SW Aware Monitor
Installation, Operation, and Maintenance

Made in the United States of America

Figure 1. SCS SW Aware Monitor

Description

The SCS SW Aware Monitor is a single workstation continuous monitor. It continuously monitors the path-to-ground integrity of one operator and one ESD worksurface. Mounting holes make it suitable to install underneath tabletops. The SW Aware Monitor eliminates the need for periodic testing and record keeping of wrist straps.

The SW Aware Monitor uses impedance technology to provide stable, continuous monitoring of the path-to-ground and one megohm resistor in an operator's wrist strap. Audio and visual alarms activate (in less than 50 milliseconds) when the operator unintentionally disconnects from the monitor or the wrist strap connection points are intermittent. The SW Aware Monitor also monitors for a worksurface path-to-ground of less than 10 megohms. All SW Aware Monitors are calibrated to NIST standards.

Impedance Monitoring Technology (IMT) is the Most Reliable Technology for the Continuous Monitoring of Single-Wire (Conductor) Wrist Straps
Vector impedance works by applying a continuous test voltage of 1.2 volts peak-to-peak at 1 to 2 microamperes (0.000002 amperes) to the wrist strap that is connected to the continuous or constant monitor. The test voltage creates a square wave that the monitor circuit compares to established patterns. By monitoring the shape of the square wave, IMT determines if the monitored circuit is complete - the operator is in the circuit and the total equivalent DC resistance is within specifications. Impedance Monitoring Technology produces a very fast alarm time and minimal false alarms.

ANSI/ESD S20.20 section 7.3 states "Compliance verification records shall be established and maintained to provide evidence of conformity to the technical requirements." Per ANSI/ESD S1.1 Annex A.3 Daily (wrist strap system) testing may be omitted if constant monitoring used." Per ESD Handbook ESD TR 20.20 section 5.3.2.4.4 "Typical Test programs recommend that wrist straps that are used daily should be tested daily. However, if the products that are being produced are of such value that knowledge of a continuous, reliable ground is needed, and then continuous monitoring should be considered or even required."

The SW Aware Monitor and its accessories are available as the following item numbers:

Item	Description
770151	SW Aware Monitor, with North America Power Adapter
770152	SW Aware Monitor, with Universal Power Adapter
770153	Verification Tester
770154	Power Adapter, 100-240VAC Input, 9 VDC 500 mA Output, North America Plug
770155	Power Adapter, 100-240VAC Input, 9 VDC 3 A Output, C14 Inlet

SMP Static Management Program

The SCS SW Aware Monitor is compatible with SCS Static Management Program (SMP). SMP continuously monitors ESD control programs throughout all stages of manufacturing. SMP captures data from SCS continuous monitors and ionizers to provide a real-time picture of critical manufacturing processes. All activity is captured and stored in a centralized database for on-going quality control purposes. Reports generated by SMP reveal areas of concern, enable proactive prevention of ESD events, and validate the efficiency of a ESD control program. SMP captures operator and worksurface pass/fail data from the SW Aware Monitor.

SMP is sold separately. Click here to learn more.

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East: (919) 718-0000 | West: (909) 627-9634 • Website: StaticControl.com

Packaging

770151 SW Aware Monitor

1 SW Aware Monitor
1 Mat Monitor Cord (White)
1 Countersunk Washer
1 Flat Head Screw, 6-32 x 1/4"
1 Keps Nut, 6-32
2 Rounded Head Screws, #6 x 1-1/4"
1 Power Adapter with North America Plug, 9 VDC

770152 SW Aware Monitor

1 SW Aware Monitor
1 Mat Monitor Cord (White)
1 Countersunk Washer
1 Flat Head Screw, 6-32 x 1/4"
1 Keps Nut, 6-32
2 Rounded Head Screws, #6 x 1-1/4"
1 10 mm Interchangeable Parking snap
1 10 mm Operator Jack Adapter
1 Power Adapter with IEC C14 Inlet, 9 VDC

Features and Components

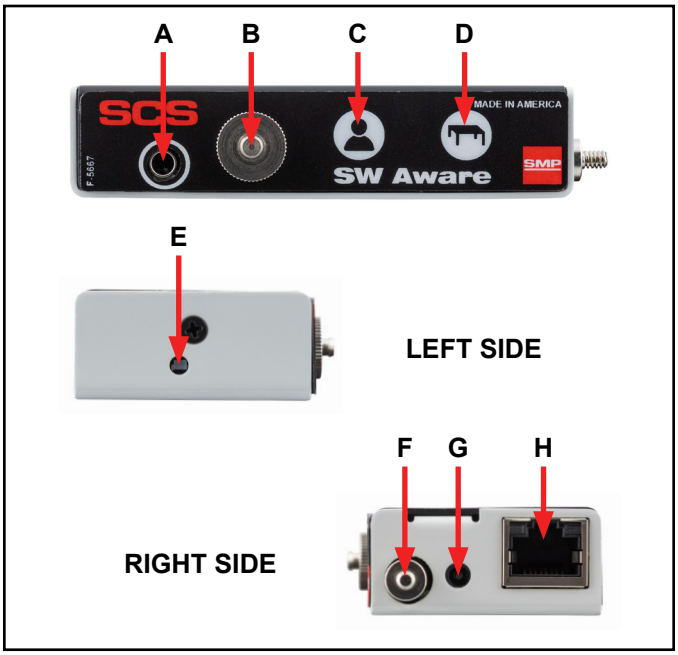

Figure 2. SW Aware Monitor features and components

A. Monitored Operator Jack: Insert the single-wire wrist cord here to monitor the operator's connection to ground.

B. Parking Snap: Allows the operator to disconnect (and park) a wrist strap when leaving the workstation without creating a false alarm. Touch the parking snap to disable the monitor's audible alarm for approximately 8 seconds. Use this time to disconnect the wrist cord from the wristband, and attach it to the parking snap or remove the banana plug from the jack. Upon returning to the workstation and disconnecting the wrist cord from the parking snap, the operator has approximately 8 seconds to reconnect the wrist cord to a worn wristband before activating the alarm.

C. Operator LED: Blinks white when the operator jack is vacant. Illuminates solid green when the operator is properly grounded. Blinks red and audible alarm sounds when the operator is not properly grounded. Illuminates solid blue when in the 8 second park delay state. Blinks blue when the wrist cord is parked.

D. Worksurface LED: Illuminates solid green when the worksurface is properly grounded. Illuminates solid red and audible alarm sounds when the worksurface is not properly grounded.

E. Set Switch: Toggles the monitor's settings for the audible alarm and mat monitor circuit.

Function	Procedure
Audible Alarm Volume	1. Push and release the switch to toggle the buzzer's volume. 2. The LEDs will illuminate purple, and the volume will toggle from medium and high.
Enable / Disable Worksurface Monitor Circuit	1. Push and hold the switch until all LEDs illmuniate cyan. 2. Release the switch. 3. A green or red illuminated Worksurface LED indicates that the mat monitor circuit is enabled. A non-illuminated LED indicates that the mat monitor circuit is disabled.

F. Monitored Mat Terminal: Verifies that the worksurface's path-to-ground is less than 10 megohms. Connect the white mat monitor cord here.

G. Power Jack: Connect the included 9 VDC power adapter here.

H. Ethernet Port: Provides network communication between the SW Aware Monitor and SCS Static Management Program (SMP).

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Installation

Hardware Setup

1. Remove the SW Aware Monitor from the carton, and inspect for damage.
2. Locate an appropriate AC outlet near the SW Aware Monitor, and test it for proper wiring and grounding prior to use. The SCS 770048 Common Point Ground Monitor or similar test equipment may be used to verify the outlet's functionality.
3. Determine the mounting location of the SW Aware Monitor. A common application is the underside of a tabletop. The monitor's LEDs should be visible to the operator. Secure the SW Aware Monitor to a surface using its two through-holes and the included rounded head screws.

Figure 3. Using the two rounded head screws to mount the SW Aware Monitor

4. Secure the ring termination of the white mat monitor cord to the monitored mat terminal on the side of the SW Aware Monitor.
5. Connect the opposite end of the mat monitor cord to a grounded worksurface mat. Use the included countersunk washer and flat head screw to secure the cord to the grounded mat.
6. Connect the power adapter to the power jack located on the SW Aware Monitor. Plug the power adapter into the tested AC outlet.

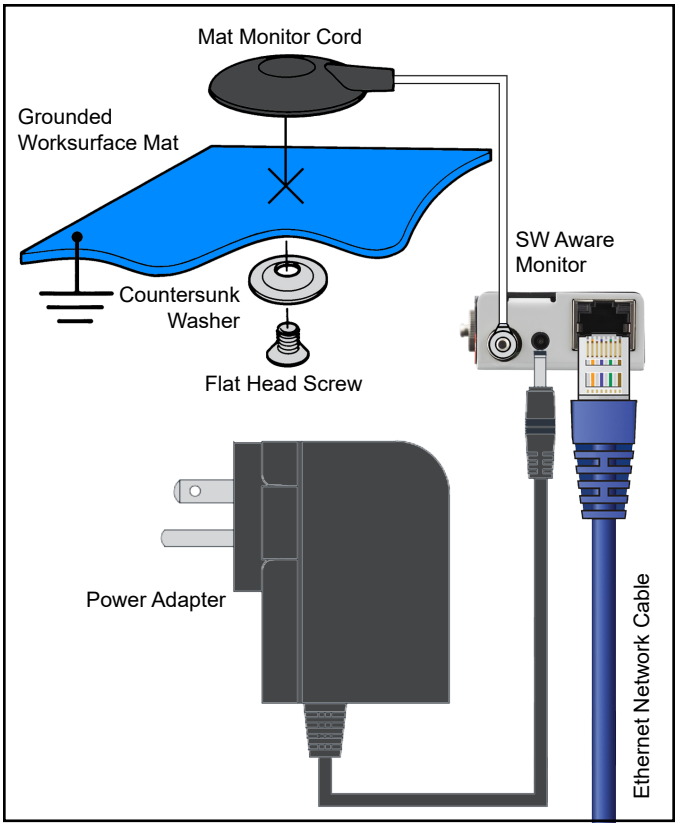

Figure 4. Installing the SW Aware Monitor

10 MM SNAP ADAPTERS

The 770152 SW Aware Monitor includes an interchangeable 10 mm parking snap and 10 mm banana jack adapter for operators who use wrist cords with 10 mm terminations. Use the parking snap's knurled rim to unscrew the 4 mm parking snap from the monitor and install the 10 mm parking snap to the monitor. Plug the 10 mm operator jack adapter into the monitor's operator jack.

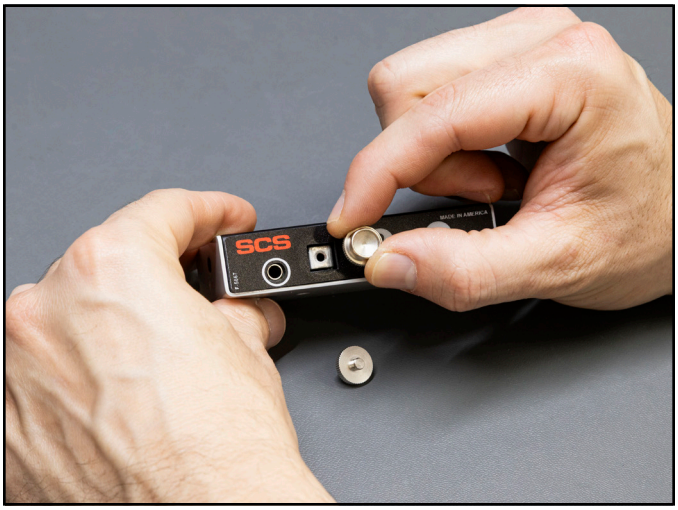

Figure 5. Installing the 10 mm parking snap to the 770152 SW Aware Monitor

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SMP Network Setup

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

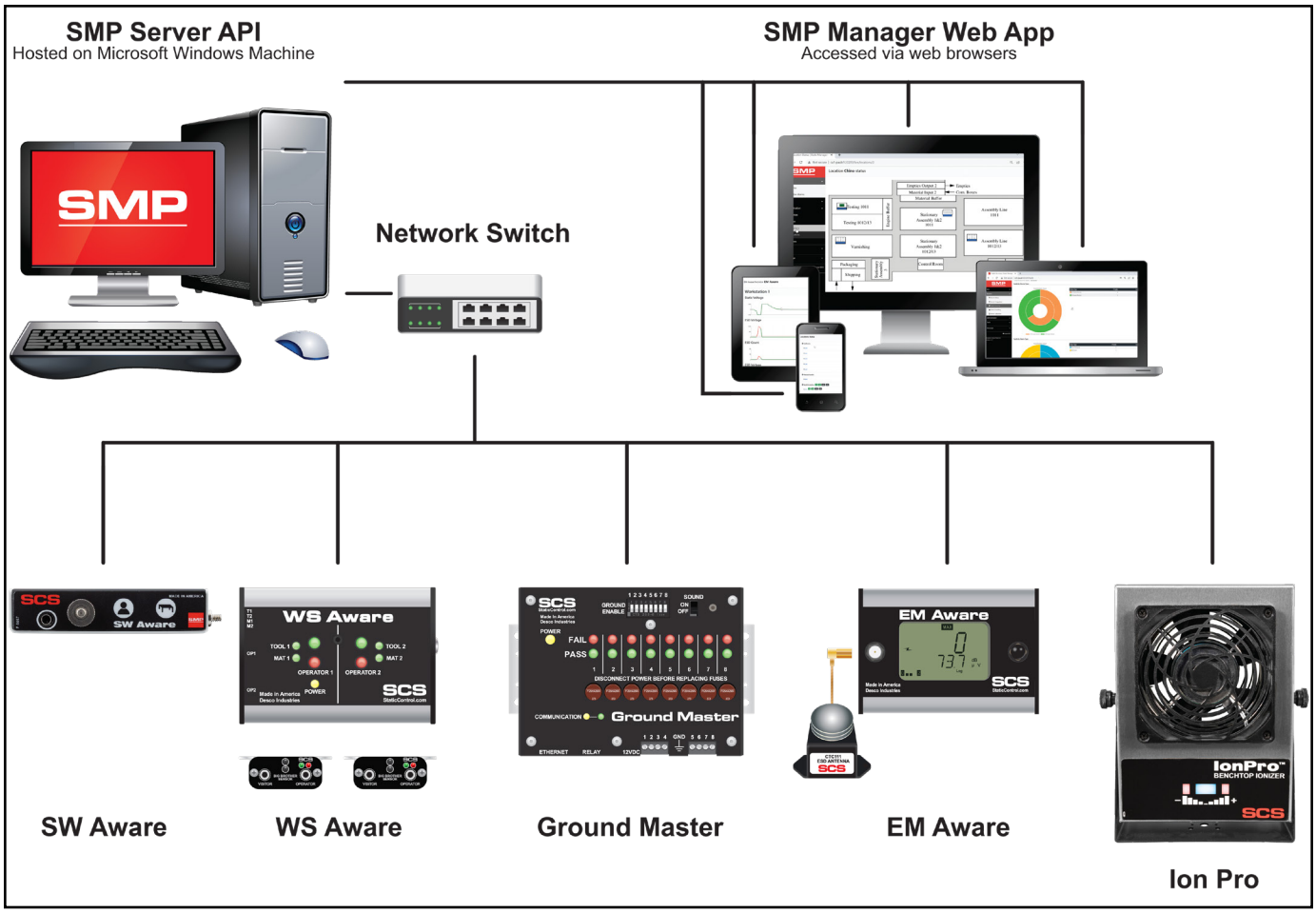
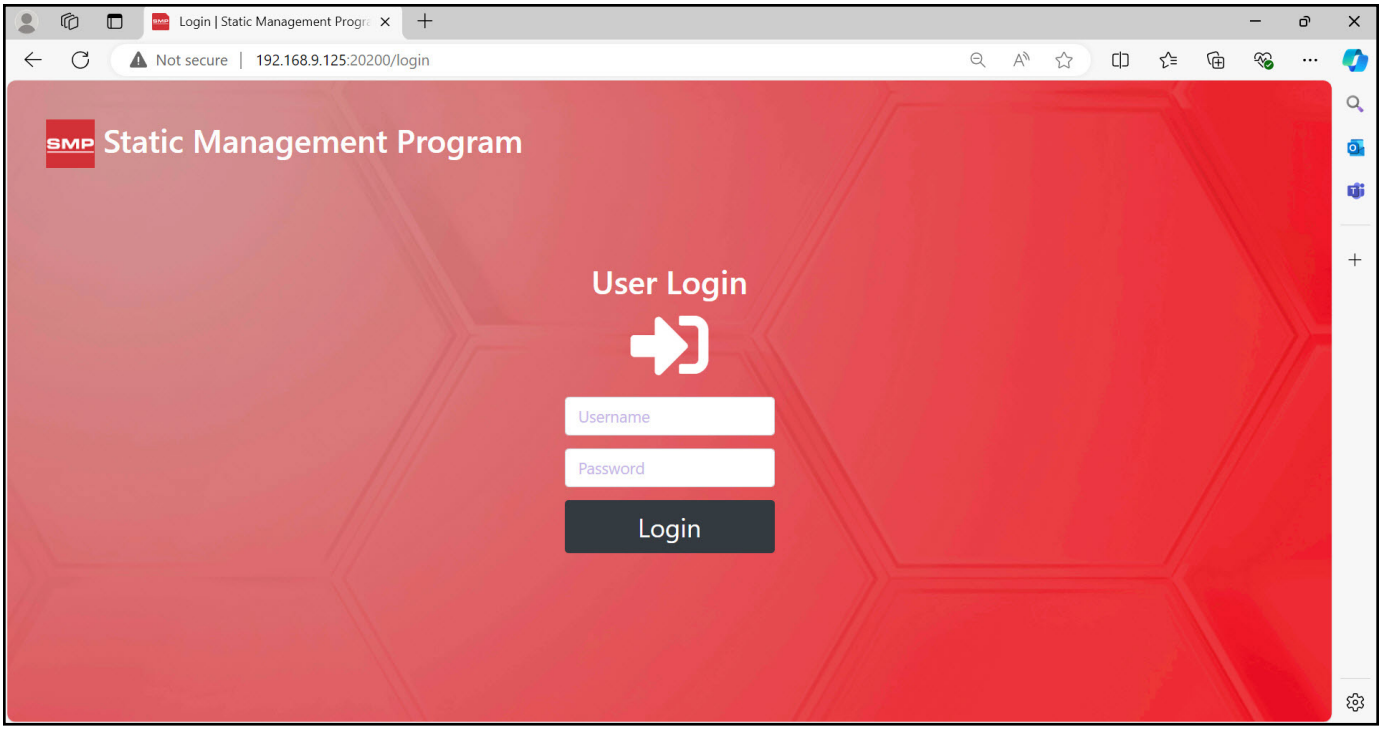
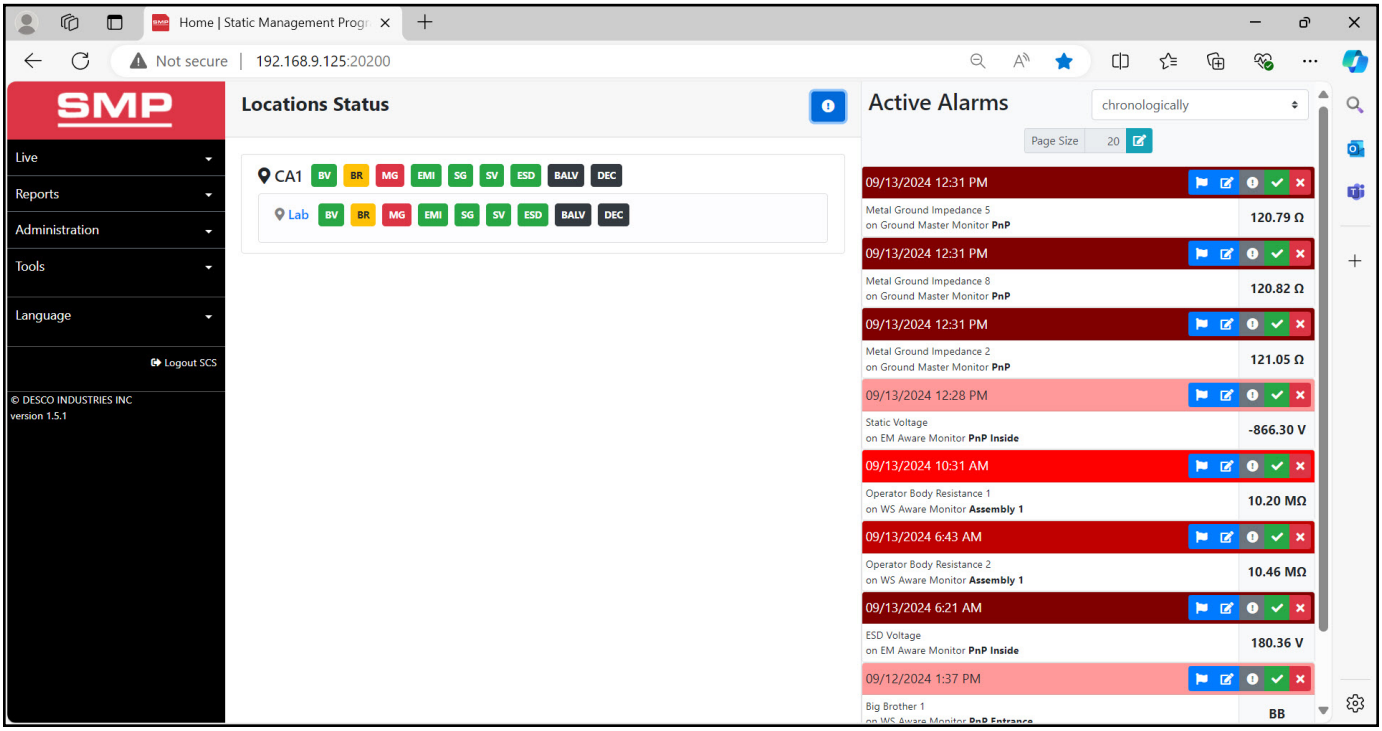


Figure 6. SMP system setup

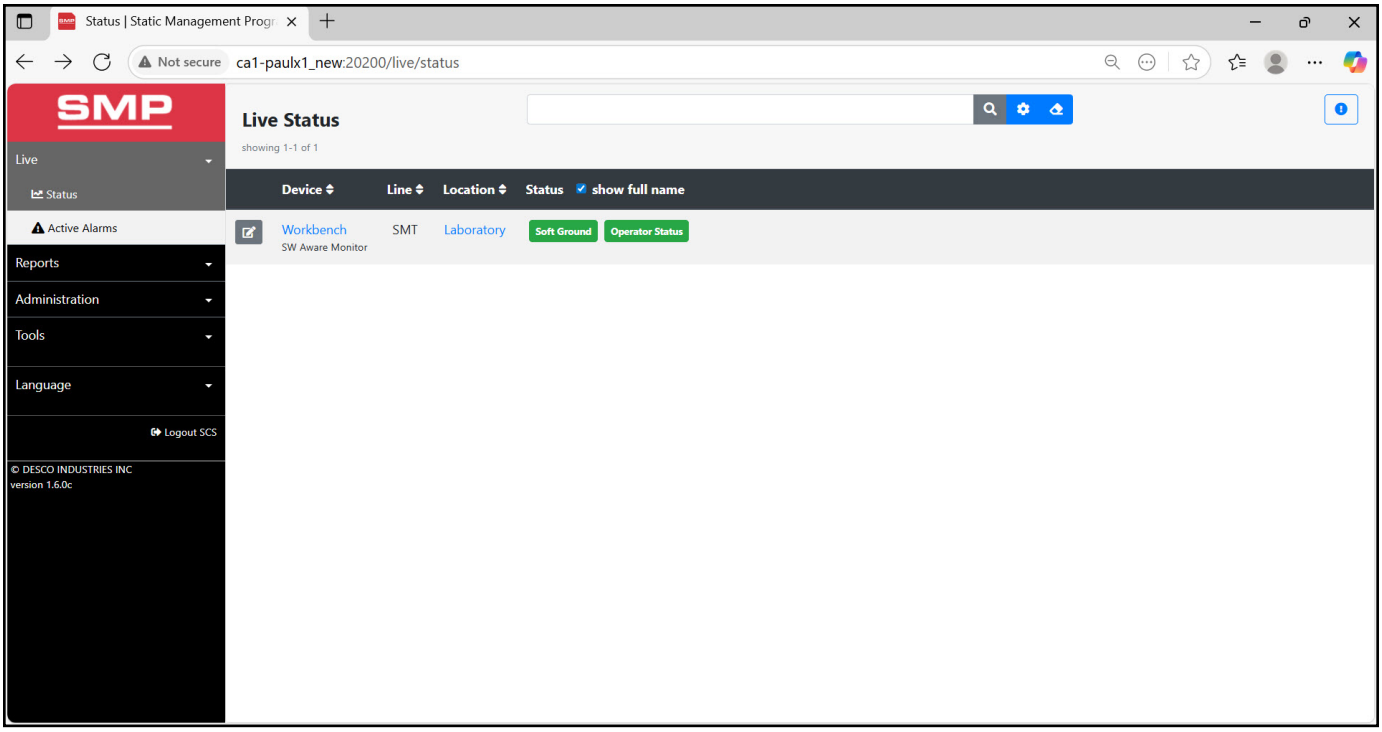
1. Verify that the Ethernet cable is securely connected to the network and SW Aware Monitor. The LEDs on the Ethernet port will illuminate when a connection to the network is established.
2. Log into the SMP Web App with either the default credentials (see user guide TB-9116) or ones provided bythe SMP Admin.



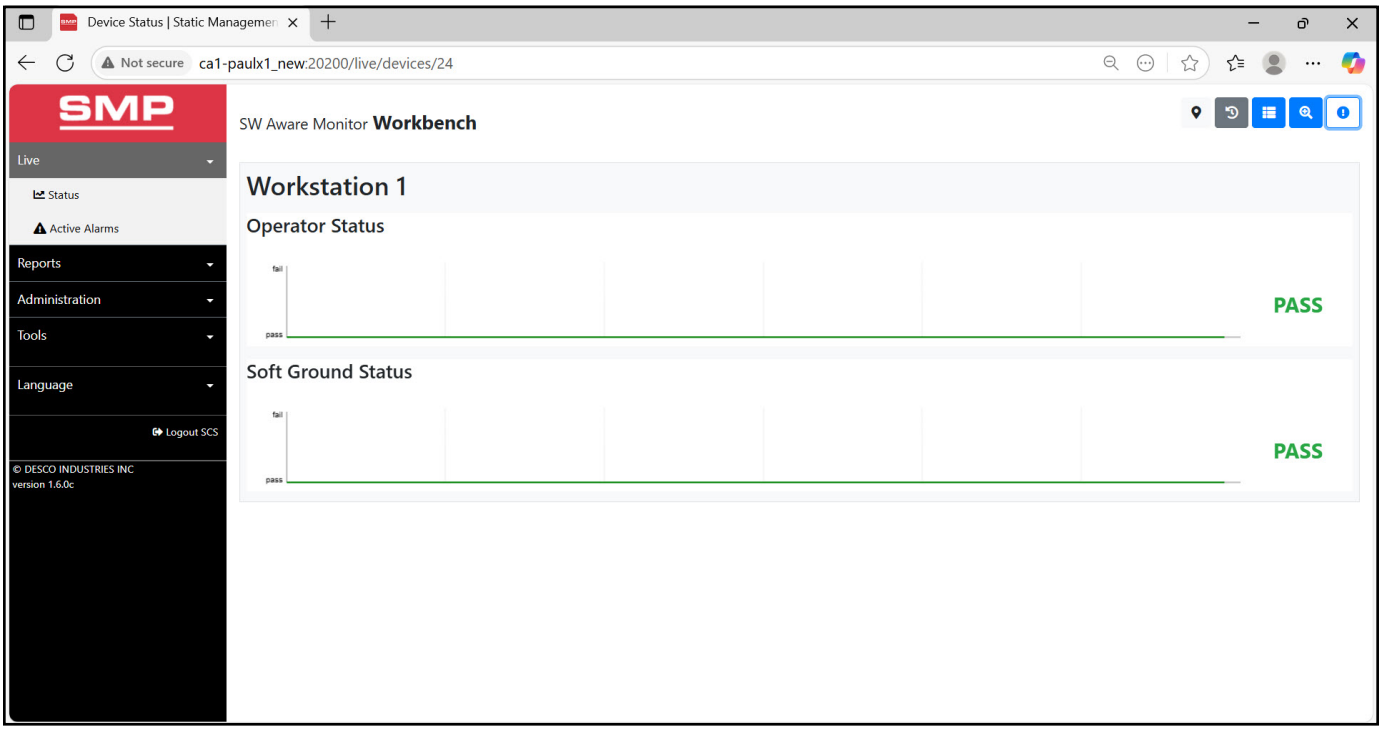
3. The dashboard view will provide activity for all SMP devices.



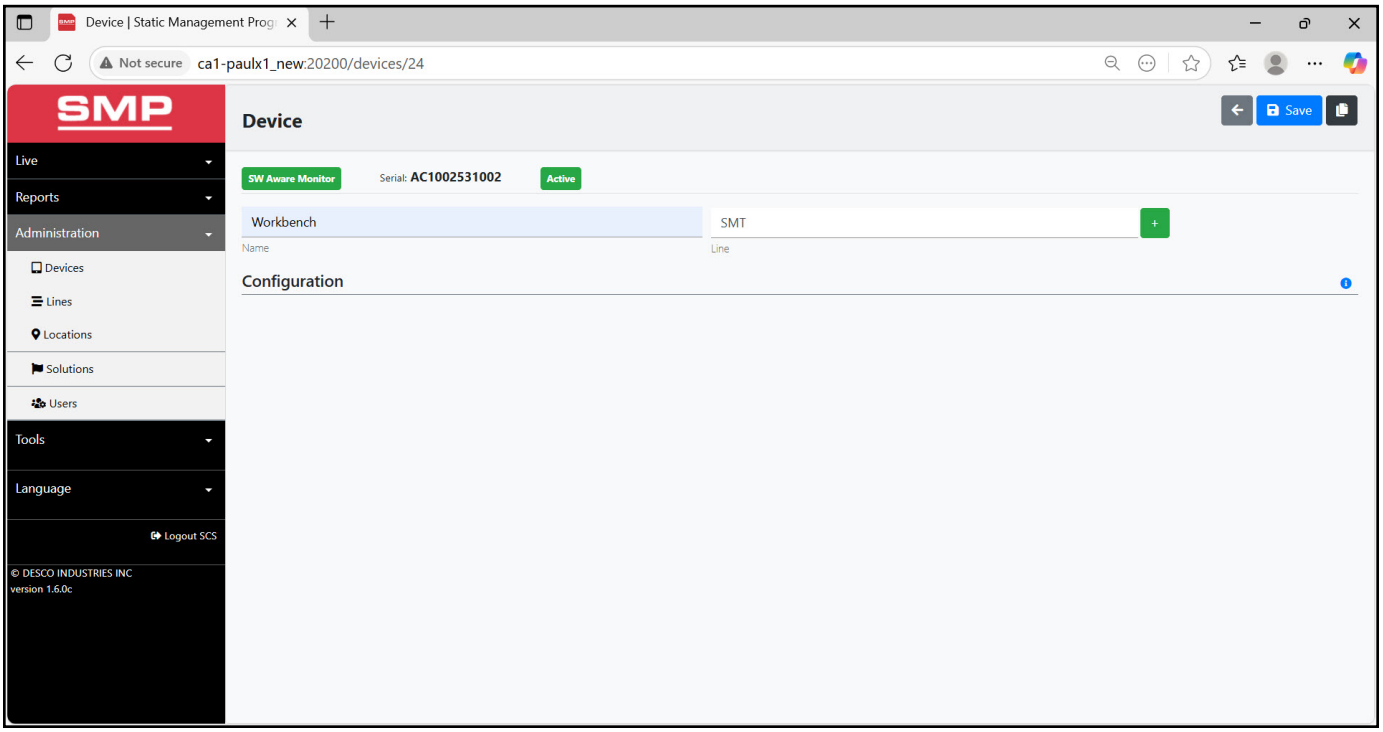
4. Go to the Live > Status page to view the status of the SW Aware Monitor.



5. Select the device name to access the live results for all SW Aware Monitor channels. The shortcuts at the top of the window are for generating history reports, toggling between different views of the data, zooming in/out, and showing/hiding the Alarms panel.



6. Go to the Administration > Devices page and select the Edit icon to access the SW Aware Monitor's settings. In this screen, the device may be assigned a name and attached to a line.



7. Note: The SW Aware Monitor's test limits are factory configured and cannot be modified.

Operation

1. Fit the wristband snugly onto the wrist.
2. Snap the wrist cord to the wristband.
3. Plug the wrist cord into the operator jack. The green operator LED will illuminate. This indicates that the operator is properly grounded.
4. If this does not happen, examine the wrist cord for continuity or damage and the wristband to ensure that it fits securely. If experiencing dry skin, the operator may apply an approved dissipative hand lotion such as MENDA Reztore® ESD Hand Lotion.
5. When leaving the workstation, first touch the monitor's parking snap. The monitor's audible alarm will disable for approximately 8 seconds. Use this time to disconnect the wrist cord from the wristband and attach it to the parking snap without sounding a false alarm.
6. Upon returning to the workstation and disconnecting the wrist cord from the parking snap, the monitor will provide approximately 8 seconds for the operator to reconnect the wrist cord to a worn wristband before sounding the monitor's alarm.

Figure 8. Using the parking snap

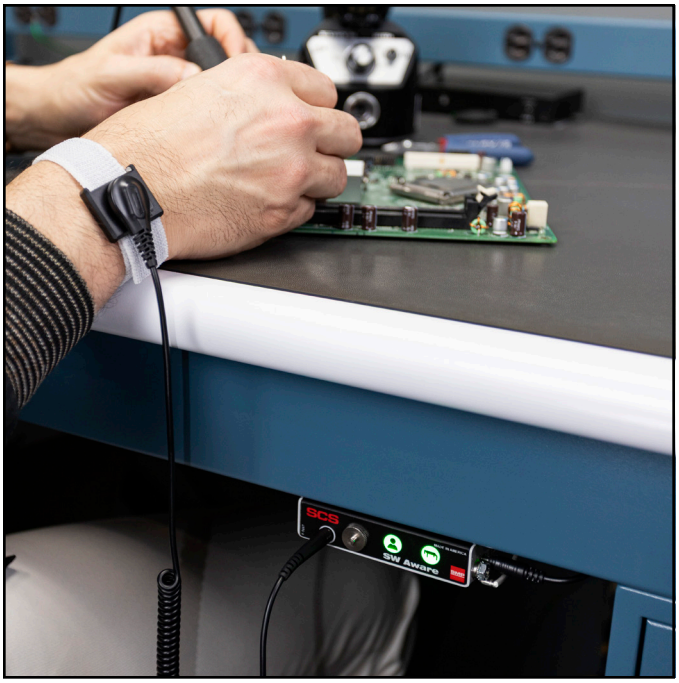


Figure 7. Using the SW Aware Monitor

Calibration

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.

Use the SCS 770153 Verification Tester to perform periodic verification (once every 6-12 months) of the SW Aware Monitor. The 770153 Verification Tester can be used to check the test limits of the SW Aware Monitor without removing it from the factory floor.

See user guide TB-9125 for more information.

Figure 9. SCS 770153 Verification Tester

Specifications

Input Voltage and Frequency (External Adapter)	AC/DC Power Adapter Power Input: 100-240 VAC, 50/60 Hz Power Output: 9 VDC Cable Length: 5 ft. (1.5 m)
Operating Temperature	50 to 95° F (10 to 35° C)
Environmental Requirements	Indoor use only at altitudes less than 6500 ft. (2 km) Maximum relative humidity of 80% up to 85° F (30° C) decreasing linearly to 50% @ 85° F (30° C)
Dimensions	.86" L x 3.61" W x .80" H (22 mm x 92 mm x 20 mm)
Weight	2.8 oz. (79 g)
Operator Test Range*	500 kilohms to 10 megohms impedance
Worksurface Test Limit**	10 megohms (±20%)
Operator Test Voltage	1.2 V peak-to-peak @ 1.2 µA, open circuit
Worksurface Test Voltage	5 to 7.5 V, open circuit
Alarm Response Time	<50 ms
Country of Origin	United States of America

*This cannot be verified with standard DC test equipment. The continuous monitor is an impedance sensing device, and the limits are determined by the magnitude and angle of the impedance.

**The worksurface mat must have a conductive layer such as Dual Layer Rubber or Dissipative 3-Layer Vinyl with conductive buried layers. SCS workstation monitors are not recommended for use with homogeneous matting.

ANSI/ESD S20.20 requires the use of a surface resistance meter for periodic verification of a worksurface's resistance-to-ground (Rtg). Constant monitors may not be used as a substitute for this requirement.

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

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

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