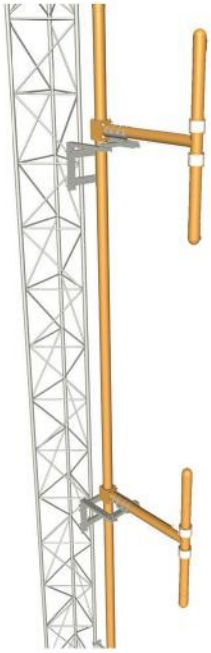
P300/P350 Series Vertically Polarized FM Antenna



Features

- Low VSWR, superior VSWR band width, minimal weather related VSWR problems
- Fully pressurized, internal feed, welded feed connections, series fed radiating elements
- High input power capacity
- Modular construction facilitates easy installation and repair; Custom modifications are available
- Rugged brass construction and stainless steel support brackets and hardware — Corrosion resistant construction
- Radomes or deicing heaters not normally required for radial ice less than 1/2 inch; however radomes and deicers are available
- Custom designed antenna supports

The P-300/P-350 vertically polarized FM dipole antenna may be used as a single element where a vertically polarized only orientation is desired or may be used in combination with any type of horizontally polarized antenna system.

The P-300/P-350 antenna consists of a large diameter radiating dipoles and interconnecting transmission line sections. The dipoles are electrically and mechanically identical. Each element is spaced one wave length apart with a coupling rigid transmission section. The input port to the antenna is a standard EIA, 50 ohm flange. When used in combination with horizontal elements the system is furnished with suitable power dividers and impedance matching networks between elements.

The P-300/P-350 dipole is a broad-band radiator (low Q) which minimizes cross-coupling between main and subcarrier channels. The P-300 dipole is fabricated from 85/15 brass which has excellent mechanical and electrical properties. This antenna is rugged, light-weight, and presents low wind load forces.

The P-350 vertically polarized FM dipole antenna is a higher power version of ERI's well known P-300 dipole antenna. Using the same quality materials and manufacturing process that has been used for decades, ERI has modified the design only by increasing the power handling capability of the individual elements. The single bay input power rating has been increased to 10 kW for the Series A and Series B dipoles, and 56 kW for the Series C dipoles. Multiple elements may be used to increase power gain and allowable input power levels. Null fill and beam tilt are also available.

Characteristics

Product Line:	P Series
Product Series:	P300 and P350 Series
Frequency Range:	88 - 108 MHz, Single frequency or multiplexed versions
Polarization:	Vertical
Azimuth:	± 1 dB in free space
VSWR at Input:	1.07:1 or less (with field matching) 1.25:1 or less (with top pole or LAMBDA™ Mounting System) 1.50:1 or less (top mounted without field matching)

P-350 Series (left) and P-300 (right)

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Electrical Specifications

Type Number	Power Gain	dB Gain	Input	Input Feed Configuration	Input Power Rating *kW*	Bay to Bay Spacing
P300-1AE	0.9500	-0.2200	3 1/8 inch 50 Ohm Female	End	3	Full Wave
P300-2AE	1.9700	2.9400	3 1/8 inch 50 Ohm Female	End	6	Full Wave
P300-2AC	1.9700	2.9400	3 1/8 inch 50 Ohm Female	Center	6	Full Wave
P300-3BE	3.1200	4.9400	3 1/8 inch 50 Ohm Female	End	9	Full Wave
P300-3AC	3.1200	4.9400	3 1/8 inch 50 Ohm Female	Off Center	9	Full Wave
P300-4AE	4.2000	6.2300	3 1/8 inch 50 Ohm Female	End	12	Full Wave
P300-4AC	4.2000	6.2300	3 1/8 inch 50 Ohm Female	Center	12	Full Wave
P300-5AE	5.3100	7.2500	3 1/8 inch 50 Ohm Female	End	15	Full Wave
P300-5AC	5.3100	7.2500	3 1/8 inch 50 Ohm Female	Off Center	15	Full Wave
P300-6AC	6.3900	8.0600	3 1/8 inch 50 Ohm Female	Center	18	Full Wave
P300-7AC	7.5000	8.7500	3 1/8 inch 50 Ohm Female	Off Center	18	Full Wave
P300-8AC	8.5700	9.3300	3 1/8 inch 50 Ohm Female	Center	24	Full Wave
P300-9AC	9.7600	9.8900	3 1/8 inch 50 Ohm Female	Center	24	Full Wave
P300-10AC	10.9600	10.4000	3 1/8 inch 50 Ohm Female	Center	30	Full Wave
P300-11AC	11.8700	10.7400	3 1/8 inch 50 Ohm Female	Center	30	Full Wave
P300-12AC	13.2000	11.2000	3 1/8 inch 50 Ohm Female	Center	36	Full Wave

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Mechanical Specifications

Type Number	Weight								C_aA_a							
	Antenna		Antenna & 1/2 in. radial ice		Antenna & radome		Antenna, radome, 1/2 in. radial ice		Antenna		Antenna & 1/2 in. radial ice		Antenna with radome		Antenna, radome, & 1/2 in. radial ice	
	lbm	*kg*	*lbm*	*kg*	*lbm*	*kg*	*lbm*	*kg*	*ft2*	*m2*	*ft2*	*m2*	*ft2*	*m2*	*ft2*	*m2*
P300-1AE	55.00	24.95	94.00	42.64	70.00	31.75	144.00	65.32	4.70	0.44	6.30	0.59	8.10	0.75	9.80	0.91
P300-2AE	116.00	52.62	198.00	89.81	146.00	66.22	298.00	135.17	10.30	0.96	13.70	1.27	17.10	1.59	20.70	1.92
P300-2AC	146.00	66.22	233.00	105.69	176.00	79.83	333.00	151.05	11.10	1.03	14.90	1.38	17.90	1.66	21.90	2.03
P300-3AE	177.00	80.29	302.00	136.98	222.00	100.70	452.00	205.02	15.90	1.48	21.10	1.96	26.10	2.42	31.60	2.94
P300-3AC	207.00	93.89	337.00	152.86	252.00	114.31	487.00	220.90	16.70	1.55	22.30	2.07	26.90	2.50	32.80	3.05
P300-4AE	238.00	107.95	406.00	184.16	298.00	135.17	606.00	274.88	21.50	2.00	28.50	2.65	35.10	3.26	42.50	3.95
P300-4AC	268.00	121.56	441.00	200.03	328.00	148.78	641.00	290.75	22.30	2.07	29.70	2.76	35.90	3.34	43.70	4.06
P300-5AE	299.00	135.62	510.00	231.33	374.00	169.64	760.00	344.73	27.10	2.52	35.90	3.34	44.10	4.10	53.40	4.96
P300-5AC	329.00	149.23	545.00	247.21	404.00	183.25	795.00	360.61	27.9	2.52	37.10	3.45	44.9	4.17	54.6	5.07
P300-6AC	390.00	176.90	648.00	293.93	480.00	217.72	948.00	430.01	33.50	3.11	44.50	4.13	53.90	5.01	65.50	6.09
P300-7AC	482.00	218.63	803.00	364.24	594.00	269.43	1178.00	534.33	41.9	3.89	55.7	5.17	67.4	6.26	81.9	7.61
P300-8AC	512.00	232.24	855.00	387.82	632.00	286.67	1255.00	569.26	44.60	4.14	59.40	5.52	71.80	6.67	87.40	8.12
P300-9AC	573.00	259.91	1503.00	681.75	1112.00	504.39	2203.00	999.26	78.10	7.26	103.90	9.65	125.70	11.68	152.90	14.20
P300-10AC	634.00	287.58	2151.00	975.68	1592.00	722.12	3151.00	1429.27	111.60	10.37	148.40	13.79	179.60	16.69	218.40	20.29
P300-11AC	695.00	315.25	2799.00	1269.60	2072.00	939.84	4099.00	1859.27	145.10	13.48	192.90	17.92	233.50	21.69	283.90	26.38
P300-12AC	756.00	342.92	3447.00	1563.53	2552.00	1157.57	5047.00	2289.28	178.60	16.59	237.40	22.06	287.40	26.70	349.40	32.46

Mechanical Notes:

(1) Antenna weight and wind load are approximate values for a typical structure assuming no top load. Final design loads will vary for specific projects and should be verified by an ERI representative.

(2) Wind loads are calculated in accordance with the ANSI/TIA/EIA 222-F standard. Weight and effective wind area (C_aA_a) includes antenna, inner transmission feed and typical support mast and mounting brackets with no ice.

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Electrical Specifications

Type Number	Power Gain	dB Gain	Input	Input Feed Configuration	Input Power Rating *k W*	Bay to Bay Spacing
P350-1AE	0.9500	-0.2200	3 1/8 inch 50 Ohm Female	End	10	Full Wave
P350-2AE	1.9700	2.9400	3 1/8 inch 50 Ohm Female	End	20	Full Wave
P350-2AC	1.9700	2.9400	3 1/8 inch 50 Ohm Female	Center	20	Full Wave
P350-3AE	3.1200	4.9400	3 1/8 inch 50 Ohm Female	End	30	Full Wave
P350-3AC	3.1200	4.9400	3 1/8 inch 50 Ohm Female	Off Center	30	Full Wave
P350-4AE	4.2000	6.2300	3 1/8 inch 50 Ohm Female	End	32	Full Wave
P350-4AC	4.2000	6.2300	3 1/8 inch 50 Ohm Female	Center	39	Full Wave
P350-5AE	5.3100	7.2500	3 1/8 inch 50 Ohm Female	End	32	Full Wave
P350-5AC	5.3100	7.2500	3 1/8 inch 50 Ohm Female	Off Center	39	Full Wave
P350-6AC	6.3900	8.0600	3 1/8 inch 50 Ohm Female	Center	39	Full Wave
P350-7AC	7.5000	8.7500	3 1/8 inch 50 Ohm Female	Off Center	39	Full Wave
P350-8AC	8.5700	9.3300	3 1/8 inch 50 Ohm Female	Center	39	Full Wave
P350-9AC	9.7600	9.8900	3 1/8 inch 50 Ohm Female	Off Center	39	Full Wave
P350-10AC	10.9600	10.4000	3 1/8 inch 50 Ohm Female	Center	39	Full Wave
P350-11AC	11.8700	10.7400	3 1/8 inch 50 Ohm Female	Off Center	39	Full Wave
P350-12AC	13.2000	11.2000	3 1/8 inch 50 Ohm Female	Center	39	Full Wave

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Mechanical Specifications

Type Number	Weight								C_aA_a							
	Antenna		Antenna & 1/2 in. radial ice		Antenna & radome		Antenna, radome, 1/2 in. radial ice		Antenna		Antenna & 1/2 in. radial ice		Antenna with radome		Antenna, radome, & 1/2 in. radial ice	
	lbm	*kg*	*lbm*	*kg*	*lbm*	*kg*	*lbm*	*kg*	*ft2*	*m2*	*ft2*	*m2*	*ft2*	*m2*	*ft2*	*m2*
P350-1AE	58.00	26.31	100.00	45.36	73.00	33.11	150.00	68.04	5.00	0.46	6.30	0.59	8.40	0.78	9.80	0.91
P350-2AE	122.00	55.34	208.00	94.35	152.00	68.95	308.00	139.71	10.70	0.99	13.90	1.29	17.50	1.63	20.90	1.94
P350-2AC	152.00	68.95	243.00	110.22	182.00	82.55	343.00	155.58	11.50	1.07	15.10	1.40	18.30	1.70	22.10	2.05
P350-3AE	186.00	84.37	316.00	143.34	231.00	104.78	466.00	211.37	16.40	1.52	21.50	2.00	26.60	2.47	32.00	2.97
P350-4AE	250.00	113.40	424.00	192.32	310.00	140.61	624.00	283.04	22.10	2.05	29.10	2.70	35.70	3.32	43.10	4.00
P350-4AC	280.00	127.00	459.00	208.20	340.00	154.22	659.00	298.91	22.90	2.13	30.30	2.81	36.50	3.39	44.30	4.11
P350-5AE	314.00	142.43	532.00	241.31	389.00	176.45	782.0	354.71	27.80	2.58	36.70	3.41	44.80	4.16	54.20	5.04
P350-6AC	408.00	185.07	675.00	306.18	498.00	225.89	975.00	442.25	34.30	3.19	45.50	4.23	54.70	5.08	66.50	6.18
P350-6AE	378.00	171.46	640.00	290.30	468.00	212.28	940.00	426.377	33.50	3.11	44.30	4.12	53.90	5.00	65.30	6.07
P350-7AE	442.00	200.49	748.00	216.82	547.00	248.12	1098.00	498.04	39.20	3.64	51.90	4.82	63.00	5.85	76.40	7.10
P350-8AE	506.00	229.52	856.00	388.28	626.00	283.95	1256.00	569.71	44.90	4.17	59.50	5.53	72.10	6.70	87.50	8.13
P350-8AC	536.00	243.13	891.00	404.15	656.00	297.56	1291.00	858.59	45.70	4.25	60.70	5.64	72.90	6.77	88.70	8.24
P350-10AC	664.00	301.19	1107.00	502.13	814.00	369.22	1607.00	728.92	57.10	5.30	75.90	7.05	91.10	8.46	110.90	10.30
P350-12AC	792.00	359.25	1323.00	600.10	972.00	440.89	1923.00	872.23	68.50	6.36	91.10	8.46	109.30	10.15	133.10	12.37

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Mounting Notes

Each antenna mounting bracket is designed and fabricated to match the tower and mounting specifications of the purchaser. The antenna can be side or pole mounted. Custom designed and fabricated antenna support poles and tower sections are also available from ERI. The horizontal radiation pattern of the P-300/P-350 dipole is omni-directional within +/- 1 db in free space. The extent of deviation from a circular pattern will vary with the type and size of the supporting structure. For the best possible circular pattern we recommend the antenna system be mounted on an ERI antenna support pole. Structural design information is required if the P-300/P-350 system is to be placed on another manufacturer's support structure.

Utilize the ERI Advantage

Combine an ERI antenna with an ERI Mounting Structure, Pattern Measurement and Installation. Assure yourself of the best antenna/tower interaction. ERI's Pattern Measurement service will provide the crucial answers concerning the relationship between the antenna mounting orientation and antenna pattern.

ERI Mounting Sections are designed to achieve optimum antenna performance while reducing weight and wind loads. Only ERI can offer you an antenna/tower/installation package that will achieve your highest expectations in a demanding FM market. Contact Electronics Research for complete electrical and mechanical specifications.

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Ordering Information

Antenna arrays of eight (8) bays or less are fed at the bottom bay through a six (6) foot matching section. Nine (9) or more elements are center fed through the six (6) foot matching section piece and a coaxial "T" connector. If the support structure has a large face dimension, several P-300/P-350 dipoles may be mounted around the periphery to obtain 360° coverage. This configuration would be fed in parallel by individual, equal-length feed lines from a power divider. ERI recommends a tower/antenna analysis if this option is employed.

Type Number Definition

a - b c d	
a	Model: P300 or P350
b	Number of Bays
c	Input Power Rating: A = Low Power
d	Input Feed Configuration: E = End fed, C = Center fed

Example: P300-12BC

Description: ERI Model P300 Series FM Antenna, twelve bay, medium power, center fed.

Options*

- Anti-Rotation Brackets (per bay)
- Quarter wave stub (per system)
- Beam tilt (per system) [center fed antennas only]
- First null fill (per system) [center fed antennas only]
- Second null fill (per system) [center fed antennas only]
- Radomes
- Export packing (per bay)

*Options available at additional cost.

Anti-rotation brackets (per bay) required for:

Angle leg members

P300 and P350 Series: No Radomes - Leg sizes 3-inches (76 mm) or less or angle members.

Radomed Antennas - Leg sizes 5-inches (127 mm) or less

Anti-rotation brackets, steel, (per bay) for tower faces up to 42- inches (1067-millimeters) center to center, one required per bay.

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