

# EMProve®

## Ultra-Fast Surge Arrester 18 kV Rating UFSA18E1-B

### Product Description

Advanced Fusion Systems' (AFS) Ultra-Fast Surge Arrester (UFSA) EMProve® is a grid protection device designed to shunt the induced current from an E1 HEMP event away from protected equipment.

During testing at a Nationally Recognized Test Lab (NRTL), the EMProve® shunted more than 97 % of the induced current surge to ground when tested under MIL-STD188-125. (Fig. 1)

Electrical connections are made to the UFSA by two sets of two NEMA compliant threaded holes.

### Specifications

- Med Voltage Intermediate class device
- Voltage class: 18 kV
- MCOV: 15.3 kV
- Energy class: H
- Standby current: <5  $\mu$ A (60 Hz)
- Bypass current rating: 2.5 kA amps
- Housing BIL: 110 kV (IEEE C37.06 chopped wave)
- Reaction delay time: <6 nS
- Temperature range (storage/operating): -40 °F (-40 °C) to 150 °F (65 °C)
- Humidity: 5 % to 95 % (noncondensing)
- Length: 16 US inches (406.4 mm)
- Diameter: 5.76 US inches (146.3 mm)
- Weight: 11.63 US pounds (5.28 kg)

### Setup and Installation

The EMProve® (model UFSA18E1-B, see Fig. 2) is suitable for installation in equipment housings

inside and outside of buildings where pollution degree levels are very light to heavy.

The EMProve® must not be used as a structural member for any other device or equipment.

The EMProve® device is intended to be mounted on all phase conductors and neutral within 3.28 feet (1 m) of the protected equipment.

Electrical connections are made to the EMProve® by two NEMA compliant threaded holes on each connection flange. Various standard adapters are available at additional cost to facilitate electrical connections. Custom adapters can be designed and fabricated.

It is suggested that the bottom (labeled) conductor of the EMProve® (ground connection) be made with a rigid connection to support the device from below. However, if impractical, a flexible wire or copper strap of suitable ampacity rating no longer than necessary may be used to make this connection.

The top conductor of the EMProve® (phase or neutral) may be made with either a low inductance flexible wire (or strap) of suitable ampacity rating no longer than necessary.

According to the NEMA Surge Protection Institute, for both the phase, neutral connections, and ground connections to the EMProve® to ground connections should be as short as practical.

As the residual voltage is highly dependent on the di/dt current surge and the impedance to the local ground plane, therefore, every effort must be made to minimize the impedance of the connections from the phase (or neutral) to the EMProve® and from the EMProve® to ground.

The EMProve® is not designed to be a lightning protection device.

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### Maintenance

The EMProve® devices are maintenance free. However, it is recommended that the units be Partial Discharge tested every 48 months to ensure proper operation.

The EMProve® device should be replaced after a quantity of 100 E1 current surges.

### Product Family

Please contact Advanced Fusion Systems or one of its representatives for other voltage or installation class devices.

### Orderable Part Numbers

8118.00001 for UFS18E1-A Medium Voltage Intermediate class 18 kV indoor device (Fig. 2) for Pollution Degree from Very Light to Light

8118.00002 for UFS18E1-B Medium Voltage Intermediate class 18 kV outdoor device (Fig. 3) for Pollution Degree from Medium to Heavy

### Warranty

AFS warrants the UFS18E1 device against defects in materials and workmanship for 10 years prorated from the date of purchase.

AFS warrants to the Buyer that the UFS18E1 device will perform to the specifications herein for up to 100 E1 current surges under NRTL environment or like conditions.

For complete warranty details, see the terms and conditions in the purchase agreement.

### Dual Use Technology

The technology employed in the EMProve® devices are designated as dual use technology, indicating their utility for both civilian and military use. Products containing dual use technology may not be transferred without permission and the intellectual capital cannot be disclosed to non-US citizens. Advanced Fusion Systems (AFS) must permanently mark each unit with a serial number and reserve the right to inspection of the devices. In order to meet the requirements of United States government and international treaties, laws, rules, and regulations and to protect AFS intellectual property, these products may not be x-rayed, opened, penetrated, or transferred to others without permission of AFS.

### Continuous Improvement

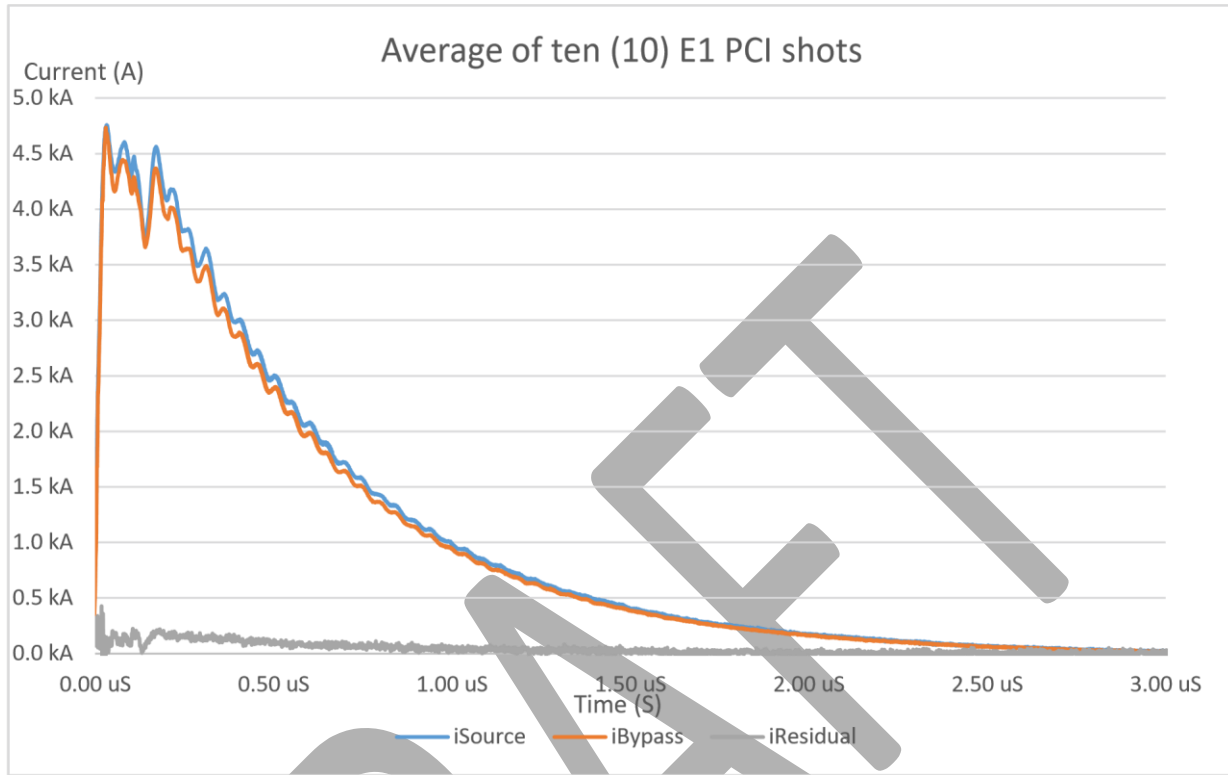
AFS reserves the right to change the design and specifications without notice.

### Contact

Advanced Fusion Systems  
11 Edmond Road  
Newtown, CT, 06470  
(203) 270-9700 x199  
Email: sales@advfusion.com

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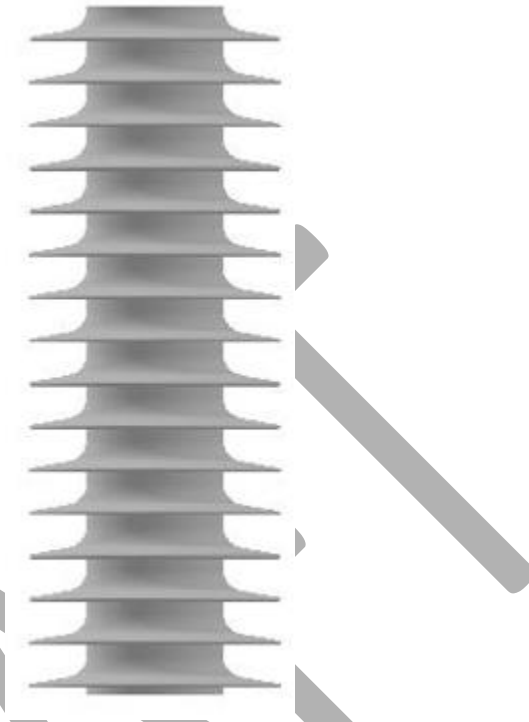
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**Figure 1: E1 PCI performance**

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**Figure 2: EMProve® Outdoor**  
Pollution degree light to heavy

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