

# CS-1040 Spinning DF Antenna Unit



## The CS-1040 is a high performance Spinning DF Antenna Unit covering 0.5 to 40 GHz

The CS-1040 is a spinning DF antenna covering the 0.5 - 40 GHz frequency range, with spin rates from 0 - 200 RPM. This antenna unit can optionally be provided with an OMNI antenna set integrated into the radome and supporting the same frequency range. DC Power and fiber optic control are provided by the CS-1950 Antenna Interface Unit.

The antennas in the spinning DF segment include a LOG periodic covering the 0.5 - 2 GHz band and a parabolic antenna with LOG periodic feed (optional Vertical and Horizontal separate feeds available), and a dual ridge horn antenna for the 18 - 40 GHz range.

The 0.5 - 2 GHz antenna is mounted at a 45° angle to provide the best overall characteristics for vertical and horizontal polarized signals. A single 45° feed or optional dual feed with simultaneous vertical and horizontal outputs (switch selected in the spinning DF portion) are available for the 2 - 18 GHz antenna. The dual feed configuration allows the user to evaluate the source signal for characteristics based upon vertical and horizontal components detected via the two feeds.

The third band (18 - 40 GHz) is also mounted in the spinning DF portion of the antenna. The horn antenna is mounted at an approximate 45° angle. Following the horn, the input is filtered, amplified and down converted into the 2 - 18 GHz band.

One of the two lower DF bands (0.5 - 2.0 or 2 - 18), with or without preamplification, or the high band (18 - 40) is selected and routed through a rotary joint to the pedestal where additional electronics are used to amplify and equalize the signals for cable loss. Programmable attenuators can also be optionally provided.

Power and communication to the spinning DF is routed from the pedestal through slip rings. A microprocessor in the spinning DF section controls various switches for antenna selection, preamp and vertical or horizontal feed selection (2 - 18 GHz band).

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The DF antenna controller is located in the base of the pedestal. Control for the motor and resolver feedback are processed by the controller via fiber optic interface to the CS-1950 Antenna Interface Unit, allowing the user to mount the pedestal at a convenient high point and to run relatively small power lines and fiber control lines with relative ease. The coaxial outputs (1 DF and 1 OMNI) are typically equalized to allow for a cable length as required by the customer.

#### SPECIFICATIONS

DF spinning antenna frequency	0.5 - 2 GHz low band 2 - 18 GHz middle band 18 - 40 high band																																																																																	
DF spinning antenna polarization	0.5 - 2 GHz 45° slant linear 2 - 18 GHz 45° slant linear 18 - 40 GHz 45° slant linear																																																																																	
Optional	2 - 18 GHz vertical and horizontal switchable																																																																																	
DF antenna gain	<table border="0"> <tr> <td>Freq (GHz)</td> <td>Min (dBi)</td> <td>Typ (dBi)</td> </tr> <tr> <td>Log periodic</td> <td>0.5-2</td> <td>4.0</td> </tr> <tr> <td>Parabolic</td> <td>2.0 8.0</td> <td>10.5</td> </tr> <tr> <td></td> <td>4.0 12.0</td> <td>14.5</td> </tr> <tr> <td></td> <td>8.0 13.0</td> <td>16.0</td> </tr> <tr> <td></td> <td>12.0</td> <td>17.0</td> </tr> <tr> <td></td> <td>18.0</td> <td>19.0</td> </tr> <tr> <td>Dual ridge horn</td> <td>18.0</td> <td>12.5</td> </tr> <tr> <td></td> <td>26.0</td> <td>12.5</td> </tr> <tr> <td>DF antenna beamwidth</td> <td> <table border="0"> <tr> <td>Freq (GHz)</td> <td>Max (°)</td> <td>Typ (°)</td> </tr> <tr> <td>Log periodic</td> <td>0.5-2</td> <td>85.0</td> </tr> <tr> <td>Parabolic</td> <td>2.0 24.0</td> <td>20.0</td> </tr> <tr> <td></td> <td>4.0 12.0</td> <td>10.5</td> </tr> <tr> <td></td> <td>8.0 6.0</td> <td>5.5</td> </tr> <tr> <td></td> <td>12.0</td> <td>4.0</td> </tr> <tr> <td></td> <td>18.0</td> <td>3.0</td> </tr> <tr> <td>Dual ridge horn</td> <td>18-40</td> <td>30.0</td> </tr> </table> </td> </tr> <tr> <td>Vertical - horizontal isolation</td> <td>10 - 12 dB typ (2 - 18 GHz band)</td> </tr> <tr> <td>Elevation beamwidth</td> <td>20° min (-5 to +15°)</td> </tr> <tr> <td>Azimuth squint</td> <td> <table border="0"> <tr> <td>Freq (GHz)</td> <td>Typ (°)</td> </tr> <tr> <td>0.5 - 2</td> <td>±4.0</td> </tr> <tr> <td>2 - 12</td> <td>±1.5</td> </tr> <tr> <td>12 - 18</td> <td>±1.2</td> </tr> <tr> <td>18 - 40</td> <td>±3.0</td> </tr> </table> </td> </tr> <tr> <td>DF antenna modes</td> <td>Spin, sector scan, point</td> </tr> <tr> <td>Spin rate/DF search</td> <td>0 to 200 RPM selectable</td> </tr> <tr> <td>Scan rate &gt;30° sector</td> <td>10 - 60 °/sec</td> </tr> <tr> <td>Scan rate &lt;30° sector</td> <td>2 x sector width °/sec</td> </tr> <tr> <td>Size</td> <td>19.5" (50 cm) diameter x 25" (63.5 cm) height</td> </tr> <tr> <td>Weight – spinning DF pedestal</td> <td>50 lbs (22.7 kg) max 25 lbs (11.25 kg) max</td> </tr> </table>	Freq (GHz)	Min (dBi)	Typ (dBi)	Log periodic	0.5-2	4.0	Parabolic	2.0 8.0	10.5		4.0 12.0	14.5		8.0 13.0	16.0		12.0	17.0		18.0	19.0	Dual ridge horn	18.0	12.5		26.0	12.5	DF antenna beamwidth	<table border="0"> <tr> <td>Freq (GHz)</td> <td>Max (°)</td> <td>Typ (°)</td> </tr> <tr> <td>Log periodic</td> <td>0.5-2</td> <td>85.0</td> </tr> <tr> <td>Parabolic</td> <td>2.0 24.0</td> <td>20.0</td> </tr> <tr> <td></td> <td>4.0 12.0</td> <td>10.5</td> </tr> <tr> <td></td> <td>8.0 6.0</td> <td>5.5</td> </tr> <tr> <td></td> <td>12.0</td> <td>4.0</td> </tr> <tr> <td></td> <td>18.0</td> <td>3.0</td> </tr> <tr> <td>Dual ridge horn</td> <td>18-40</td> <td>30.0</td> </tr> </table>	Freq (GHz)	Max (°)	Typ (°)	Log periodic	0.5-2	85.0	Parabolic	2.0 24.0	20.0		4.0 12.0	10.5		8.0 6.0	5.5		12.0	4.0		18.0	3.0	Dual ridge horn	18-40	30.0	Vertical - horizontal isolation	10 - 12 dB typ (2 - 18 GHz band)	Elevation beamwidth	20° min (-5 to +15°)	Azimuth squint	<table border="0"> <tr> <td>Freq (GHz)</td> <td>Typ (°)</td> </tr> <tr> <td>0.5 - 2</td> <td>±4.0</td> </tr> <tr> <td>2 - 12</td> <td>±1.5</td> </tr> <tr> <td>12 - 18</td> <td>±1.2</td> </tr> <tr> <td>18 - 40</td> <td>±3.0</td> </tr> </table>	Freq (GHz)	Typ (°)	0.5 - 2	±4.0	2 - 12	±1.5	12 - 18	±1.2	18 - 40	±3.0	DF antenna modes	Spin, sector scan, point	Spin rate/DF search	0 to 200 RPM selectable	Scan rate >30° sector	10 - 60 °/sec	Scan rate <30° sector	2 x sector width °/sec	Size	19.5" (50 cm) diameter x 25" (63.5 cm) height	Weight – spinning DF pedestal	50 lbs (22.7 kg) max 25 lbs (11.25 kg) max
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#### PRODUCT ATTRIBUTES

- 0.5 - 40 GHz DF coverage
- Internal 18 - 40 GHz down conversion
- Internal preamplification
- Optional OMNI antennas
- Internal limiters
- Fiber optic interface
- 0 - 200 RPM spin rate

#### OPTIONS

- Option 1 – OMNI antennas (0.5 - 8 and 8 - 40 GHz bands)
- Option 2 – Selectable vertical/horizontal polarization (2 - 18 GHz). This option not recommended when using side lobe inhibit function
- Option 3 – Programmable attenuators
- Option 4 – Alternate control interface (replaces fiber optic interface)

#### RELATED EQUIPMENT

CS-1950 Antenna Interface Unit  
 CS-3001 Pulse Analyzer  
 CS-5020C Microwave Receiver  
 CS-1960 RF Distribution Unit

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

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