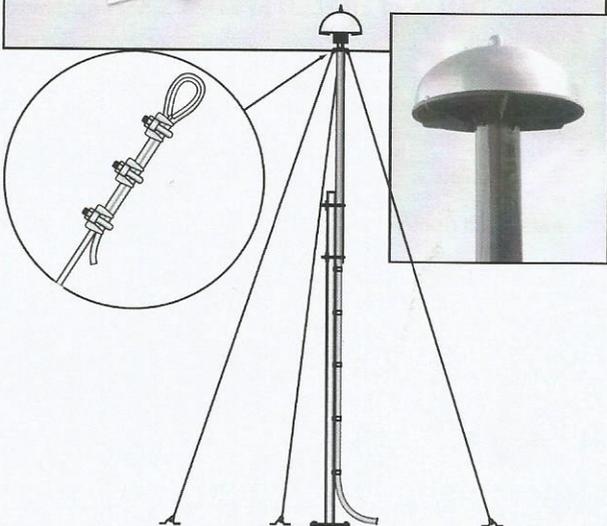


ERITECH®

ERITECH® SYSTEM 3000

Installation, Operation and
Maintenance Manual



ERICO®

ERITECH[®] SYSTEM 3000

THE ERITECH[®] SYSTEM 3000 Installation, Operation and Maintenance Manual

Due to ongoing research into the phenomena of lightning and lightning protection technology and product improvement, ERICO reserves the right to alter any information and specifications contained herein at any time without notice. Users should check with ERICO to ensure they have the latest edition.

Warning:

1. ERICO products shall be installed and used only as indicated in ERICO product instruction sheets and training materials. Instruction sheets are available at www.erico.com and from your ERICO customer service representative.
2. ERICO products must never be used for a purpose other than the purpose for which they were designed or in a manner that exceeds specified load ratings.
3. All instructions must be completely followed to ensure proper and safe installation and performance.
4. Improper installation, misuse, misapplication or other failure to completely follow ERICO's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death.

SAFETY INSTRUCTIONS: All governing codes and regulations and those required by the job site must be observed. Always use appropriate safety equipment such as eye protection, hard hat, and gloves as appropriate to the application.

The ERITECH[®] SYSTEM 3000 is manufactured by ERICO.
International patents on the ERITECH SYSTEM 3000 are existing.

Local Distributors should be the user's first point of contact with supply, delivery, installation, limited warranty, and checking of the system for compliance with Manufacturer's instructions.

Pre-Installation Requirements

This manual is a guide to the Installation, Operation and Maintenance of the ERITECH® SYSTEM 3000 Lightning Protection System.

It assumes that the system to be installed has been designed by an authorized ERICO representative. The system design will include:

- Grounding system design - a configuration should be designed as a result of soil resistivity analysis.
- Downconductor routes - chosen to avoid other services, maintain minimum bending radii and minimize downconductor run length.

- Downconductor securing requirements.
- Terminal types - operating environment.
- CAD analysis design software which determines terminal placement, mast & height requirements as well as protection level calculation.

All of the above are recommended for a successful installation. If there is any doubt about any of the points mentioned, please contact ERICO or your nearest Distributor for clarification.



Only attempt to install the ERITECH SYSTEM 3000 during storm-free periods.

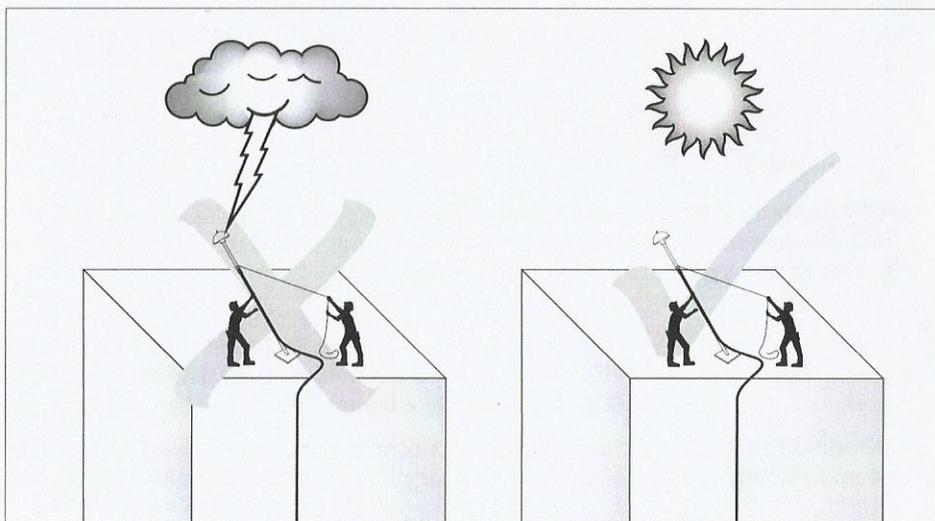


Figure 1.



The recommended order of installation is as follows:

1. Full installation of the grounding system.
2. Full installation of the downconductor.
3. Termination of the downconductor to the grounding system.
4. Upper termination of the downconductor (may already have been completed by ERICO) and connection to the ERITECH® DYNASPHERE air terminal.
5. Termination of bonding cable from upper termination to structure (if required).
6. Raise mast into position and secure.

Grounding Systems

The grounding system is critical to the integrity of any lightning protection installation and should include consideration of:

- Local Standards compliance (IEC 61024-1, BS 6551, AS1768-1991, NFPA® 780, C22.1-98, NEC® etc.)
- Available space / location.
- Natural soil conditions - resistivity of soil, soil moisture content, soil temperature range, etc.
- Location of underground services - Power, Communications, Fuel, Gas, Water, etc.
- Corrosive environments, ie: salt water, acid / alkaline contaminated ground mass.
- Use of suitable grounding rods such as ERITECH® rods.
- Minimization of risk to personnel.

Contact an ERICO office or Distributor if you require further advice on grounding systems.

Downconductors

The ERITECH® ERICORE downconductor or other recommended downconductor should have been selected during the design stage, as should the route, length and any preterminations of the downconductor.



Re-check intended route of downconductor immediately prior to installation to ensure that:

- There are no structural changes or additions that may effect the initial design.
- Most direct route possible to the grounding system with minimal number of bends and as flush with the structure as possible.
- Minimum bending radii maintained (500 mm, 20 in.).
- Parallel routing with other services - minimum separation = 2 m (80 in.).
- Attachment to the structure is at a maximum of every 1 m (40 in.) for the top 10% of the downconductor route and . 2 m (80 in.) from then on.
- Pipe installations follow the instructions given on page 17.

Re-check:

- Securing of downconductor - saddles, cable ties, beam clamps, cable hangers, etc, are appropriate.
- Method of cable installation, ie. cable upper terminated on the outside of the drum - to be rolled off from the base of the structure, or cable upper terminated on the inside of the drum - to be rolled off from the top of the structure, (refer Figure 6 on page 15).
- The outer sheath of the downconductor must be electrically bonded to a conductive structural point within 5 m (17 ft) of the upper termination kit.

Structural Bonding Braid & Conductive Structural Points



When installing the upper end of the downconductor on a masonry structure (concrete panels, brick, etc), the downconductor should be secured directly to the structural steel work. In addition, the bonding cable (supplied in the termination kit) must be connected via 6 mm² (8 AWG) insulated copper cable to the nearest conductive structural point. This point should be where the downconductor first comes into contact with the structure and may be either structural steel work or the reinforcing within concrete panels or slabs.

It is recommended that this point be determined prior to the installation to allow for any site work or equipment that may be required prior to the installation.

The 6 mm² (8 AWG) cable is not supplied and the length of the cable will need to be determined and obtained before commencing the installation.

See Pages 18 to 24, figures 10-17 for more details and diagrams.

Lightning Event Counters

The Lightning Event Counter (LEC IV) is a device for registering and recording the number of strikes that the ERITECH® SYSTEM 3000 has intercepted. The design of this counter allows many installation alternatives on the downconductor as discussed in later text. Also, see Specifications on page 60.

The following should be considered prior to installation of the Lightning Event Counter:

- It is advisable to locate the LEC IV in a secure area that is not prone to contact with moving objects, theft, or vandalism.
- If the LEC IV is to be encased in an additional enclosure, ensure that it is mounted to enable easy access to the display, (see figure 32 on page 48).

ERITECH® DYNASPHERE Terminals

The ERITECH® DYNASPHERE is the air terminal of the ERITECH SYSTEM 3000.

Ensure that the appropriate air terminal has been provided.

Suitable for use in:

- General purpose applications
- High temperature environments
- Corrosive environments (salt or acid atmosphere)



Ensure the air terminal is supplied with the finial tip secured in place. The air terminal is supplied with three different finial tip configurations (two separate, and one secured in place), similar to that shown in photo 1. **It is important that the correct finial tip is installed, specific to the application.** Photo 2 shows the three different finial tip sizes, ranging from sharp to blunt in dimension. The sharp tip (middle), medium tip (left) and rounded tip (right). The application of each of these tips is detailed below:

- Sharp Tip – Terminal heights less than 20 m (65 ft)
- Medium Tip – Terminal heights less than 50 m (165 ft), greater than 20 m (65 ft)
- Rounded Tip – Terminal heights greater than 50 m (165 ft)

Note: heights listed refer to the actual terminal height above ground level

If required, replace the finial tip supplied with the appropriate tip for the application, and tighten firmly.

Warning – Do not install the ERITECH® DYNASPHERE without installing the correct finial tip.



1 – ERITECH DYNASPHERE with two spare finial tips.



2 – Three (3) ERITECH DYNASPHERE finial tip sizes.

Masts

There are three main types of mast configurations:

- Guyed - generally required for mast heights of over 3 m (10 ft) or for climatic conditions where wind gusts may exceed 160 km/h (100 mph). Always consult with a local civil engineer if in doubt. The mast is anchored at the base and then guyed using one or two guy sets, depending on the mast height and configuration, each with 3 lengths of non conductive guying material.
- Cantilevered - the lower third of the mast is secured to a vertical surface to provide support. These may also require guying depending on mast height.
- Free-standing - base support only.

Ensure that the configurations and heights for your specific installation conform to the design and consultation directives.

Specific advice for each mast configuration is provided on pages 40 to 47.

When all of the components for the ERITECH® SYSTEM 3000 have been received, they should be checked against the design "Bill of Materials" and for any possible shipping loss or damage.