

TECHNICAL TIPS

PRODUCT: BioScan, BioLock and BioLock+ Standalone

Subject: Static Electricity Problems

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“Static electricity” is a build-up of electrical charge on insulated items, which can discharge by means of a spark to a grounded metal object. It builds up when dissimilar insulating items are rubbed against each other (friction causes electrons to transfer to one of the items). It is also known as ESD – Electro-Static Discharge.

Static electricity is most often encountered when humidity is very low (dry) or with synthetic carpets or shoes. It can also be caused in special circumstances (e.g. the driver of a car driven for long distance or at high speed). The resulting spark when static electricity discharges (when you touch something earthed) can be painful as static voltage build-ups can be thousands of volts, and the peak currents can also momentarily be very high.

BRS devices are well protected against static discharge (of course for proper operation they must be touched by fingers). The sensor has an array of “lightning rods” on its surface to discharge sparks, and extensive protection circuitry around it to protect the device (BioLocks are rated and laboratory-tested to +/- 8kV). The housing supports early discharge of an approaching finger and reduces EMI (electro-magnetic interference).

However doors can experience surprising levels of traffic (even a lightly-used door may have an average of hundreds of entries a day), and static electricity can build up to higher voltages than the device rating. The combination of many, heavy static discharges may end up overwhelming the protection barriers, and cause failures.

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Static-caused failures may have many symptoms. Sensors might be damaged (dead pixels, rows or columns), the device may hang (and require a power cycle to work again), just die (a fuse may blow – static discharges can cause electronic chips to “lock-up” in a state that causes excessive current drain), the sensor may get very hot (“lock-up” that doesn’t blow a fuse but may damage the sensor), or reboot.

Repeated static discharges may also cause the device to become less reliable and fail at a later time.

All in all, preventing static discharges is a great way to improve reliability.

Short of changing the environment (humidifiers, change carpets), the floor area underneath a BioLock that is experiencing static discharges should either

1. be overlain with an anti-static mat, or
2. be sprayed with anti-static compound. Many vendors of such mats and sprays exist – a simple web search should help locate a suitable product.

FURTHER INFORMATION:

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Bio Recognition Systems Pty Ltd is a 100% Australian owned and operated hardware and software developer and manufacturer. Located in Lane Cove, Sydney, Bio Recognition Systems Pty Ltd began by offering its customers software and hardware solutions in 1999. Its leading edge BioMetric technology harnesses the power of the newest technology in fingerprint recognition.

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