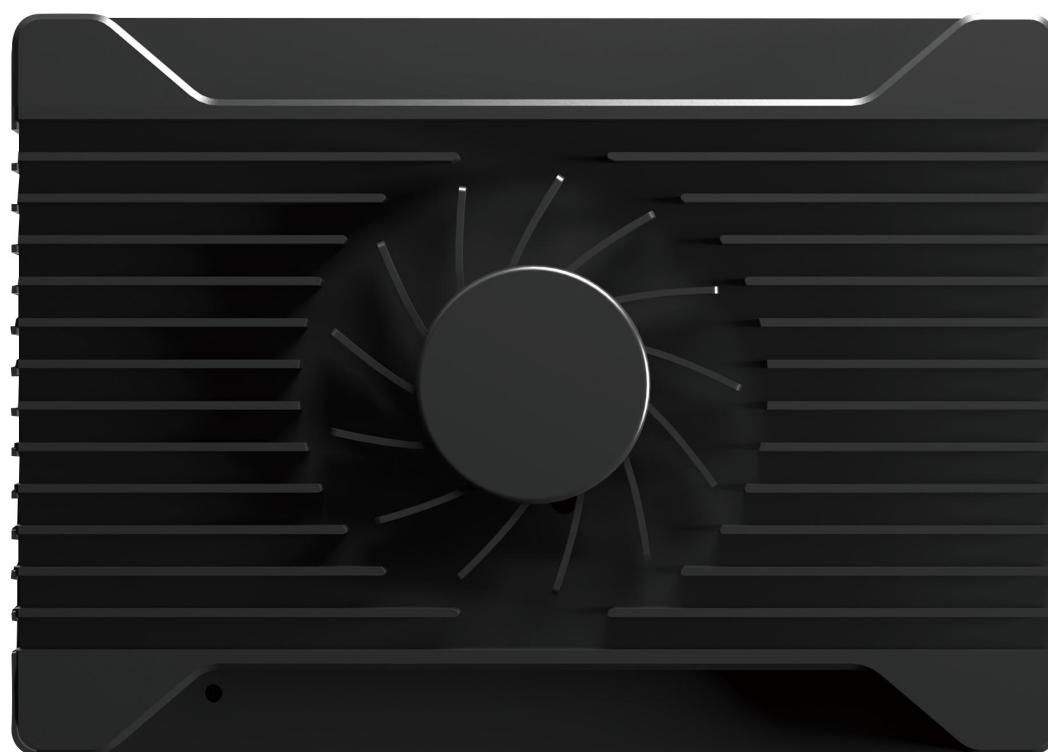


Aviation grade electronic control system

All-in-one integrated design

NEW GENERATION
FLIGHT CONTROL



In order to meet the requirements of functionality, integration and electromagnetic immunity of automatic control systems such as drones and unmanned vehicles in professional fields, our team has independently developed a new series of autopilot products, integrating automatic control and communication links. , differential positioning, power management and other functions in one, all indicators fully meet the requirements of military regulations.

Specification

Model No.	400PRO
Processor	STM32F427
Gyroscope bias	0.05°/s
Acceleration bias	±30mg
Barometer Accuracy	5cm
UART	5
I2C	2
ADC IN	2, Support 0-3.3V
PWM OUT	14
RC IN	1, Support PPM SBUS CRSF
RSSI	1 PWM or 3.3V analog voltage
USB	Type-C x 1
ETH	1
Power interface	2
GPS Support	2
RTK Frequency	GPS:L1C/A、L2P(Y)、L2C、L5 BDS:B1I B2I B3I GLONASS :L1 L2 Galileo:E1、E5a、E5b QZSS:L1、L2、L5
RTK Positioning Accuracy	Level : 0.8 cm + 1 ppm Range: 1.5 cm + 1 ppm
RTK Direction Accuracy	0.2° / 1m Baseline
RTK initialization Time	Cold Start: < 20S RTK Fixed: < 5S
Differential Data	RTCM 3.3 / 3.2 / 3.1 / 3.0 NMEA-0183
Buzzer	Built-in
TF Memory	4G
Communication Frequency	902-928MHZ
Network data transmission	Support, 64 machines at one station, relay,roaming
Video transmission	Support RTSP/UDP/RTMP
Communication Distance	10km
Operating Voltage	7V-60V
Servo output	5.6Vx4 way, 2A each way
Operating temperature	-20°C-+60°C
Dimension	80 x 56 x 22mm
Page volume (including antenna)	150g
Case material	CNC Aluminum alloy
Ardupilot firmware	Ardupilot 4.1 or Later
Model support	Fixed W/3-8 axis multi-rotor/helicopter/fixed VTOL/unmanned vehicle/unmanned boat/submarine

HIGH RELIABILITY INERTIAL SENSOR

Excellent long term stability

8^{°/h}

Three-axis
gyroscope

10_{mg}

Three-axis
acceleration

2[°]

Triaxial
Magnetic Field

2_{cm}

Position
Accuracy

5_{cm}

Height
Precision

1 LSB

Noise
Figure

±16_g

Seismic
ability

-40^{°C}

minimum
temperature

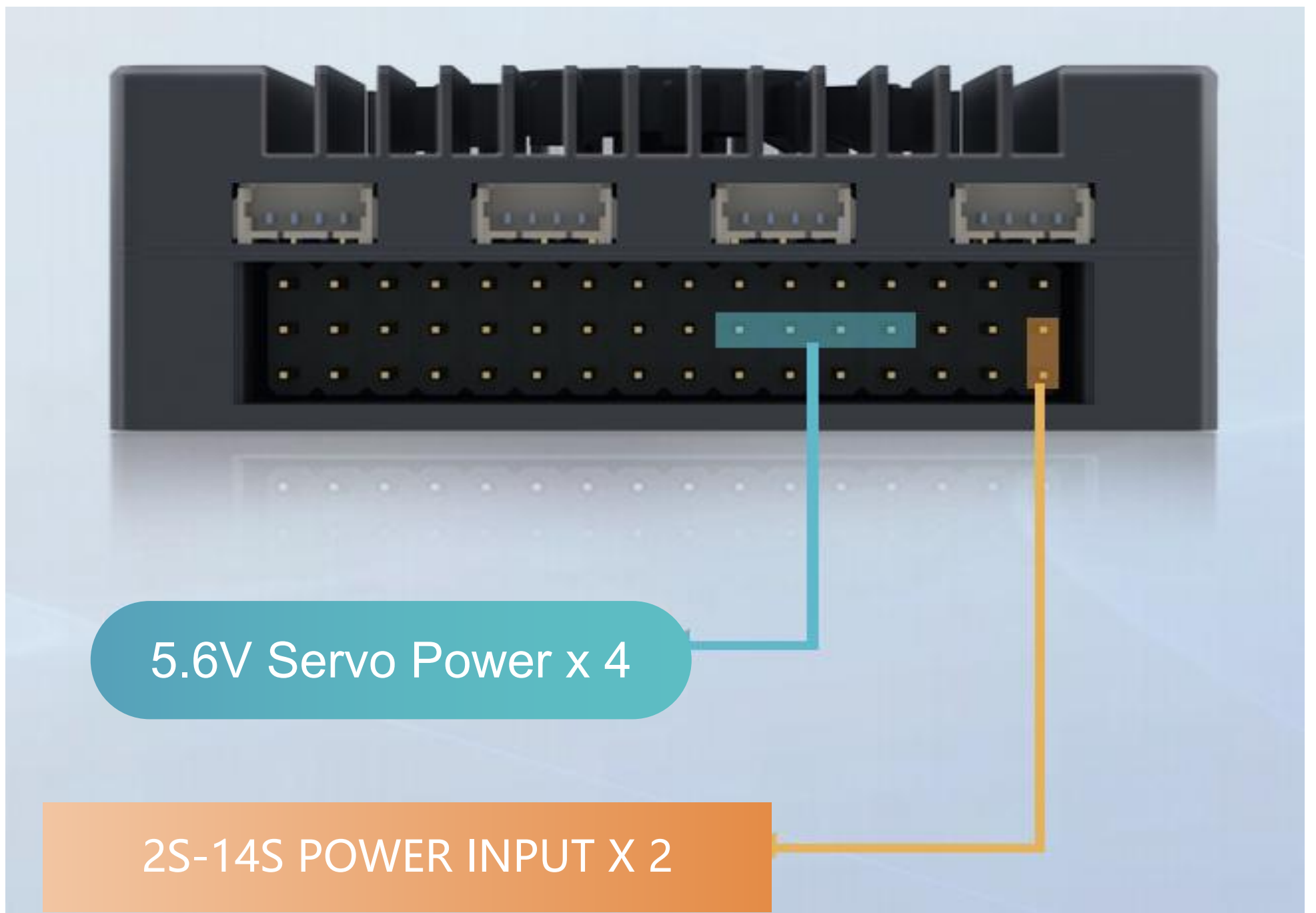
+85^{°C}

Maximum
Temperature

The sensor is one of the important indicators to evaluate the level of flight control. Our products use the industry's more advanced anti-seismic MEMS sensor. Compared with traditional devices, the noise figure is less than 1LSB, and the long-term zero drift is more stable, so as to ensure the highest accuracy under harsh working conditions.

HIGH VOLTAGE CONVERTER BUILT-IN

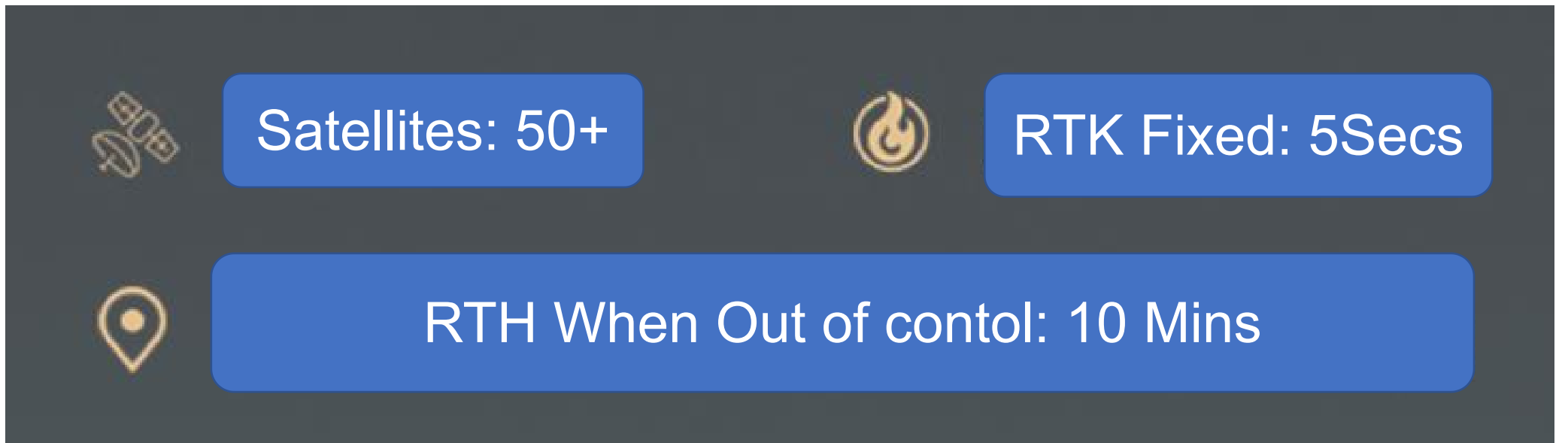
The third generation semiconductor process GaN



The application of advanced nitride iron material realizes the voltage regulation of up to 60V input power supply in a very small volume. Multiple independent power supply modules are integrated inside to fully guarantee the power consumption of peripheral equipment and steering gear, and it has overvoltage and overcurrent protection functions.

RTK CENTIMETER POSITIONING

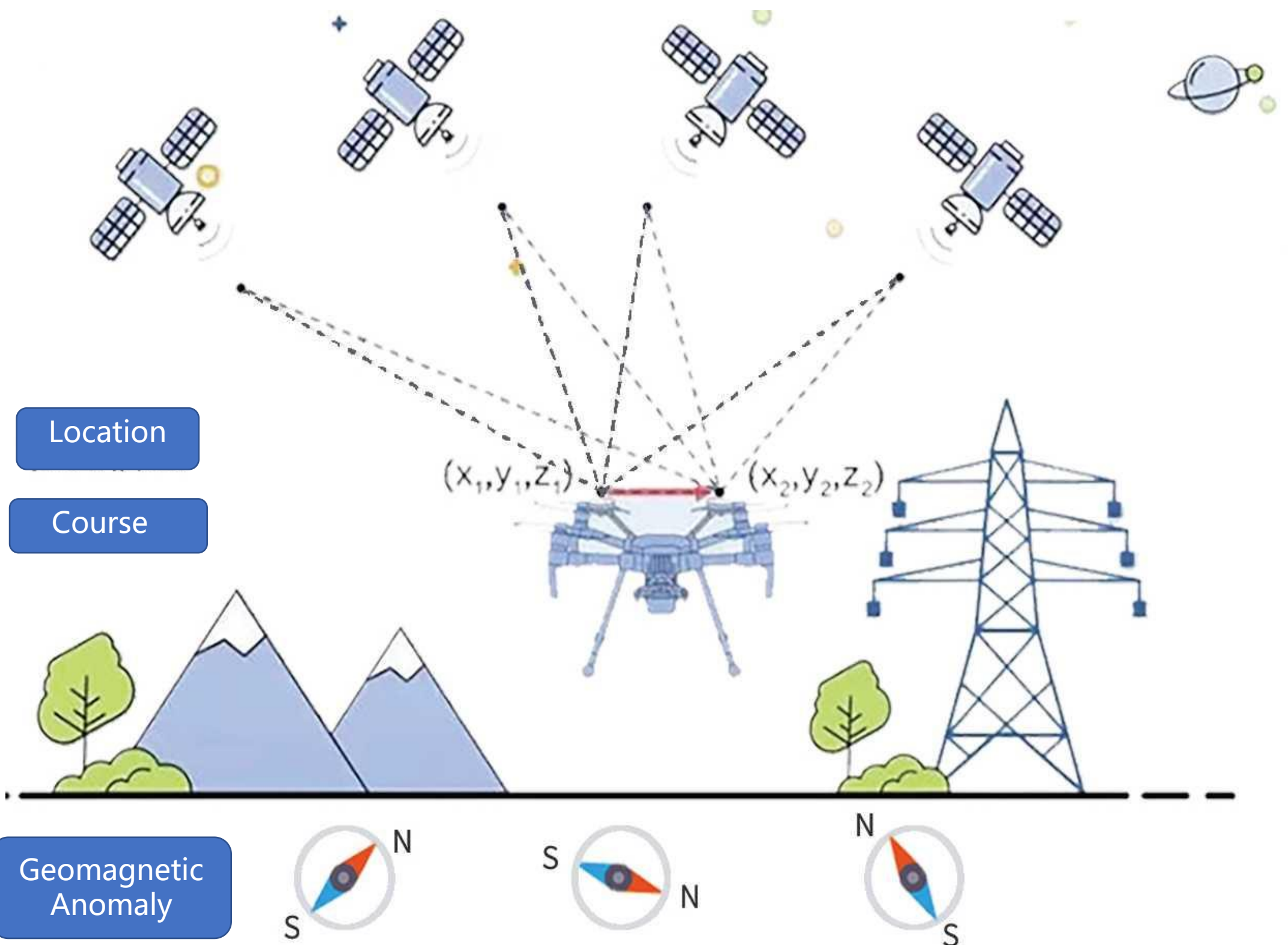
All Constellations | Full Frequency Band | High frequency



It adopts the new generation of BDS/GPS/GLONASS/Galileo/QZSS high-precision positioning and orientation module independently developed by Unicore, based on the new generation of radio frequency baseband and high-precision algorithm integrated GNSS SoC chip-NebulasIV design. The built-in advanced anti-interference unit ensures that the module can provide reliable and accurate positioning accuracy even in complex electromagnetic environments.

DUAL RTK POSITION AND HEADING

Magnetic compass does not need to be calibrated to cope with complex spatial environments

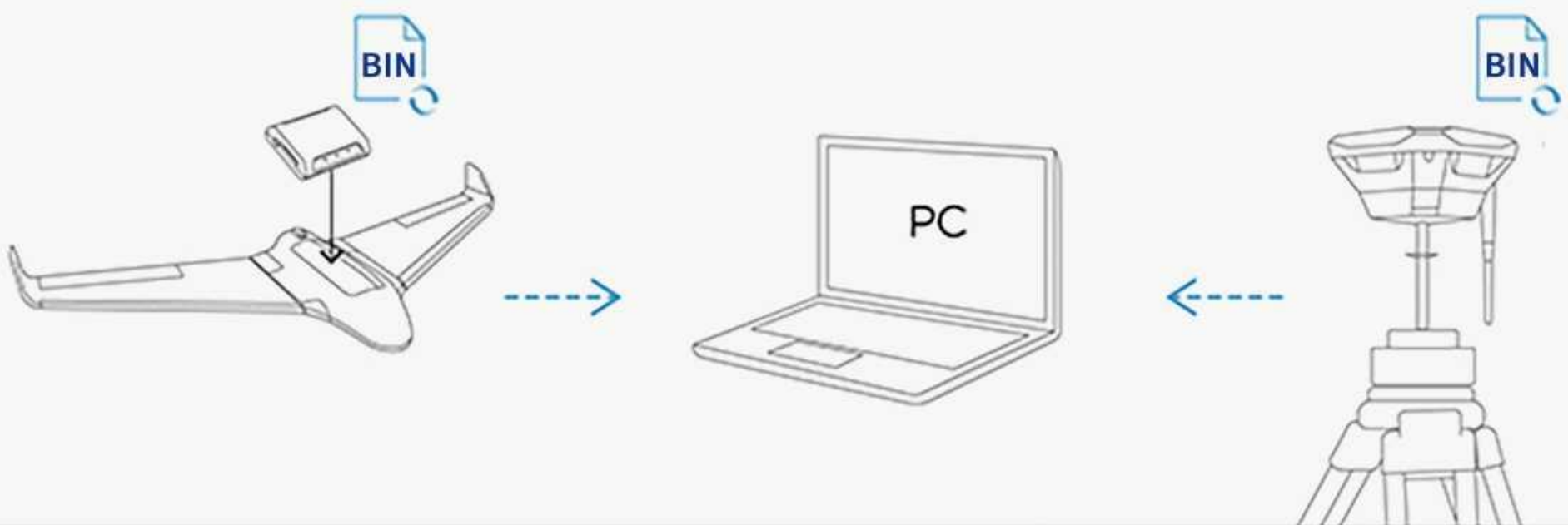


The dual-antenna direction-finding technology means that the master-slave two antennas form a baseline vector, and the angle between the baseline direction and the true north direction is obtained through differential analysis, so as to obtain the current heading of the aircraft, which can replace the magnetic compass for UAV navigation. Meet the application requirements in special environments such as power inspection and pipeline inspection.

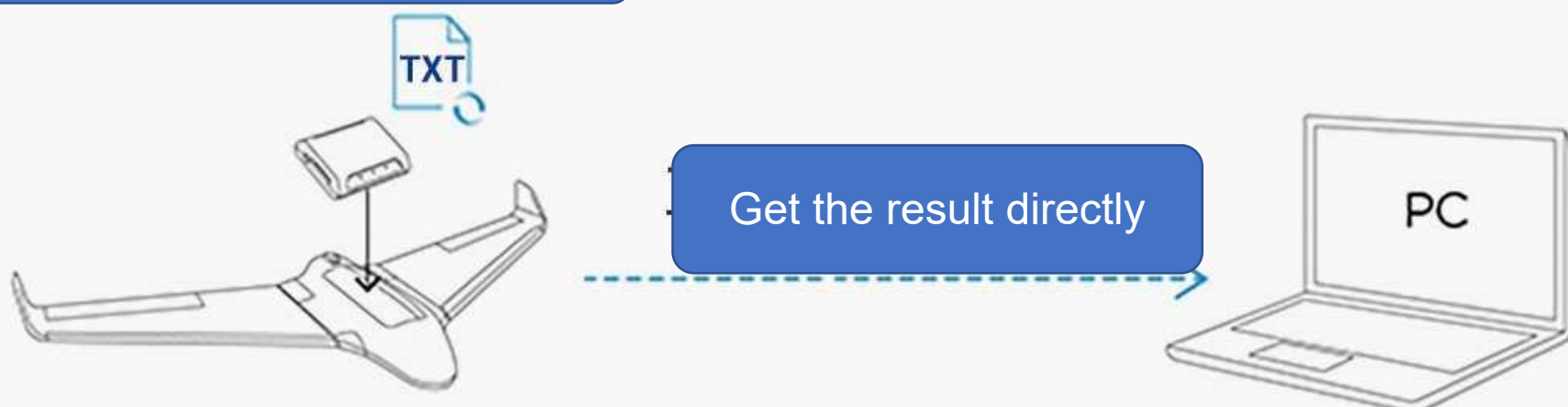
IMPROVED REAL TIME PPK PROCESSING

Quickly obtain accurate surveying and mapping results

Traditional Post-Processing PPK



IMPROVED REAL TIME PPK



In the field of aerial surveying and mapping, the traditional PPK post-processing technology is to record the data of the mobile terminal and the base station for calculation. This process depends on the quality and integrity of the satellite data. If there are problems that cannot be found in time, it may bring losses to users.

The new generation of airborne POS processing technology is based on the principle of PPK, which can accurately calculate the position of the photo in real time. The error between the test result and the PPK method is about 1 cm, which meets the requirements of high-precision surveying and mapping.

LOW FREQUENCY PRIVATE NETWORK

More stable distance and higher safety



The new generation of self-developed radio frequency wireless chip adopts high-quality low-frequency spectrum resources below 1GHz, avoids the widely used 2.4G and 5.8G public frequency bands, and has the characteristics of long transmission distance, strong diffraction, and high security. Independently developed the TDM modulation algorithm and spectrum dynamic sharing technology, which maximizes the spectrum efficiency, supports a maximum bandwidth of 32Mbps, and users do not need to set the communication frequency, and automatically realizes the coexistence of multiple devices.

NETWORKING COMMUNICATIONS LINK

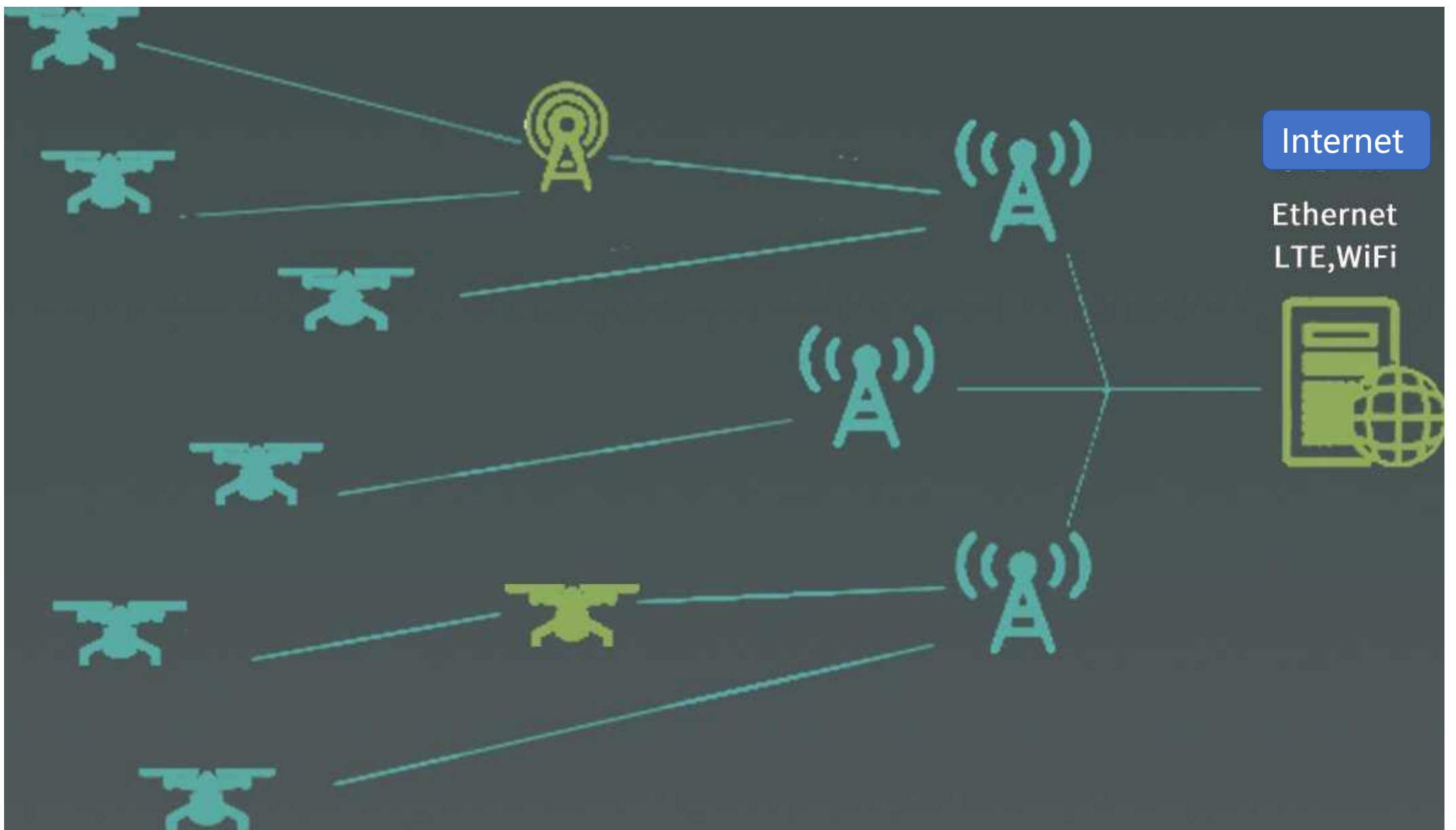
One Station 64 Machines | Intermediate relay | Seamless roaming

Drone

Intermediate relay

Station

Server



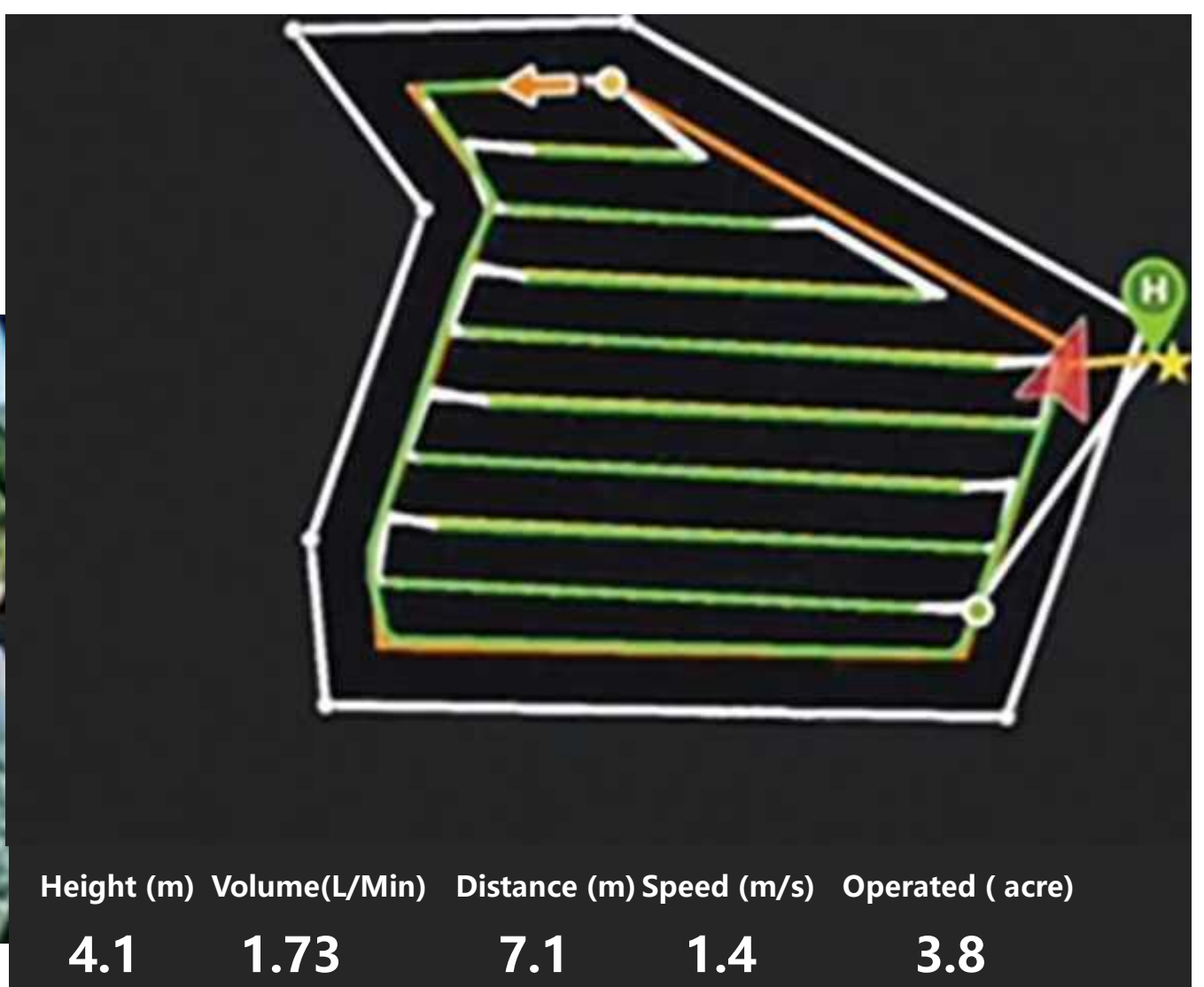
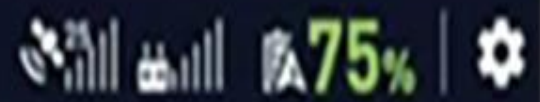
A single node supports communication with up to 64 devices. Users no longer depend on network operators, and can completely set up ground base stations and relay stations independently. The running devices can realize roaming communication between different base stations, so as to achieve full coverage of the area, which is especially applicable for scenarios that require batch deployment and cluster control.

HD DIGITAL VIDEO TRANSMISSION

Multi-channel Parallel Transmitting | Low latency | Strong Compatibility



Airline operations
(Satellite Positioning)



The advanced IP network organizes data transmission, and can transmit multiple high-definition video streams and data streams concurrently under the condition of sufficient bandwidth. Various video signals (such as HDMI) are converted into network signals by an external video converter for transmission. The network protocol supports RTSP, UDP, RTMP and other arbitrary formats. The high-definition video display delay is as low as 180ms, and it cooperates with our ground station software to realize switching multi-channel video and picture-in-picture display.

TURBINE FAN HEAT DISSIPATION

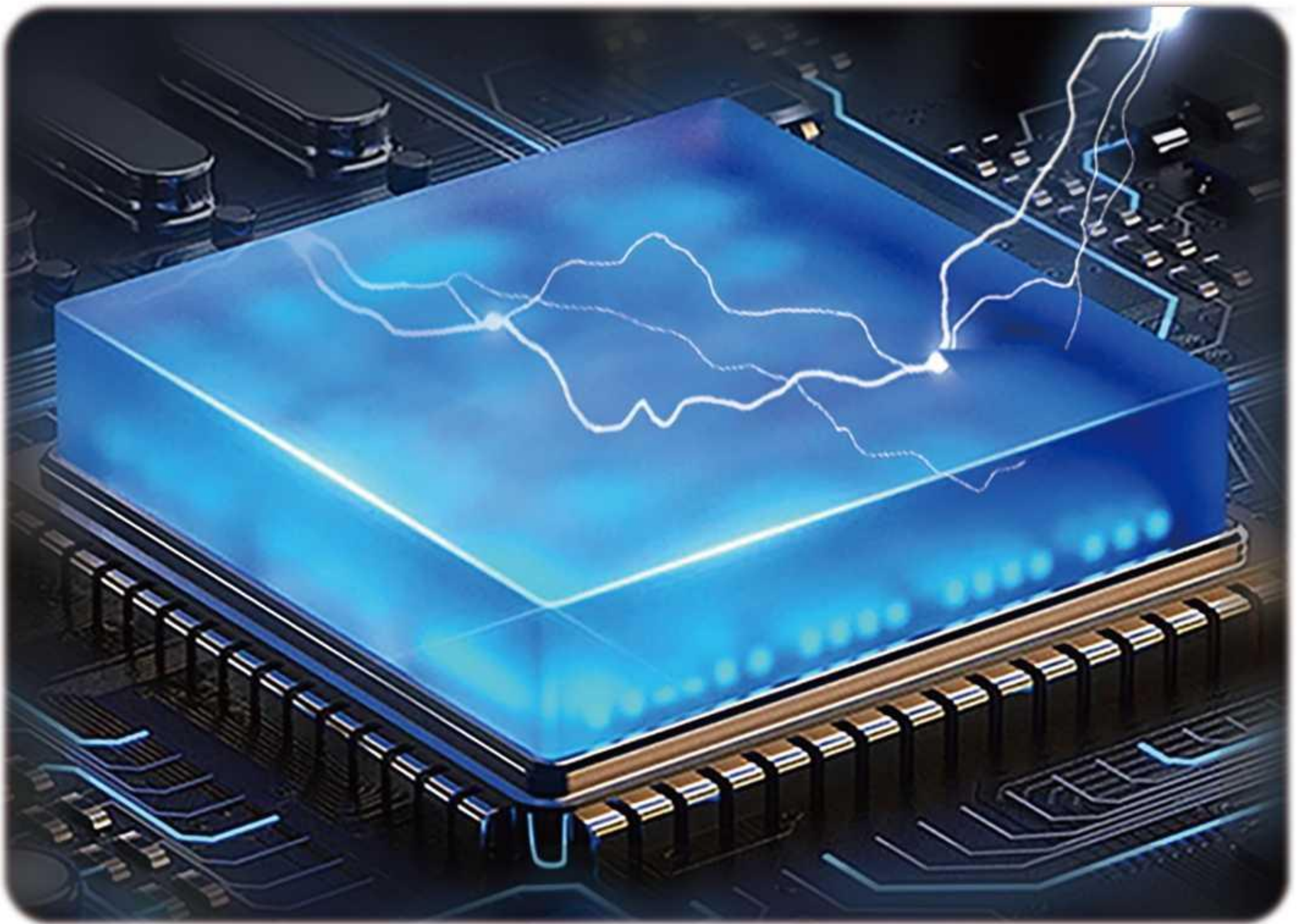
Active cooling without fear of heat and radiation



The design of compact integrated integrated products often needs to consider the heat dissipation. In order to meet the global use, such as the equatorial high temperature environment or the harsh solar radiation conditions at high altitudes, the design adopts advanced turbo centrifugal heat dissipation with a speed of up to 8000 rpm. The turbo per minute generates strong centrifugal force. With the help of the bi-directional fin-type air duct design, the CPU level directly touches the heat-conducting structure, so that the product maintains "zero temperature rise" at all times.

PORT OF HIGH VOLTAGE RESISTANT

Satisfy the stringent ESD standard of
industrial grade



The peripherals in the industrial system environment have the voltage and possibility of electrostatic shock, which will cause attenuation or complete destruction of chip port drive capability. The product applies a new generation of high-voltage ESD port composite protection technology

Possibility of electrostatic shock, which will cause attenuation or complete destruction of chip port drive capability. The product applies a new generation of high-voltage ESD port composite protection technology

It only has 30kV anti-static ability, and realizes the ability to withstand and protect the continuous voltage of 60V. Both the allowable time for the impact on the port and the range of the withstand voltage are far beyond the protection standards of standard devices.

SOLID STATE DAMPING STRUCTURE

Sensor remains stable under extreme vibration conditions



Most traditional manufacturers use built-in shock-absorbing foam for IMU shock absorption. This shock-absorbing method has the following disadvantages. There are individual differences in adaptability to models. It is easy to cause the overall deviation of the internal frame under impact vibration. In severe cases As a result, the posture is abnormally shaken, and the elastic modulus of the foam material changes at high and low temperatures, so the shock absorption characteristics are prone to change. After years of continuous testing and verification, Our team referred to the shock absorption principle of the rocket engine and successfully developed a dynamic shock absorption solution, which is no longer limited by the vibration amplitude Value and frequency changes, and can be well adapted to harsh conditions such as high and low temperature environments, high vibration, and high impact.

COMPATIBLE WITH ARDUPILOT ECOLOGY

Simplify parameters and optimize control algorithms for models

Partners

pixhawk

 **MAVLINK**
MAVROBOT AIR VEHICLE COMMUNICATION PROTOCOL

ROS

 **QGroundControl**

ARDUPILOT

 **MAVSDK**

The product not only has mature services and extensive global support, but also maintains close cooperation with the open source community and provides various contributions. our software protocol stack has made a technical architecture compatible with open source solutions, which means that a wide range of technical teams around the world can realize rapid transformation from open source ecology to our products based on existing technical knowledge and experience. At the same time, our product firmware can provide firmware modification or optimization services according to the characteristics of user models, and in the process of cooperation, it can also enable both parties to expand channels and discover more business opportunities.

STATION FOR CONTROL AND VIDEO TRANSMISSION

Abundant interfaces, compact and strong, easy to deploy



The communication base station is responsible for transmitting wireless data with the mobile station. A single base station can communicate with up to 64 mobile stations at the same time, and multiple base stations or relay stations can be deployed on the ground to form a network. At the same time, in order to facilitate customers to connect laptops or mobile phones, we have designed a variety of wired and wireless interfaces for the base station, including 100M Ethernet and TYPE-C interfaces suitable for low-latency transmission of video signals, and integrated W old signal. The base station supports user-defined configuration, one-key pairing, and signal strength indicator functions.

COMMUNICATION STATION SPECIFICATION

Frequency	
Communication frequency	902MHz-928MHz (700MHz-960MHz customizable)
Transmission rate	4-32Mbps
Transmit power	26dBm (30dBm-40dBm Customizable)
Receiver sensitivity	-102dBm
Transmission distance	10~20KM (Elevated Accessibility)
error detection	32bits CRC/ARQ
Encryption Algorithm	128bits AES
Operating mode	Point-to-multipoint, relay, roaming
Multi-point quantity	64sets
Internet access time	<3 seconds
Network access method	One-key auto-negotiation or software configuration
Job diagnosis	PING、 ARP、 DHCP、 IPerfx RSSI、 OTA
Anti-jamming_	Built-in SAW filter, excellent strong signal interference and suppression characteristics
Certificate	FCC/CE/SRRC
communication Port	Ethernet、 TYPE-C、 WIFI
Indicator light	WIFI x 1 RSSI x 3
Voltage	5-24VDC
Power consumption	Peak value: 2W
Connector	TNC x 1 (Link antenna) SMA x 1 (WIFI antenna) RJ45 x 1 (Ethernet) USB Type C x 1 (Ethernet) XT30 x 1 (Power)
Operating temperature	-40° C to +85° C
Working humidity	5%-95%
Weight	Approx. 150g
Dimension	75 x 70 x 35mm
Package	6061Aluminum Case
Protection class	IP65