

ESP RF Series



LPZ $0_B \rightarrow 3$	FULL MODE Bonding + Equipment Protection
SIGNAL/ TELECOM TEST CAT D + C + B	e ENHANCED Low let-through voltage
HIGH BANDWIDTH	

Combined Category D, C, B tested protector (to BS EN 61643-21) suitable for RF systems (of power up to 150W) using coaxial cables at frequencies between 50MHz and 2.7GHz to provide effective protection without impairing system performance. For use at boundaries up to LPZ 0_B to protect against flashover (typically the service entrance location) through to LPZ 3 to protect sensitive electronic equipment.

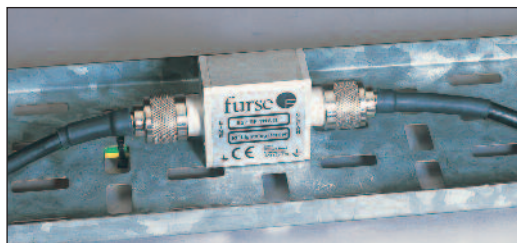
Features and benefits

- ✓ Very low let-through voltage (enhanced protection to BS EN 62305) between all lines – Full Mode protection
- ✓ Full mode design capable of handling partial lightning currents as well as allowing continual operation of protected equipment
- ✓ Repeated protection in lightning intense environments
- ✓ Superior transient protection to both Gas Discharge Tube (GDT) and Quarter Wave Stub (QWS) based protectors
- ✓ Very low attenuation and near unity VSWR over a wide range of frequencies ensure the protectors do not impair system performance
- ✓ Wide bandwidth means a single product is suitable for a range of applications
- ✓ Available with N, 7/16 DIN and BNC connectors
- ✓ Easily mounted and earthed via fixtures on the base of the unit that accept M3 and M5 screws or via mounting brackets
- ✓ Additional mounting plates give increased flexibility
- ✓ Robust silver plated aluminium housing

Technical note

The high level of protection offered by these units comes from the addition of a high pass filter circuit which gives a very low let-through voltage. It should be noted that due to this high pass filter circuit no DC power can pass along the transmission line. This is referred to as "DC blocked".

Protectors with other connectors are available. Contact Furse.



ESP RF 111A11 installed on a coaxial cable running between an antenna and an RF receiver. Note the earth lead (behind the cable tray) attached to the mounting fixture

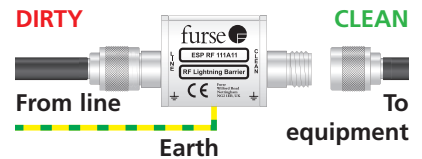
Application

Use on coaxial cables to protect RF transmitter and receiver systems, including electronics located at the antenna or dish. Typical examples include cell sites, military communications, satellite earth stations, pager systems and emergency services communications systems.

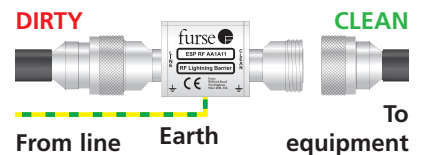
Installation

In a building, connect in series with the coaxial cable near where it enters or leaves the structure, or close to the equipment being protected. This should be as close as possible to the system's earth star point (to enable a good connection to earth). On a mast, connect in series with the coaxial cable near the antenna/dish being protected.

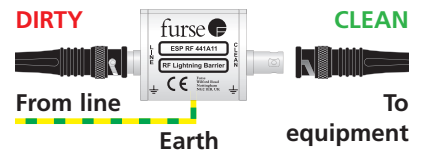
Install in a radio communications room, an existing cabinet or a suitable enclosure.



ESP RF 111A11 with N female connectors installed in series



ESP RF AA1A11 with 7/16 DIN female connectors installed in series



ESP RF 441A11 with BNC female connectors installed in series

Accessories

ESP RF BK1

Straight mounting plates

ESP RF BK2

90° angled mounting plates

ESP RF GDT-A

Replacement gas discharge tube

Electrical specification

	ESP RF 111A11	ESP RF AA1A11	ESP RF 441A11
Maximum working voltage U_c (RMS)		86V	
Maximum transmitted power (RMS)		150W	
Characteristic impedance		50Ω	
Bandwidth		50-2700MHz	
Voltage standing wave ratio		≤1.2	
Insertion loss over bandwidth – 50-500MHz		≤0.4dB	
– 500-1,600MHz		≤0.2dB	
– 1.6-2.7GHz		≤0.4dB	
Maximum power		150W	

Transient specification

	ESP RF 111A11	ESP RF AA1A11	ESP RF 441A11
Let-through voltage (all conductors) ¹ U_p			
C2 test 4kV 1.2/50μs, 2kA 8/20μs to BS EN/EN/IEC 61643-21		24V	
C1 test 1kV, 1.2/50μs, 0.5kA 8/20μs to BS EN/EN/IEC 61643-21		15V	
B2 test 4kV 10/700μs to BS EN/EN/IEC 61643-21		15V	
5kV, 10/700μs ²		20V	
Maximum surge current ³			
D1 test 10/350μs to BS EN/EN/IEC 61643-21		1kA	
8/20μs to ITU (formerly CCITT), BS 6651:1999 Appendix C		10kA	

¹ The maximum transient voltage let-through the protector throughout the test (±10%). Response time <10ns. This let-through voltage represents a deviation from the applied signal voltage, present at the time of the test.

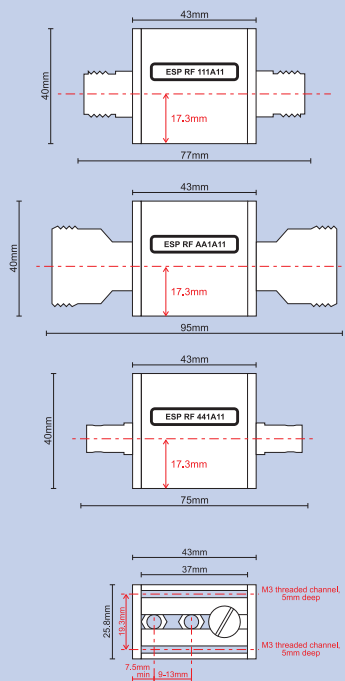
² Test to BS 6651:1999 Appendix C, Cat C-High, IEC 61000-4-5:1995, ITU-T (formerly CCITT) K.20, K.21 and K.45, Telcordia GR-1089-CORE, Issue 2:2002, ANSI TIA/EIA/IS-968-A:2002 (formerly FCC Part 68).

³ The installation and connectors external to the protector may limit the capability of the protector.

Mechanical specification

	ESP RF 111A11	ESP RF AA1A11	ESP RF 441A11
Temperature range		–25°C to +70°C	
Connection type	N female	7/16 DIN female	BNC female
Earth connection		Via mounting fixtures	
Case material, finish		Aluminium, Silver plated	
Weight – unit	150g	220g	120g
– packaged	170g	240g	160g

Dimensions



ESP RF BK1

Straight mounting bracket, 53 x 26.3 x 3mm
Two M4 clearance mounting holes, 16.3mm apart

ESP RF BK2

90° mounting bracket, 33 x 26.3 x 3mm,
20 x 26.3 x 3mm
Two M4 clearance mounting holes, 16.3mm apart, 14mm from fold line

(Mounting brackets supplied with screws for fixing to protector)

For RF applications where DC power is present on the coaxial cable, use the alternative RF protectors. The ESP CCTV/B and ESP CCTV/T are suitable for use on coaxial (or twisted pair) CCTV lines. For coaxial CATV lines, use the ESP CATV/F.