

DCR-S/HDR-S

- DCR-M: Right Hand Circularly Polarized
- HDR-M: Left Hand Circularly Polarized
- DCR-M/HDR-M 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

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 are 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 with 6 1/8” inputs are also available.

Multi-Station Operation

The wide bandwidth and the high-power input capability of the “S” series antenna permits optional multi-station operation.

Beam Tilt & 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.

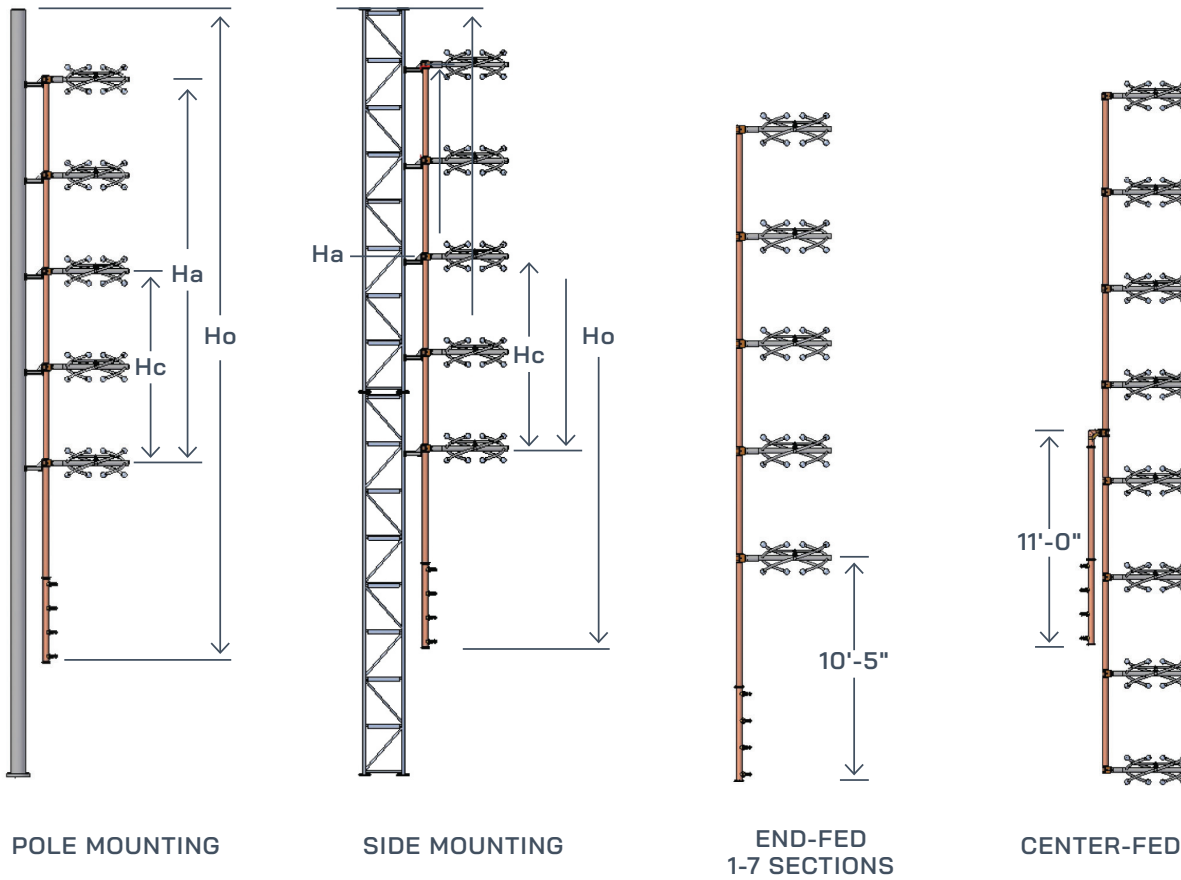
Quadrapole Design

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 robust coverage. Low downward radiation options available—contact factory.

General Specifications

Polarization	Pattern Circulatory in Free Space	VSWR (max) at Input w/o field trim	VSWR (max) at Input w/ field trim, Top or Side Mounted	Input	Bay Dimensions (w/o Radome)	Bay Dimensions (w/ Radome)
Circular	± 1 dB	Top Mounted 1.2:1	(+/-200 KHz): 1.05:1	3 1/8" EIA	Diameter 36" (915 mm)	Diameter 44" (1,118 mm)
		Side Mounted 1.5:1	(+/-400 KHz): 1.10:1		Height 29" (737 mm)	Height 34" (864 mm)

Mounting Dimensions



H_a = Antenna aperture length
 H_c = Antenna center of radiation
 H_o = Antenna overall length needed for mounting
 $H_a = 984/f \times [s(x-1)]$
 $H_c = H_a/2$
 $H_o \text{ end-fed} = H_a + 5' \text{ top} + 10' - 5" \text{ bottom}$
 $H_o \text{ center-fed} = H_a + 5' \text{ top} + 5' \text{ bottom}$

All dimensions in feet
 f = frequency in megahertz (MHz)
 s = bay spacing in fraction of wavelengths
 example: $\frac{1}{2}$ wavelength = .5
 x = number of antenna bays

Note: Antennas ordered w/beam tilt and/or null fill are supplied with center feed and require 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.

Mechanical Specifications

Antenna Type DCR-S or HDR-S	# of Bays	Without Randomes			
		Weight lbs (kg)		CaAc ft ² (m ³)	
		λ Spaced	1/2 λ Spaced	λ Spaced	1/2 λ Spaced
DCR-S1 HDR-S1	1	198 (90)	—	7.2 (.7)	—
DCR-S2 HDR-S2	2	322 (146)	307 (139)	14.1 (1.3)	12.6 (1.2)
DCR-S3 HDR-S3	3	451 (205)	421 (191)	21 (2.0)	18 (1.7)
DCR-S4 HDR-S4	4	581 (264)	536 (243)	27.9 (2.6)	23.4 (2.2)
DCR-S5 HDR-S5	5	710 (322)	650 (295)	34.8 (3.2)	28.8 (2.7)
DCR-S6 HDR-S6	6	840 (381)	765 (347)	41.7 (3.9)	34.2 (3.2)
DCR-S7 HDR-S7	7	969 (440)	879 (399)	48.5 (4.5)	39.5 (3.7)
DCR-S8 HDR-S8	8	1142 (518)	1037 (470)	55.7 (5.2)	45.2 (4.2)
DCR-S10 HDR-S10	10	1401 (635)	1266 (574)	69.5 (6.5)	56 (5.2)
DCR-S12 HDR-S12	12	1660 (753)	1495 (678)	83.3 (7.7)	66.8 (6.2)

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.

With Randomes				With Deicers			
Weight lbs (kg)		CaAc ft ² (m ³)		Weight lbs (kg)		CaAc ft ² (m ³)	
λ Spaced	$\frac{1}{2} \lambda$ Spaced	λ Spaced	$\frac{1}{2} \lambda$ Spaced	λ Spaced	$\frac{1}{2} \lambda$ Spaced	λ Spaced	$\frac{1}{2} \lambda$ Spaced
335 (152)	—	11.2 (1.0)	—	197 (89)	—	7.7 (.7)	—
607 (275)	592 (269)	22.1 (2.1)	20.6 (1.9)	332 (151)	317 (144)	15.1 (1.4)	13.6 (1.3)
879 (394)	849 (385)	33.0 (3.1)	30.0 (2.8)	466 (211)	436 (198)	22.5 (2.1)	19.5 (1.8)
1151 (522)	1106 (502)	43.9 (4.1)	39.4 (3.7)	601 (273)	556 (252)	29.9 (2.8)	25.4 (2.4)
1423 (645)	1363 (618)	54.9 (5.1)	48.9 (4.5)	735 (333)	675 (306)	37.3 (3.5)	31.3 (2.9)
1695 (769)	1620 (733)	65.8 (6.1)	58.3 (5.4)	870 (395)	795 (361)	44.7 (4.2)	37.2 (3.5)
1967 (892)	1877 (851)	76.6 (7.1)	67.6 (6.3)	1004 (455)	914 (415)	52 (4.8)	43 (4.0)
2239 (1016)	2134 (968)	87.8 (8.2)	77.3 (7.2)	1182 (536)	1033 (468)	59.7 (5.5)	49.2 (4.6)
2753 (1249)	2618 (1188)	110.0 (10.2)	96.5 (9.0)	1451 (658)	1286 (583)	74.5 (6.9)	61 (5.7)
3267 (1481)	3102 (1407)	131.0 (12.2)	115.0 (10.6)	1720 (780)	1555 (705)	89.3 (8.3)	72.8 (6.8)

Electrical Specifications

Antenna Type DCR-S or HDR-S	Gain Polarization Spacing ¹				Power Rating kW ³
	λ Spacing		$\frac{1}{2} \lambda$ Spacing		
	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 vary depending on feed system, frequency, null fill, and beam tilt.
2. Average power ratings are nominal @ 40°C (104°F) 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. Specifications are for a single DCR-S antenna array or HDR-S antenna array, not both.