

# L/S/C Tri-Band Feed



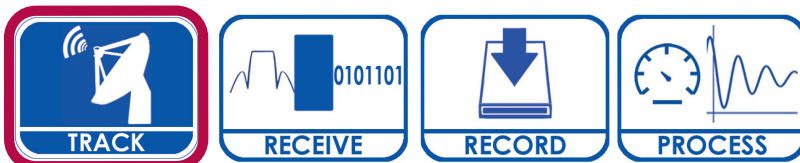
**PATENTED  
DESIGN**

With the progressive shift of flight test telemetry towards C-band, most users are looking at a solution coping with their immediate requirements (L-band and S-band) but also offering a reliable, cost effective and truly usable C-band capability.

Zodiac Data Systems offers the best match of technology, performance and price with a patented highly miniaturized common L/S/C radiating front end fitted with a modular set of active RF modules. Therefore, the feed is able to receive signals and track simultaneously in each band with a small and light-weight enough enclosure so that it may be mounted on dishes as small as 6 feet (1.8m).

The revolutionary aspect of Zodiac Data Systems' solution is the ability for the customer to get the system only with the active RF modules for the bands he is immediately interested in (and therefore paying only for that), and to upgrade on-site at a later stage for an extra band adjunction, such as the C-band, whenever it gets necessary.

With 8 radiating elements for the tracking, Zodiac Data Systems' feed offers a perfect axial symmetry for the Delta channel (equivalent to TE<sub>21</sub>), and consequently improving the tracking experience and performance. Besides, all the usual benefits of Zodiac Data Systems feeds are made available to the operator, such as LNA bypass for very short range and tracking LNA muting for long range reception when the antenna can afford operator-driven pointing adjustments.



**C-band without  
compromise**

**Field-upgradeable**

## Main Benefits

- Impressive performances in Low and mid C-band, with simultaneous Rx of L- and S-bands
- Experience superior tracking performances of very high dynamic targets even in C-band with up to 2000 Hz scan-rate
- Step into C-band now or later with any combination of L-, S- and C-band RF modules fitted at order or in-the-field upgrade
- The most compact tri-band concentric single housing feed of the market, allowing mountings on dishes as small as 6 feet (1.8m) for a more comfortable tracking experience
- Remotely-controllable low gain mode to prevent short-range saturation, and tracking LNA muting for long range telemetry reception

## Main Features

- Up to 3 bands (L/S/C) simultaneous reception and tracking in a single feed enclosure
- Tracking feed from 50Hz up to 2000Hz scanning frequency
- Independent active RF module & filtering for each band allowing S, C, L/S, S/C, L/S/C configurations
- Compact and efficient design based on concentric printed radiating elements
- Triplexing of  $\Sigma + \Delta$  signals for each polarization
- User selectable Low and High gain on tracking feed

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## Technical specifications

### Frequency Bandwidth

L-Band	1429 - 1545 MHz and 1710 - 1850 MHz
S Band	2200 - 2400 MHz
C Band	4400 - 5250 MHz

### Design

Polarizations	RHCP & LHCP	
Scanning frequency	Internal reference	50Hz/500Hz
	External reference	2kHz max
$\Sigma$ (for each band)	1 printed radiating element	
$\Delta$ (for each band)	8 printed radiating elements	
Independent filters for each band (e.g. S-band filter rejects UMTS & LTE frequencies)		

### Signal Amplification (for each band)

Design	2 cascaded LNAs per channel
High gain mode	35dB (all LNAs on)
Low gain mode (very short range)	15dB (1 LNA bypassed)
Long range tracking	tracking LNAs off.

### Reflector pairing

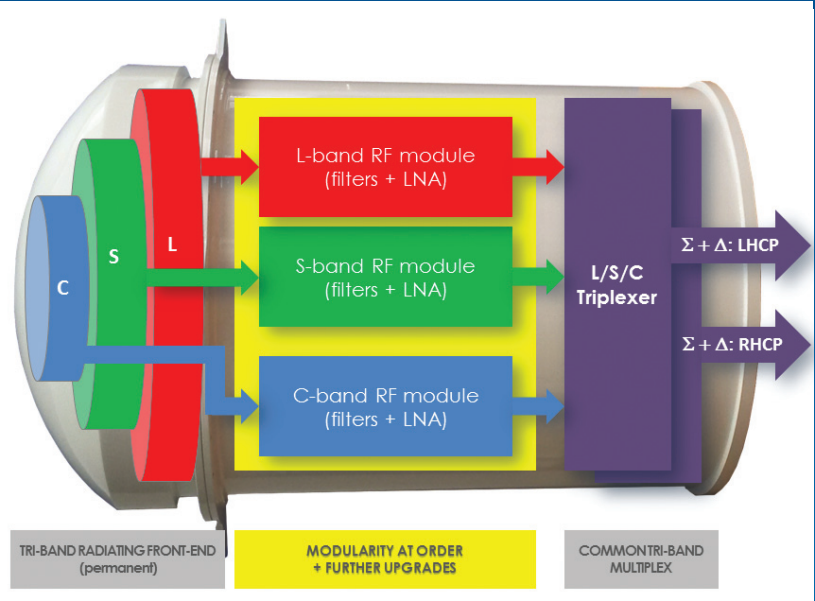
F/D range	0.38 - 0.42			
	$\emptyset$	1.8	2.4	3.0 m
L-band 1/2 power beamwidth	8°	5.8°	4.6°	
S-band 1/2 power beamwidth	5°	3.8°	2.9°	
C-band 1/2 power beamwidth	2.1°	1.6°	1.3°	
Tracking beamwidth	1.5x HPBW			
Prime focus mounting				
Dimensions	Length	= 18.9" (480 mm)		
	Diameter	= 11.8" (300 mm)		
Weight	< 40 lb (18 kg)			
Environment	-13°F to +122°F (-25°C to +50°C)			



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## L/S/C Tri-Band Feed



### Main Figures of Merits (G/T given for 10° El, 20°C clearsky)

#### Performance for $\Sigma + \Delta$ including filters (1)

	L-band @ 1500 MHz	S-band @ 2300 MHz	C-band @ 5150 MHz
6 ft (1.8 m)	2.2 dB/K	6.4 dB/K	11.1 dB/K
8 ft (2.4 m)	4.4 dB/K	9.3 dB/K	13.6 dB/K
10 ft (3.0 m)	6.2 dB/K	11.2 dB/K	15.6 dB/K

(1) Up to +1.5 dB in all performances when tracking LNAs are muted for very long range

### Associated Products

- ▶ Zodiac Data Systems antennas 6 ft - 36 ft (1.8m - 11 m)
- ▶ Cortex RTR with multi-band inputs
- ▶ S/L/C Acquisition Aid Antenna in a single enclosure

[www.zodiacaerospace.com](http://www.zodiacaerospace.com)

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