

## CASSEGRAIN REFLECTOR ANTENNAS



### DESCRIPTION

Millitech offers a wide range of parabolic reflector antennas with Cassegrain feeds. Series CRA antennas are available for operation over 18 to 325 GHz with standard reflector diameters ranging from 6"/15.24 cm to 48"/121.92 cm, depending on the frequency. The main reflector has a highly accurate metalized surface and is constructed of either carbon fiber skin with honeycomb core or machined aluminum. The sub-reflector is a machined aluminum hyperboloid which is rigidly supported by struts. These struts are designed to have minimal cross-section with reduced aperture blockage, and hence, produce low sidelobe levels (typically 18 dB).

The feeds are designed to obtain the best performance over the widest bandwidth possible. The gain of the antenna depends

### FEATURES:

- Highly efficient, low VSWR
- Wide range of sizes available
- Available for use from 18 to 325 GHz
- Polarization options offered

### APPLICATIONS:

- Communication systems
- Radars and radiometers
- EW/ELINT

upon its diameter, illumination, and frequency of operation. The sidelobes are determined by the edge illumination taper as well as by the sub-reflector blockage. Typical match into the antenna feed input is 1.44:1 with a net efficiency of 50%. For boresighting the antenna, an optional boresighted telescopic sight can be provided. Reflector diameters of 6 to 12 inches are available for frequencies from 18 to 325 GHz. 24 to 48 inch models are available for 18 to 110 GHz.

Millitech also offers fixed polarizers (series POL) and series OMT orthomode transducers.

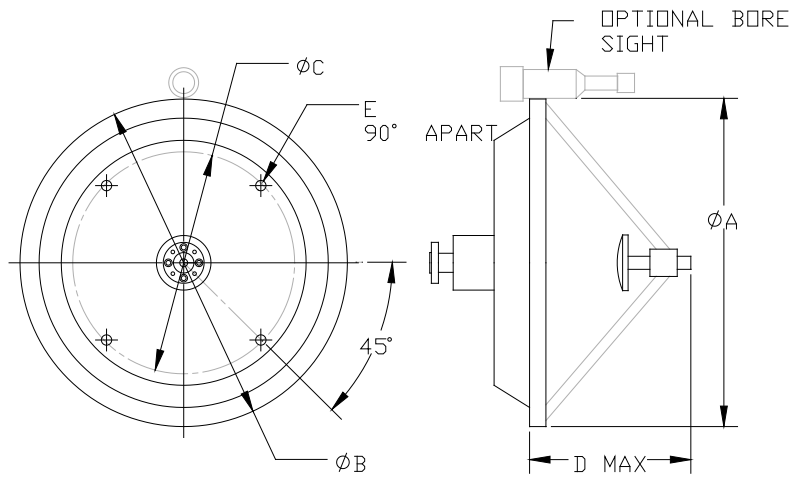
Radomes are available for select frequency bands, contact Millitech for more details.

## ELECTRICAL SPECIFICATIONS

Performance Parameter	Range	Remarks
Frequency Range (GHz)	18 to 325	Practical range for waveguide feeds.
Standard Reflector Diameters (in)*	6, 10, 12, 18, 24, 36, 48	Other diameters available as custom products.
Beamwidth (degrees) (nom)	0.1 to 3.0	Beamwidth depends on frequency and diameter selected.
Gain (dBi) (nom)	35 to 60	Depending on the frequency and diameter selected.
Sidelobes (dB) (typ)	18	Typical value for standard product. Blockage by subreflector determines sidelobe level.
VSWR (typ)	1.5:1	

\* Larger, non-standard reflector diameters are available. Please consult Millitech for details.

## OUTLINE DRAWINGS



## MECHANICAL SPECIFICATIONS

A Reflector Diameter (in/mm)	6.0/152	10.0/254	12.0/305	18.0/457	24.0/610	36.0/914	48.0/1219
B Housing Diameter (in/mm)	6.0/152	10.0/254	12.0/305	18.8/478	24.8/630	36.8/935	49.2/1250
C (in/mm)	4.0/102	7.0/178	10.0/254	10.0/254	16.5/419	24.0/610	36.0/914
D (in/mm)	3.6/91	5.1/130	5.4/137	6.9/175	7.8/198	9.5/241	14/356
E (in/mm)	.190-24UNC.	.375-16UNC.	.375-16UNC.	.375-16UNC.	.375-16UNC.	.375-16UNC.	.500-13UNC.

## CIRCULAR WAVEGUIDE SIZES

Rectangular Waveguide Band	Circular Diameter Size	Frequency Range (GHz)*	Circular Waveguide Diameter (in/mm)	Specify When Ordering
<b>K</b>	Large	17.5-20.5	0.455/11.56	<b>455</b>
	Medium	20.0-24.5	0.396/10.06	<b>396</b>
	Small	24.0-26.5	0.328/8.33	<b>328</b>
<b>Ka</b>	Large	26.5-33.0	0.315/8.00	<b>315</b>
	Medium	33.0-38.5	0.250/6.35	<b>250</b>
	Small	38.5-40.0	0.219/5.56	<b>219</b>
<b>Q</b>	Large	33.0-38.5	0.250/6.35	<b>250</b>
	Medium	38.5-43.0	0.219/5.56	<b>219</b>
	Small	43.0-50.0	0.188/4.78	<b>188</b>
<b>U</b>	Large	40.0-43.0	0.210/5.33	<b>210</b>
	Medium	43.0-50.0	0.188/4.78	<b>188</b>
	Small	50.0-60.0	0.165/4.19	<b>165</b>
<b>V</b>	Large	50.0-58.0	0.165/4.19	<b>165</b>
	Medium	58.0-68.0	0.141/3.58	<b>141</b>
	Small	68.0-75.0	0.125/3.18	<b>125</b>
<b>E</b>	Large	60.0-66.0	0.136/3.45	<b>136</b>
	Medium	66.0-82.0	0.125/3.18	<b>125</b>
	Small	82.0-90.0	0.094/2.39	<b>094</b>
<b>W</b>	Large	75.0-88.0	0.112/2.84	<b>112</b>
	Small	88.0-110.0	0.094/2.39	<b>094</b>
<b>F</b>	Large	90.0-115.0	0.089/2.26	<b>089</b>
	Small	115.0-140.0	0.075/1.91	<b>075</b>
<b>D</b>	Large	110.0-140.0	0.073/1.85	<b>073</b>
	Small	140.0-160.0	0.059/1.50	<b>059</b>
<b>G</b>	Large	140.0-180.0	0.058/1.47	<b>058</b>
	Small	180.0-220.0	0.045/1.14	<b>045</b>
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\*If the required frequencies fall within two waveguide diameter sizes, the larger one should be selected.

## HOW TO ORDER

<b>Specify Model Number CRA-XX-ABBBCCD</b>
<b>XX</b> = Waveguide Band <b>WR</b> – number
<b>A</b> = Flange Type <b>R</b> – round (WR-28 through WR-03 only) <b>S</b> – square (WR-42 and WR-28 only) <b>A</b> – Precision Flange per Millitech IS000131, flat option (WR-08 through WR-05 only)
<b>BBB</b> = Circular Waveguide Diameter (in inches) <b>See Waveguide Sizes Table</b> (previous page) Specify ØØØ for rectangular waveguide
<b>CC</b> = Reflector Diameter (in/cm) <b>06</b> – 6/15.24 <b>10</b> – 10/25.4 <b>12</b> – 12/30.48 <b>13</b> – 13/33.02 <b>15</b> – 15/38.10 <b>18</b> – 18/45.72 <b>24</b> – 24/60.96 <b>36</b> – 36/91.44 <b>48</b> – 48/121.92
<b>D</b> = Material Options <b>C</b> – carbon fiber skin with honeycomb core <b>A</b> – machined aluminum (6” and 12” diameters only)