

FSIAR16715

Air termination Free standing interception air rods



Free standing interception air rods

The new Furse interception air rods are designed to provide a fast and easy solution to protecting rooftop installations, like air conditioning units or solar panels, from a direct lightning strike, all in accordance with IEC/BS EN 62305:2006.

Offering a choice of copper, aluminium or stainless steel with aluminium tip, these free standing interception air rods use concrete blocks to secure them to the roof surface, minimising the time and effort needed by the installer.

Rod height and wind loading are the important factors when choosing an appropriate interception air rod. Wind loading becomes more relevant for taller interception air rods (3 m and above), where selection is by wind zone.

This publication provides all the key information and guidance necessary to assist with selection of the right free standing interception air rod for the task – ensuring maximum protection against lightning, with minimum effort.



Air termination

Free standing interception air rods

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.

The straightforward design of this multi-component system enables rapid installation of interception air rods to protect rooftop and exposed equipment from lightning damage.

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

Interception air rod (0.5 m to 2 m height)

- Copper or aluminium air rod
- Circular concrete base
- Rod connects directly into base
- Suitable for wind zones 1 – 4

Interception air rod (3 m to 4 m height)

- 2 piece interception pole
- Square support frame
- 4 square concrete bases (or 8 doublestacked for higher wind speeds)
- Select by rod height and wind zone

Interception air rod (4.5 m to 5.5 m height)

- 2 piece interception pole
- Tripod support frame
- 3 circular concrete bases
- Select by rod height and wind zone

Interception air rod (6 m to 8 m height)

- 3 piece interception pole
- Tripod support frame
- 6 circular concrete bases
- Select by rod height and wind zone

Interception air rod (8 m to 10 m height)

- 3 piece interception pole
- 'H' shaped support frame
- 10 circular concrete bases
- Select by rod height and wind zone

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



Air termination

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Determining the correct interception air rod for a particular installation is straightforward.

Firstly, establish the interception air rod height required to create a protective zone around the equipment.

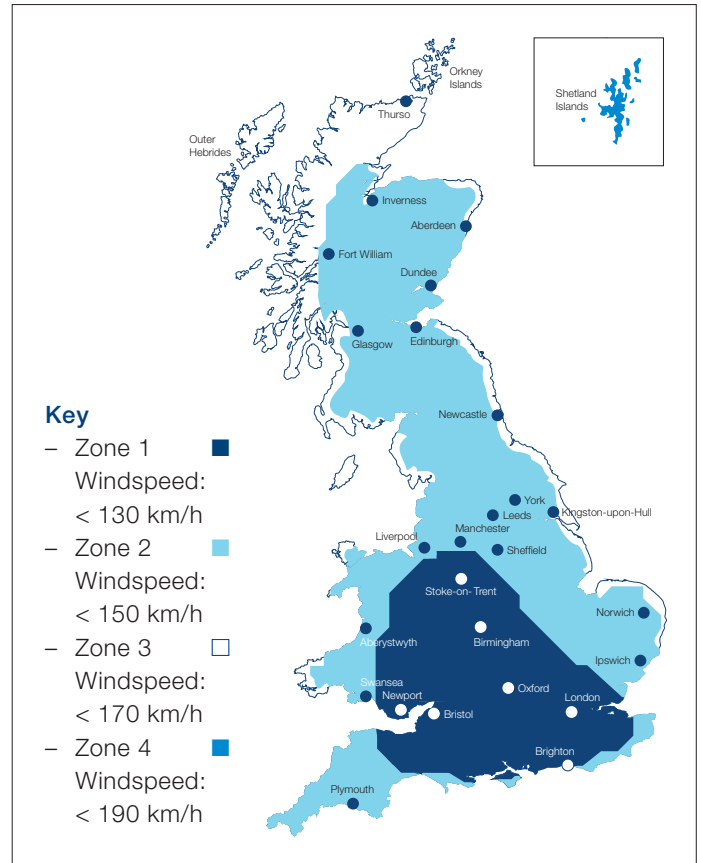
The diagram below and table overleaf give guidance on minimum interception air rod heights to protect equipment, for the respective Classes of Lightning Protection Systems (LPS), as defined within IEC/BS EN 62305:2006. This is relevant for all interception air rods from 0.5 m upwards.

Secondly, consider the wind loading at the installation. Wind loading becomes an important factor for taller interception air rods, since extreme weather can subject them to fatigue mechanisms.

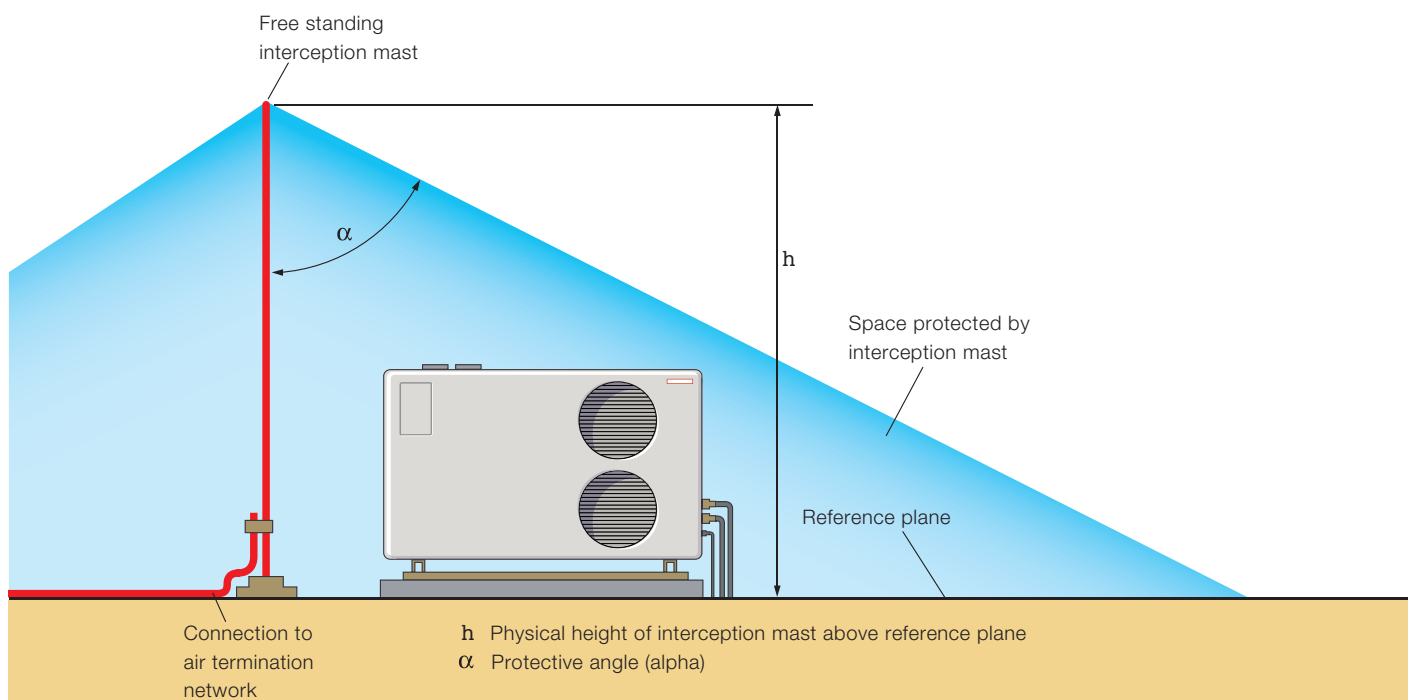
The map featured right establishes four wind zones for the UK, as highlighted by the wind zones key.

Protective angle diagram

The interception air rod must have sufficient height to provide a clear zone of protection around the equipment to be protected, as illustrated below.



For non UK wind zone information, please contact your local ABB Furse representative.



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Protective angle to protection radius comparison table

Use this table to calculate the minimum air rod height required to protect equipment

Height of interception air rod above reference plane (m)	LPS Class IV		LPS Class III		LPS Class II		LPS Class I	
	Angle (deg)	Radius (m)	Angle (deg)	Radius (m)	Angle (deg)	Radius (m)	Angle (deg)	Radius (m)
0.5	78.7	2.5	76.3	2.0	73.2	1.7	70.0	1.4
1	78.7	5.0	76.3	4.1	73.2	3.3	70.0	2.7
1.5	78.7	7.5	76.3	6.1	73.2	5.0	70.0	4.1
2	78.7	10.0	76.3	8.2	73.2	6.6	70.0	5.5
3	76.7	12.7	74.1	10.5	70.1	8.3	66.3	6.8
4	74.7	14.6	72.0	12.3	67.1	9.5	62.6	7.7
5	72.8	16.1	69.9	13.6	64.4	10.4	59.1	8.4
6	71.0	17.4	67.9	14.8	62.0	11.3	55.9	8.9
7	69.3	18.5	66.0	15.7	59.7	12.0	53.0	9.3
8	67.7	19.5	64.3	16.6	57.6	12.6	50.2	9.6
9	66.2	20.4	62.6	17.4	55.6	13.2	47.7	9.9
10	64.7	21.2	61.1	18.1	53.8	13.6	45.2	10.1

Free standing interception air rods from 0.5 – 2 m

These interception air rods comprise an air rod connecting directly into a circular concrete base. This air rod type is available up to 2 m in height and is non wind zone specific.

For this interception air rod type, both the air rod and concrete base must be ordered from the component table shown opposite.

Free standing interception air rods from 3 – 10 m

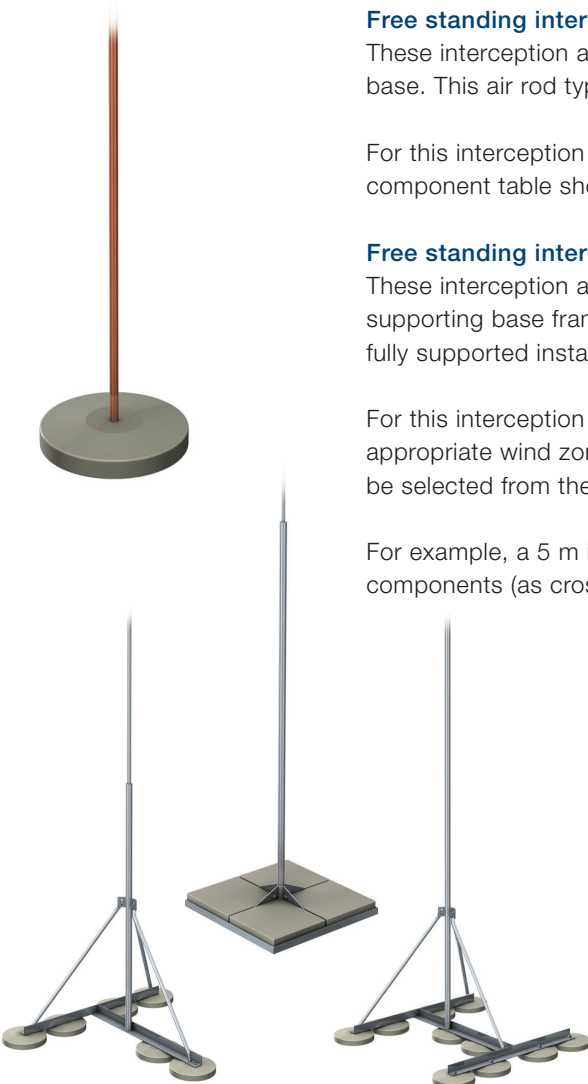
These interception air rods comprise multiple components including interception pole, supporting base frame plus concrete bases. All components need to be ordered to ensure a fully supported installation.

For this interception air rod type, both the minimum interception pole height and the appropriate wind zone need to be established. Once determined, the exact components can be selected from the relevant wind zone table below.

For example, a 5 m interception air rod at a Zone 2 location would require the following components (as cross-referenced to the Zone 2 table opposite):

Interception pole: 912004-FU **Base frame:** 499005-FU **Concrete bases:** 103110-FU x 3

Individual component details are provided on pages 5 & 6.



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Free standing interception air rods

Zones 1 - 4 wind speeds

Rod height (m)	Interception pole Part no.	Zone 1	Zone 2	Zone 3	Zone 4
		Wind speeds of < 130 km/h	Wind speeds of < 150 km/h	Wind speeds of < 170 km/h	Wind speeds of < 190 km/h
		Base frame / concrete base Part no.	Base frame / concrete base Part no.	Base frame / concrete base Part no.	Base frame / concrete base Part no.
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

Inception air rod (0.5 m - 2 m)

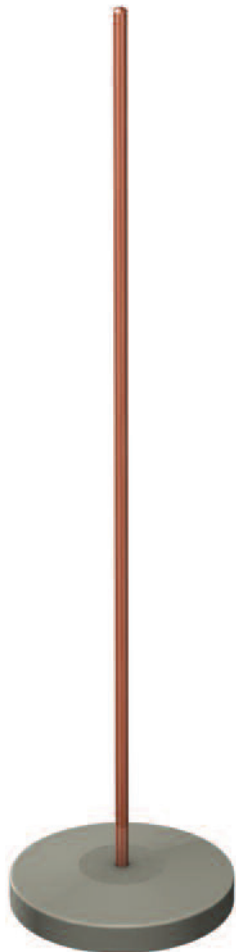
Rod Part no.	Base part no.	Rod diameter (mm)	Thread	Material	Weight each (kg)
RA215	103101-FU	Ø 15	M16	Copper	0.73
RA225	103101-FU	Ø 15	M16	Copper	1.51
RA230	103110-FU	Ø 15	M16	Copper	2.35
RA240	103110-FU	Ø 15	M16	Copper	3.00
RA015	103101-FU	Ø 15	M16	Aluminium	0.29
RA025	103101-FU	Ø 15	M16	Aluminium	0.53
RA030	103110-FU	Ø 15	M16	Aluminium	0.80
RA040	103110-FU	Ø 15	M16	Aluminium	1.06

- For construction of interception air rods up to 2 m height, where interception air rod connects directly into base via M16 insert. Interception air rod manufactured from high conductivity hard drawn copper or aluminium, with rolled threads. Supplied complete with locknut. Concrete base.

“Field Trials in the United States, carried out over many years 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.

Note: During high winds and extreme weather conditions air rods over 1 m height can be subjected to fatigue mechanisms. It is therefore recommended that additional supports are considered before installation.



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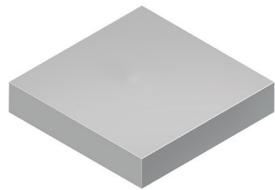
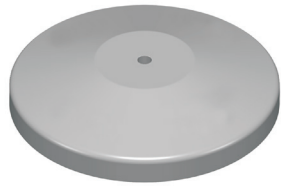
Free-standing interception pole

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

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

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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.

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

Note: all interception air rods should be installed as part of a comprehensive air termination network.

Furse, first for support

Furse is a world leading designer, manufacturer and supplier of lightning protection systems. Furse offers a wide range of products for lightning protection, including air terminals, conductors and earthing components to protect structures, and surge protection devices to protect electronic equipment.

Furse not only supplies market leading products, but also provides cutting edge design and technical support for lightning protection and earthing systems. For further details on our full range of services, please contact your local Furse office.

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