725 Wrist Strap Monitor Operation and Maintenance

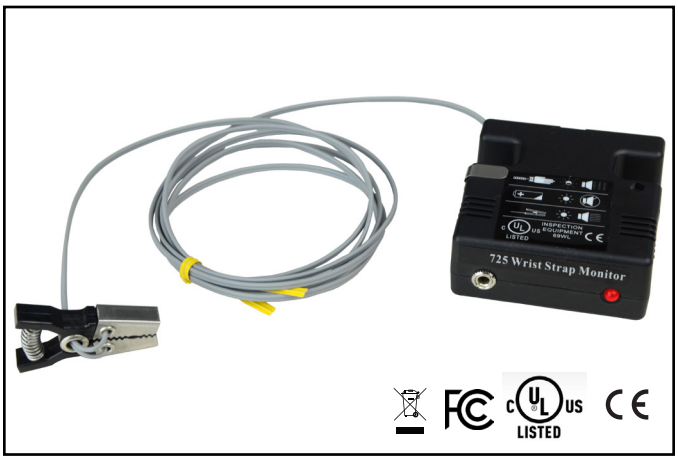

Figure 1. SCS 725 Wrist Strap Monitor

Description

The 725 Wrist Strap Monitor is designed to monitor the operation of a wrist strap grounding system for a single operator. This product has been designed and tested for use with SCS Dual Conductor Wrist Straps and SCS Worksurfaces Grounding Systems. This unit is powered by a 9 volt alkaline battery. Use of other components or use in any other application not evaluated by SCS may cause improper performance and/or an unsafe condition. To avoid damage to the 725 Wrist Strap Monitor, do not use this monitor outside of the operating conditions listed in this user guide.

Meets requirements of ANSI/ESD S20.20 and recommendations of ESD Handbook ESD TR20.20 which includes “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 SCS Wrist Strap Monitor and its accessories are available as the following item numbers:

Item	Description
725	Wrist Strap Monitor
725VK	Verification Kit
770065	Verification Tester

Packaging

1 725 Wrist Strap Monitor with 5 ft. Ground Clip
1 Certificate of Calibration

Theory of Operation

The SCS 725 Wrist Strap Monitor is designed to monitor the operation of the wrist strap grounding system of a single operator. The system features special wrist bands and ground cords that contain two independent conductors.

The 725 Wrist Strap Monitor performs a resistance measurement by applying a small electrical current. The path for the current is through one conductor of the wrist strap ground cord that contains a current-limiting resistor, through one side of the wristband, through the skin of the wearer under the band, through the second side of the wristband, through the second conductor of the wrist strap ground cord that contains a current limiting resistor, and finally back to the monitor.

If the resistance of the wrist strap loop is less than 35 megohms, the wrist strap ground cord, wristband, and the interface of the wristband to the arm of the wearer are considered to be functioning correctly. If the measured resistance is over 35 megohms, a red lamp flashes along with a chirping audible alarm.

In addition, the 725 Wrist Strap Monitor monitors the ground clip connection to a predetermined electrical ground. This is accomplished by measuring the resistance from the monitor, through one conductor of the monitor’s ground cord and metal clip, through the ground point conducting medium, through the other metal clip and conductor of the monitor’s ground cord, and finally back to the 725 Wrist Strap Monitor. If the resistance of this loop exceeds 10 megohms, a red lamp will illuminate with a continuous audible alarm. This indicates that there is a problem with the monitor’s ground cord or the ground.

The SCS 725 Wrist Strap Monitor monitors the battery voltage and alerts the operator when it is necessary to change the battery. When the battery voltage falls below 6 volts ±10%, the red lamp will illuminate with no audible alarm. At this time the 725 Wrist Strap Monitor is still operational, making reliable resistance measurements of the wrist strap assembly and the ground connection.

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Installation

ATTACHING TO A WORKSURFACE

The SCS 725 Wrist Strap Monitor can be used to ground a worksurface while providing a monitored grounding point for an operator. To ground a worksurface, the 725 Wrist Strap Monitor contains a snap located on its bottom cover, that is connected internally to the monitor's ground cord. To use this feature there must be an SCS 10 mm Female Snap Fastener 3034, attached to the grounding layer of the worksurface. Simply align the male snap on the monitor with the female snap on the worksurface and press downward on the monitor. The worksurface is now automatically grounded through a one megohm resistor by the 725 Wrist Strap Monitor.

Use of an optional SCS Stand-By Jack 3057 at the work station extends the life of the monitor's input jack. The user disconnects the wrist strap ground cord from the wristband and plugs into the Stand-By Jack 3057 which is mounted at the work station. Plugging into the Stand-By Jack 3057 prevents the 725 Wrist Strap Monitor from continuously alarming when disconnected from the wristband.

Note: Although the worksurface is grounded by the SCS 725 Wrist Strap Monitor, it is not monitoring the ground to the worksurface.

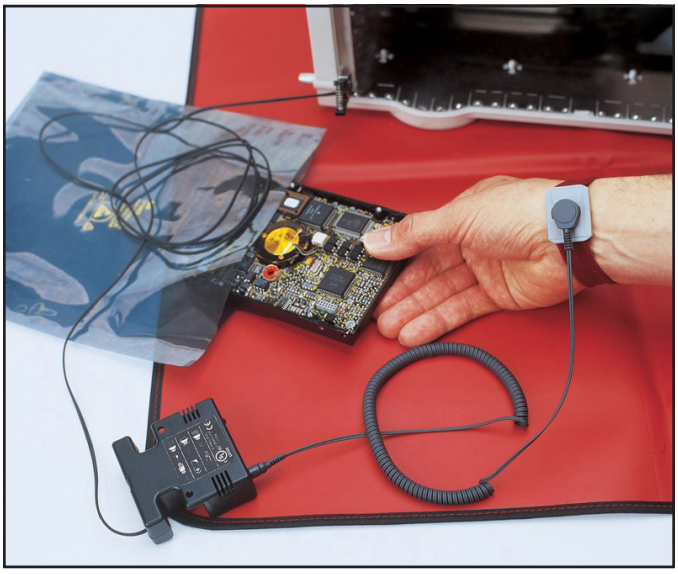

Figure 2. Using the 725 Wrist Strap Monitor with a worksurface

UNDERNEATH A WORKBENCH

The SCS 725 Wrist Strap Monitor can be mounted under a workbench by securing with two #8 screws (not supplied) through the mounting hole tabs located on the top cover.

When mounting the 725 Wrist Strap Monitor under a workbench for non-mobile use, remove the parking clip from the 725 Wrist Strap Monitor using a small screwdriver. The 725 Wrist Strap Monitor is now ready to mount. Position the monitor so that it is convenient for the operator to plug their wrist strap ground cord into the jack on the front of the monitor. It is recommended that the front face of the monitor be flush or slightly recessed from the front edge of the workbench. Attach the monitor to the workbench with the screws. It may be necessary to pre-drill pilot holes for the screws. Attach the dual conductor ground clip or each wire of the monitor's dual conductor ground cord to a suitable ground.

Note: Use of the monitor in this way precludes grounding a worksurface through the snap connector on the bottom of the monitor. A static control worksurface, if present, would require grounding separately through an additional ground cord.

Figure 3. Installating the 725 Wrist Strap Monitor underneath a workbench

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Operation

To operate the 725 Wrist Strap Monitor, attach the monitor's six foot ground cord with dual conductor ground clip to a suitable ground.

Attach an SCS Dual Conductor Ground Cord to an SCS Dual Conductor Wristband. Place the wristband on your wrist and plug the cord into the jack on the front of the 725 Wrist Strap Monitor. Plugging into the jack activates the monitor. If the red lamp flashes with an intermittent audible alarm or at any time during use, the resistance of the wrist strap assembly is greater than 35 megohms. If the red lamp and the audible alarm remain on continuously, check the dual conductor ground clip connection.

Note: Operators may complain that the alarm is sounding too often until they learn to adjust the wristband to fit securely or apply an approved skin moisturizer on a frequent basis.

Remember that the monitor is informing you that the operator is exceeding the established static control requirement for resistance to ground when wearing a static protective wrist strap assembly. These alarms alert the operator when sensitive electronics are possibly being exposed to static electricity. Prior to incorporating the wrist strap monitor into your static control process, the operator could be unaware of these events. If you decide not to use the dual conductor ground clip that is attached to the monitor's ground cord in the way described in this user instruction manual, observe the following precaution: Attach each of the two wires of the monitor's ground cord to separate ground bonding points. By attaching the wires to the same ground but at different physical locations, the monitor can check for loose or lost connections.

Parking Clip

A parking clip is supplied with the 725 Wrist Strap Monitor allowing mobile users to silence the ground clip disconnect alarm. Attaching the dual conductor ground clip to the parking clip prevents unnecessary disconnecting/connecting of the wrist strap ground cord from the input jack during mobility. An added benefit of this feature is that it extends the life of the dual conductor ground cord plug and the monitor's input jack. The parking clip is already attached to the mounting tab of the 725 Wrist Strap Monitor. If the 725 Wrist Strap Monitor Model is to be mounted under a workbench for permanent use, remove the parking clip from the 725 Wrist Strap Monitor using a small screwdriver.

Maintenance

BATTERY REPLACEMENT

When only the red lamp illuminates on the SCS 725 Wrist Strap Monitor, it is time to change the battery. Unplug the wrist strap ground cord from the 725 Wrist Strap Monitor jack before proceeding. Remove the top cover of the 725 Wrist Strap Monitor case by squeezing the two tabs (grooved area located on the bottom cover) inward while lifting the top cover. Remove the used battery carefully by using a pulling-twisting motion to unsnap the battery from the connectors on the printed circuit board.

Install a new 9 volt alkaline battery by supporting the snap connectors on the printed circuit board with your fingers, while using a pushing-twisting motion to fully seat the terminals of the battery into the snap connectors.

Note: Use an alkaline battery.

Pass the monitor's ground cord through one of the two exit wire slots in the bottom half of the case. Align the rear locking tab on the top cover, to the tab slot on the bottom cover while maintaining the ground cord in the desired wire slot. Rotate the top cover downward onto the two side locking tabs of the bottom cover and snap firmly into place.

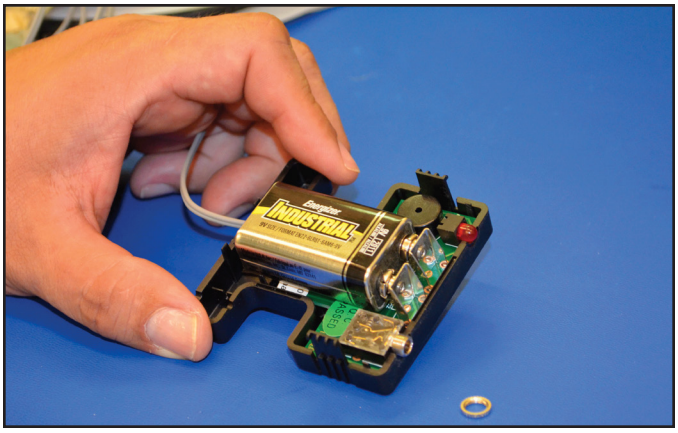

Figure 4. Replacing the battery

Verification Procedure

The 725 Wrist Strap Monitor is calibrated to standards traceable to NIST. Frequency of recalibratrion 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, we recommend that calibration be performed annually.

Use the SCS 725VK Verification Kit to perform periodic testing (once every 6-12 months) of the 725 Wrist Strap Monitor. The 725VK Verification Kit can be used on the shop floor within a few minutes virtually eliminating downtime, verifying that the monitor is operating within tolerances.

Equipment Needed:
1 725VK Verification Kit
2 Single conductor wires with alligator clip terminals

Figure 5. 725VK Verfication Kit

1. Install a new 9 volt battery into the SCS 725 Wrist Strap Monitor.
2. Short the monitor's ground clip by attaching it to a conductive metal object such as a coin.
3. Connect the 29.4M plug from the verification kit into the operator jack on the monitor. The monitor's LED and alarm should remain OFF.
4. Connect the 40.2M plug from the verification kit into the operator jack on the monitor. The monitor's LED should flash, and its alarm should chirp.
5. Connect the two single conductor wires with alligator clips to the metal jaws of the monitor's ground clip. One wire should connect to the top piece of the jaw, and the other wire should connect to the bottom piece. Ensure that the two pieces do not make contact with one another.
6. Clip the other ends of the single conductor wires to the 4.99M plug from the verification kit. One wire should make contact with the two conductors on the verification kit's plug (see Figure 6).
7. Use the 4.99M plug from the verification kit. The monitor's LED and alarm should remain OFF.
8. Use the 11.5M plug from the verification kit. The monitor's LED should illuminate, and its alarm should sound continuously.

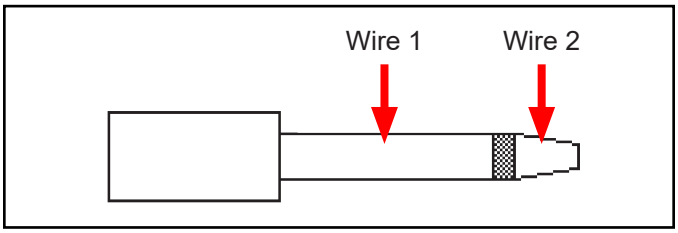

Figure 6. Connecting the monitor's ground clip to the 725VK plugs

Specifications

Accuracy	±15%
Test Voltage	9VDC open circuit
Test Current	Less than 1 microamp
Size	2.5" x 2.6" x 1.1"
Power Supply Requirements	9 Volt alkaline battery recommended (not supplied)
Environmental Operating Conditions	Temperature: Maximum : 110°F / 43°C Minimum : 50°F / 10°C Humidity: Maximum relative humidity 75%

Safety Information

Warning:
To reduce the risks associated with medical device malfunction which, if not avoided, could result in serious injury or death:
- Persons with active implanted medical devices (such as heart pacemaker devices) should never use this monitor.

Caution:
To reduce the risks associated with environmental contamination which, if not avoided, could result in minor or moderate injury:
- Dispose of monitor in accordance with all applicable local and government regulations.

Notice:
To prevent damage to the 725 Wrist Strap Monitor:
- Users should not attempt to service this device.
- Do not use in wet or humid environments.

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To reduce the risk of damage to components or assemblies being handled:

- Always properly ground your tools and dissipative surfaces to known good ground before connecting the 725 Wrist Strap Monitor for monitoring. If unsure of suitable ground, contact a licensed electrician before installation.
- Always ensure operator grounding during use of monitor. The 725 Wrist Strap Monitor does not provide grounding.

Environmental Conditions

This equipment has been tested and found to be safe to operate within these environmental conditions.

This is not a warranty of equipment performance within these conditions.

- Indoor use only
- Ingress Protection: IPX0
- Altitude: Up to 2,000 m
- Pollution degree 2
- Temperature: Maximum 110°F / 43°C Minimum 50°F / 10°C
- Humidity: Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C .

Regulatory Information

WEEE Statement

The following information is only for EU-members States: The mark shown to the right is in compliance with Waste Electrical and Electronic Equipment Directive 2002/96/EC (WEEE). The mark indicates the requirement NOT to dispose the equipment as unsorted municipal waste, but use the return and collection systems according to local law.

FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

ICES Statement

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la NMB-003 du Canada.

Made in China

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

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

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- *Тестирование поставляемой продукции.*
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- *Входной контроль качества.*
- *Наличие сертификата ISO.*

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