DCR-S / HDR-S

CIRCULARLY POLARIZED FM ANTENNA

The DCR-S/HDR-S has been used extensively for high power broadband applications. The "S" series antennas are circularly polarized with a power rating of 28 kW for a single bay and is available in stacked arrays of up to 16 bays with an input rating to 120 kW. For situations where ice formation is common, the arrays can be equipped with optional electrical deicers or radomes. The antenna is DC grounded and does not require shorting stubs. Each array is supplied with an input fine matcher for field optimization. For reduced downward radiation, the use of a custom feed design allows for shorter spacings in a series fed configuration.

High Power Input Capability

The DCR-S and HDR-S were designed to handle high input power ideally suited for multiplexing. The "S" series antenna is available with optional 4-1/16" feed system having a power input rating (for five or more bays) of 70 kW. Arrays w/ 6-1/8" inputs are also available.

Multi-Station Operation

The wide bandwith and the high power input capability of the "S" series antenna permits optional multi-station operation.

Beam Tilt and Null Fill

Beam tilt and/or null fill are available options. These options are ordinarily specified for arrays of 8 bays or more. Even numbered arrays of six sections and fewer may include one or both options and typically are designed as a center-fed array. The "S" series antenna is available in directional arrays which are custom-built to the needs of the station.

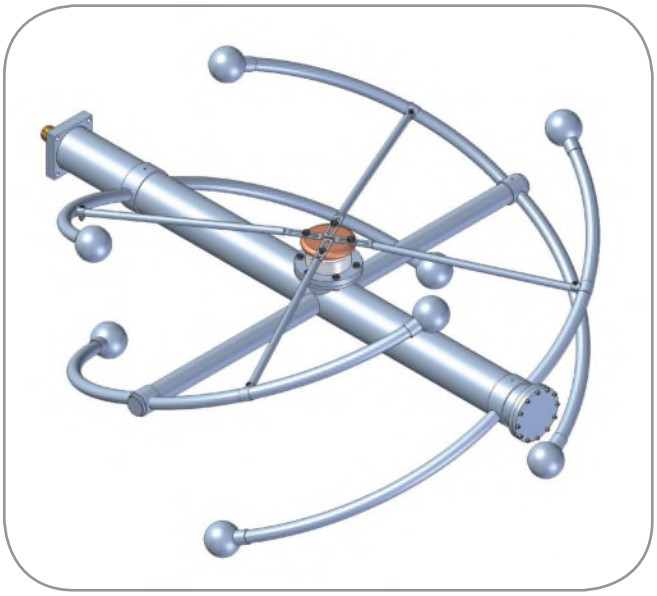
Quadrapole Design

The four-dipole-per-element design offers the advantage of more symmetrical azimuth pattern performance and H/V ratio than dual dipole designs, providing more rubust coverage.

Low downward radiation options available — contact factory.

General Specifications

Polarization:	Circular
Pattern Circularity in Free Space:	±1dB
VSWR (max) @ Input, without field trim:	
Top Mount:	1.2:1
Side Mount:	1.5:1
VSWR (max) @ Input, with field trim (Top or Side Mount):	
(± 200 KHz):	1.05:1
(± 400 KHz):	1.10:1
Input:	3-1/8" EIA
Bay Dimensions (without Radome):	
Diameter:	36" (915 mm)
Height:	29" (737 mm)
Bay Dimensions (with Radome):	
Diameter:	44" (1118 mm)
Height:	34" (864 mm)



DCR-S: Right Hand Circularly Polarized

HDR-S: Left Hand Circularly Polarized

- DCR-S/HDR-S IBOC compatible
- Interleaved provides -40dB of isolation
- Stainless steel elements
- Ideal for Class B and C stations
- 28 kW for a single bay
- Fine matcher included
- Radomes or integral deicers optional
- VSWR field adjustable
- High power bays for multiplexing high power signals
- High peak power ratings

Dielectric®

AN SPX DIVISION

22 Tower Road
Raymond, Maine 04071 USA
800.341.9678
Email: dcsales@spx.com • www.dielectric.com

DCR-S / HDR-S

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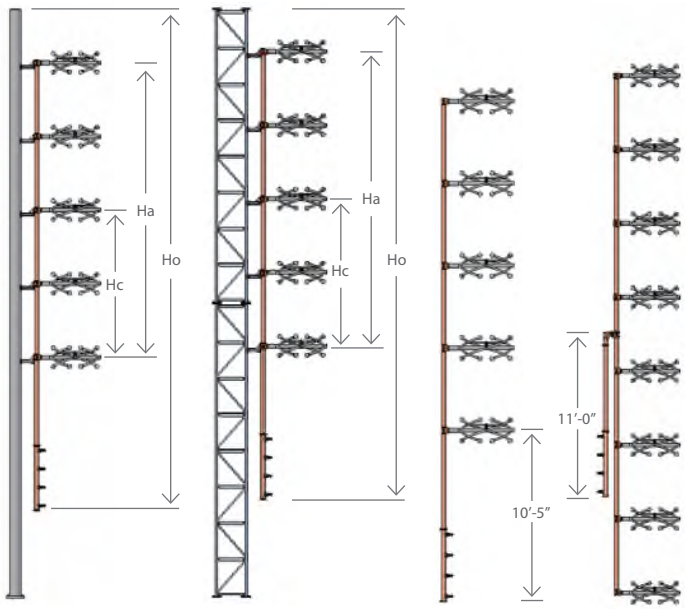
Mounting Dimensions



Pole Mounting | Side Mounting | End-Fed 1-7 Sections | Center-Fed

Ha = Antenna aperture length
Hc = Antenna center of radiation
Ho = Antenna overall length needed for mounting
Ha = 984/f x [s(x-1)]
Hc = Ha/2
$Ho_{end\text{-}fed} = Ha + 5'_{top} + 10' - 5''_{bottom}$
$Ho_{center\text{-}fed} = Ha + 5'_{top} + 5'_{bottom}$

All dimensions in feet
f = frequency in megahertz (MHz)
s = bay spacing in fraction of wavelengths
example: ½ wavelength = .5
x = number of antenna bays

Note: Antennas ordered w/beam tilt and/or null fill are supplied with center feed and require and even number of bays

DEICER SPECIFICATIONS:
Power (nominal per bay): 1200 W

Voltage: may be wired for 208 V or 240 V service, single or three phase.

Optional: Ice sensor and deicer controller

Electrical Specifications

ANTENNA TYPE (DCR-S OR HDR-S)	GAIN POLARIZATION[1] λ SPACING		½ λ SPACING		POWER RATING kW[3]
	POWER GAIN	dB	POWER GAIN	dB	
DCR-S1 HDR-S1	0.46	-3.37			28
DCR-S2 HDR-S2	1.0	0	0.7	-1.55	40
DCR-S3 HDR-S3	1.5	1.76	1.0	0	40
DCR-S4 HDR-S4	2.1	3.22	1.3	1.14	40
DCR-S5 HDR-S5	2.7	4.31	1.6	1.76	40
DCR-S6 HDR-S6	3.2	5.05	1.8	2.55	40
DCR-S7 HDR-S7	3.8	5.80	2.1	3.22	40
DCR-S8 HDR-S8	4.3	6.34	2.3	3.62	40
DCR-S10 HDR-S10	5.5	7.40	2.9	4.62	40
DCR-S12 HDR-S12	6.6	8.2	3.5	5.44	40

NOTES
1. RMS gain data is given relative to dipole. Values are for midband and include standard harness configurations. Actual gain will vay depending on feed system, frequency, null fill, and beam tilt.
2. Average power ratings are nominal @ 40°C ambient. Assumes constant pressurization with dry air or nitrogen. Ratings may vary based on specific feed system design and local conditions.
3. Higher power ratings and custom feed systems may be available on request.
4. Antenna components and feed harnesses are optimized for FM channels of interest
5. Specs. are for a single DCR-S antenna array or HDR-S antenna array, not both.

Mechanical Specifications

ANTENNA TYPE (DCR-S OR HDR-S)	# OF BAYS	WITHOUT RADOMES WEIGHT LBS (KG) λ SPACING	WITHOUT RADOMES WEIGHT LBS (KG) ½ λ SPACING	WITHOUT RADOMES CaAc ft² (m²) λ SPACING	WITHOUT RADOMES CaAc ft² (m²) ½ λ SPACING	WITH RADOMES WEIGHT LBS (KG) λ SPACING	WITH RADOMES WEIGHT LBS (KG) ½ λ SPACING	WITH RADOMES CaAc ft² (m²) λ SPACING	WITH RADOMES CaAc ft² (m²) ½ λ SPACING	WITH DEICERS WEIGHT LBS (KG) λ SPACING	WITH DEICERS WEIGHT LBS (KG) ½ λ SPACING	WITH DEICERS CaAc ft² (m²) λ SPACING	WITH DEICERS CaAc ft² (m²) ½ λ SPACING
DCR-S1 HDR-S1	1	198 (90)		7.2 (.7)		335(152)		11.2 (1.0)		197 (89)		7.7 (.7)	
DCR-S2 HDR-S2	2	322 (146)	307 (139)	14.1 (1.3)	12.6 (1.2)	607 (275)	592 (269)	22.1 (2.1)	20.6 (1.9)	332 (151)	317 (144)	15.1 (1.4)	13.6 (1.3)
DCR-S3 HDR-S3	3	451 (205)	421 (191)	21 (2.0)	18 (1.7)	879 (394)	849 (385)	33.0 (3.1)	30.0 (2.8)	466 (211)	436 (198)	22.5 (2.1)	19.5 (1.8)
DCR-S4 HDR-S4	4	581 (264)	536 (243)	27.9 (2.6)	23.4 (2.2)	1151 (522)	1106 (502)	43.9 (4.1)	39.4 (3.7)	601 (273)	556 (252)	29.9 (2.8)	25.4 (2.4)
DCR-S5 HDR-S5	5	710 (322)	650 (295)	34.8 (3.2)	28.8 (2.7)	1423 (645)	1363 (618)	54.9 (5.1)	48.9 (4.5)	735 (333)	675 (306)	37.3 (3.5)	31.3 (2.9)
DCR-S6 HDR-S6	6	840 (381)	765 (347)	41.7 (3.9)	34.2 (3.2)	1695 (769)	1620 (733)	65.8 (6.1)	58.3 (5.4)	870 (395)	795 (361)	44.7 (4.2)	37.2 (3.5)
DCR-S7 HDR-S7	7	969 (440)	879 (399)	48.5 (4.5)	39.5 (3.7)	1967 (892)	1877 (851)	76.6 (7.1)	67.6 (6.3)	1004 (455)	914 (415)	52 (4.8)	43 (4.0)
DCR-S8 HDR-S8	8	1142 (518)	1037(470)	55.7 (5.2)	45.2 (4.2)	2239 (1016)	2134 (968)	87.8 (8.2)	77.3 (7.2)	1182 (536)	1033 (468)	59.7 (5.5)	49.2 (4.6)
DCR-S10 HDR-S10	10	1401 (635)	1266 (574)	69.5 (6.5)	56 (5.2)	2753 (1249)	2618 (1188)	110.0 (10.2)	96.5 (9.0)	1451 (658)	1286 (583)	74.5 (6.9)	61 (5.7)
DCR-S12 HDR-S12	12	1660 (753)	1495 (678)	83.3 (7.7)	66.8 (6.2)	3267 (1481)	3102 (1407)	131.0 (12.2)	115.0 (10.6)	1720 (780)	1555 (705)	89.3 (8.3)	72.8 (6.8)

NOTES
1. CaAc and weight includes bays and standard extension brackets for mounting. Excludes custom mounts. For antennas that include pattern studies, contact factory for additional information.
2. Dimensions are for antennas at 98.0 MHz and can vary ± 10% across the band.
3. Ice shields are strongly recommended for areas subject to icing conditions. Dielectric is not responsible for antenna damage caused by impact from falling ice.
4. Calculated area (CaAc) expressed in TIA/EIA-222-F standard.
5. Specs. are for a single DCR-S antenna array or HDR-S antenna array, not both.