



## HDFDM

- Very low aerodynamic area
- Ideal for candelabra applications
- High-power ratings
- In dual mode, IBOC injected by high level combining or common amplification
- Galvanized steel, brass and copper construction for excellent reliability
- Low downward radiation
- Near perfect omni-directional pattern performance
- 10 MHz bandwidth
- Designed for -10 dB IBOC signals

The HDFDM is legendary for its reliability and proven performance. The HDFDM antenna offers ideal characteristics for FM stations desiring the advantages of top mounting and combined station operation and is designed for digital, analog, or both types of service.

The Dielectric HDFDM radiator consists of a patented truncated helix dipole radiator fed in phase and mounted three around on a structural pole mast. The vertical stubs on each element cancel the effect of the vertical pole support structure and help shape the element patterns for a near perfect omnidirectional azimuth pattern. Each layer of dipoles is specifically tuned and patterns are optimized in conjunction with the supporting pole.

The HDFDM dipole element is supported off a mounting pole, which also serves as a mounting for the balun assembly. This results in an aerodynamic design that significantly reduces weight and windload requirements of the supporting structure. This often represents substantial savings in support structure cost compared with panel style designs. The HDFDM also has very low radar cross-sectional area, which makes it the antenna of choice for candelabra installations because it has a minimal effect on other antennas mounted on adjacent corners of the tower at the same height.

Multi-station FM operation where two or more stations share the same antenna has increased in popularity due to the inherent cost savings that can be realized. Multi-station operation with excellent pattern circularity can be achieved with the wide bandwidth characteristics the HDFDM antenna offers. These characteristics are achieved through the use of broadband radiating elements. The HDFDM is recommended for applications of up to 10 MHz in bandwidth. For greater bandwidth requirements refer to Dielectric's HDFMVee and HDCBR antennas or consult Dielectric with your specific needs.

For omnidirectional operation, the shape of the HDFDM's azimuth pattern will vary from omni by as little as +/-1.5 dB for top mount configurations, putting it a step ahead of panel type antennas. The unique design of the HDFDM antenna offers precise control of the elevation pattern, which is critical in mobile receiver reception. Beam tilt and null fill may be provided by means of standard phase and power distribution techniques. Consult Dielectric for specific applications.

The HDFDM antenna is designed for high-power operation enabling station flexibility in transmission system design. Our conservative power rating ensures adequate design headroom for long-term reliability. The Dielectric HDFDM antenna can be configured with one or two input ports. This feature allows the top and bottom portions of a typical five- or seven-bay antenna to be fed by two independent transmission lines. Should standby operation be necessary, one half of the antenna may be used at reduced power.

FM panel antennas are generally utilized in a number of specific situations:

- To achieve better azimuth patterns on larger towers than typical side-mounted element arrays can provide.
- High-power and/or very directional applications
- Multi-station or shared facilities.

All antennas are designed specific to the particular needs of the station(s) and to tower limitations. Dielectric will assist the station or consultant in choosing the proper design and configuration to achieve project goals.

All panel antennas contain elements that are DC grounded for lightning protection.

## Mechanical Specifications

Antenna Type	# of Bays	Weight lbs (kg)	Windload lbs (kg)	Projected Area ft <sup>2</sup> (m <sup>2</sup> )
HDFDM-5A	5	6,200 (2,812)	3,000 (1,360)	60 (5.57)
HDFDM-7A	7	11,400 (5,171)	4,150 (1,882)	83 (7.71)

**Notes:**

1. RMS gain data is given relative to dipole. Values given are for each polarization and nominal for mid band and include standard harness configurations. Gain will vary depending on feed system, frequency, null fill and beam tilt.
2. Null fill is standard for 5 bays or greater.
3. Power ratings are nominal @40°C (104°F) ambient and assume pressurization with dry air or nitrogen to 5 psi minimum. Power ratings may vary dependent on specific feed system design, and local conditions.
4. Higher power ratings and dual inputs are available on request.
5. Antenna components and feed harnesses are optimized for FM channels of interest.
6. Area calculated expressed in terms of equivalent flats (RS-222-C standard).
7. Windload force calculated based on 50 pounds per square foot (50psf) on flats (RS-222-C standard).
8. To convert area to equivalent rounds, multiply area by 1.5.
9. To convert area to Aerodynamic area (CaAa - linear or CaAc - discrete) based on EIA-222-F standard, multiply area by 1.8.

\*Other gain values are available. Please contact factory.

## Electrical Specifications

Antenna Type	Gain Polarization Spacing <sup>1</sup>		Power Rating kW <sup>3</sup>
	Power Gain*	dB	
HDFDM-5A	2.20	3.42	70
HDFDM-7A	3.00	4.77	70

**Notes:**

Please contact a Dielectric representative for high-power ratings.

