

Electrostatic Discharge Protection

Electrostatic Discharge (ESD) is a serious threat to electronic devices and integrated circuits. ESD is the sudden and momentary electric current that flows between two objects at different electrical potentials. The most recognizable form of ESD is a spark. Common causes of ESD events are static electricity and electrostatic induction where an electrically charged object is placed near a conductive object that is isolated from ground and then comes in contact with a conductive path.

Electronic devices can suffer permanent damage when subjected to a small ESD and care must be taken with machine design to ensure no charge can build up. Aerotech has a long history of supplying ESD protected precision motion systems to the electronics manufacturing, data storage and semiconductor industries. Protection techniques include:

- Stage surfaces coated in conductive electroless nickel so no charge can build up
- Stage components tied to a common ground to maintain zero potential difference
- Special ESD cable management chains used to maintain long-term conductivity to dissipate electrostatic charges
- Removal of stage sealing belts
- Optional slip-ring for rotary stages to ground the tabletop and customer payload

Given the sensitive nature of electronic devices, many motion systems requiring ESD protection often require cleanroom preparation.