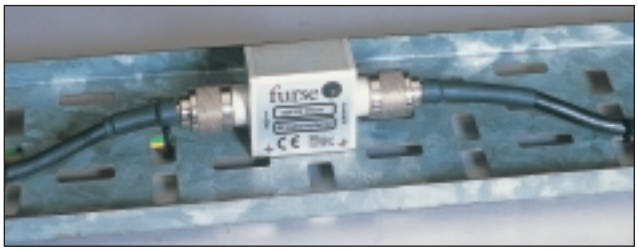
- **Suitable for RF systems using coaxial cables at frequencies between 50MHz and 2.7GHz.**
- **Effective protection without impairing system performance.**
- **Suitable for power up to 150W.**

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.

Features & benefits

- ✔ Restricts let-through voltage to below the damage levels of interface circuitry.
- ✔ Superior transient protection to both Gas Discharge Tube (GDT) and Quarter Wave Stub (QWS) based protectors.
- ✔ Provides repeated protection in lightning intense environments.
- ✔ Very low attenuation and near unity Voltage Standing Wave Ratio (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 - ESP RF BK1 (straight) and ESP RF BK2 (90º angled) - give increased flexibility in mounting methods.
- ✔ Robust silver plated aluminium housing.



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.

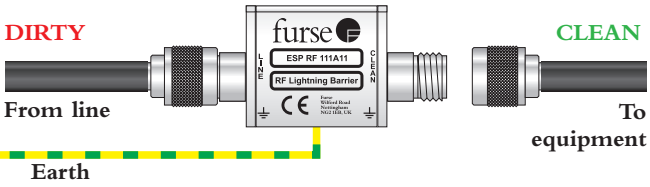
For RF applications where DC power is present on the coaxial cable, use the alternative RF protectors. The ESP CCTV/B and ESP CCTV/T are suitable for use on coaxial (or twisted pair) CCTV lines. For coaxial ethernet lines, use the ESP ThinNet or ESP ThickNet and for coaxial CATV lines, use the ESP CATV/F.

Technical Note

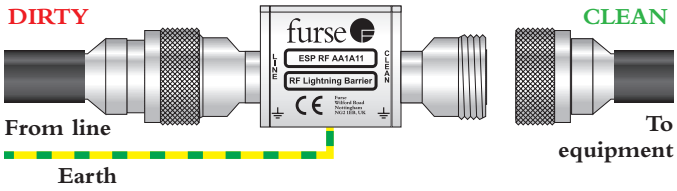
The high level of protection offered by these units comes from the addition of a high pass filter circuit which gives a very low let-through voltage. However, it should be noted that due to this high pass filter circuit no DC power can pass along the transmission line. This is referred to as "DC blocked".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

Installation

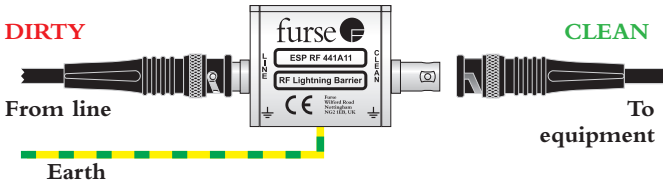
In a building, connect in series with the coaxial cable near where it enters or leaves the structure, or close to the equipment being protected. This should be as close as possible to the system's earth star point (to enable a good connection to earth). On a mast, connect in series with the coaxial cable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

Additional mounting brackets:
- ESP RF BK1 (straight)
- ESP RF BK2 (90º angled)

Brackets are supplied with screws for fixing to protectors.

Replacement gas discharge tubes:
- ESP RF GDT-A.

Adapters are also available to convert to other connection interfaces. Please contact Furse for further information.

Electrical specification

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

Transient specification

	ESP RF 111A11	ESP RF AA1A11	ESP RF 441A11
Let-through voltage (all conductors)[1] 5kV, 10/700µs test to: *BS 6651:1999 Appendix C, Cat C-High ITU (formerly CCITT) IX K17*	20V	20V	20V
Maximum surge current[2]	10kA	10kA	10kA

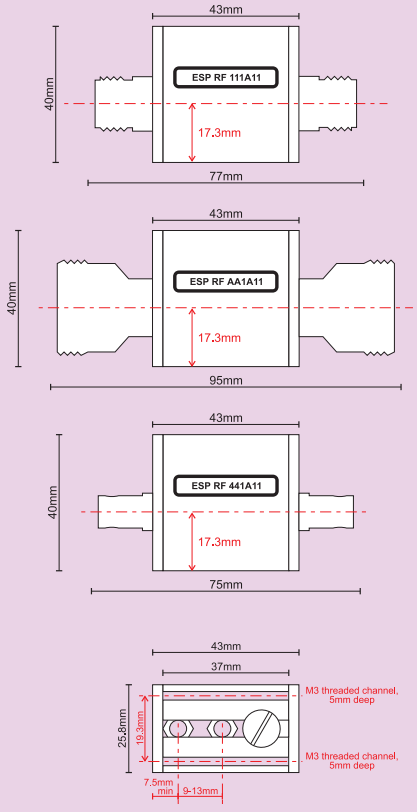
1 The maximum transient voltage let-through the protector throughout the test (±10%). Response time <10ns. This let-through voltage represents a deviation from the applied signal voltage, present at the time of the test.

2 Tested with 8/20µs waveshape to ITU (formerly CCITT), BS 6651:1999 Appendix C.

Mechanical specification

	ESP RF 111A11	ESP RF AA1A11	ESP RF 441A11
Temperature range	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C
Connection type	N female	7/16 DIN female	BNC female
Earth connection	Via mounting fixtures	Via mounting fixtures	Via mounting fixtures
Finish	Silver plated	Silver plated	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)