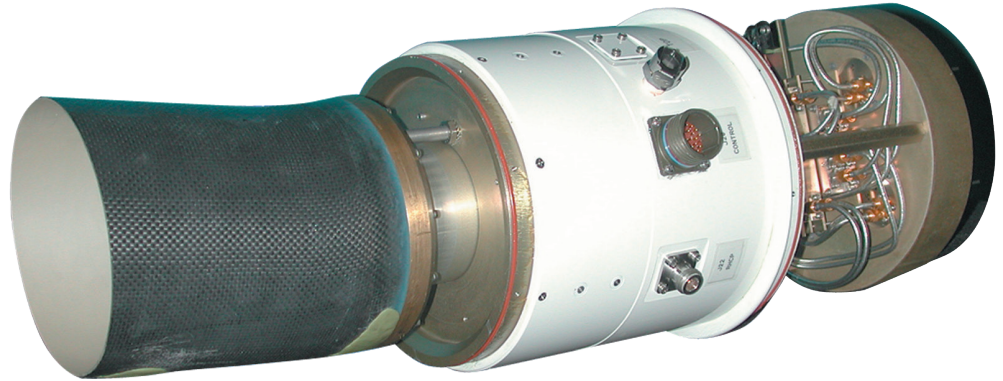


Model **CS SERIES** Conically Scanning Feed

Product Data Sheet

Features:

- Lightweight
- Low Aperture Blockage
- Wide Frequency Bandwidth
- High Efficiency
- Low Insertion Loss
- Low Axial Ratio
- Low Sidelobe Levels
- Superior Low Angle Tracking
- Variable Scanning Rates
- High Reliability



The CS Series is the latest model of the CPI Malibu Division family of Conically Scanning (ConScan) feeds. While conically scanning feeds have long been proven to provide high accuracy with simplicity and provide superior RF performance, as compared to single-channel monopulse feeds, this new design accomplishes several significant improvements.

Our new conically scanning feed design incorporates the usage of a small DC brushless motor to rotate the offset circular waveguide horn. The usage of a small, lightweight DC brushless motor yields a small diameter feed assembly, thus reducing the aperture blockage and total weight of the feed assembly. This reduced aperture blockage directly results in higher antenna efficiencies, with higher gain and lower sidelobe figures, while the reduced feed weight decreases the amount of counterweights required on the pedestal, improving the pedestal dynamics.

The motor design, driven by a servo amplifier, also allows for a variable scanning speeds.

The utilization of a DC motor allows for the feed's scanning speed to be either manually varied, by the operator via the front panel of the ACU, or automatically varied by the ACU software in a pseudo-random mode, thus ensuring that coincidentally rotating rates do not occur. The conically scanning feed's scanning rate can be varied between 5 and 45 Hz.

The CS Series has the advantages of our previous conically scanning feeds, which include wide frequency bandwidth, low insertion loss, low axial ratio, low crosstalk and high reliability. The new design further improves the insertion loss of the unit due to its reduced size, thus reducing the length of the RF cables from the dipole assembly, while the MTBF and MTTR has been improved with the brushless motor.

Related Data Sheets

• **HD Pedestal Series**

• **P-Series Antenna Control Unit**

• **Acquisition-Aid Antenna**

Model CS SERIES

Advantage Details

Wide Frequency Bandwidth	The ConScan feeds utilize a circular waveguide horn to create the error signals for tracking, the constraints on the frequency bandwidth are due to the cutoff frequencies of the circular waveguide. This allows a wide frequency coverage with one feed to cover both L & S Band.
Mechanical Parameters	The smaller diameter of the ConScan feed assembly results in lower aperture blockage, which in turn results in higher gain and lower sidelobes.
Lower Insertion Loss	The ConScan feed does not necessitate the usage of a comparator network or scan modulator unit to create the tracking error signals. The conically scanning feed assembly does not incur the insertion losses associated with these components, which can be as much as 1.5 dB. The RF signals are available directly at the dipole outputs.
Higher Antenna Gain & G/r Levels	As denoted above, higher antenna gains result with the use of a ConScan feed due to the lower aperture blockage and lower insertion losses.
Lower Sidelobe Levels	Sidelobes for an antenna system using a ConScan feed are typically lower than -20 dBc.
Superior Low Angle Tracking	Since multipath typically occurs at low elevation angles, the lower sidelobes of an antenna system using a ConScan feed results in superior low angle tracking. ConScan feed are typically lower than -20 dBc.
Lower Axial Ratio & Crosstalk	Given that a ConScan feed uses only one crossed-dipole assembly, the linearly polarized outputs can be easily phased at the input to a quadrature hybrid to produce circularly polarized outputs, yielding an axial ratio of less than 1.0 dB, over limited bandwidths, and less than 2.0 dB over octave bandwidths. The usage of a single dipole also results in a crosstalk between dipole elements exceeding 20 dB.
Higher Reliability	The limited number of active components and the usage of a brushless motor results in MTBF figures of greater than 100,000 hours for a ConScan feed, as compared to 30,000 hours for typical SCM feeds.
Environmental Parameters	
Frequency Bandwidths	1.4 to 2.5 GHz 4.4 to 5.2 GHz (other frequency bands available upon request)
Variable Scan Rate	5 to 40 Hz
Tx/Px	Receive only; Transmit available with special request
Temperature	Operating -40°C to +52°C Storage/Transit -54°C to +71°C
Relative Humidity	Up to 100%, including condensation; fitted for pressurization
Power Requirement	+24 VDC (motor), +15 VDC (low noise amplifiers), 115-230 VAC, 50-60 Hz (heaters)
Size - Diameter	8.00 inches (not including acquisition-aid antenna)
Weight	< 10 lbs (5 kg) (without acquisition-aid antenna)

