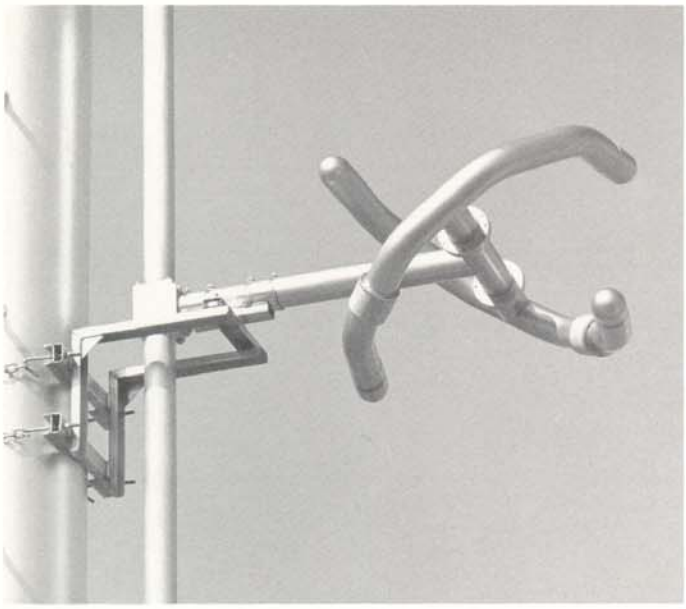
HARRIS FMH HIGH POWER CIRCULARLY POLARIZED FM ANTENNA



Features and Benefits:

- **High input power rating for flexibility in transmitting system design**
- **Capable of multi-station operation**
- **Excellent bandwidth for minimal VSWR and related signal degradation**
- **Internal element feed point to minimize VSWR weather-related problems**
- **Rugged brass element construction and stainless steel support brackets and hardware to impede corrosion**

Harris' FMH High Power Circularly Polarized FM Antenna will give you unusually high power handling capabilities, excellent bandwidth characteristics and rugged construction for years of superb performance.

The FMH antenna features rugged construction necessary to withstand the most severe weather and wind velocities of up to 150 miles per hour.

The brass radiating element has an outside diameter of 3⅛". The silver soldered feed point is completely internal with a pressurized environment up to the feed point. Each element is radiated at 40 kW (excluding the "A" series end-fed one and two bay antennas which are rated at 32 kW, and the center-fed two bay model which is rated at 39 kW). Element ratings are limited only by the average power handling capability of the 3⅛" rigid coaxial line, which has been conservatively derated from 48 kW to 40 kW.

As a result of design excellence in the Harris FMH antenna, deicers and radomes typically are not required at antenna heights where radial ice does not exceed ½-inch. Under icing conditions of up to ½-inch, typical VSWR is 1.5:1 or less, assuming the antenna exhibits normal VSWR of 1.1:1 or less. Harris recommends optional FMH radomes or electrical element deicers for antennas in environments subject to heavier icing.

Excellent bandwidth characteristics of the FMH's radiating element permit multi-station operation. Stations with a frequency separation of up to 4 MHz may be diplexed on a common antenna; however, with 40 kW transmitters a minimum frequency separation of 1.2 MHz is recommended to avoid excessive heating of filter components.* Harris has all necessary components needed for diplexing or multiplexing operations.

The FMH antenna has a low standing wave ratio of 1.07:1 or less, ±200 kHz per given channel with field trimming. VSWR at antenna input without field trimming is 1.2:1 for pole mounting atop a tower, and 1.5:1 or less when side mounted on a tower.

Harris' FMH's horizontally polarized radiation pattern is omnidirectional when the antenna is pole-mounted atop a tower. Circularity typically is ±2 dB when the antenna is mounted on a 14-inch diameter steel pole. When side-mounted, the antenna pattern will be somewhat affected by the supporting structure.

Harris offers complete antenna patterning facilities for measuring the antenna radiation patterns. An electrically equivalent full size tower section approximately 20-feet long is set up on the antenna range. The exact size and location of the ladder, coaxial transmission lines, conduits and cables are duplicated on this tower section, and an identical antenna element is mounted on the tower for such measurements.

Pattern optimization for the vertical polarization component or both the vertical and horizontal polarization components is available to improve the pattern circularity.

Three versions of Harris' FMH high power FM antenna are available:

FMH "A" uses a 3⅛-inch element feed stem and 3⅛-inch rigid interbay line. It is offered in 3⅛-inch end-fed; 3⅛-inch center-fed, or 6⅛-inch center-fed models in arrays of up to 16 bays.

FMH "B" uses a 4⅛-inch element feed stem and a 4⅛-inch rigid interbay line. It is available in either 6⅛-inch end-fed or center-fed models in arrays of up to 12 bays.

FMH "C" uses a 4⅛-inch element feed stem and a 6⅛-inch rigid interbay line with a 6⅛-inch end feed. It is available in arrays of up to six bays.

Each antenna comes with a six-foot input transformer. The input is 50 ohm EIA with either a 3⅛-inch or 6⅛-inch flange depending on the model. At the factory, all antennas are completely assembled, tuned to the customer's frequency, and pressure-tested to ensure delivery of a leak-free antenna.

Stainless steel mounting brackets and hardware are supplied for standard constant cross section towers with less than four-foot face or steel poles. Optional brackets for mounting on tapered towers also are available.

FMH options are available to meet your special requirements and include:

- DC shorting stub for lightning protection
- FMH radomes or electrical deicers
- Mounting brackets for special tower configurations
- FMH custom pattern measurement and optimization.

*Field tuning requiring multiple slug technology may be needed for multiple station operation.

HARRIS FMH SPECIFICATIONS

TYPE NO.	POWER GAIN[1]		FEMALE 50 OHM INPUT	POWER[2] INPUT CAPABILITY	CALCULATED WEIGHT [LBS.]	CALCULATED[3] WIND-LOAD [LBS.]	WITH RADOMES	
	POWER	dB					CALCULATED WEIGHT [LBS.]	CALCULATED[3] WIND LOAD [LBS.]
"A" MODEL, 3⅛" INTERBAY LINE, 3⅛" ELEMENT STEM								
FMH-1AE	0.4611	−3.3623	3⅛"	32 kW	114	137	185	354
FMH-2AE	0.9971	−0.0128	3⅛"	32 kW	225	304	376	742
FMH-2AC	0.9971	−0.0128	3⅛"	39 kW	250	319	385	749
FMH-2AC6	0.9971	−0.0128	6⅛"	64 kW	301	421	436	851
FMH-3AE	1.5588	1.9278	3⅛"	32 kW	336	470	568	1130
FMH-4AE	2.1332	3.2903	3⅛"	32 kW	447	637	759	1518
FMH-4AC	2.1332	3.2903	3⅛"	39 kW	472	652	768	1525
FMH-4AC6	2.1332	3.2903	6⅛"	64 kW	523	758	819	1631
FMH-5AE	2.7154	4.3384	3⅛"	32 kW	558	804	951	1905
FMH-6AE	3.3028	5.1888	3⅛"	32 kW	669	971	1142	2294
FMH-6AC	3.3028	5.1888	3⅛"	39 kW	694	986	1151	2300
FMH-6AC6	3.3028	5.1888	6⅛"	64 kW	745	1096	1202	2410
FMH-7AE	3.8935	5.9034	3⅛"	32 kW	780	1138	1334	2682
FMH-8AE	4.4872	6.5197	3⅛"	32 kW	891	1305	1525	3070
FMH-8AC	4.4872	6.5197	3⅛"	39 kW	916	1320	1534	3076
FMH-8AC6	4.4872	6.5197	6⅛"	64 kW	967	1433	1585	3190
FMH-10AC	5.6800	7.5435	3⅛"	39 kW	1138	1653	1917	3852
FMH-10AC6	5.6800	7.5435	6⅛"	64 kW	1189	1770	1968	3970
FMH-12AC	6.8781	8.3747	3⅛"	39 kW	1360	1987	2300	4628
FMH-12AC6	6.8781	8.3747	6⅛"	64 kW	1411	2108	2351	4750
"B" MODEL, 4⅛" INTERBAY LINE, 4⅛" ELEMENT STEM								
FMH-1BE	0.4611	−3.3623	6⅛"	40 kW	159	201	223	421
FMH-2BE	0.9971	−0.0128	6⅛"	56 kW	297	407	425	847
FMH-2BC	0.9971	−0.0128	6⅛"	80 kW	336	468	464	908
FMH-3BE	1.5888	1.9278	6⅛"	56 kW	435	613	627	1273
FMH-4BE	2.1332	3.2903	6⅛"	56 kW	573	818	829	1699
FMH-4BC	2.1332	3.2903	6⅛"	112 kW	612	879	869	1762
FMH-5BE	2.7154	4.3384	6⅛"	56 kW	711	1024	1031	2125
FMH-6BE	3.3028	5.1888	6⅛"	56 kW	849	1229	1233	2551
FMH-6BC	3.3028	5.1888	6⅛"	112 kW	888	1290	1272	2612
FMH-7BE	3.8935	5.9034	6⅛"	56 kW	987	1435	1435	2997
FMH-8BE	4.4872	6.5197	6⅛"	56 kW	1125	1641	1637	3043
FMH-8BC	4.4872	6.5197	6⅛"	112 kW	1164	1702	1676	3462
FMH-10BC	5.6800	7.5435	6⅛"	112 kW	1440	2113	2080	4312
FMH-12BC	6.8781	8.3747	6⅛"	112 kW	1716	2524	2484	5162
"C" MODEL, 6⅛" INTERBAY LINE, 4⅛" ELEMENT STEM								
FMH-1CE	0.4611	−3.3623	6⅛"	40 kW	205	260	269	480
FMH-2CE	0.9971	−0.0128	6⅛"	80 kW	410	520	538	960
FMH-3CE	1.5888	1.9278	6⅛"	120 kW	615	780	807	1440
FMH-4CE	2.1332	3.2903	6⅛"	120 kW	820	1040	1076	1920
FMH-5CE	2.7154	4.3384	6⅛"	120 kW	1025	1300	1345	2400
FMH-6CE	3.3028	5.1888	6⅛"	120 kW	1230	1560	1614	2880

FOOTNOTES - (Apply to all models): 1. Horizontal and vertical power gain and dB gain are the same. 2. Power input capability up to 2,000 ft. above mean sea level. Derating required above 2,000 ft. 3. Windload based on 50/33 PSF. 112 m.p.h. actual wind velocity. NOTE: Brackets included in weight and windload calculations.

HARRIS MAINTAINS A CONTINUOUS PROGRAM OF PRODUCT IMPROVEMENT, AND THEREFORE RESERVES THE RIGHT TO CHANGE SPECIFICATIONS WITHOUT NOTICE.

HARRIS CORPORATION BROADCAST DIVISION
P. O. BOX 4290, QUINCY, ILLINOIS 62305-4290 U.S.A. 217/222-8200

HARRIS

ADV. 713 PTD. IN U.S.A.