



DCR-M / HDR-M

- DCR-M: Right Hand Circularly Polarized
- HDR-M: Left Hand Circularly Polarized
- DCR-M/HDR-M IBOC compatible
- Interleaved provides -40 dB of isolation
- Stainless steel elements
- Ideal for Class B and C stations
- 18 kW for a single bay
- Fine matcher (optional)
- Radomes or integral deicers optional
- VSWR field adjustable

The DCR-M/HDR-M has been used extensively for high-power broadband applications. The “M” series antennas are circularly polarized with a power rating of 18 kW for a single bay and are available in stacked arrays of up to 16 bays with an input rating to 40 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. Fine matcher for field optimization is optional. 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 “M” 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 bandwidth of high-power input capability of the “M” 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 “M” series antenna is available in directional arrays which are custom-built to the needs of the station.

Quadrupole Design

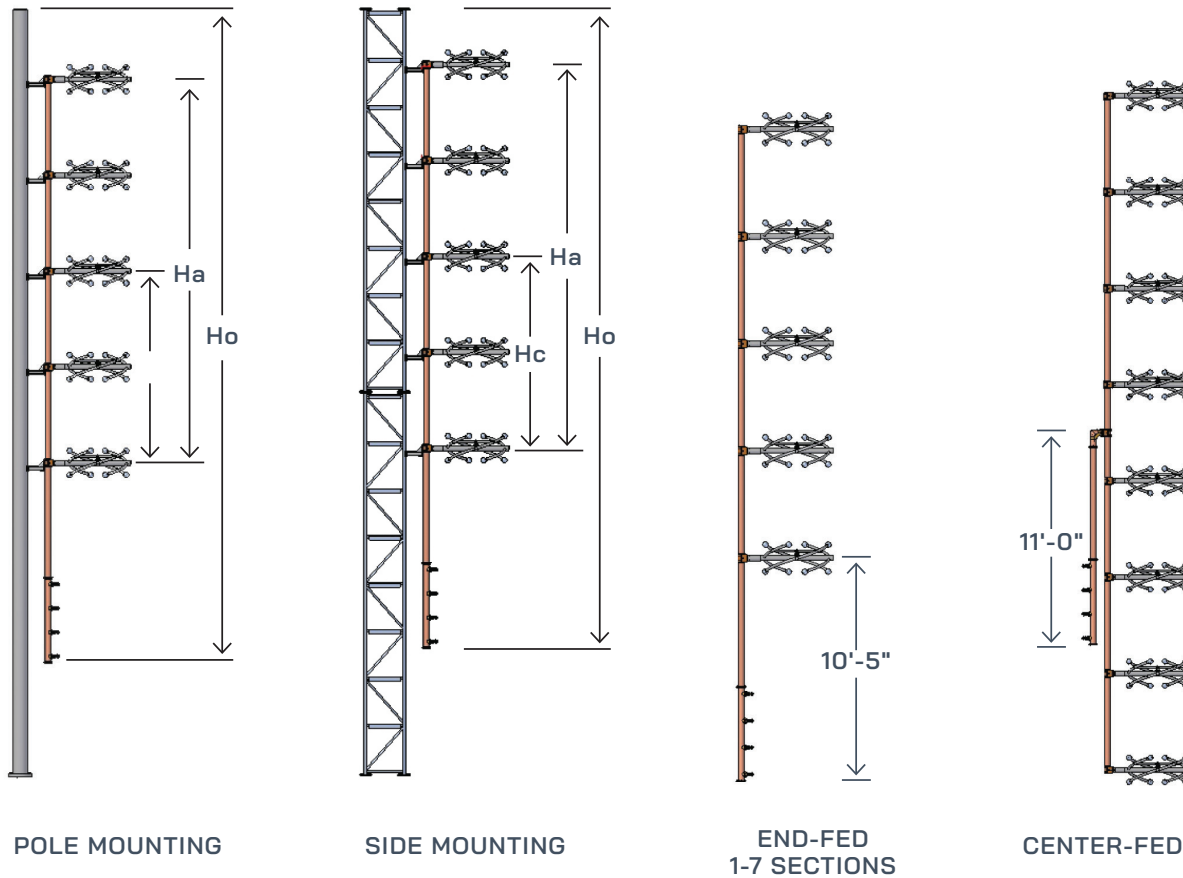
The four-dipole-per-element design offers the advantage of more symmetrical azimuth pattern performance and H/V ratio than dual dipole designs, providing more robust coverage.

Low downward radiation options available—contact factory.

General Specifications

Polarization	Circular
Pattern Circularity in Free Space	± 1 dB
VSWR (max.) at Input, w/o field trim	Top Mounted: 1.2:1 / Side Mounted: 1.5:1
VSWR (max.) at Input, w/ field trim	Top Mounted: (±200 KHz) 1.05:1 / Side Mounted: (±400 KHz) 1.10:1
Bay Dimensions (w/o Radome)	Diameter: 36" (915mm) / Height: 29" (737mm)
Bay Dimensions (w/ Radome)	Diameter: 44" (1118mm) / Height: 34" (864mm)

Mounting Dimensions



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

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 an even number of bays.

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	# of Bays	Without Radomes			
		Weight lbs (kg)		EPA (ft ²)	
		λ Spaced	$\frac{1}{2} \lambda$ Spaced	λ Spaced	$\frac{1}{2} \lambda$ Spaced
DCRM-1 HCRM-1	1	121		5	
DCRM-2 HCRM-2	2	207	200	9.9	8.4
DCRM-3 HCRM-3	3	294	280	14.7	11.8
DCRM-4 HCRM-4	4	380	360	19.6	15.2
DCRM-5 HCRM-5	5	467	440	24.4	18.6
DCRM-6 HCRM-6	6	553	519	29.3	22
DCRM-7 HCRM-7	7	640	599	34.1	25.4
DCRM-8 HCRM-8	8	726	679	39	28.8
DCRM-10 HCRM-10	10	900	839	48.7	35.5
DCRM-12 HCRM-12	12	1073	998	58.4	42.3

Loads per ANSI/TIA 222G, reference frequency 98Mhz, end fed antenna

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 $\pm 10\%$ 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-G standard.
5. Specs. are for a single DCR-M antenna array or HDR-M antenna array, not both.

With Radomes				With Deicers			
Weight lbs (kg)		EPA (ft ²)		Weight lbs (kg)		EPA (ft ²)	
λ Spaced	$\frac{1}{2} \lambda$ Spaced	λ Spaced	$\frac{1}{2} \lambda$ Spaced	λ Spaced	$\frac{1}{2} \lambda$ Spaced	λ Spaced	
174		7.3		126		6.3	
314	207	14.5	13	217	210	12.6	10.9
454	440	21.6	18.7	309	295	18.9	15.4
594	574	28.7	24.4	400	380	25.2	20
734	707	35.9	30	492	465	31.5	24.6
874	840	43	35.7	583	549	37.8	29.2
1014	973	50.2	41.4	675	634	44.1	33.7
1154	1106	57.3	47.1	766	719	50.5	38.3
1434	1373	71.6	58.4	950	889	63.1	47.5
1713	1639	85.9	69.8	1133	1058	75.7	56.6

Electrical Specifications

Gain Polarization Spacing ¹					
Antenna Type DCR-S or HDR-S	λ Spacing		1/2 λ Spacing		Power Rating kW ³
	Power Gain	dB	Power Gain	dB	
DCR-M1 HDR-M1	0.46	-3.37	—	—	18
DCR-M2 HDR-M2	1.0	0	0.7	-1.55	36
DCR-M3 HDR-M3	1.5	1.76	1.0	0	40
DCR-M4 HDR-M4	2.1	3.22	1.3	1.14	40
DCR-M5 HDR-M5	2.7	4.31	1.6	1.76	40
DCR-M6 HDR-M6	3.2	5.05	1.8	2.55	40
DCR-M7 HDR-M7	3.8	5.80	2.1	3.22	40
DCR-M8 HDR-M8	4.3	6.34	2.3	3.62	40
DCR-M10 HDR-M10	5.5	7.40	2.9	4.62	40
DCR-M12 HDR-M12	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 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-M antenna array or HDR-M antenna array, not both.