

## 6.0 Meter THA Antenna System

### 1 Main function

6.0M THA antenna system has high reliability, good environmental adaptability and good maintainability, it can be frequently adopted in satellite test orbit determination systems.



Fig.1-1 6m antenna

## 2 Technical Specifications

### 2.1 Electrical Specification

- a) Operating Frequency Tx: 5850~6725MHz Rx: 3400~4200MHz
- b) Gain Tx:  $49.7+20\lg(f/6.2)$ dB<sub>i</sub> (Receiving filter output)  
Rx:  $45.3+20\lg(f/3.9)$  (Transmitting filter output)  
(f: Operating Frequency GHz)
- c) Polarization

Four-port dual-line polarization and dual circular polarization converted (program control, manual option )

Linear polarization angular program control

- d) Antenna Noise Temperature: 20°EL /60K
- e) Radiation Pattern: First Sidelobe:  $\leq -14\text{dB}$   
Wide-angle sidelobe (peak value of 90°)  

29—25lg $\theta$	(dBi)	$1^\circ \leq \theta \leq 20^\circ$
-3.5	(dBi)	$20^\circ < \theta \leq 26.3^\circ$
32—25lg $\theta$	(dBi)	$26.3^\circ < \theta \leq 48^\circ$
-10	(dBi)	$\theta > 48^\circ$
- f) Axis Ratio Polarization: 0.5dB
- g) Linear polarization  
Axial cross polarization isolation  $\geq 35\text{dB}$  (Axis)  
 $\geq 30\text{dB}$  (Off-axis gain decreases by 1dB)
- h) Port isolation  
TX-RX 85dB (Linear and circular polarization)  
RX-RX 20dB (Circular polarization) 35dB (Linear polarization)  
TX-TX 20dB (Circular polarization) 35dB (Linear polarization)
- i) VSWR  
Circular polarization 1.25  
Linear polarization 1.25
- j) Power Capability: 3KW Continuous wave / per port
- k) Interface type Tx.: BJ70 wave guide (CPR137 matching flange interface)  
Rx.: BJ40 wave guide (CPR229 matching flange interface)

## 2.2 Mechanical Specification

- a) Diameter: 6M
- b) Antenna Pedestal Type: Turntable pedestal AZ-EL control
- c) Antenna Drive Mode: Dual motor drive
- d) Travel range: AZ:  $0^\circ \sim 350^\circ$ , EL:  $0^\circ \sim 90^\circ$ , Pol.:  $\pm 90^\circ$
- e) Travel speed: AZ/EL  $0.01^\circ \sim 5^\circ/\text{S}$  (Continuously adjustable)
- f) Two-channel rotating joints for AZ and EL  
Transmission gear with dust proof and sand-proof design

- g) Interface location

Upstream: power amplifier output port flange (2 channels at the same time),

Downstream: 1:2 low noise amplifier input port flange

### 2.3 Servo tracking specification

- a) ACU Surface Accuracy: Pointing:  $0.01^\circ$ , polarization  $0.1^\circ$

Range: AZ:  $0.00^\circ \sim 359.99^\circ$  EL:  $0.00^\circ \sim 89.99^\circ$

Working mode: manual, pointing, step tracking, position preset, standby

RS-422 Monitoring interface: Ethernet port / RS-422

Device local display and control functions

- b) Pointing accuracy 1/8 beamwidth (r.m.s)
- c) Tracking accuracy 1/10 beam width
- d) Configure the handheld control terminal

### 2.4 Environmental Specification

- a) Temperature

Outdoor:  $-40^\circ\text{C} \sim +60^\circ\text{C}$

Indoor:  $0^\circ\text{C} \sim +30^\circ\text{C}$

- b) Relative Humidity

Outdoor: 5%~100%

Indoor: 0%~95%

- c) Rain: 100mm/h max
- d) Operational Wind
  - Steady wind 14m/s, gust 20m/s (Normal working wind speed)
  - Steady wind 20m/s, gust 28m/s (Reduced precision working wind speed)
  - 56m/s (survival wind speed)
- e) Seismic (Survival): Resistance to 9 Degree Earthquakes
- f) Solar radiation: 100Kcal/h/m<sup>2</sup>
- g) With feed port blowing rain and snow function (including heating and monitoring capability)
- h) with feed port anti-bird function



**Antesky Science Technology Inc.**

Tel: +86-29-88352448 Fax: 86-29-88352334 Email sales@antesky.com

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- i) Antenna Designed Service Life:  $\geq 15$ Years

