





- 1 The coaxial duplexer 2 The feed bracket 3 The panels (six) 4 The tripod

**Fig.1**



- 1 The reflector bracket 2 The azimuth adjustment mechanism 3 The azimuth Turntable 4 The elevation adjustment mechanism 5 The foundation dish

**Fig. 2**

As shown in Figure1 and Figure 2(The configuration of the antenna), the antenna is composed of the feed system(the feed, the coaxial duplexer, the feed bracket),the reflector(the main reflector, the reflector bracket),the and the foundation(the elevation adjustment mechanism, the azimuth Turntable, the azimuth Turntable, the tripod, the foundation dish).

### 3 The Installation

#### 3.1 The calculation of the antenna angle

The calculation of the antenna azimuth angle(AZ):

$$AZ = 180^\circ + \arctg\left(\frac{tg(L_{\text{卫星}} - L_e)}{\sin(\phi_e)}\right)$$

The calculation of the antenna elevation angle(EL):

$$EL = \arctg\left(\frac{\cos(L_{\text{卫星}} - L_e)\cos(\phi_e) - 0.152266}{(1 - [\cos(L_{\text{卫星}} - L_e)\cos(\phi_e)]^2)^{0.5}}\right)$$

The calculation of the antenna polarization angle(pol):

$$pol = \arctg\left(\frac{\sin(L_{\text{卫星}} - L_e)}{tg(\phi_e)}\right)$$

Remarks:

$L_{\text{卫星}}$  —The Satellite longitude

$L_e$  —The earth longitude

$\phi_e$  —The earth Latitude

#### 3.2 The relation of the feed offset angle and the elevation angle

$EL$  —the elevation angle of the antenna

$\theta$  —the elevation of the feed bracket

$\phi$  —the feed offset angle is  $10^\circ$

The formula of the Calculation :  $EL = \theta + \phi$

#### 3.3 The installation of the antenna:

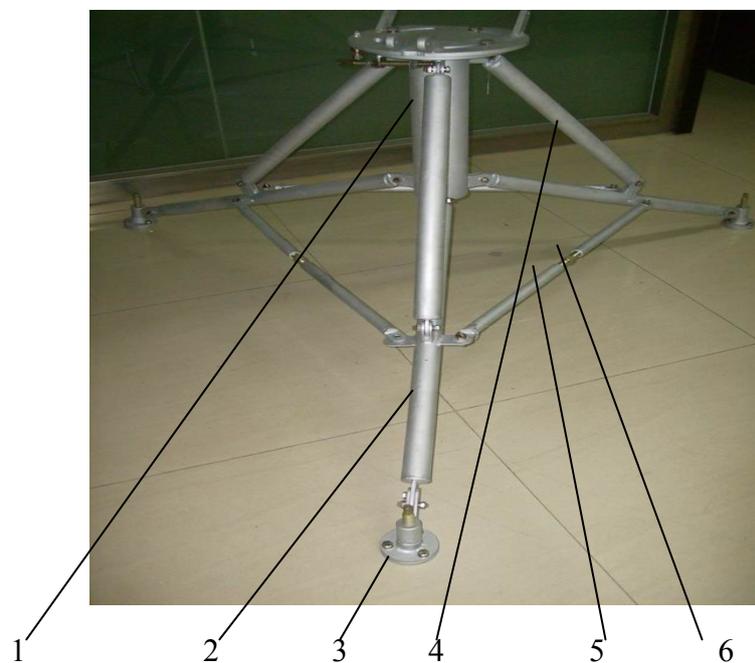
3.3.1 The installation tool:the wrench(Adjustable):one set. the specification:the extent: 200mm. the longest hatch: B=24mm} Remarks: the user can prepare three specifications fixation wrenchs(16×18、 22×24、 12×14)for the installation.

The fixation wrenchs: two set . The specification: 8×10.The hammer: one set.

### 3.3.2 Installation Steps

1) First ,open the casing box ,then take the feed system, the reflector,the foundation dish ,the standard screw and the others out from the casing box.

2) The connection of the foundation: First, connect each end of the three main knighthead to the the main pole which is under the the azimuth Turntable,and the other end connect with the foundation dish. and then connect the main pole to the main knighthead with the oblique knighthead. then connect the landscape orientation knighthead to the main knighthead.(notice: the landscape orientation knighthead is adjustable by the adjustable screw thread. At the end , install the azimuth adjustment mechanism and the elevation adjustment mechanism. (see Fig. 3)



1. the main pole 2 .the main knighthead 3 .The foundation dish  
4. the oblique knighthead 5 .the landscape orientation knighthead  
6 .the adjustable screw thread

**fig.3** the configuration of the foundation

Screw down all the nut after all the part of the foundation is connected.and then adjust the foundation dish by the box and needle which is in the azimuth Turntable till the bleb is in the middle of the box and needle.at last,adjust the length of the landscape orientation knighthead in order to fix the foundation.

3) The connection of the reflector bracket and the feed bracket:

first, connect longitudinal bracket to the the feed bracket by eight M10 bolt. and then connect the the landscape orientation bracket to the longitudinal bracket by four M10 bolt.then connect the abdomen board to the one side of the landscape orientation bracket by twelve bolt,the other side is same. The function of the abdomen board is that connect the reflector bracket to the reflector. At last,connect the bracket to the ear-support which is in the foundation. (see Fig. 4).



1 the ear-support of the elevation 2 the abdomen board 3the landscape orientation bracket 4 the longitudinal bracket 5 the feed bracket

**Fig.4** the configuration of the bracket

4) The installation of the reflector: assemble the panels (the reflector)by the marks that 1—4, 2—5, 3—6. Assemble these antenna panels with the bolt that is in the panels on the ground, then connect the panel(2—5) which is in the middle of the reflector to the bracket. Connect the abdomen board to the reflector by the bolt that is on the abdomen board. (see Fig. 2).

5) The installation of the coaxial duplexer and the feed: connect the feed and the coaxial duplexer to the transition Chassis by the Semicircle Clasp. The polarization angle can adjust when the Semicircle Clasp is loosened, then connect the transition Chassis to the feed bracket with four M6 bolt. (see Fig. 5).



1 The reflector bracket    2 Semicircle Clasp    3 Transition Chassis  
 4 The feed    5 The feed bracket

**Fig.5** the configuration of the feed system

#### 6) Antenna adjustment

##### a. Adjustment of antenna elevation angle:

According to calculated antenna elevation angle, preset antenna reflector to calculated position by rotating large knob of elevation lead screw (refer to elevation scale), then trim elevation lead screw through knob to align antenna toward satellite.

##### b. Adjustment of antenna azimuth angle:

According to calculated antenna azimuth angle, approximately preset antenna to calculated azimuth angle, unscrew one large knob under tripod upright, then, referring to the scale, rotate large knob of azimuth lead screw to align antenna toward satellite. Adjust antenna to get optimum reception effect by azimuth & elevation adjustment, then screw down large knob on tripod upright to prevent antenna from shake during its operation.

#### 4 The maintenance of the antenna

**4.1** Fasten the foundation with the steel wire that the type is bigger than  $\varnothing 4$ . One side connect the foundation, the other side connect the anchor. Collections the antenna when the wind is bigger than the working wind.

**4.2** Smear the lubricate Grease to protect the bolt when the antenna is not used.

**4.3** It should be spray-paint when the antenna's reflector is worked two years. The bracket and the foundation should besmear gray paint to protect when they are damaged.

## The step of the installation



## The installation of the foundation



## the installation of the oblique knighthead



## the installation of the the azimuth thread

## the installation of the bracket and the feed bracket



**the installation of the main reflector**



**put the reflector on the bracket of the antenna**



**the installation of the feed and the coaxial duplexer**



**the overall figure of the antenna**