



SA90-SMA  
Surge Arrestor  
(supplied with surge arrestor and  
SMA female to SMA male cable)

### **Broadband Surge Arrestor for DC-3000 MHz applications**

Help protect your equipment from the effects of lightning induced surges with the broadband SA90-SMA Surge Arrestor. This DC-passing surge arrestor operates with frequencies up to 3 GHz and helps with protection from lightning strikes. The arrestor is compatible with the IEEE 802.11b standard.

### **FEATURES**

- Easy installation for Masterclock GPS antenna systems- compact design fits in cramped installations
- Weather resistant in mated condition
- Quality protection at a competitive price
- Good return loss characteristics
- Low throughput energy during lightning strikes
- Contains 1 each surge arrestor with SMA female and SMA male connectors and a 18" – 45 cm low loss coaxial pigtail (SMA female to SMA male) - everything needed to install the surge arrestor either outside adjacent to the antenna or inside at the receiving hardware.\*
- For maximum protection 2 units can be installed - see rear of sheet for details.

### **SPECIFICATIONS**

- Connectors:** SMA-Female – SMA Male
- Pass Band:** DC – 3GHz
- Max power handling:** 200 W
- Impedance:** 50  $\Omega$
- Insertion loss, dB (MHz):** Less than 0.2 dB (1000–3000)
- VSWR:** less than 1.5:1 2.7 GHz, 1.65:1 3 GHz
- DC discharge voltage:** 90 VDC
- Impulse discharge current:** 5 KA 8/20  $\mu$  max withstanding current
- Outer conductor finish:** nickel plated
- Hardware provided:** Grounding screw, washers and terminal lug
- Operating temperature:** C -40° to +85°

## SURGE ARRESTOR INSTALLATION

### WARNING

Ensure that the antenna and coaxial cable that the surge arrester is protecting is not exposed to direct lightning strikes. This device offers no protection for such strikes and will be destroyed – along with whatever equipment that it is connected to - by a direct strike.

### **Notice:**

The installation, maintenance, or removal of antenna and surge arrester systems requires qualified, experienced personnel. These installation recommendations are written for such personnel. Installations of this type of energy suppression equipment should be made in accordance with local safety and electrical codes and with regard to good electrical and engineering practices. If you have questions regarding the use of this type of product with respect to your installation, contact a local licensed electrical contractor for the latest electrical codes and guidelines. In no event shall Masterclock, Inc. be liable for any direct, indirect, special, incidental, or consequential damages caused from the installation or use of this product.

### **Installation:**

For maximum protection install two surge arrestors, one outside, either close to the antenna or at the point where the coaxial cable enters the building and a second as close to the receiving equipment. A good rule of thumb to remember is that all lines entering or exiting a building need protection.

The SA90 is a bidirectional RF device. Either RF port may be connected to the equipment side or the antenna side of the transmission line interface to provide protection. Do not leave the RF ports exposed when installed outdoors.

The surge arrester must be grounded by attaching a ground wire to the grounding lug. This wire must be attached to a master ground bar or the systems earth grounding to ensure a low impedance path to ground. During installation, all grounding contact surfaces must be clean, dry, and free of oxidation.

### **Grounding Recommendations:**

A protection system with a poor ground is the same as having no protection at all.

Recommended grounds are the utility company ground, a ground rod, well casings, and cold water pipes that are of continuous metal. A note of caution, sometimes the metal-cold water pipes are repaired and/or extended PVC piping. The introduction of PVC material renders the cold water pipe ground unacceptable. A thorough investigation of a cold water pipe ground is important since the PVC repairs or extensions may be covered by drywall. Grounds that are unacceptable include sprinkler pipes, PVC pipe, conduit, buried wire and any ground that cannot be verified.

Bonding ensures the most effective ground. Bonding ties all of the grounds in the building together electrically. If there is a rise in ground potential and all of the grounds are bonded, no damage will occur since it is differential voltage that causes problems.

It is absolutely necessary to make sure that the ground used for the AC power is the same as the ground used for the data-line surge protectors. A common ground reference must be achieved for all equipment.

All ground wires must be as short as possible and it is **imperative** that the ground wire not be coiled nor looped – it must be as straight as possible. Regarding the diameter of the ground wire, the **larger the better**.

Finally, the earth ground resistance on which the whole grounding system relies, must be less than 5 ohms between any two points within the ground system.