

True circular polarization

Power rating: 3 kW per bay

Shively standard features:

- Ring stub design
- Low weight and windload
- Consistently predictable patterns
- Digital-ready
- Pattern studies available
- No factory personnel needed to install
- Adjustable fine-matching transformer
- Radomes and deicers available
- Rugged corrosion-resistant mounts
- Works with regular towers; no need for special frequency-sensitive tower sections
- Pressure relief valve for easy purging of the system
- Special spacing, H/V ratios, null fill and beam tilt available

Performance specifications:

Polarization: Right circular
 VSWR: 1.08 : 1 ± 100 kHz
 1.16 : 1 ± 200 kHz (optional 1.10 : 1; see factory for details)
 Azimuth pattern circularity: Horizontal component ± 1.5 dB on pole.
 Input connection: 1-5/8 in EIA Female

Electrical specifications:

| No. of Bays | Gain | | Power Rating kW | No. of Bays | Gain | | Power Rating kW |
|-------------|-------|-------|--------------------|-------------|-------|------|--------------------|
| | Power | dB | | | Power | dB | |
| 1 | 0.45 | -3.43 | 3 | 7 | 3.93 | 5.94 | 12 |
| 2 | 0.99 | -0.04 | 6 | 8 | 4.53 | 6.56 | 15 |
| 3 | 1.56 | 1.92 | 9 | 10 | 5.74 | 7.59 | 15 |
| 4 | 2.14 | 3.30 | 10 | 12 | 6.97 | 8.43 | 15 |
| 5 | 2.73 | 4.36 | 12 | 14 | 8.18 | 9.13 | 15 |
| 6 | 3.33 | 5.22 | 12 | 16 | 9.42 | 9.74 | 15 |

Notes:

1. Our gain figures are derived from the computed directivity and include the losses in the antenna feed system. Gain is provided for one polarization and is equal in circularly polarized antennas for both horizontal and vertical components. Gain will be reduced if null fill, beam tilt, special H/V ratio, or special wavelength spacing is provided. Gain will increase in a directional array by the directivity of the azimuth pattern.

Pub. No. ds-6813-fw (170322)

A Division of Howell Laboratories, Inc., P. O. Box 389, Bridgton, Maine 04009 USA
 (207) 647-3327 1-888-SHIVELY Fax: (207)647-8273
 An Employee-Owned Company

www.shively.com
 sales@shively.com
 Certified to ISO-9001



Model 6813 size and weight (full-wave-spaced):

| No. of Bays | Vertical Tower Space | | | | | | Weight | | | | | |
|-------------|----------------------------|------|---------------------|------|-------------------------------|------|-----------------|------|--------------|------|---|-------|
| | Antenna Radiation Aperture | | Physical Space Used | | Total Tower Space Recommended | | Without radomes | | With radomes | | With radomes & 1/2" (1.2 cm) radial ice | |
| | ft | m | ft | m | ft | m | lb | N | lb | N | lb | N |
| 1 | 2 | 0.7 | 9 | 3.0 | 20 | 6.6 | 62 | 277 | 97 | 433 | 195 | 870 |
| 2 | 10 | 3.3 | 19 | 6.2 | 30 | 9.8 | 105 | 468 | 175 | 781 | 380 | 1695 |
| 3 | 20 | 6.6 | 29 | 9.5 | 40 | 13.1 | 147 | 656 | 252 | 1124 | 565 | 2520 |
| 4 | 30 | 9.8 | 39 | 12.8 | 50 | 16.4 | 190 | 847 | 330 | 1472 | 749 | 3341 |
| 5 | 40 | 13.1 | 49 | 16.1 | 60 | 19.7 | 259 | 1155 | 407 | 1815 | 934 | 4166 |
| 6 | 50 | 16.4 | 59 | 19.4 | 70 | 23.0 | 275 | 1227 | 485 | 2163 | 1119 | 4991 |
| 7 | 60 | 19.7 | 69 | 22.6 | 80 | 26.2 | 317 | 1414 | 562 | 2507 | 1303 | 5811 |
| 8 | 70 | 23.0 | 73 | 23.9 | 90 | 29.5 | 338 | 1507 | 618 | 2756 | 1444 | 6440 |
| 10 | 90 | 29.5 | 93 | 30.5 | 110 | 36.1 | 423 | 1887 | 773 | 3448 | 1814 | 8090 |
| 12 | 110 | 36.1 | 113 | 37.1 | 130 | 42.6 | 508 | 2266 | 928 | 4139 | 2183 | 9736 |
| 14 | 130 | 42.6 | 133 | 43.6 | 150 | 49.2 | 593 | 2645 | 1083 | 4830 | 2552 | 11382 |
| 16 | 150 | 49.2 | 153 | 50.2 | 170 | 55.8 | 676 | 3015 | 1239 | 5526 | 2922 | 13032 |

Windload (full-wave-spaced):

| No. of Bays | Revision 'C' | | | | | | Revision 'F' | | | | | |
|-------------|-----------------|------|--------------|-------|---|-------|--------------------|----------------|--------------------|----------------|---|----------------|
| | Without radomes | | With radomes | | With radomes & 1/2" (1.2 cm) radial ice | | Without radomes | | With radomes | | With radomes & 1/2" (1.2 cm) radial ice | |
| | lb | N | lb | N | lb | N | (ft ²) | m ² | (ft ²) | m ² | (ft ²) | m ² |
| 1 | 76 | 339 | 180 | 803 | 222 | 990 | 2.4 | 0.2 | 4.9 | 0.5 | 6.0 | 0.6 |
| 2 | 152 | 678 | 360 | 1606 | 442 | 1971 | 5.1 | 0.5 | 10.1 | 0.9 | 12.5 | 1.2 |
| 3 | 228 | 1017 | 540 | 2408 | 662 | 2953 | 7.7 | 0.7 | 15.3 | 1.4 | 18.9 | 1.8 |
| 4 | 304 | 1356 | 719 | 3207 | 881 | 3929 | 10.4 | 1.0 | 20.4 | 1.9 | 25.4 | 2.4 |
| 5 | 380 | 1695 | 899 | 4010 | 1101 | 4910 | 13.1 | 1.2 | 25.6 | 2.4 | 31.9 | 3.0 |
| 6 | 456 | 2034 | 1079 | 4812 | 1321 | 5892 | 15.8 | 1.5 | 30.8 | 2.9 | 38.4 | 3.6 |
| 7 | 532 | 2373 | 1258 | 5611 | 1540 | 6868 | 18.4 | 1.7 | 36.0 | 3.3 | 44.9 | 4.2 |
| 8 | 581 | 2591 | 1411 | 6293 | 1713 | 7640 | 20.2 | 1.9 | 40.2 | 3.7 | 49.9 | 4.6 |
| 10 | 732 | 3265 | 1771 | 7899 | 2153 | 9602 | 25.5 | 2.4 | 50.5 | 4.7 | 62.8 | 5.8 |
| 12 | 884 | 3943 | 2130 | 9500 | 2593 | 11565 | 30.9 | 2.9 | 60.9 | 5.7 | 75.8 | 7.0 |
| 14 | 1036 | 4621 | 2490 | 11105 | 3032 | 13523 | 36.2 | 3.4 | 71.2 | 6.6 | 88.8 | 8.2 |
| 16 | 1188 | 5298 | 2849 | 12707 | 3472 | 15485 | 41.5 | 3.9 | 81.6 | 7.6 | 101.7 | 9.4 |

Notes:

- The mounting structure must not flex more than $\pm 1/2$ in (1.2 cm) in any ten-foot (3-meter) section. Five feet (1.5 m) of mounting structure is required above and below the antenna bays for proper pattern formation.
- Antenna radiation aperture is the distance from the center of the top bay to the center of the bottom bay. Physical space used is from the top of the top bay to the input flange at the bottom of the array, or the bottom of the bottom bay in a center-fed array. Total tower space recommended allows ten feet (3 m) of clear tower space above and below the antenna to protect from pattern interference by other antennas. At frequencies lower than 98 MHz, each of these dimensions will increase by up to 1 ft (0.3 m) per bay.
- Seven bays or less are normally end-fed. All antennas supplied with beam tilt will be center-fed. Antennas with an odd number of bays are normally not available with center feed.
- Windload and weight tabulations are estimates and assume 98 MHz. They include the bay, interbay feedline, input connection, and a fine-matching transformer. No values have been included in these tabulations for mounts. Actual values vary with the specific installation. Contact us with details of your installation if more precise values are needed.
- Antenna windloads are calculated for 112 mph (180 kph), using 50 psf (2400 N/m²) for flats and 33 psf (1600 N/m²) for rounds] per EIA standard RS-222-C and CSA standard S37-94. The surface area is calculated per EIA standard RS-222-F (C_oA_c).
- Deicers add approximately 1 lb (4.4 N) per bay in weight and 2 lb (8.9 N) or 0.05 ft² (0.005 m²) per bay in windload.
- Ask for technical assistance at Shively if you are planning to mount antennas on AM towers or install them at altitudes over 3,000 ft (915 m) above mean sea level.