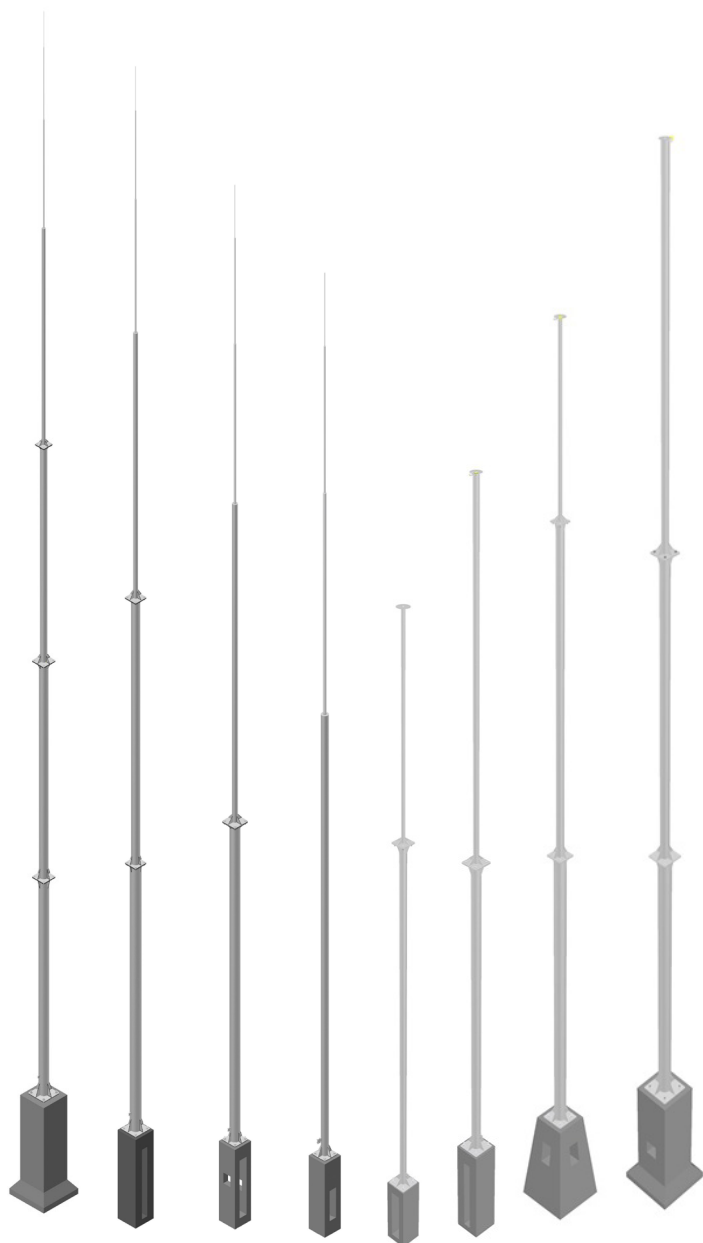


EFFECTIVE AND RELIABLE LIGHTNING PROTECTION



**VERTICAL
AIR TERMINALS
ON FOUNDATION**



group VII
air termination
system

AIR TERMINATION SYSTEM

They are used to protect equipment and metallic roof components by intercepting direct lightning strikes and safely conducting the lightning current into the lightning protection system.

AH Hardt Foundation-Mounted Vertical Air Terminals

– effective Protection for Facilities with Hazardous (Explosive) Areas

Safety in Compliance with Applicable Standards

The Building Act and PN-EN 62305 require the implementation of external lightning protection systems (LPS) on buildings, including facilities with explosion-hazard zones. The design of such systems is particularly challenging, as it requires maintaining adequate separation distances while meeting the stringent requirements of the applicable standards.

Why Choose Our Solution?

Conventional lightning protection components often do not meet the requirements of tall structures with complex geometries and high economic importance, such as biogas plants, fuel storage facilities, and explosive material storage sites. That is why AH Hardt offers vertical air terminals mounted on prefabricated foundations, available in heights of up to 30 m, which:

- comply with the requirements of PN-EN 62305-3:2025;
- are designed for lightning protection systems based on the rolling sphere method, ensuring the required separation distance;
- are manufactured from materials selected and verified through structural calculations in accordance with Eurocode, including verification for the Ultimate Limit State (ULS);
- provide reliable protection for facilities with hazardous and explosion-risk areas;
- enable the creation of extensive protection zones while minimizing the risk of dangerous flashovers.

Benefits for the investor:

- maximum security for the facility
- compliance with applicable regulations and standards
- a solution designed specifically for high-risk facilities



	Strefa	H m n.p.m	V _k m/s
 Strefa I	I	≤300	22
 Strefa II	I	≤500	25
	II	≤600	26
 Strefa III	III	≤950	30

VERTICAL AIR TERMINALS ON FOUNDATION

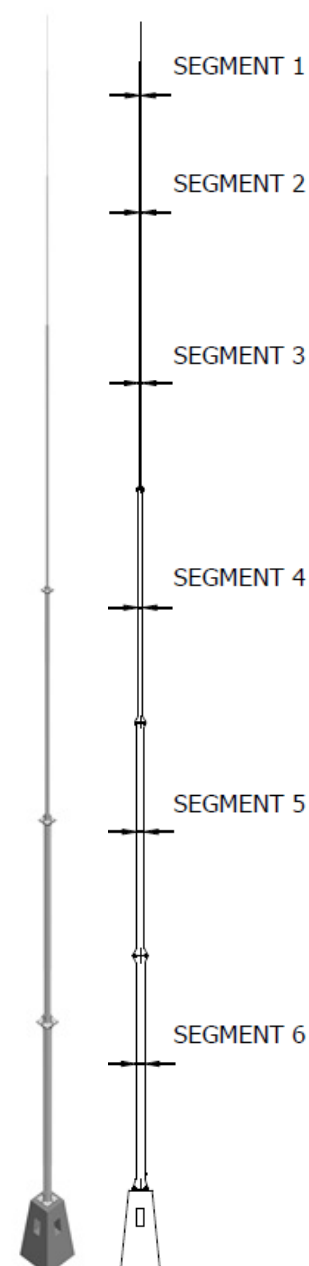
Vertical air terminal on foundation, wind zone I

The dimensions of the vertical air terminal were determined and verified for the Ultimate Limit State (ULS) using a safety factor of 1.5 and a basic wind speed of 22 m/s, in accordance with PN-EN 1991-1-4.

The vertical air terminal can be installed in Wind Zone I (up to 300 m above sea level) on any soil type, without restrictions.

material of vertical air terminal: hot-dip galvanised steel, aluminium

catalog No.	height [mm]	vertical air terminal components						foundation	weight [~kg]
		segment L6 [mm]	segment L5 [mm]	segment L4 [mm]	segment L3 [mm]	segment L2 [mm]	segment L1 [mm]		
AH070001F	6000	-	-	-		3000	3000	250x250x1000mm, 100kg	113
AH070002F	7500	-	-	-	1500	3000	3000		120
AH070003F	9000	-	-	-	3000	3000	3000		130
AH070004F	10500	-	-	-	4500	3000	3000		134
AH070006F	12000	-	-	-	6000	3000	3000		148
AH070008F	13500	-	-	6000	1500	3000	3000		179
AH070010F	15000	-	-	6000	3000	3000	3000		185
AH070012F	16500	-	-	6000	4500	3000	3000		192
AH070014F	18000	-	-	6000	6000	3000	3000	350x350x1500mm, 263kg	384
AH070016F	19500	-	6000	6000	1500	3000	3000		422
AH070018F	21000	-	6000	6000	3000	3000	3000	430x430x1600mm, 335kg	440
AH070020F	22500	-	6000	6000	4500	3000	3000		545
AH070022F	24000	-	6000	6000	6000	3000	3000	470x470x2000mm, 780kg	580
AH070024F	27000	6000	6000	6000	3000	3000	3000		1096
AH070026F	30000	6000	6000	6000	6000	3000	3000	600(1000) x600(1000) x2000mm, 2250kg	2663



VERTICAL AIR TERMINALS ON FOUNDATION

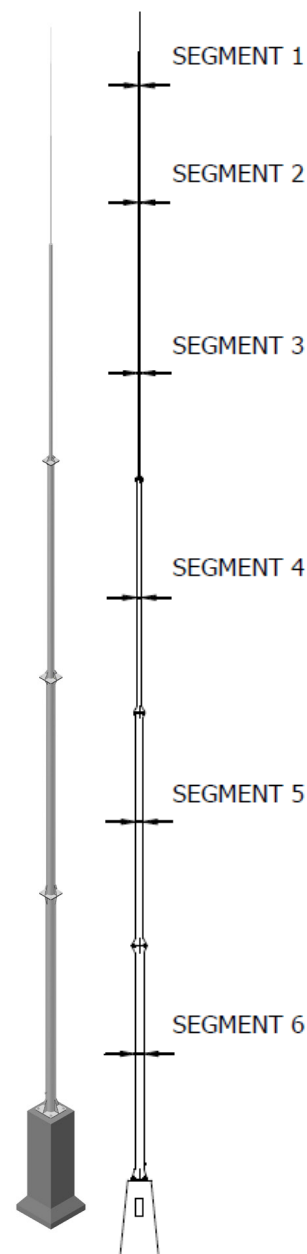
Vertical air terminal on foundation, wind zone I, II and III

The dimensions of the vertical air terminal were determined and verified for the Ultimate Limit State (ULS) using a safety factor of 1.5 and a basic wind speed of 30 m/s, in accordance with PN-EN 1991-1-4.

The vertical air terminal is suitable for installation in Wind Zones I, II and III (up to 905 m above sea level) and may be founded on any soil type without restrictions.

material of vertical air terminal: hot-dip galvanised steel, aluminium

catalog No.	height [mm]	vertical air terminal components						foundation	weight [~kg]
		segment L6 [mm]	segment L5 [mm]	segment L4 [mm]	segment L3 [mm]	segment L2 [mm]	segment L1 [mm]		
AH070001F	6000	-	-	-		3000	3000	250x250x1000mm, 100kg	113
AH070002F	7500	-	-	-	1500	3000	3000		120
AH070003F	9000	-	-	-	3000	3000	3000		130
AH070005F	10500	-	-	-	4500	3000	3000		152
AH070007F	12000	-	-	-	6000	3000	3000		165
AH070009F	13500	-	-	6000	1500	3000	3000	350x350x1500mm, 263kg	356
AH070011F	15000	-	-	6000	3000	3000	3000		374
AH070013F	16500	-	-	6000	4500	3000	3000		406
AH070015F	18000	-	-	6000	6000	3000	3000		453
AH070017F	19500	-	6000	6000	1500	3000	3000	430x430x1600mm, 335kg	553
AH070019F	21000	-	6000	6000	3000	3000	3000	470x470x2000mm, 780kg	1016
AH070021F	22500	-	6000	6000	4500	3000	3000		1076
AH070023F	24000	-	6000	6000	6000	3000	3000		1123
AH070025F	27000	6000	6000	6000	3000	3000	3000	600(1000) x600(1000) x2000mm, 2250kg	2641
AH070027F	30000	6000	6000	6000	6000	3000	3000	750(1100) x750(1100) x2750mm, 3850kg	4430



VERTICAL AIR TERMINALS ON CONCRETE FOUNDATIONS FOR ELEVATED TERMINALS

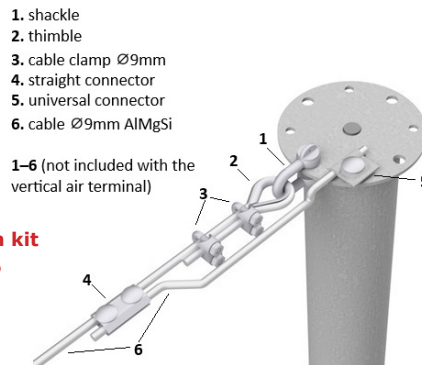
Vertical air terminal on concrete foundations for elevated terminals, wind zone I, II and III

The dimensions of the vertical air terminals were verified for the Ultimate Limit State (ULS) with a safety factor of 1.5 and a basic wind speed of 30 m/s in accordance with PN-EN 1991-1-4. Structural verification was carried out for the most unfavourable load case, considering the simultaneous action of two perpendicular catenary wires producing the maximum design loads on the vertical air terminals.

Vertical air terminals are suitable for installation in Wind Zones I, II and III, subject to the terrain category and the catenary wire configuration used (Table A). The systems may be installed on any type of ground, with no restrictions regarding soil conditions.

Material of vertical air terminal: hot-dip galvanised steel, aluminium

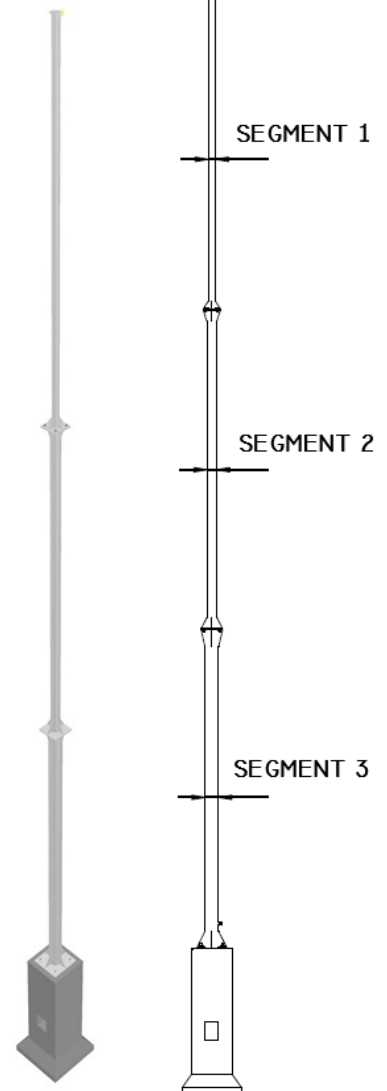
Detail A



**dedicated installation kit
cat. No. AH070001ZP**

catalog No.	height/ catenary wire height [mm]	vertical air terminal components			foundation	weight [~kg]	maximum catenary wire span
		segment L3 [mm]	segment L2 [mm]	segment L1 [mm]			
AH070028F	9000	-	6000	3000	350x350x1200mm, 220kg	311	table A
AH070029F	12000	-	6000	6000	470x470x2000mm, 780kg	968	
AH070030F	15000	6000	6000	3000	600(1000) x600(1000) x2000mm, 2250kg	2525	
AH070031F	18000	6000	6000	6000	750(1100) x750(1100) x2750mm, 3850kg	4280	

Detail A



ELEVATED AIR-TERMINATION SYSTEM INSTALLATION KIT

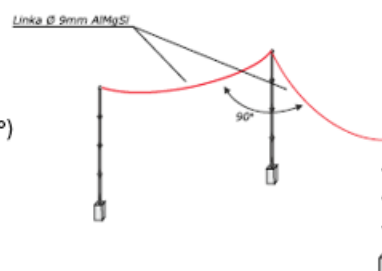
catalog No.	material	elements	comments
AH070001ZP	stainless steel galvanised steel	shackle (1pc.) cable thimble (1pc.) wire rope clamp (2pcs.) through connector (1pc.) universal connector (1pc.)	designed for use with AH070028-31 lightning air terminals the Ø9 mm aluminium wire rope is not included in the kit

TABLE A						
Land category	Wind speed [m/s]					
	22		26		30	
	A	B	A	B	A	B
	L _{max} [m]		L _{max} [m]		L _{max} [m]	
	AH070028F (H9)					
I	28	40	12	17	-	-
II	39	54	24	33	8	12
III	47	67	33	47	20	28
IV	50	70	45	63	32	45
	AH070029F (H12)					
I	26	37	20	28	15	21
II	30	43	24	34	18	26
III	35	49	27	39	22	31
IV	39	55	31	46	27	38
	AH070030F (H15)					
I	25	35	22	31	18	25
II	26	37	24	34	21	30
III	27	38	25	35	23	32
IV	28	39	26	37	25	35
	AH070031F (H18)					
I	19	27	15	21	10	19
II	20	29	17	24	14	20
III	22	31	19	27	16	23
IV	24	34	21	30	19	27

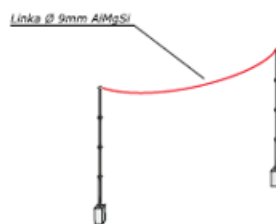
The values shown indicate the maximum permissible spans of catenary wires between two vertical air terminals, depending on the terrain category, design wind speed, and the selected catenary wire configuration (single-wire or double-wire system). The values provided in the table may be used as limit values when determining the spacing between vertical air terminals for specific site conditions.

$L_{\max}$ – maximum spacing between two vertical air terminals [m]

A – configuration with two perpendicular catenary wires (90°)



B – configuration with a single catenary wire





AH Hardt sp.j
Cholerzyn 215
32-060 Liszki
biuro@ah.com.pl
Poland

en.ah.com.pl