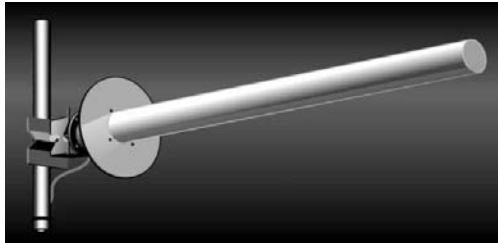


Other Directional Antennas

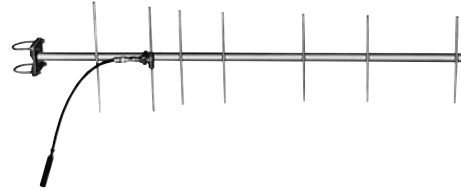
In this section you'll find directional antennas for special applications such as:

- The yagi antennas series available in various gains for 406 - 512MHz and 806 - 960MHz bands
- The APV series with field adjustable horizontal beamwidth designed to fill multiple horizontal pattern coverage requirements. This flexibility allows custom tailoring of cell coverage and avoids antenna replacement as sectors change. The reflector can be easily adjusted and provides coverage in six different settings; 46°, 60°, 78°, 90°, 105°, and 110° horizontal beamwidth.
- The AH series specially design for tunnel coverage thanks to the circular polarization. Antennas are available for cellular networks in low band, high band and dual band applications

For indoor antennas please refer to the WINS (Wireless Indoor Solutions) product line.



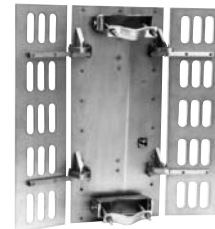
AH18-203013 Series



688* Series



10212 Series



APV8646* Series

Directional Yagi Antenna

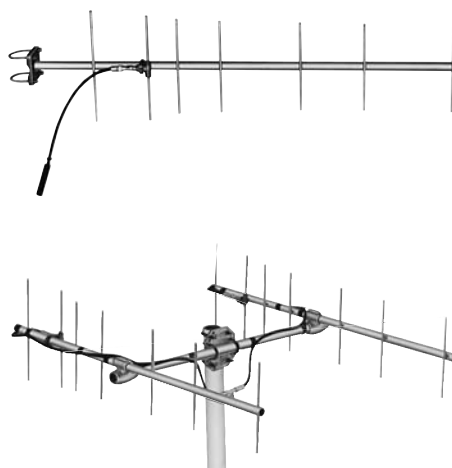
406-512 MHz

688* Series

These Yagi Antennas are constructed using 6061-T6 aluminum rod and pipe. Solid director and solid reflector elements are precision welded to their main boom, effectively eliminating misalignment problems during shipping, installation, or in service. Provision has been made in the mounting hardware for either vertical or horizontal polarization and stacking.

- Versatile

Ideal for point-to-point and SCADA systems.

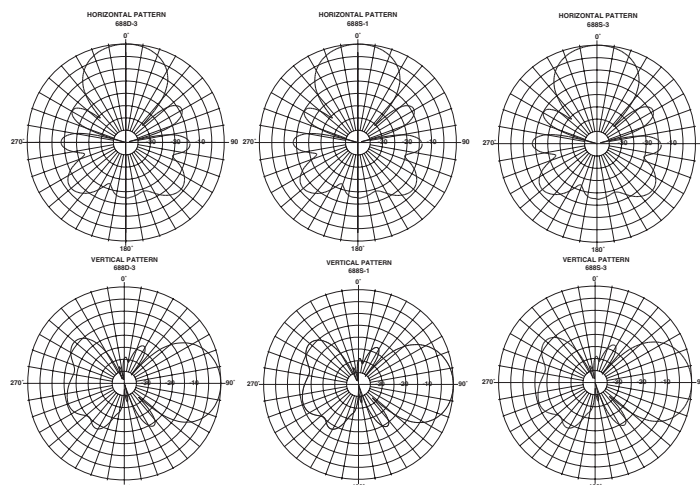


688* Series

ORDERING INFORMATION

Model Number	Frequency Range, MHz
688D-3	450-470
688S-1	406-420
688S-3	450-470

ELECTRICAL SPECIFICATIONS	688D-3	688S-1	688S-3
Frequency Range, MHz	450-470	406-420	450-470
Horizontal Pattern	Directional	Directional	Directional
Antenna Type	Yagi/Corner	Yagi/Corner	Yagi/Corner
Polarization	Vertical	Vertical	Vertical
Horizontal Beamwidth, deg	24	50	50
Vertical Beamwidth, deg	40	40	40
Electrical Downtilt, deg	0	0	0
Gain, dBi (dBd)	15.1 (13)	12.1 (10)	12.1 (10)
Front-To-Back Ratio, dB	15 (min.)	15 (min.)	15 (min.)
Bandwidth for 1.5:1 VSWR, MHz	20	20	20
Maximum Power Input, W	250	250	250
Lightning Protection	Direct Ground	Direct Ground	Direct Ground
Connector Type	RG8A/U N Male	RG8A/U N Male	RG8A/U N Male
Mount Type	Fixed	Fixed	Fixed
Mounting Hardware	237 Crossover Plate	U Bolts .3125 in. (.008 m)	U Bolts .3125 in. (.008 m)
MECHANICAL SPECIFICATIONS			
Dimensions - HxWxD, mm (in)	914 x 1041 x 102 (36 x 41 x 4)	406 x 1397 x 102 (16 x 55 x 4)	343 x 1270 x 102 (13.5 x 50 x 4)
Weight, kg (lb)	4 (8)	2 (3.75)	2 (3.75)
Max Wind Loading Area, m2 (ft2)	0.07 (0.75)	0.033 (0.35)	0.033 (0.35)
Rated Wind Speed, km/h (mph)	160 (100)	160 (100)	160 (100)
Side Thrust @ Rated Wind, N (lbf)	133 (30)	62 (14)	62 (14)
Torsional Moment @ Rated Wind on support pipe, N m (ft lbf)		33 (24.5)	33 (24.5)
Element Material	0.375 in. (10 mm) 6061 - T6 Aluminum Rod	0.375 in. (10 mm) 6061 - T6 Aluminum Rod	0.375 in. (10 mm) 6061 - T6 Aluminum Rod



10108* Series

- 6061-T6 Aluminum elements – welded solid rod for high strength, low weight and corrosion resistance.
- Broadband – duplex operation for cellular and trunking applications.
- Weatherproof radome – protects elements against severe weather conditions.

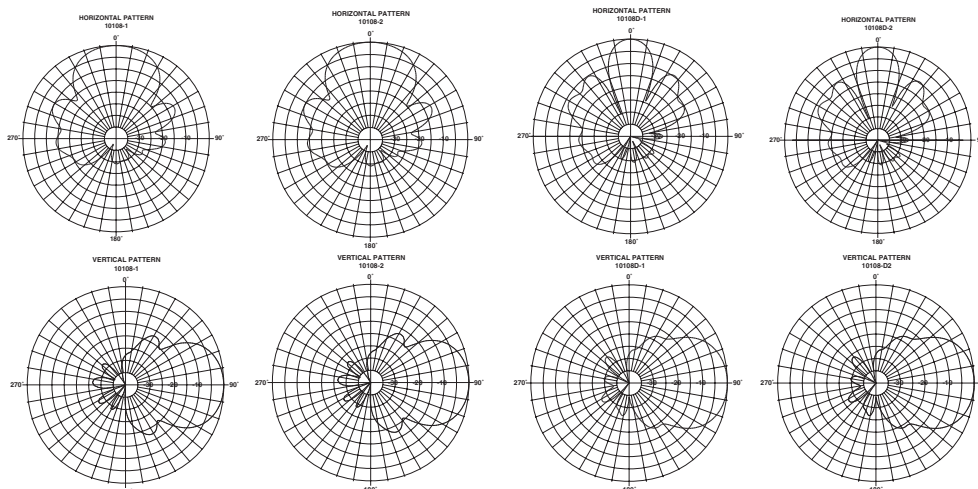
ORDERING INFORMATION

Model Number	Frequency Range, MHz
10108-1	806-896
10108-2	880-960
10108D-1	806-896
10108D-2	880-960



10108* Series

ELECTRICAL SPECIFICATIONS	10108-1	10108-2	10108D-1	10108D-2
Frequency Range, MHz	806-896	880-960	806-896	880-960
Horizontal Pattern	Directional	Directional	Directional	Directional
Antenna Type	Yagi/Corner	Yagi/Corner	Yagi/Corner	Yagi/Corner
Polarization	Vertical	Vertical	Vertical	Vertical
Horizontal Beamwidth, deg	50	50	22	22
Vertical Beamwidth, deg	42	42	42	42
Electrical Downtilt, deg	0	0	0	0
Gain, dBi (dBd)	12.1 (10)	12.1 (10)	15.1 (13)	15.1 (13)
Front-To-Back Ratio, dB	20	20	20	20
Bandwidth for 1.5:1 VSWR, MHz	80+	80+	80+	80+
Maximum Power Input, W	150	150	300	300
Lightning Protection	Direct Ground	Direct Ground	Direct Ground	Direct Ground
Connector Type	N Female	N Female	N Female	N Female
Mount Type	Fixed	Fixed	Fixed	Fixed
Mounting Hardware	Integral Plate w/U-bolts	Integral Plate w/U-bolts	Integral Plate w/U-bolts	Integral Plate w/U-bolts
MECHANICAL SPECIFICATIONS				
Dimensions - HxWxD, mm (in)	889 x 203 x 102 (35 x 8 x 4)	838 x 203 x 102 (33 x 8 x 4)	897 x 584 x 203 (35.3 x 23 x 8)	886 x 584 x 203 (34.9 x 23 x 8)
Weight, kg (lb)	2 (5)	2 (5)	6 (13)	6 (13)
Max Wind Loading Area, m ² (ft ²)	0.017 (0.18)	0.017 (0.18)	0.035 (0.38)	0.035 (0.38)
Rated Wind Speed, km/h (mph)	241 (150)	241 (150)	241 (150)	241 (150)
Side Thrust @ Rated Wind, N (lbf)	32 (7.2)	32 (7.2)	68 (15.2)	68 (15.2)
Torsional Moment @ Rated Wind on support pipe, N m (ft lbf)	13 (9.3)	13 (9.3)		
Element Material	6061 - T6 Aluminum	6061 - T6 Aluminum	6061 - T6 Aluminum	6061 - T6 Aluminum



Directional Low Gain Yagi Antenna

806-960 MHz

10212 Series

- Aluminum elements – welded solid rod for high strength, low weight and corrosion resistance.
- Broadband – duplex operation for cellular and trunking applications.
- ABS radome – protects the radiating elements against severe weather conditions.
- Small surface area – minimizes wind resistance and conserves tower loading capacity.



10212 Series

ORDERING INFORMATION

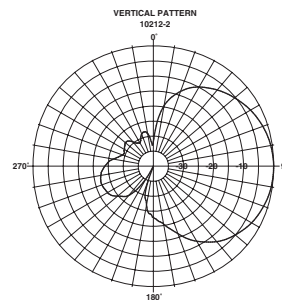
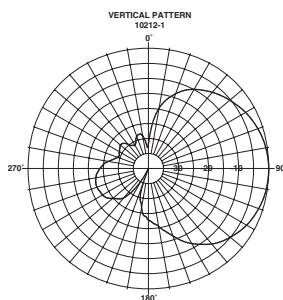
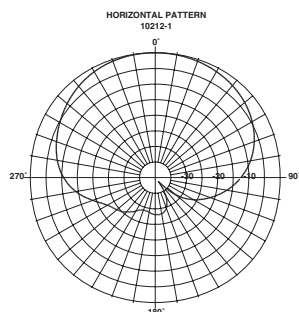
Model Number	Frequency Range, MHz
10212-1	806-896
10212-2	900-960

ELECTRICAL SPECIFICATIONS

	10212-1	10212-2
Frequency Range, MHz	806-896	900-960
Horizontal Pattern	Directional	Directional
Antenna Type	Yagi/Corner	Yagi/Corner
Polarization	Vertical	Vertical
Horizontal Beamwidth, deg	105	105
Vertical Beamwidth, deg	66	66
Electrical Downtilt, deg	0	0
Gain, dBi (dBd)	7.6 (5.5)	7.6 (5.5)
Front-To-Back Ratio, dB	20	20
Bandwidth for 1.5:1 VSWR, MHz	60+	60+
Maximum Power Input, W	150	150
Lightning Protection	Direct Ground	Direct Ground
Connector Type	N Female	N Female
Mount Type	Fixed	Fixed
Mounting Hardware	Integral Plate w/U-bolts	Integral Plate w/U-bolts

MECHANICAL SPECIFICATIONS

Dimensions - HxWxD, mm (in)	356 x 203 x 102 (14 x 8 x 4)	356 x 203 x 102 (14 x 8 x 4)
Weight, kg (lb)	1 (3)	1 (3)
Max Wind Loading Area, m2 (ft2)	0.017 (0.18)	0.017 (0.18)
Rated Wind Speed, km/h (mph)	241 (150)	241 (150)
Side Thrust @ Rated Wind, N (lbf)	72 (16.2)	72 (16.2)
Torsional Moment @ Rated Wind on support pipe, N m (ft lbf)	9 (6.6)	9 (6.6)
Element Material	.3125 in. 6061 - T6 Aluminum	.3125 in. 6061 - T6 Aluminum



APV8646* Series

- Flexibility – easily adapts to changing pattern needs without costly material and labor for antenna replacement.
- Extends asset life – expensive antenna “swapouts” are eliminated.
- Numbered holes in reflector – allows easy, precise field adjustments.
- Superior mechanical design – provides excellent IM protection.
- Front-to-back ratio – The high 35 dB front-to-back ratio is maintained at all H-plane settings.



APV8646* Series

ORDERING INFORMATION

Model Number	Frequency Range, MHz
APV864612	806-894
APV864615	806-894

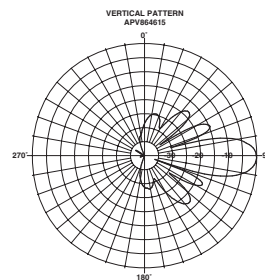
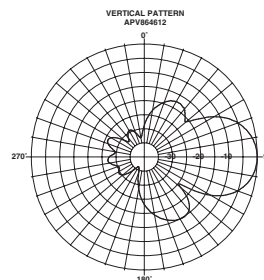
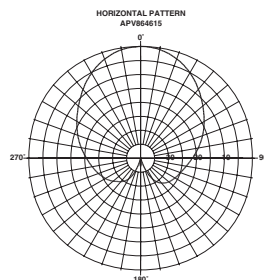
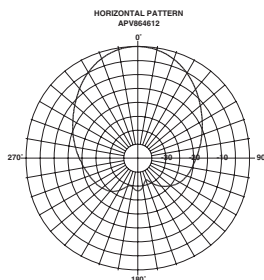
ELECTRICAL SPECIFICATIONS

	APV864612	APV864615
Frequency Range, MHz	806-894	806-894
Horizontal Pattern	Directional Variable	Directional Variable
Antenna Type	Panel Vertical Polarized	Panel Vertical Polarized
Polarization	Vertical	Vertical
Horizontal Beamwidth, deg	46, 60, 78, 90, 105, 110	46, 60, 78, 90, 105, 110
Vertical Beamwidth, deg	32	16
Electrical Downtilt, deg	0	0
Gain, dBi (dBd)	13.6, 12.4, 11.6, 10.8, 10.3, 10.1 (11.5, 10.3, 9.5, 8.7, 8.2, 8.0)	16.6, 15.5, 14.7, 13.9, 13.4, 13.1 (14.5, 13.4, 12.6, 11.8, 11.3, 11.0)
Front-To-Back Ratio, dB	35	35
Bandwidth for 1.5:1 VSWR, MHz	88	88
Maximum Power Input, W	500	500
3rd Order IMP @ 16 x 41 dBm, dBm	< -100	< -100
Lightning Protection	Direct Ground	Direct Ground
Connector Type	N Female	N Female
Mount Type	Fixed	Fixed
Mounting Hardware	10238-2 Clamp Set	10238-2 Clamp Set

MECHANICAL SPECIFICATIONS

Dimensions - HxWxD, mm (in)	610 x 635 x 114 (24 x 25 x 4.5)	1219 x 635 x 114 (48 x 25 x 4.5)
Weight w/o Mtg. Hardware, kg (lb)	Integral w/antenna	Integral w/antenna
Weight w/ Mtg. Hardware, kg (lb)	5.4 (12)	10.9 (24)
Max Wind Loading Area, m2 (ft2)	0.387 (4.17)	0.743 (8)
Rated Wind Speed, km/h (mph)	160 (100)	160 (100)
Maximum Thrust @ Rated Wind, N (lbf)	741 (166.67)	1423 (320)
Side Wind Loading Area, m2 (ft2)	0.07 (0.75)	0.387 (4.17)
Side Thrust @ Rated Wind, N (lbf)	133 (30)	743 (167)
Reflector Material	5052-H32 Aluminum Alloy	5052-H32 Aluminum Alloy
Radiating Element Material	5052-H32 Aluminum Alloy	5052-H32 Aluminum Alloy
Radome Material	Weather-Resistant Plastic	Weather-Resistant Plastic

* Note - The APV Series has adjustable side panels. See Table View for resulting Beamwidths and Gains.



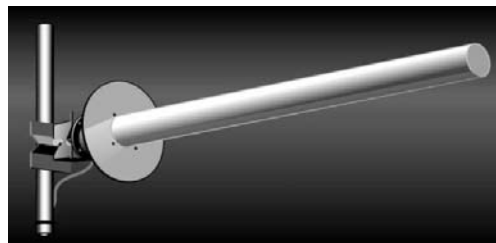
AH* Series

Applications

Repeater site configurations, tunnels and underground coverage, or difficult propagation environment

Benefits

- Ideal for repeater site managing tunnel coverage
- Ensures homogeneous coverage in tunnel independent of vehicular traffic
- Easy to hide in road environment
- Easy installation allows tight schedule installation
- To be preferred to YAGI solution because of sidelobe level suppression
- Very directive pattern eases isolation from mother cell antenna
- +/-6° vertical mechanical tilt for adaptation to special sites



Note:

Mounting pipe diameter – AH18-203013:
2 U-clamps of 35-65mm with FIX11.
2 U-clamps of 60-115 mm with FIX54.
For mechanical downtilt option, add FIX7.Electrical

Mounting pipe diameter – AH900:
FIX11 35-65mm, FIX7 option for mechanical downtilt.
FIX54 60-115mm, FIX7 option for mechanical downtilt.

ELECTRICAL SPECIFICATIONS	AH900	AH90-1811B	AH18-203013
Frequency Range, MHz	824-894 , 872-960	880-960 , 1710-1880	1710-1900 , 1900-2170
Polarization	Circular	Circular	Circular
Horizontal Beamwidth, deg	28	40 , 25	30 , 25
Vertical Beamwidth, deg	28		30 , 25
Electrical Downtilt, deg	0	0	+/-6
Gain, dBi (dBd)	15 (12.9) , 15.5 (13.4)	11.1 (9) , 13.5 (11.4)	13.7 (11.6) , 13.9 (11.8)
Front-To-Back Ratio, dB	> 20 (Typ.25)	> 20	> 25
VSWR	< 1.5:1	< 1.5:1	< 1.5:1
Maximum Power Input, W	400	200	400
Impedance	50	50	50
3rd Order IMP @ 2 x 43 dBm, dBc		> 150, > 150	> 150
Connector Type	7-16 DIN Female	(2) 7-16 DIN Female	7-16 DIN Female
Connector Location	Back	Back	Back
Mount Type	Fixed	Fixed	Fixed
Mounting Hardware	Fix 11	Fix 12	Fix 11
MECHANICAL SPECIFICATIONS			
Dimensions - HxWxD, mm (in)	1640 x 115 (64.53 x 4.53)	210 x 310 x 720 (8.26 x 12.2 x 28.33)	700 x 115 (27.55 x 4.53)
Weight w/o Mtg. Hardware, kg (lb)	5 (11)	8 (17.6)	3 (6.6)
Rated Wind Speed, km/h (mph)	160 (100)		160 (100)
Max Wind Loading Area, m2 (ft2)	0.19 (2.02)	0.07 (0.7)	0.08 (0.86)
Survival Wind Speed, km/h (mph)	200 (125)	200 (125)	200 (125)
Maximum Thrust @ Rated Wind, N (lbf)	18.6 (4.2)		18.6 (4.2)
Radiating Element	Copper	Cylindrical Support	Cylindrical Support
Material		Copper Wire Rolled	Copper Wire Rolled
Radome Material	Fiberglass	Fiberglass	Fiberglass
Radome Color	White, RAL9010	Black	Light Grey, RAL 7035
Packing Dimensions, HxWxD, mm (in)		980 x 435 x 335 (38.56 x 17.12 x 13.18)	