



9293M3 Antenna Control Unit

Model 9293M-3 antenna control units are designed to be used alongside antenna hardware for precision satellite tracking and telemetry control applications. The antenna control system is the primary control and monitoring interface for the system, featuring a user-friendly interface and menu-driven configuration.



Fig 1: Photo of ACU

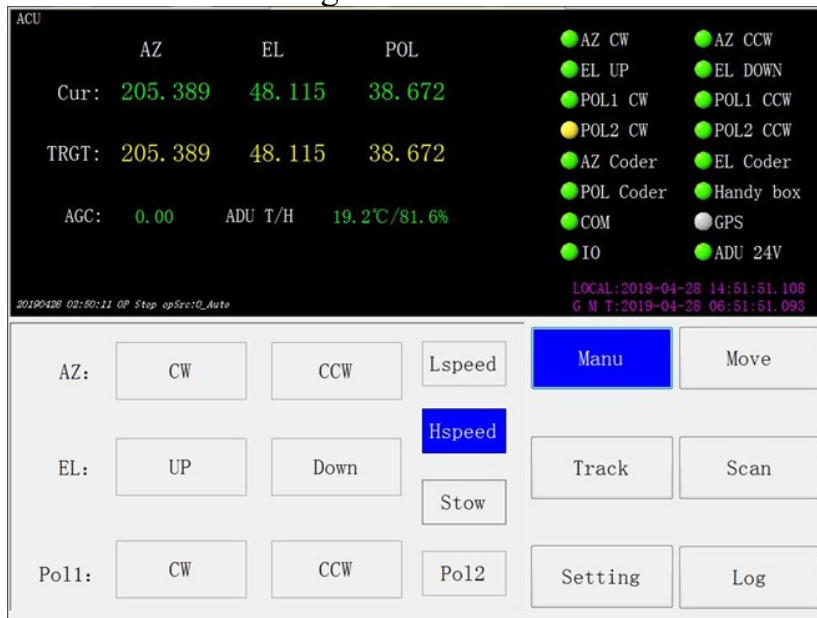


Fig 2. The photo of ACU display



Features

- Key Stroke Operation
- Target Tracking
- 100 Satellite Positions Preset
- Steptrack, Memory Track, Program Track, OPT
- Three Axis Control for Az, El and Polarization
- Antenna Position Setting
- Wherever position antenna locates, the position can be set at the operating panel or computer.
- Multi-speed Inverter
- Big Screen Display of alarm, antenna position and fault indication.
- Remote Control
- Linked Via Ethernet communication ports on the rear panel of the ACU.
- Secure Operation
- Software and hardware travel limit switches ensure the safety operation.

Technique Specifications of the Antenna Control Unit

Item	Description
Tracking accuracy	Step tracking: better than one tenth of the receiving 3dB beam width Program tracking: 0.02 °
Angle sensor	Single-speed brushless resolver and 16-bit or 18bit tracking RDC integrated circuit, Precision : $\leq 0.05^\circ$ RMS (16bit) $\leq 0.01^\circ$ RMS (18bit)
Display resolution	AZ、EL (16bit: 0.005°, 18bit :0.0015°), POL (0.08°)
Power input requirement	ADU working voltage: 380 (±10%) V, 50 (±5%) Hz; Power capacity: 10KW ACU working voltage: 220 (±10%) V, 50 (±5%) Hz;
Tracking interface	External beacon machine: RS232/ (0-10v) analog voltage input interface is optional, the connector is DB9(K) Built-in beacon machine: N-TYPE (K)
Telecommunicat	Standard RJ-45 network port

ion interface	
security	<p>(1)The soft and hard limits provide guarantee for the safe rotation of the antenna body</p> <p>(2)The inverter has the functions of short circuit, overload and phase - off protection</p> <p>(3)Independent air opening provides over-current and short-circuit protection for the equipment</p> <p>(4) Lightning protection is provided for the total power input and motor output outlet</p>
Operation environment	<p>Operating temperature of antenna controller: -10°C ~ + 50°C;Optional: - 40 ° ~ 50 ° C C</p> <p>Operating temperature of cable (standard) : -10°C ~ +50°C;Optional: to 40 ° C ~ 80 ° C</p>

Table 1

The system block diagram

The overall block diagram of 9293M3 antenna control system is shown in figure 1. Indoor equipment includes antenna control unit (ACU), tracking receiver and monitoring computer. Outdoor equipment includes antenna drive unit (ADU), drive motor, encoder and limit device.

ACU uses standard RJ-45 network cable to communicate with the monitoring computer, receives monitoring commands and data and reports servo status.

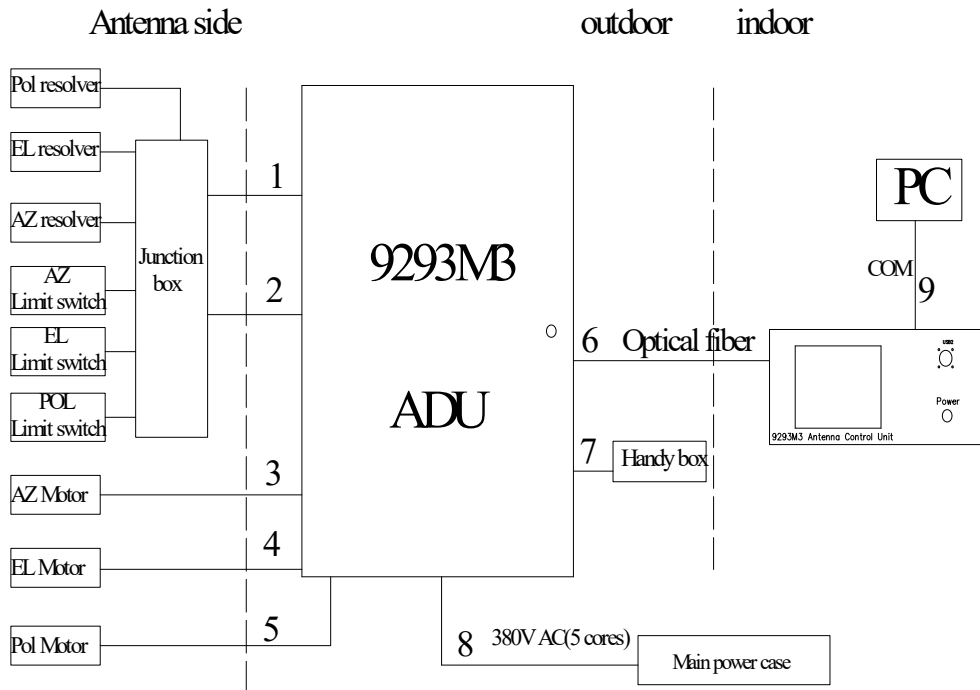


Fig1 Antenna servo system composition diagram

System hardware

1) ACU hardware

9293M3 ACU adopt Intel 3215U dual-core 1.7G high-speed processor, which provides a powerful guarantee for the realization of various algorithms in the system. The front panel is equipped with a power switch and a USB interface for easy data import and export. The display screen adopts 7.0-inch (16:9) TFT true color LCD touch screen, and the operation interface is simple and practical. The rear panel is equipped with 2 Ethernet interfaces (COM1,COM2) for user's remote monitoring.COM3 is a DB9 connector connected to the beacon, which includes 232 serial ports and AGC level acquisition interfaces. Users can flexibly choose the communication mode with the beacon.USB1 and USB2 make it easy for users to connect keyboard, mouse and wireless network card. The CONTROL interface is a single-mode optical fiber interface and communicates with ADU. The outline drawing of 9293M ACU is shown in figure 2.

The ACU configuration is as follows:

- Adopt Low-power consumption Intel 3215U, dual-core 1.7G high-speed processor;
- The system memory is DDR3 4G;
- 64G solid state drive;
- 7.0 inch (16:9) TFT true color LCD, 262K color;



- Resolution: 800X480 HD display;
- High strength touch screen, touch screen click times up to 1 million;
- Environment: WINDOWS 7 operating system;
- AGC level acquisition board;
- Network port to optical fiber module;
- USB2.0 interface.
- RJ 45 Network port

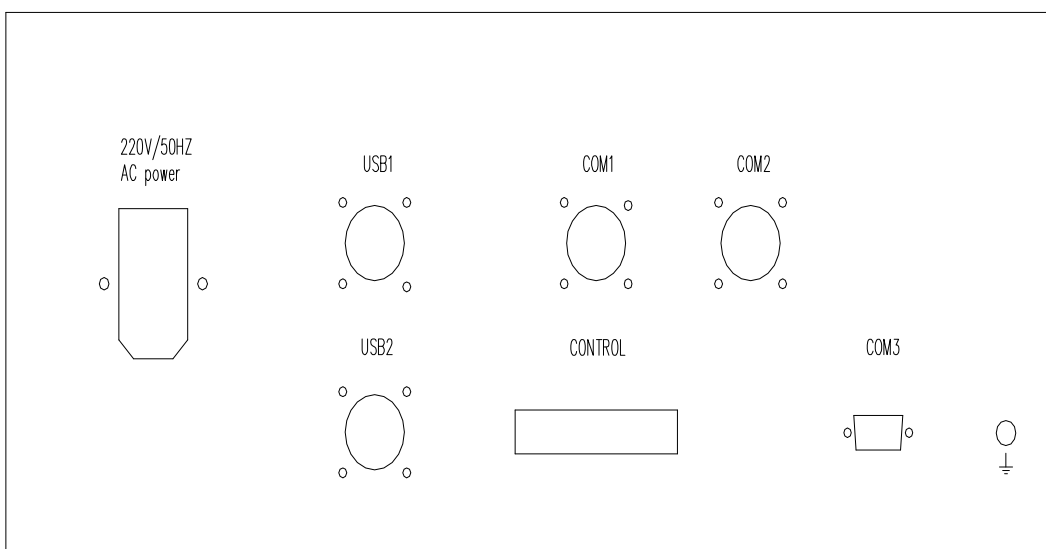
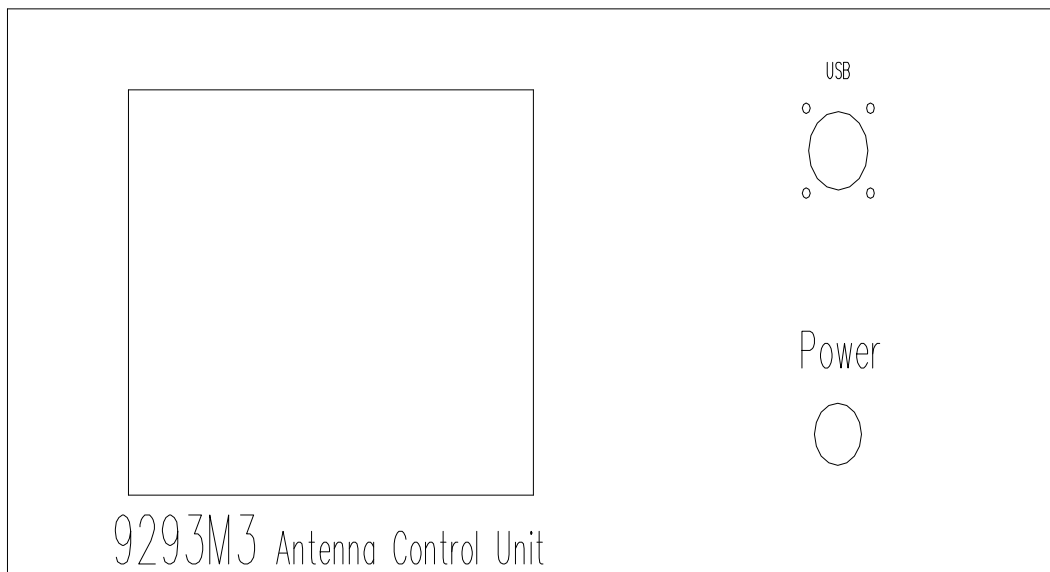


Fig 2 ACU

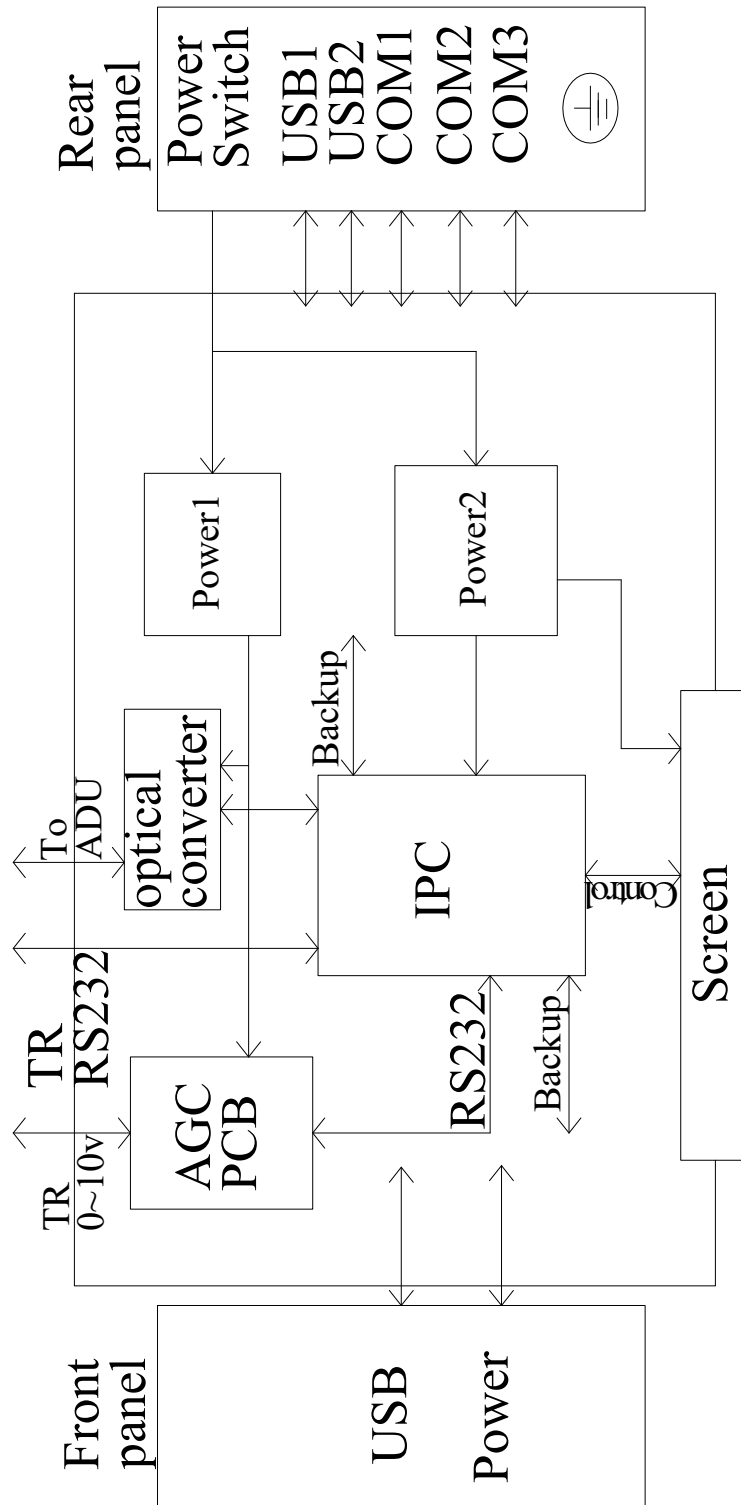


Fig 3

2) ADU hardware

The 9293M3 ADU box and its supporting legs are made of 304 stainless



steel material, which ensures no rust when placed outdoors for a long time. All outlet holes are waterproof.

The main hardware of ADU is as follows:

- Portable control unit(Handy box)
- Main and Inverter Drive Circuit Breaker
- EMERGENCY STOP SWITCH
- AZ Motor Drive Inverter
- EL Motor Drive Inverter
- 5V/24V DC Power Supply
- Control Circuitry for the POL Motor(In Three-Axis and Four-Axis System)
- Main Power and AZ/EL Lightning Arrester
- Center Control PC Broad
- RJ45-Optical converter

The main hardware diagram of ADU is shown in figure 4



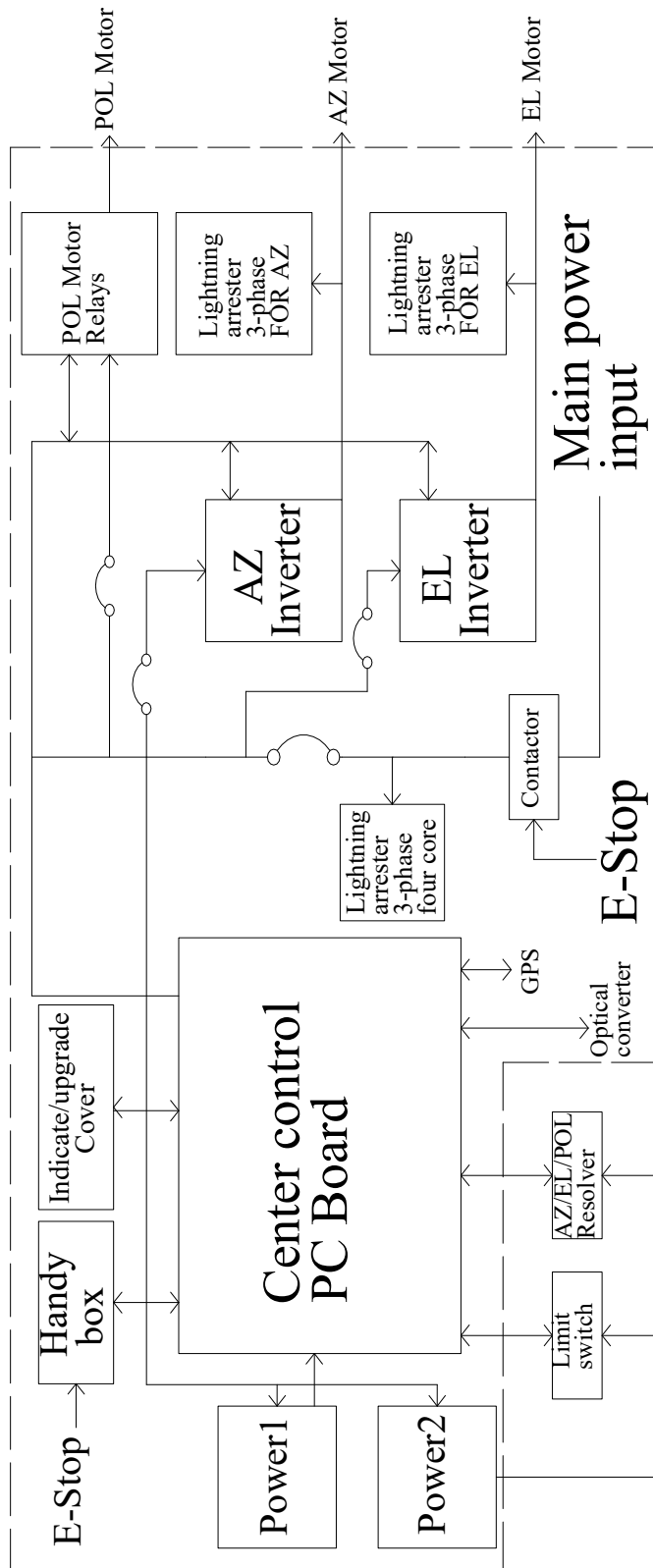


Fig 4