCS Static Management Program (SMP).

D. Power Inlet: Connect the power cord here.

E. Fan Speed Switch: Rock the switch to the II position to set the fan speed to HIGH. Rock the switch to the I position to set the fan speed to LOW. Rock the switch to the 0 position to power the ionizer OFF.

F. Power Outlet: Use the SCS 770118 power cord to daisy-chain power to another 9 ionizers. Up to 10 Ion Pro™ Benchtop Ionizers may be powered in one daisy chain.

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Installation

Hardware Setup

Place the Ion Pro™ Benchtop Ionizer at a desired location where the airflow will not be restricted. The SCS 770047 Benchtop Ionizer Boom Arm may be used to save workspace and lift the ionizer off the workbench. Use the tilt lock knobs to aim the ionizer at the area to be neutralized. Ensure that the power switch is set to OFF. Connect the ionizer's power cord into an appropriate AC power source.

Note that placement of the ionizer is important in determining its effectiveness. The distance from the targeted object and fan speed affect the ionizer's performance. The discharge time will increase as the distance increases or fan speed is reduced.

SMP Network Setup

The following procedure outlines how to connect the Ion Pro™ Benchtop Ionizer to SMP via a local area network (LAN). SMP must be installed to a PC prior to using this procedure. The diagram shown below illustrates a common SMP system setup that utilizes the server software, client software, Ion Pro™ Benchtop Ionizer, WS Aware Monitor, EM Aware Monitor, and Ground Master Monitor.

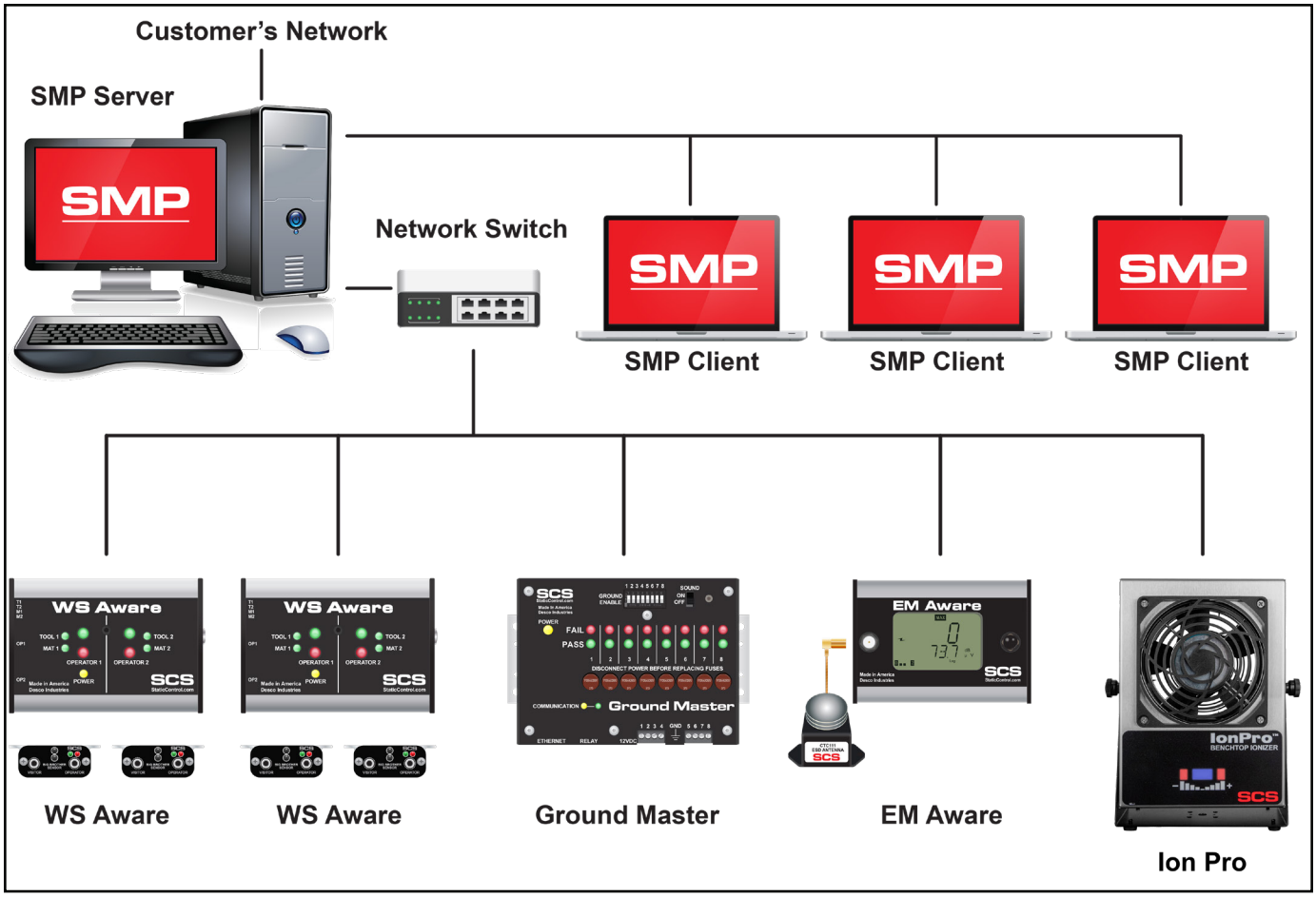

Figure 3. SMP system setup

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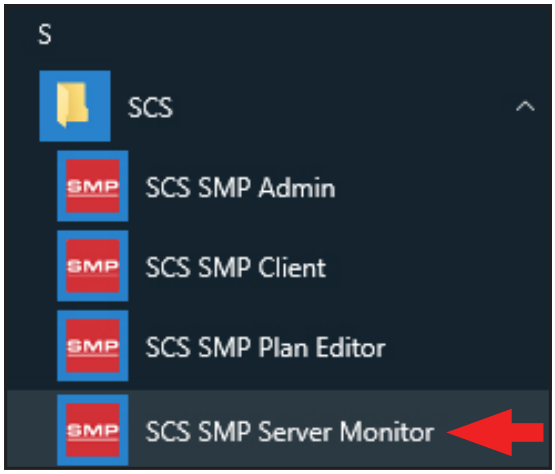
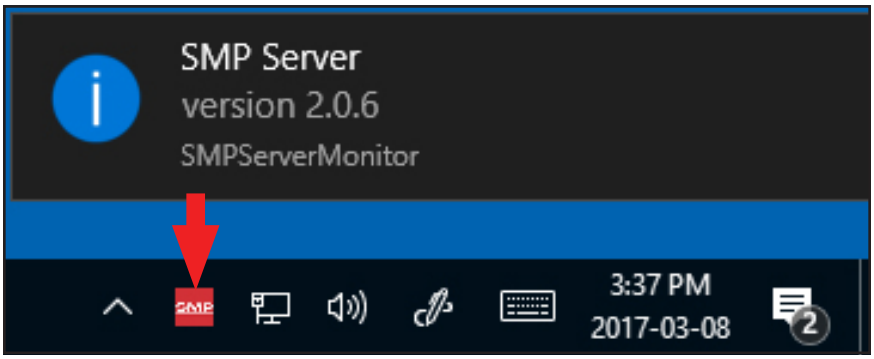
DYNAMIC IP PROCEDURE

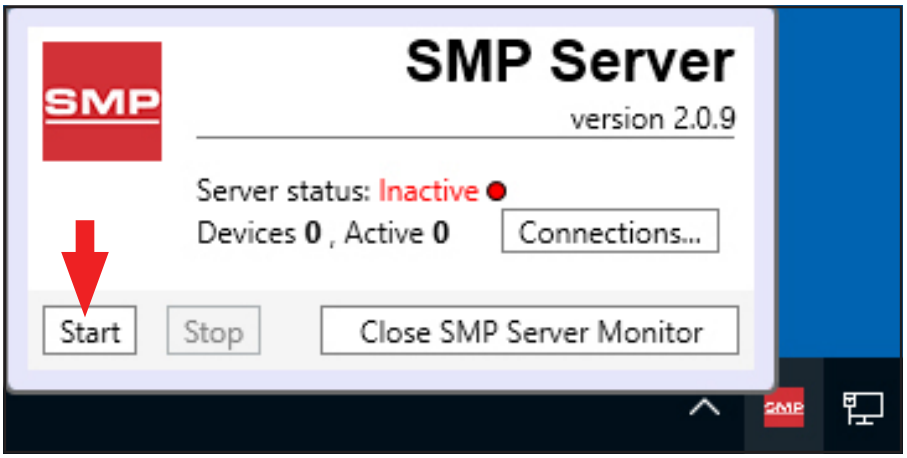
1. Verify that the Ethernet cable is securely connected to your network and Ion Pro™ Benchtop Ionizer. The LEDs on the Ethernet port will illuminate when a connection to the network is established.
2. Open SCS SMP Server Monitor.



3. The SMP Server icon will appear in the Windows taskbar.



4. Click the SMP Server icon located on the Windows taskbar. The SMP Server menu will appear. Click the Start button to start SMP Server.



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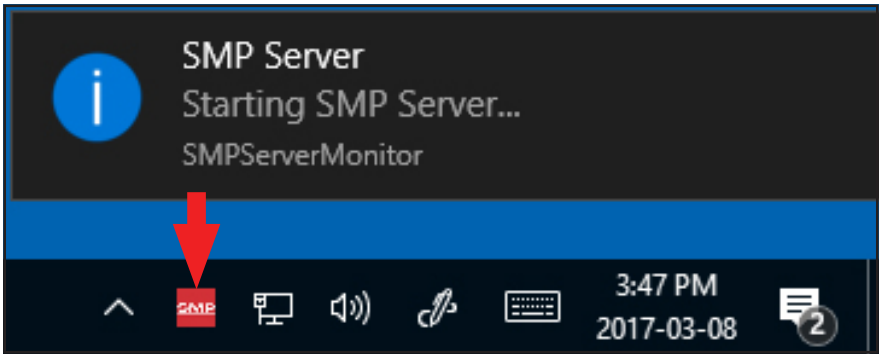
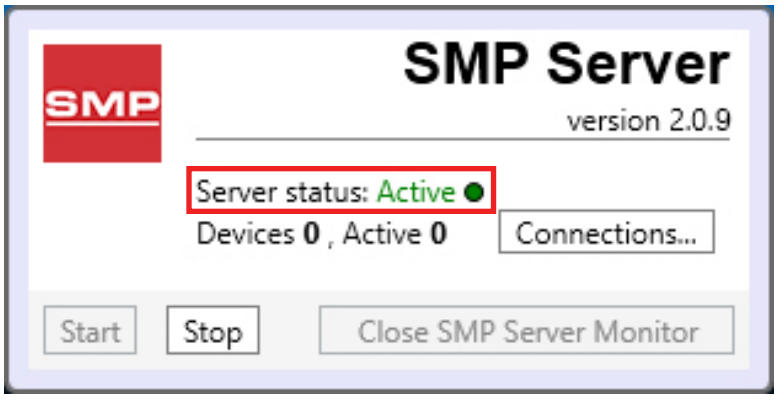
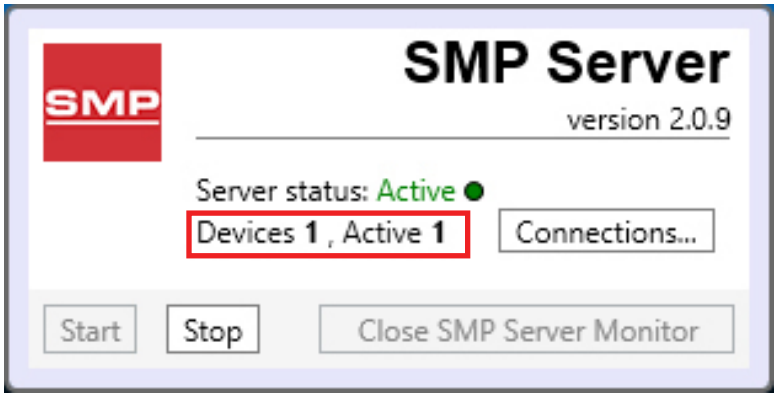
5. A message will appear and display “Starting SMP Server…” Click the SMP Server icon located in the Windows taskbar.



6. SMP Server will now indicate Active server status.



7. SMP Server will search and find the Ion Pro™ Benchtop Ionizer on the network. The Device and Active counts will increase to 1.



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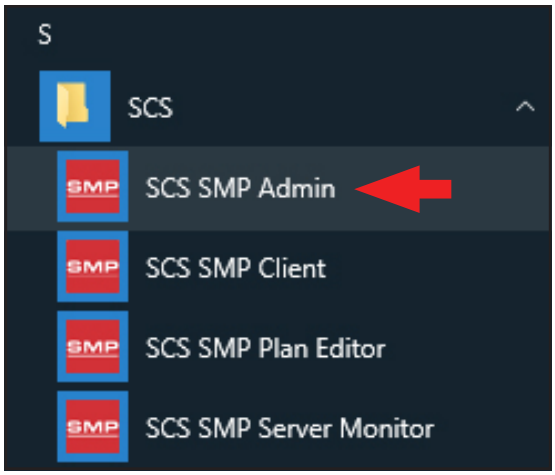
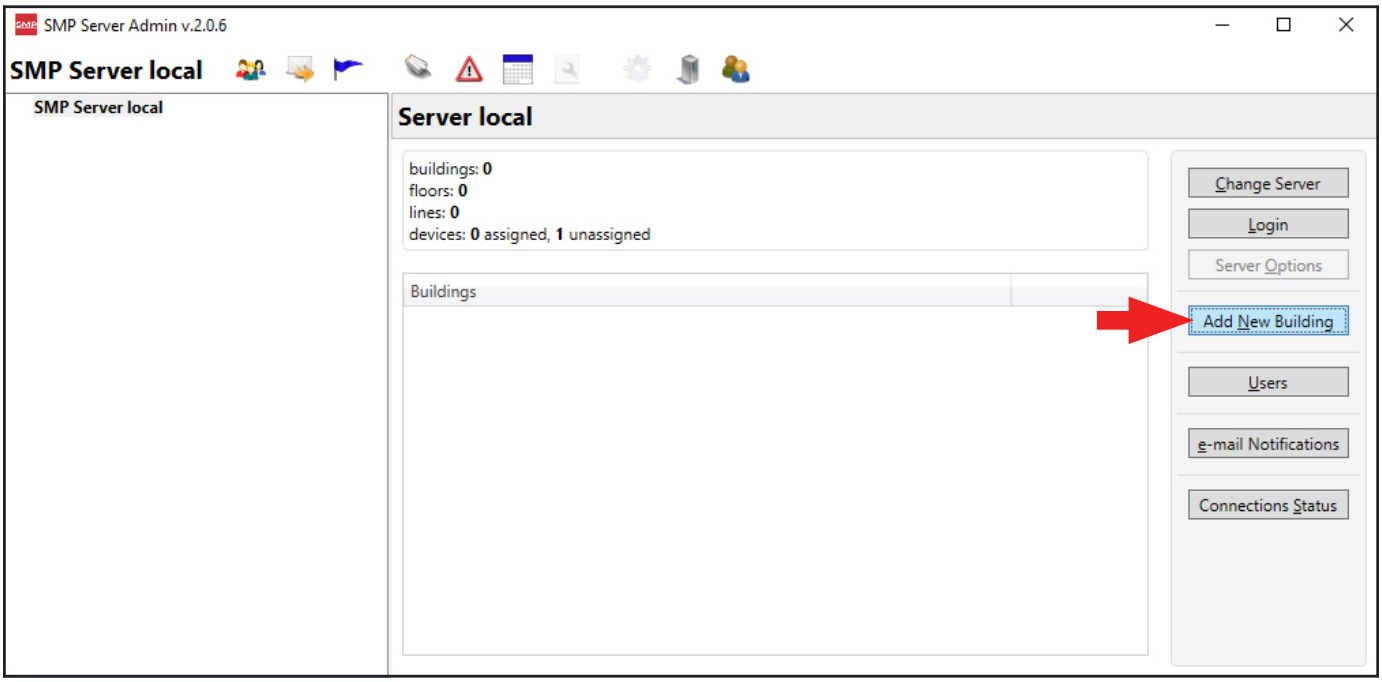
8. Open SCS SMP Admin.



9. The window for SMP Server Admin will appear. “1 unassigned” is representative of the Ion Pro™ Benchtop Ionizer that was just found by SMP Server. Click the Add New Building button.



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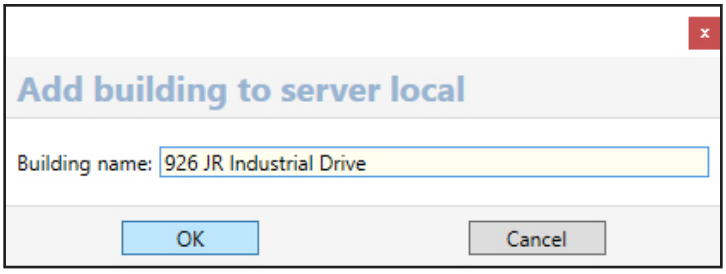
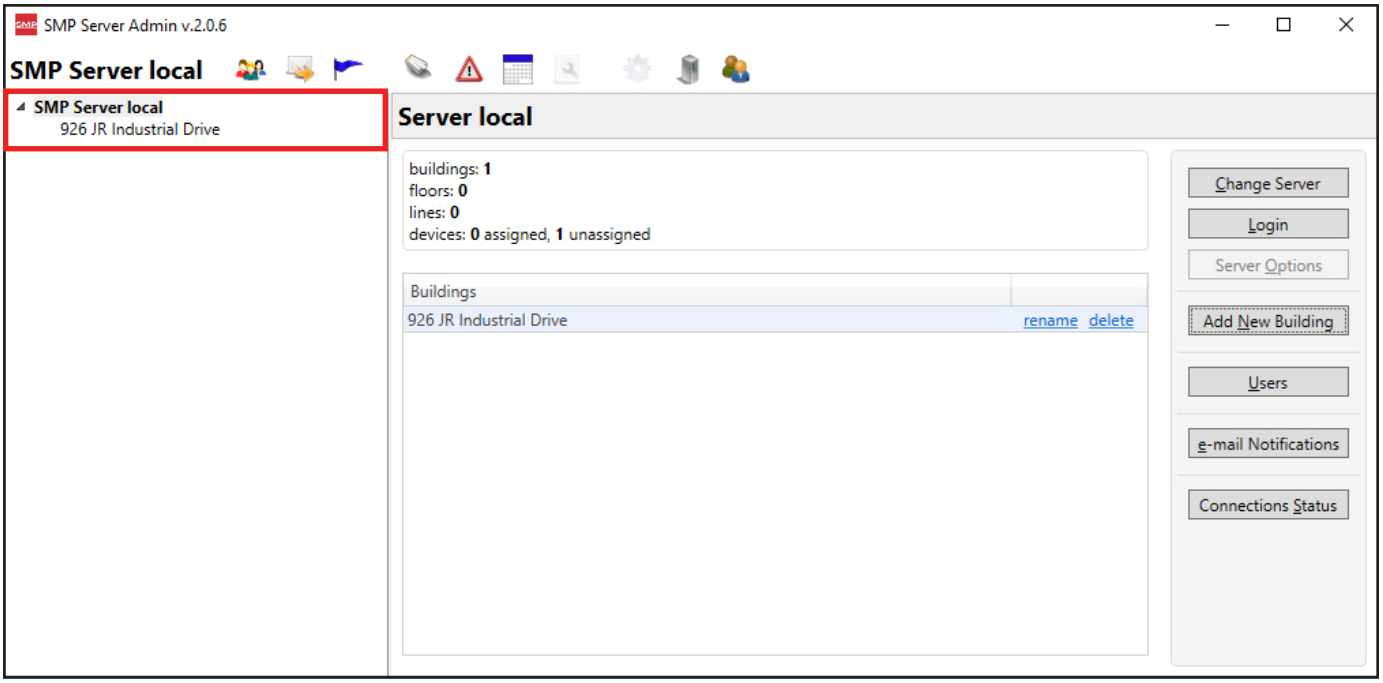
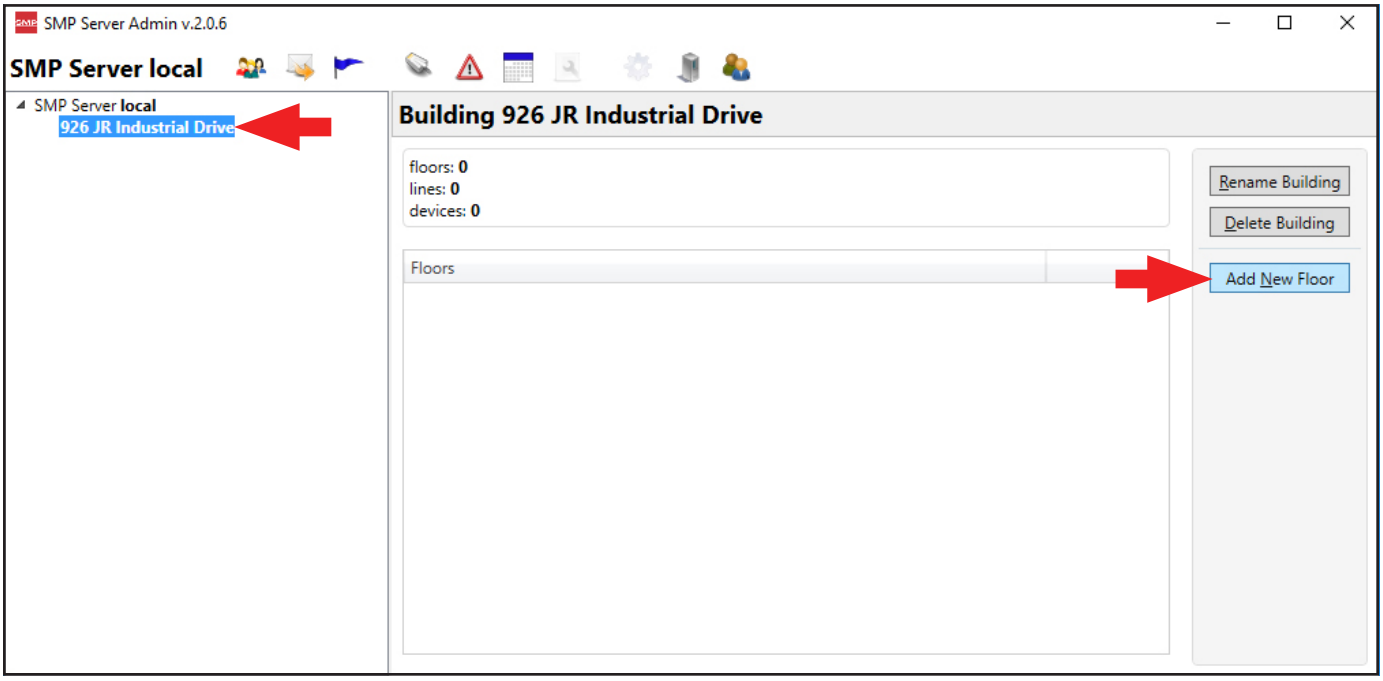
10. Enter a building name, and then click the OK button.



11. The building name will appear on the navigation pane in SMP Server Admin.



12. Click on the building name in the navigation pane, and then click the Add New Floor button.



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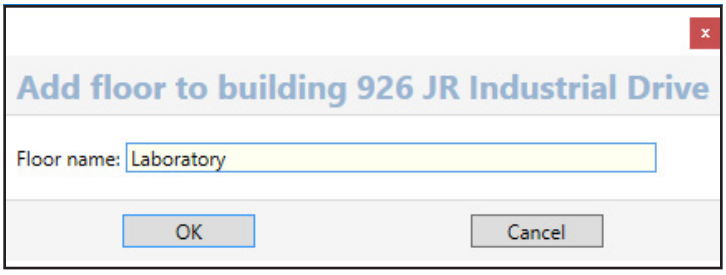
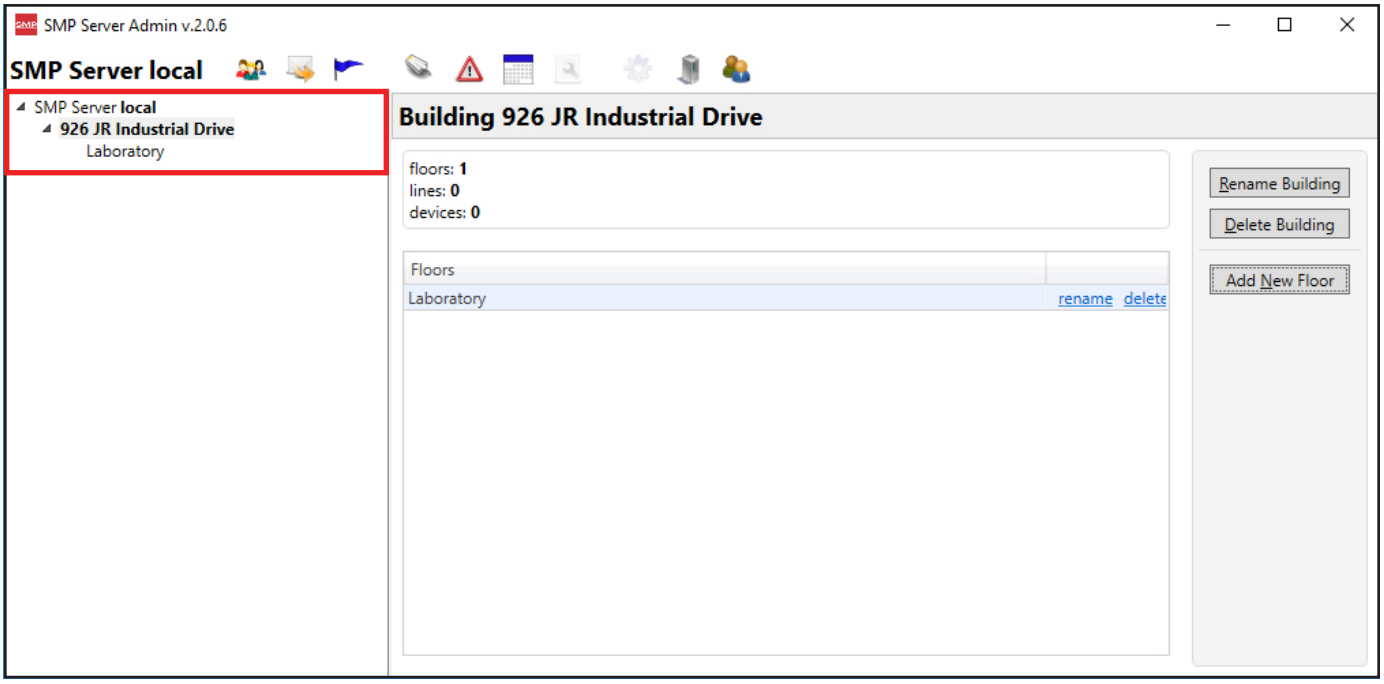
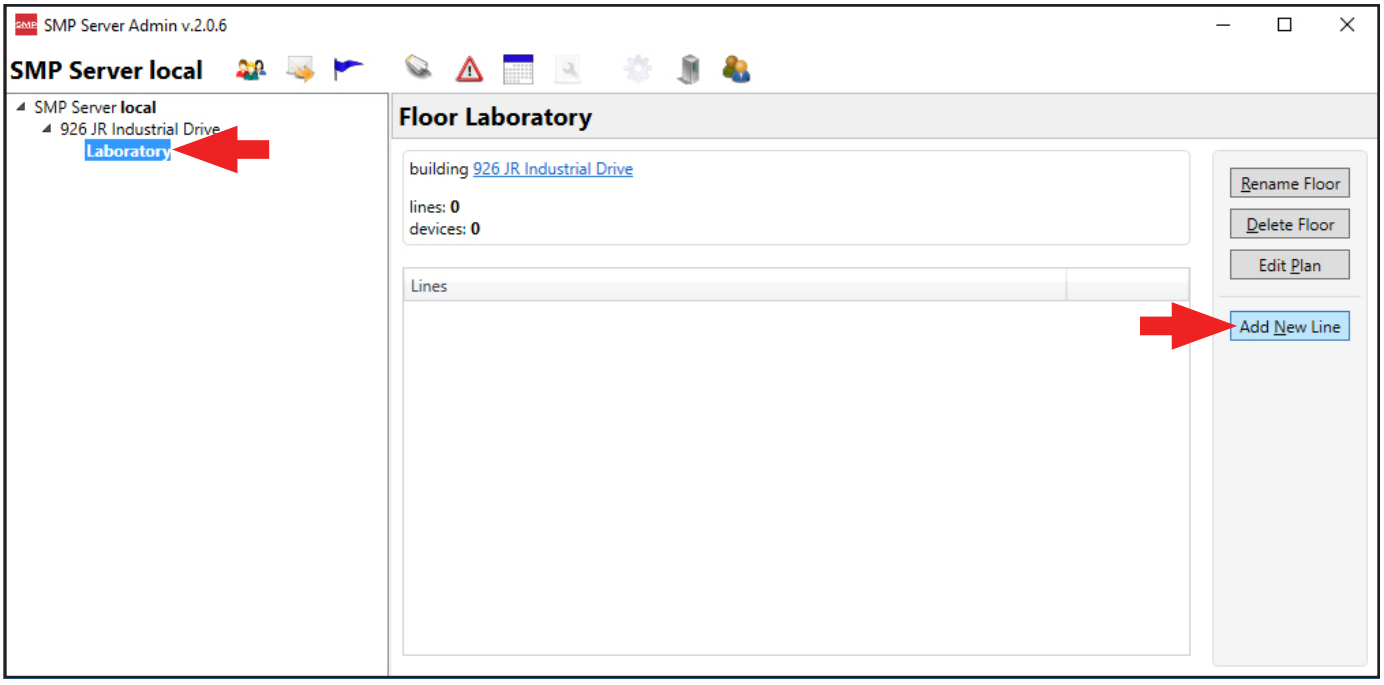
13. Enter a floor name, and then click the OK button.



14. The floor name will appear on the navigation pane in SMP Server Admin.



15. Click on the floor name in the navigation pane, and then click the Add New Line button.



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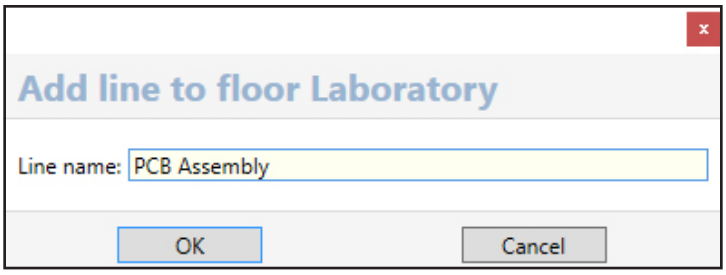
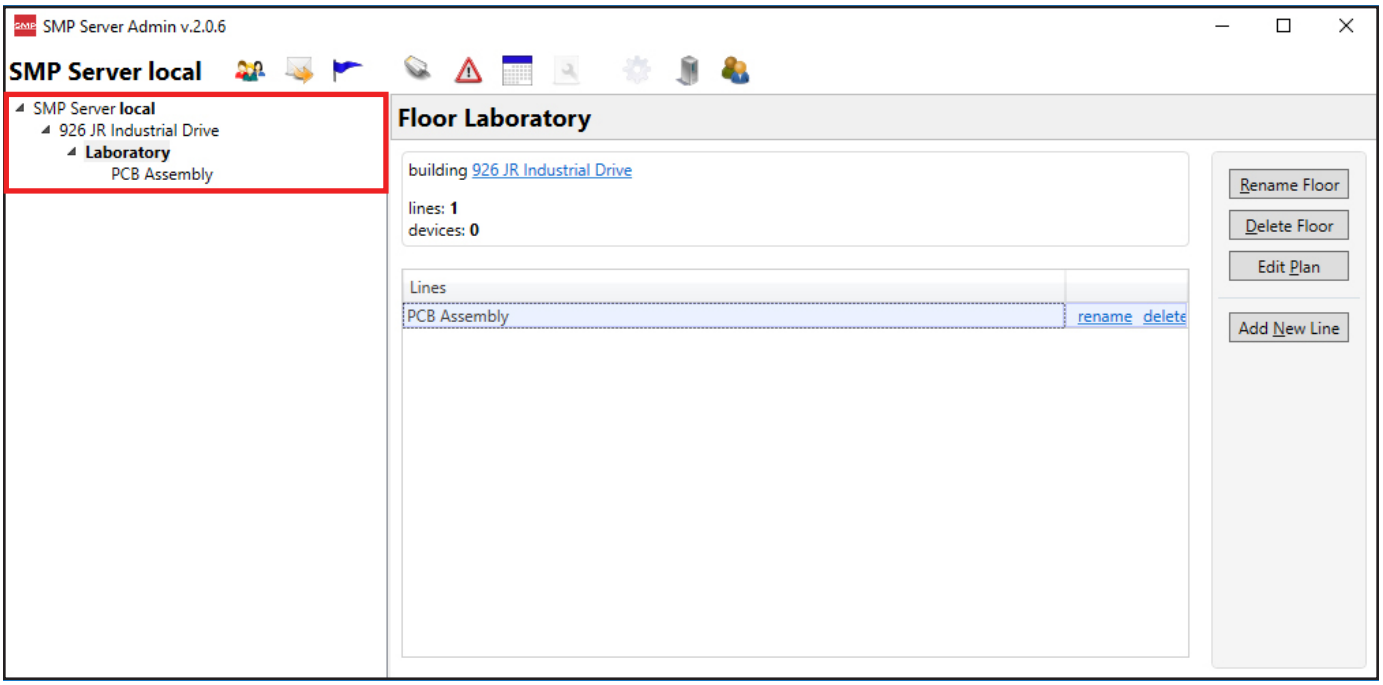
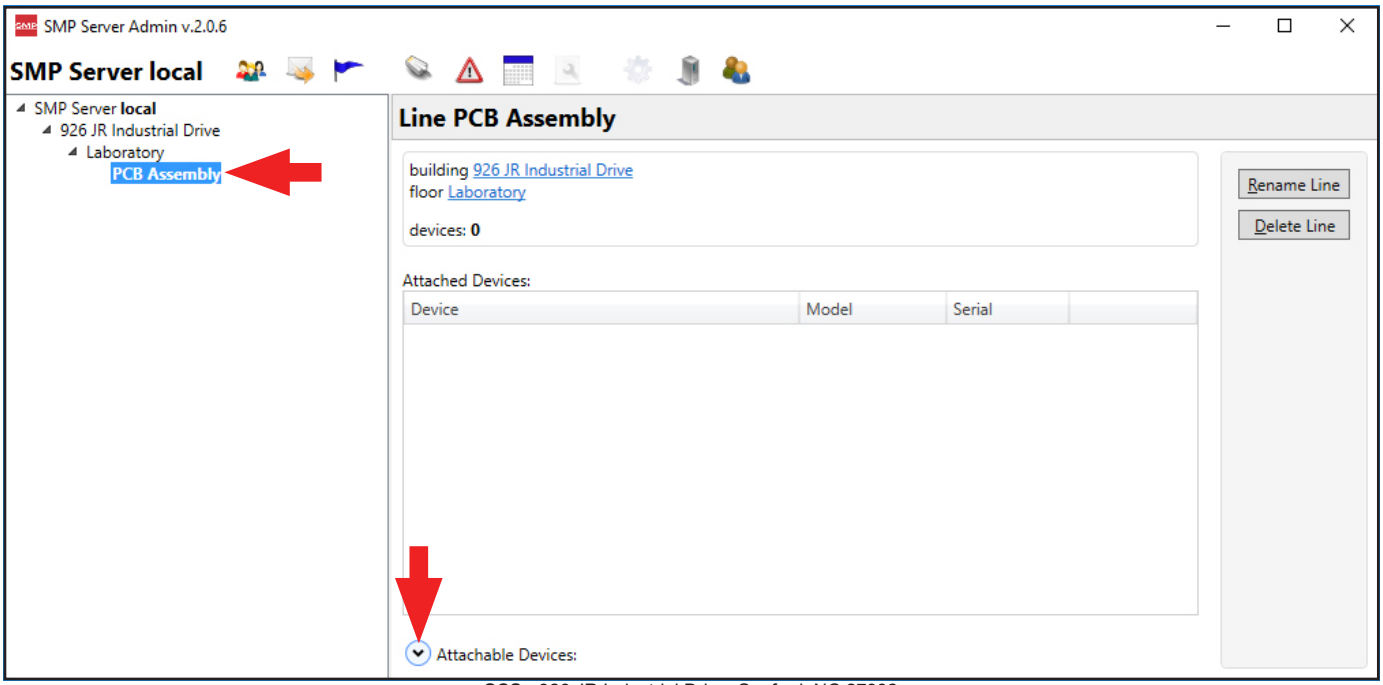
16. Enter a line name, and then click the OK button.



17. The line name will appear on the navigation pane in SMP Server Admin.



18. Click on the line name in the navigation pane, and then click the Attachable Devices arrow located at the bottom of the window.



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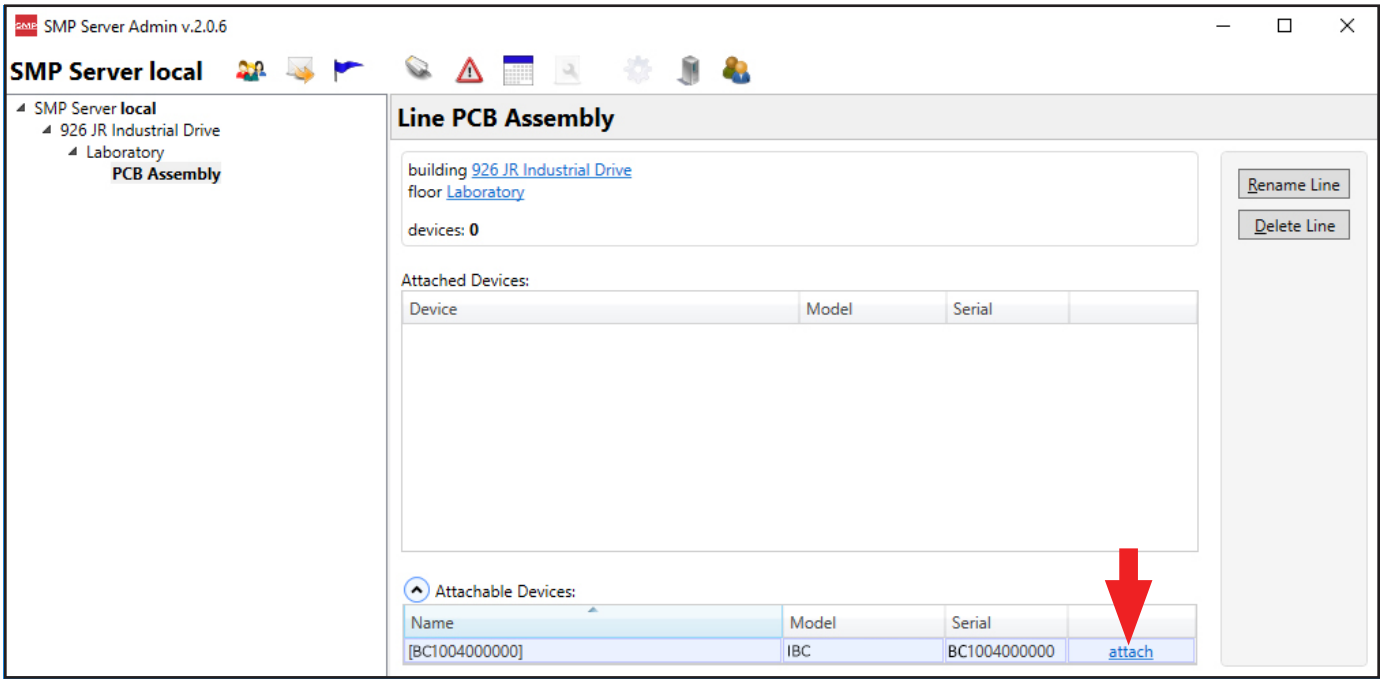
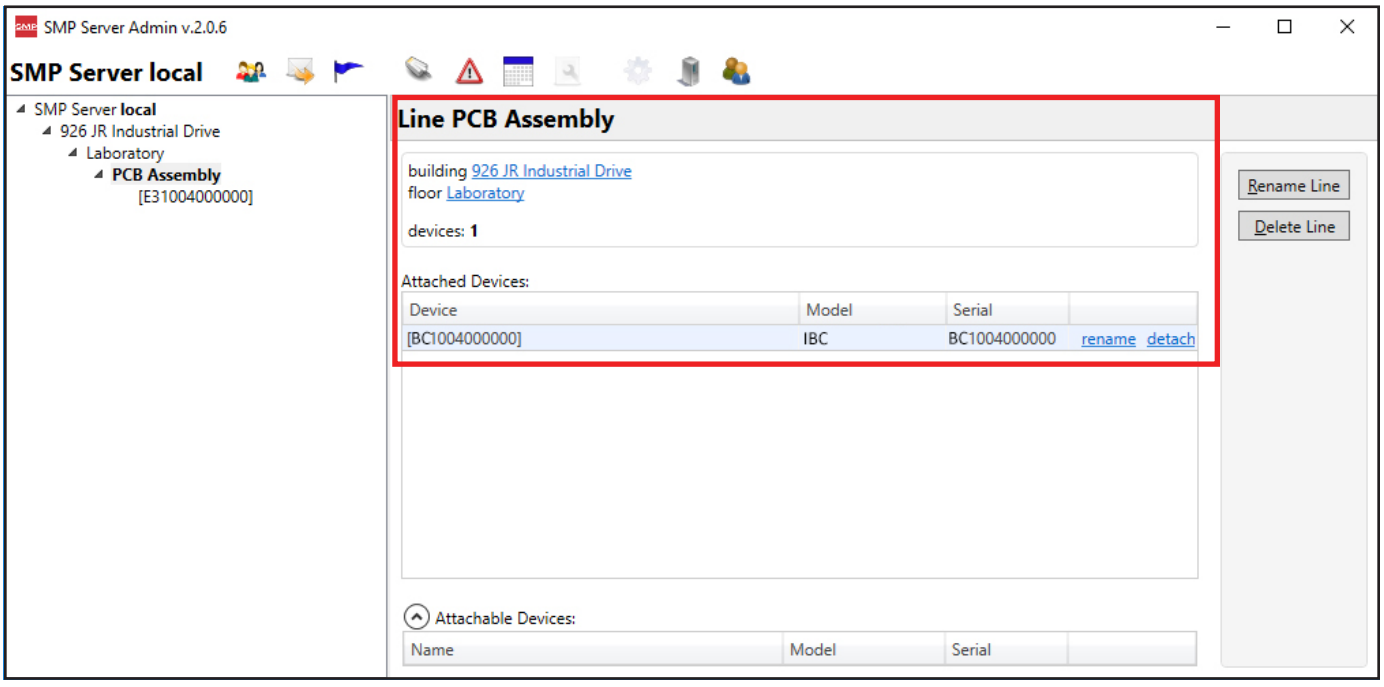
19. The serial number for the Ion Pro™ Benchtop Ionizer will appear. This number will resemble the number found on the monitor's serial label with the exception of one zero. For example, if the serial number on the label says "XXXXX2025001", the serial number in SMP will read "XXXXXX202501".

    Click attach.



20. The Ion Pro™ Benchtop Ionizer will attach to the selected line.



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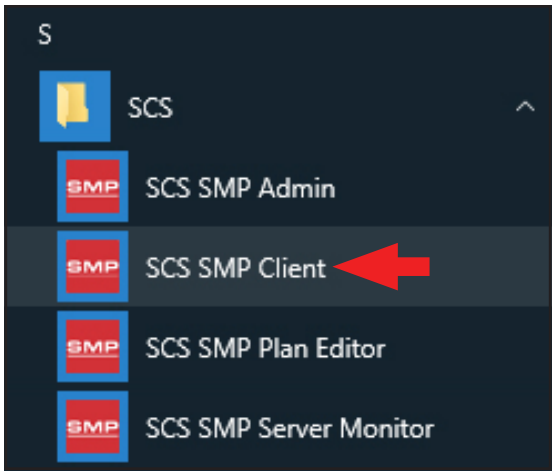
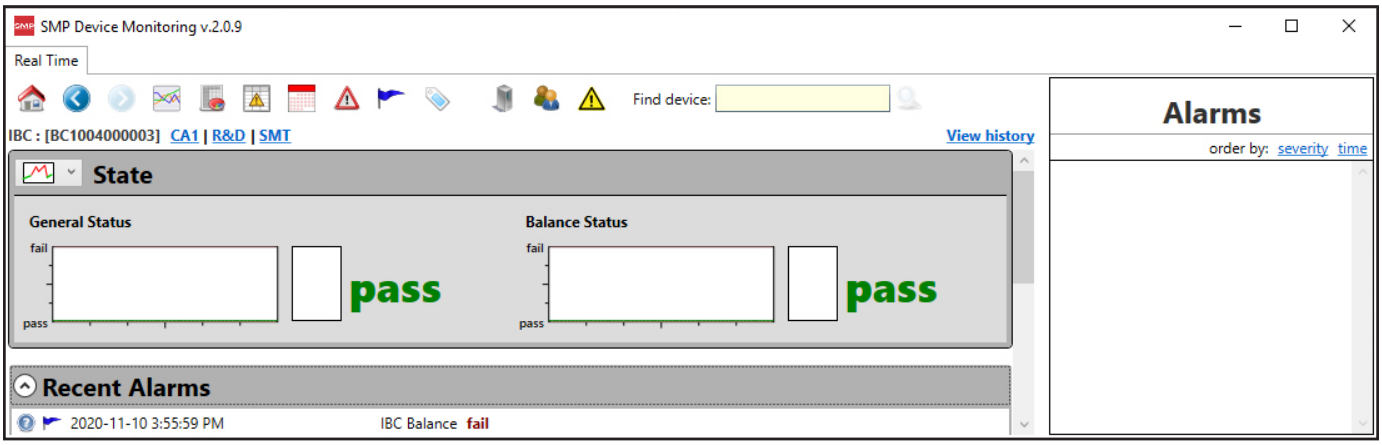
21. Open SCS SMP Client.



22. Verify that the Ion Pro™ Benchtop Ionizer was added to the appropriate building, floor and line.



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Operation

1. Position the ionizer so that maximum airflow is directed towards the items or area to be neutralized.
2. Rock the power switch to the I or II position. The ionizer will conduct a self-test upon power-up. All three LEDs will remain illuminated for approximately 15 seconds. The blue LED will remain illuminated during normal operation.
3. Set the fan speed switch to the desired setting. Higher airflow will result in faster discharge times.

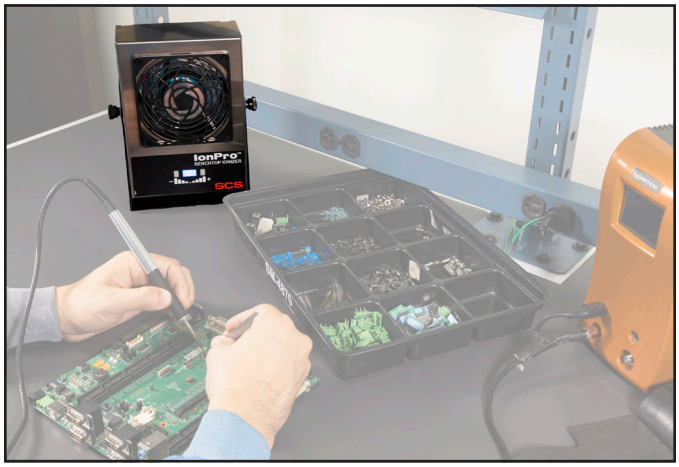

Figure 4. Using the Ion Pro™ Benchtop Ionizer at a workbench

Figure 5. Using the Ion Pro™ Benchtop Ionizer at a machine station

Maintenance

Occasional cleaning of the case and of the ionizing electrodes are the only routine maintenance procedures required.

CLEANING THE CASE

Wipe the case with a soft cloth moistened with water. If a stronger cleaning solution is required, mild soap with water may be used. The use of any other cleaning solutions is not recommended.

CLEANING THE EMITTER POINTS

NOTE: Disconnect the power to the ionizer whenever cleaning the emitter points.

When the emitter points become dirty, the internal circuitry of the ionizer will be automatically adjusted to emit an equal amount of positive and negative ions. Particulates on the emitter point may, however, inhibit ionization to a limited degree. The emitter points are located between the fan blades and the rear grill. A jet of clean, compressed air can be used to remove dirt on emitter points. If a more rigorous cleaning method is needed to remove particulate, clean the points with a cotton swab dampened with isopropyl alcohol. Access to the points is available through the rear grill. Be careful not to damage the points during cleaning.

Figure 6. Swinging the rear fan grill to access the emitter pins inside the Ion Pro™ Benchtop Ionizer

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Calibration

The SCS Ion Pro™ Benchtop Ionizer is factory adjusted to provide optimum performance. Further adjustment in the field is not possible. However, the following instructions can be followed to determine whether the Ionizer is performing to specifications. The testing follows the procedure outlined in the standard for Ionization, ANSI/ESD STM3.1. Please refer to this standard for more complete information.

Frequency of recalibration should be based on the critical nature of those ESD sensitive items handled and the risk of failure for the ESD protective equipment and materials. In general, SCS recommends that calibration be performed annually.

Periodically measure the balance and neutralization times of the Bencthop Air Ionizer to verify that it is performing within specifications. These measurements should be taken using a charged plate monitor. Calibration should be performed in accordance with the ESD Association ionization standard ANSI/ESD STM3.1. With the ionizer positioned a distance of 12 inches (30 cm), the neutralization (discharge) time of ±1000V to ±100V should be less than 1.5 seconds, and the balance should be ±3V or better.

Neutralization (Discharge) Times

The comparative efficiency of bench top ionizers is determined by a standard test published by the ESD Association: ANSI/ESD STM3.1. Typical positive and negative decay times (±1000V to ±100V) measured using this standard are shown in Figures 7 and 8.

NOTE: All discharge times are in seconds and representative only. They are not a guarantee. The discharge times were recorded in a factory ambient environment.

Specifications

Input Voltage and Frequency	770116: 100-120 VAC, 50/60 Hz 770117: 220-240 VAC, 50/60 Hz
Neutralization (Discharge) Time at 12"	< 1.5 seconds
Offset Voltage (Balance) at 12"	±3 V typical
Ion Emission	Steady-state DC
Airflow	Dual speed, 77 CFM max.
Ozone	<0.05 ppm
Discharge Time Alarm Threshold at 12"	4.5 s
Offset Voltage Alarm Threshold (Standard Mode)	±35 V approx.
Offset Voltage Alarm Threshold (CE Mode)	±7 V approx.
Power Consumption	10 W
Emitter Points	Tungsten
Dimensions (with stand)	9.1" H x 6.3" W x 3.1" D (231 mm x 160 mm x 79 mm)
Weight	4.4 lbs (2.0 kg)
U.S. Patents	9,404,945; 9,588,161
Country of Origin	United States of America

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions

See the SCS Warranty - StaticControl.com/Limited-Warranty.aspx

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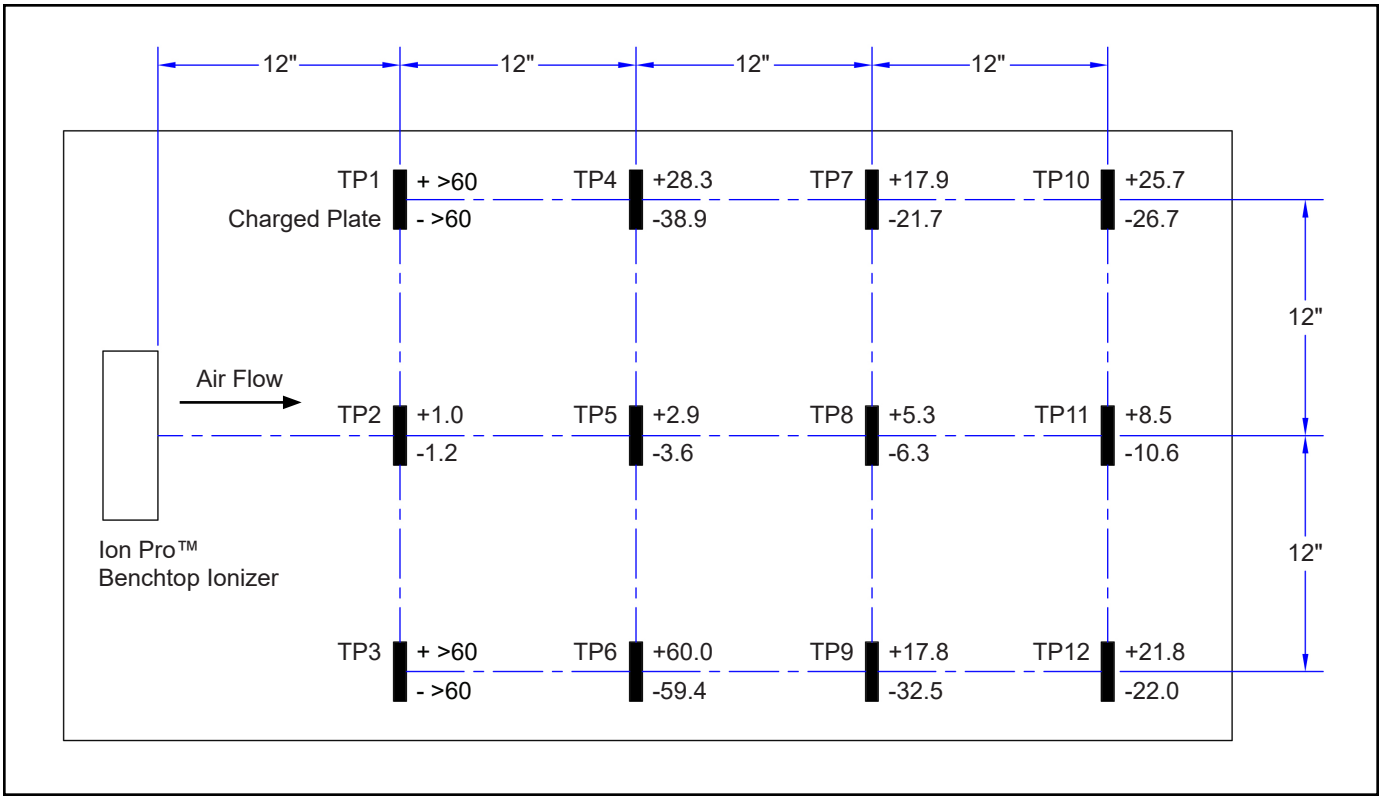

Figure 7. Neutralization (Discharge) Times at 120 VAC / 220 VAC, 60 Hz input

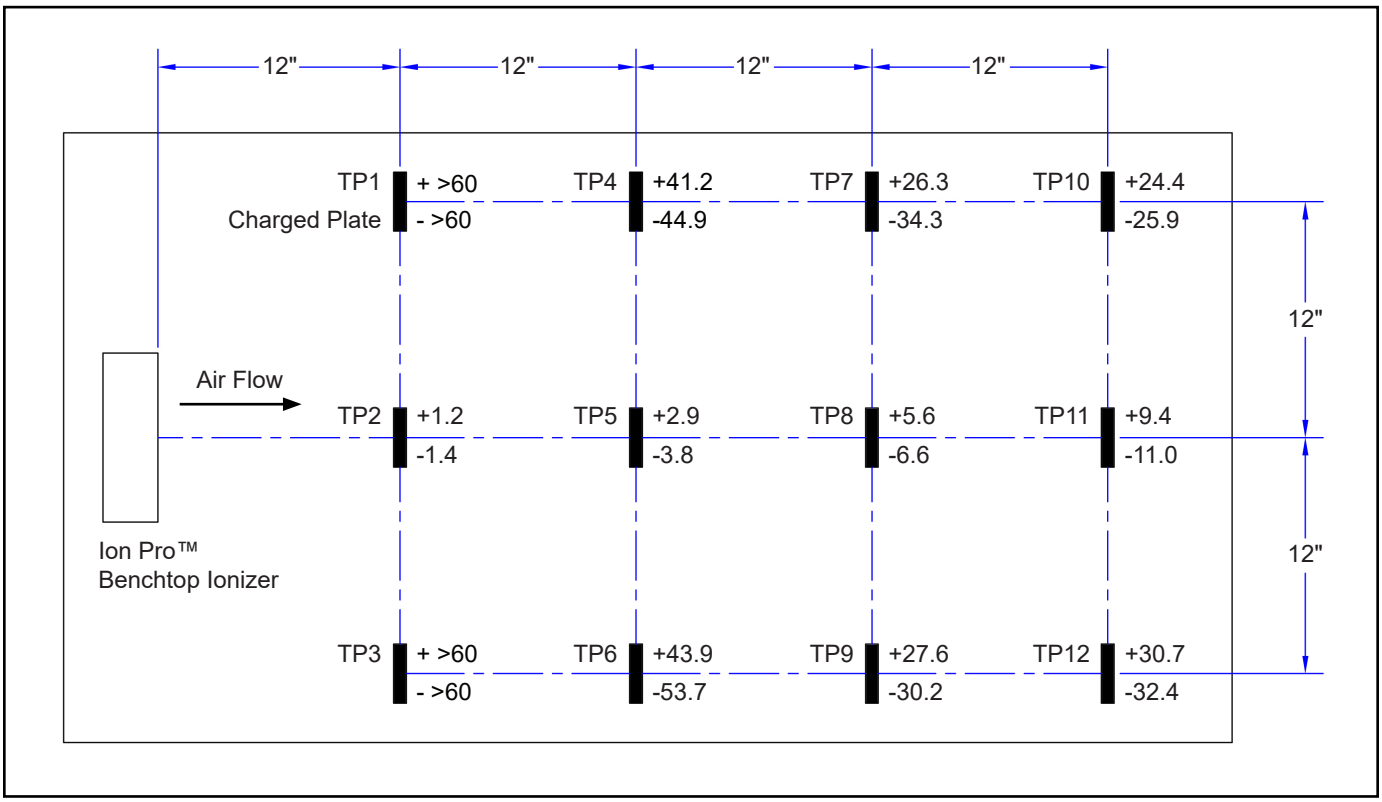

Figure 8. Neutralization (Discharge) Times at 100 VAC, 50 Hz input

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