

Air termination

Introduction

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Air termination plays a critical role in the lightning protection system, capturing the fullness of the lightning strike current and channeling this current safely to the conductor network.

It is therefore highly important to install a correctly designed air termination system.

IEC/BS EN 62305-3 advocates the use of air rods or catenary conductors to provide a protective zone above the roof structure and any prominent parts, such as HVAC systems, plus a meshed conductor network to protect flat or slightly inclined roof areas.

Through use of air rods, raised conductor or mesh, a Lightning Protection System designer can achieve appropriate positioning of the air termination in line with the three methods proposed by IEC/BS EN 62305, namely:

- The rolling sphere method
- The protective angle method
- The mesh method

These methods are detailed within our technical reference section (p16/10).

Furse air termination products are specifically designed to provide highly effective protection against the risks and consequences from a direct lightning strike.

Our air rods are manufactured from high conductivity hard drawn copper or aluminium, and provide an excellent, durable strike point for lightning. Supplied with locknut and rolled threads, these air rods fix easily to our air rod bases.

Our comprehensive range of air rod bases, conductor fasteners and clamps is manufactured from high quality copper or aluminium alloys, to ensure that a high level of conductivity is maintained throughout the air termination system, and that these components are robust enough to last a significant number of years on exposed roof lines.

All these components link together with our copper or aluminium conductors, which provide the low resistance path for lightning current, from strike point safely to earth.

Air termination

Air rods



Air rod base and multiple point not included.

Standards

BS EN 50164-2

UL96 (RA215, RA225)



Air rod

Part no.	Rod length (mm)	Rod diameter (mm)	Thread size	Conductor material	Weight each (kg)
RA215	500	Ø 15	M16	Copper	0.73
RA225	1000	Ø 15	M16	Copper	1.51
RA230	1500	Ø 15	M16	Copper	2.35
RA240	2000	Ø 15	M16	Copper	3.00
RA250-FU	3000	Ø 15	M16	Copper	4.70
RA015	500	Ø 15	M16	Aluminium	0.29
RA025	1000	Ø 15	M16	Aluminium	0.53
RA030	1500	Ø 15	M16	Aluminium	0.80
RA040	2000	Ø 15	M16	Aluminium	1.06
RA050	3000	Ø 15	M16	Aluminium	1.60
RA400-FU	500	Ø 10	M10	Copper	0.33
RA402	1000	Ø 10	M10	Copper	0.65
RA080	500	Ø 10	M10	Aluminium	0.11
RA085	1000	Ø 10	M10	Aluminium	0.22

– Manufactured from high conductivity hard drawn copper or aluminium, with rolled threads. Supplied complete with locknut

Note: during high winds and extreme weather conditions air rods over 1000 mm long can be subjected to fatigue mechanisms. It is therefore recommended that additional supports are considered before installation

“Field Trials in the United States, carried out over many years of research have confirmed that blunt air rods are struck by lightning in preference to taper pointed air rods.”

Lightning rod improvement studies
 by C B Moore, W Rison, J Mathis, G Aulich,
 Journal of Applied Meteorology, May 2000.

Air termination

Air rod bases & saddles



Air rod base

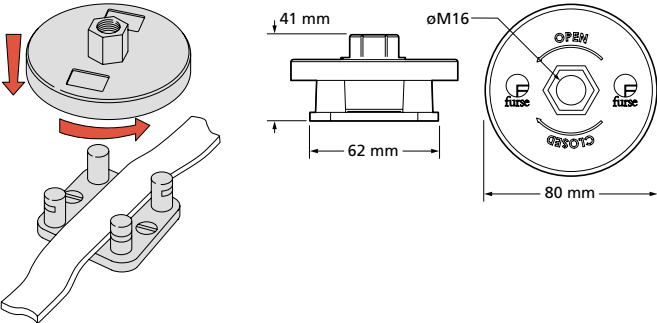
Part no.	Air rod diameter (mm)	Thread size	Maximum conductor width (mm)	Conductor material	Weight each (kg)
SD105-H	Ø 15	M16	25	Copper	0.43
SD003-H	Ø 15	M16	25	Aluminium	0.14
SD120	Ø 15	M16	50	Copper	0.7

- Manufactured from high quality alloys of either copper or aluminium
- Simple to install, providing an effective connection between air rod and air termination tape
- Fix using countersunk wood screws (Part no. SW005 or SW105) and wall plugs (Part no. PS305)
- SD120 not as illustrated (drawing available on request)

Standards

IEC/BS EN 62561-1 Class H

UL96 (SD105-H)



SD307

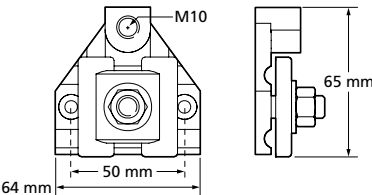


Horizontal or vertical air rod base

Part no.	Air rod diameter (mm)	Thread size	Conductor size (mm)	Conductor material	Mounting plane	Weight each (kg)
SD305	Ø 10	M10	Ø 8	Copper	Horizontal	0.30
SD307	Ø 10	M10	Ø 8	Copper	Vertical	0.30
SD005	Ø 10	M10	Ø 8	Aluminium	Horizontal	0.11
SD007	Ø 10	M10	Ø 8	Aluminium	Vertical	0.11

- Manufactured from high quality alloys of either copper or aluminium
- Simple to install, providing an effective connection between air rod and solid circular air termination conductor, in either the horizontal or vertical plane
- Fix using countersunk wood screws 1½" No. 10 or M6 (Part no. SW005 or SW105) and wall plugs (Part no. PS305)
- Tightening torque 15 Nm

SD305



Standards

BS EN 62561-1 Class H

Air termination

Air rod bases & saddles



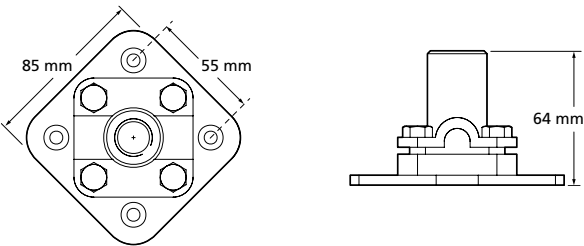
Standards

IEC/BS EN 62561-1 Class H

Flat saddle

Part no.	Air rod diameter (mm)	Thread size	Conductor size (mm²)	Conductor material	Weight each (kg)
SD155	Ø 15	M16	50	Copper	1.03
SD160	Ø 15	M16	70	Copper	0.95
SD165	Ø 15	M16	95	Copper	0.95

- Manufactured from high quality copper alloy
- Simple to install, providing an effective connection between air rod and stranded conductor
- Fix using countersunk wood screws 1½" No. 10 or M6 (Part no. SW005) and wall plugs (Part no. PS305)
- Tightening torque 12 Nm



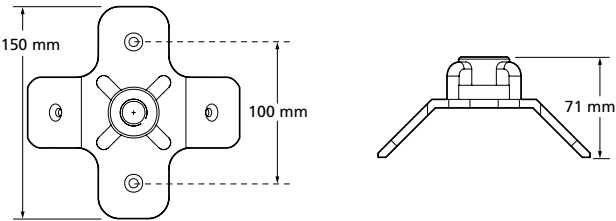
Standards

BS EN 62561-1 Class H

Ridge saddle

Part no.	Air rod diameter (mm)	Thread size	Max. conductor width (mm)	Conductor material	Weight each (kg)
SD015	Ø 15	M16	31	Aluminium	0.45
SD115	Ø 15	M16	31	Copper	1.07

- Manufactured from high quality alloys of either copper or aluminium
- Simple to install, providing an effective fixing for lightning conductor air rods on ridges
- Fix using countersunk wood screws 1½" No. 10 or M6 (Part no. SW005 or SW105) and wall plugs (Part no. PS305)
- Tightening torque 15 Nm



Air termination

Air rod brackets & rod to conductor coupling

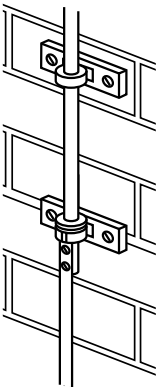
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Rod brackets

Part no.	Air rod diameter (mm)	Air rod material	Weight each (kg)
BR105	Ø 15	Copper	0.90
BR005	Ø 15	Aluminium	0.28

- Manufactured from high quality alloys of either copper or aluminium
- Simple to install, providing an effective means of mounting an air rod on to a vertical surface e.g. chimney stack
- Use in conjunction with a rod to tape or rod to stranded conductor coupling
- Fix using roundhead wood screws 1½" x No. 12 or M8 and wall plugs



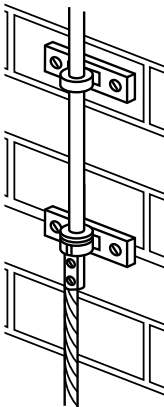
Rod to conductor coupling

Part no.	Air rod diameter (mm)	Thread size	Conductor size (mm)	Air rod material	Weight each (kg)
For use with flat tape conductor					
CG600	Ø 15	M16	25 x 3	Copper	0.23
CG500	Ø 15	M16	25 x 3	Aluminium	0.08
For use with stranded conductor					
CG705	Ø 15	M16	50-70 mm ²	Copper	0.25
CG710	Ø 15	M16	95 mm ²	Copper	0.25

- Manufactured from high quality alloys of either copper or aluminium
- Provides an effective connection between air rod and air termination tape or stranded air termination conductor
- Tightening torque 7 Nm (tape); 6 Nm (stranded)

Standards

BS EN 62561-1 Class H



Air termination

Multiple point & strike pad



Multiple point

Part no.	Air rod diameter (mm)	Air rod material	Weight each (kg)
RA600	Ø 15	Copper	0.27
RA500	Ø 15	Aluminium	0.10

- Manufactured from high conductivity hard drawn copper or aluminium
- Suitable for use with 15 mm diameter air rods (see page 4/3)

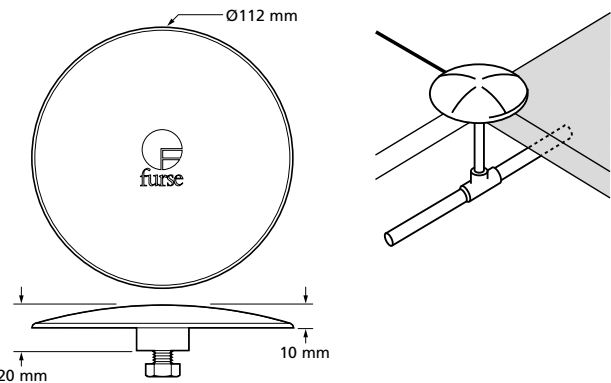
Strike pad

Part no.	Conductor material	Weight each (kg)
PL010	Copper	0.41
PL005	Aluminium	0.13

Accessories

SM005	Stainless steel stem for use with PL005	0.06
SM010	Copper stem for use with PL010	0.07

- Strike pads manufactured from high quality alloys of either copper or aluminium
- Provides an exposed attractive point on conductor systems hidden/embedded in the building's fabric, e.g. below the tiles of a pitched roof
- Supplied with setscrew for attachment of lightning conductors



Air termination

Free-standing air termination

Furse free-standing interception air rods are designed to protect rooftop mounted or exposed equipment, such as air conditioning units or photovoltaic panels, from a direct lightning strike.

Free-standing interception air rods are easily constructed from a small range of components including air rod or interception pole, support frame and concrete base, to create a complete unit which when connected to the air termination network provides a highly versatile and effective lightning protection solution.

Features & benefits

- Protects rooftop mounted equipment from direct lightning strikes
- Complies with IEC/BS EN 62305 standard
- Lightweight construction
- Corrosion resistant
- Quick and easy to assemble
- Available in a range of heights from 0.5 m to 10 m
- Range of frames and concrete weights for different wind zones
- Large protection zones
- Modular, versatile and robust

Note: installed interception air rods must have sufficient height to provide a clear zone of protection around the equipment to be protected, as defined by IEC/BS EN 62305-3 (see page 16/11). Further information can be found in the Furse Guide to BS EN 62305.

Interception air rod (0.5 m to 2 m height)

- Copper or aluminium air rod
- Circular concrete base
- Rod connects directly into base

Interception air rod (3 m to 4 m height)

- 2 piece interception pole with square support frame
- 4 square concrete bases (or 8 doublestacked for higher wind speeds)

Interception air rod (4.5 m to 5.5 m height)

- 2 piece interception pole with tripod support frame
- 3 circular concrete bases

Interception air rod (6 m to 8 m height)

- 3 piece interception pole with tripod support frame
- 6 circular concrete bases

Interception air rod (8 m to 10 m height)

- 3 piece interception pole with 'H' shaped support frame
- 10 circular concrete bases

All items sold as separates to form a complete free-standing air rod when combined at installation (see product selection guide on following page).

1 Interception air rod - 0.5 m to 2 m height | 2 Interception air rod - 3 m to 4 m height

3 Interception air rod - 4.5 m to 5.5 m height | 4 Interception air rod - 6 m to 8 m height | 5 Interception air rod - 8 m to 10 m height



Product selection

Free-standing air rod selection is based on two factors:

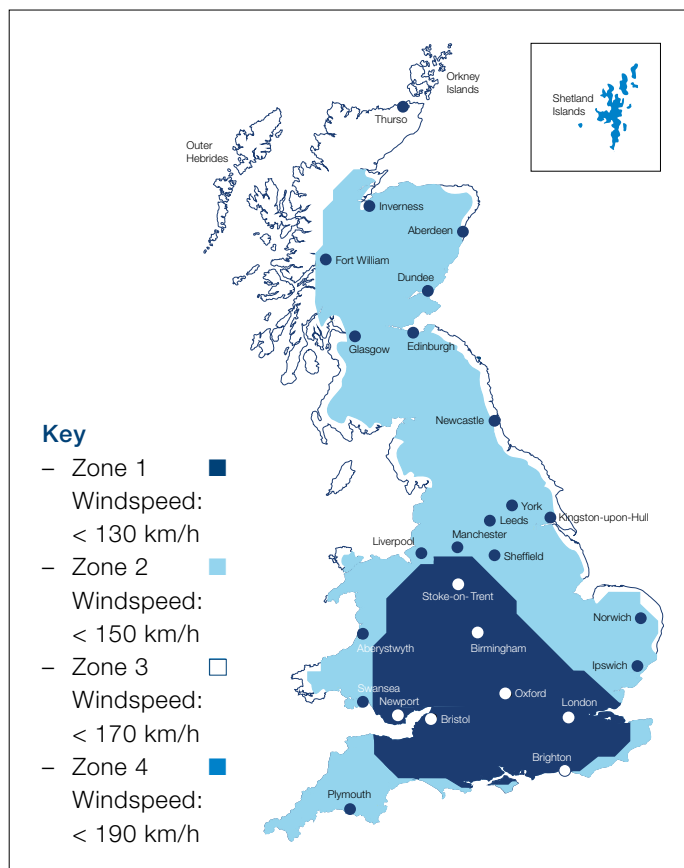
- Air rod height required to create the necessary protective zone around the equipment
- Anticipated wind loading at the installation

Wind loading is an important factor, especially for taller interception air rods as extreme weather can subject them to fatigue mechanisms.

For UK installations, the map featured right highlights four key wind zones from which the appropriate free-standing air rod can be established.

Relevant part numbers can then be determined through cross referencing wind loading with the height of air rod required in the table below.

For non-UK installations, please refer to available data for local wind conditions or contact your Furse representative to discuss your particular requirements.



UK wind zone map

Product selection guide - Free-standing air termination

Rod height (m)	Interception pole Part no.	Frame (where required) and base part no. for windspeeds			
		< 130 km/h	< 150 km/h	< 170 km/h	< 190 km/h
0.5	RA215 or RA015	103101-FU	103101-FU	103101-FU	103101-FU
1	RA225 or RA025	103101-FU	103101-FU	103101-FU	103101-FU
1.5	RA230 or RA030	103110-FU	103110-FU	103110-FU	103110-FU
2	RA240 or RA040	103110-FU	103110-FU	103110-FU	103110-FU
3	912000-FU	499000-FU / 4 x 499100-FU	499000-FU / 4 x 499100-FU	499000-FU / 4 x 499100-FU	499000-FU / 4 x 499100-FU
3.5	912001-FU	499000-FU / 4 x 499100-FU	499000-FU / 4 x 499100-FU	499000-FU / 4 x 499101-FU	499000-FU / 4 x 499101-FU
4	912002-FU	499000-FU / 4 x 499100-FU	499000-FU / 4 x 499101-FU	499000-FU / 8 x 499100-FU	499000-FU / 8 x 499101-FU
4.5	912003-FU	499005-FU / 3 x 103101-FU	499005-FU / 3 x 103110-FU	499005-FU / 3 x 103118-FU	499006-FU / 3 x 103103-FU
5	912004-FU	499005-FU / 3 x 103101-FU	499005-FU / 3 x 103110-FU	499005-FU / 3 x 103118-FU	499006-FU / 3 x 103103-FU
5.5	912005-FU	499005-FU / 3 x 103110-FU	499005-FU / 3 x 103118-FU	499006-FU / 6 x 103103-FU	499006-FU / 3 x 103103-FU
6	912006-FU	499006-FU / 6 x 103103-FU	499006-FU / 6 x 103103-FU	499006-FU / 6 x 103103-FU	499006-FU / 6 x 103101-FU
6.5	912007-FU	499006-FU / 6 x 103103-FU	499006-FU / 6 x 103103-FU	499006-FU / 6 x 103101-FU	499006-FU / 6 x 103118-FU
7	912008-FU	499006-FU / 6 x 103103-FU	499006-FU / 6 x 103101-FU	499006-FU / 6 x 103110-FU	On request
7.5	912009-FU	499006-FU / 6 x 103101-FU	499006-FU / 6 x 103110-FU	499006-FU / 6 x 103118-FU	On request
8	912010-FU	499006-FU / 6 x 103110-FU	499006-FU / 6 x 103118-FU	499007-FU / 10 x 103118-FU	On request
9	912011-FU	499007-FU / 10 x 103118-FU	499007-FU / 10 x 103118-FU	499007-FU / 10 x 103118-FU	On request
10	912013-FU	499007-FU / 10 x 103118-FU	499007-FU / 10 x 103118-FU	On request	On request

Air termination

Free-standing air termination

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Free-standing interception pole				
Part no.	Pole height (m)	Pole diameter (mm)	Pole construction	Weight each (kg)
912000-FU	3	Ø 10-42	2 piece	5.0
912001-FU	3.5	Ø 10-42	2 piece	5.5
912002-FU	4	Ø 10-42	2 piece	7.0
912003-FU	4.5	Ø 10-42	2 piece	9.2
912004-FU	5	Ø 10-42	2 piece	10.0
912005-FU	5.5	Ø 10-42	2 piece	10.6
912006-FU	6	Ø 10-60	3 piece	18.0
912007-FU	6.5	Ø 10-60	3 piece	19.0
912008-FU	7	Ø 10-60	3 piece	23.5
912009-FU	7.5	Ø 10-60	3 piece	26.0
912010-FU	8	Ø 10-60	3 piece	28.7
912011-FU	9	Ø 10-60	3 piece	30.5
912013-FU	10	Ø 10-60	3 piece	35.5

- Interception poles manufactured from stainless steel 304 with aluminium interception tip
- For construction of interception air rods from 3 to 10 m in height comprising interception pole, support frame and concrete bases
- Multi-component, stackable system with screw retention. Supplied with 3 terminal lugs for base frame connection

Air termination

Free-standing air termination



499000-FU



499005-FU

Interception pole position shown for illustration purposes. Pole not included.

Free-standing interception pole base frame

Part no.	Frame type	Frame dimension (mm)	Weight each (kg)
499000-FU	Square base	650 x 650	7
499005-FU	Tripod base	1350 x 1350	8
499006-FU	Tripod base	1850 x 1850	24.5
499007-FU	H shaped base	1850 x 1850	39.5

- Manufactured from 304 grade stainless steel
- Dimensions are approximate and include holding down bases.

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103103-FU



499100-FU

Free-standing interception pole base

Part no.	Description	Weight each (kg)
499100-FU	Square concrete base 300 x 300 x 60 mm	12
499101-FU	Square concrete base 300 x 300 x 80 mm	16
103103-FU	Circular concrete base with M16 insert	12
103101-FU	Circular concrete base with M16 insert	16
103110-FU	Circular concrete base with M16 insert	20
103118-FU	Circular concrete base with M16 insert	25

Accessories

103102-FU	Protective polyethylene tray for circular concrete blocks	0.4
919828-FU	Stainless steel clamp for connecting 25 x 3 mm copper tape to 5-19 mm thickness steel	0.55