30-3000MHz Portable 5-element Array Direction Finding Antenna

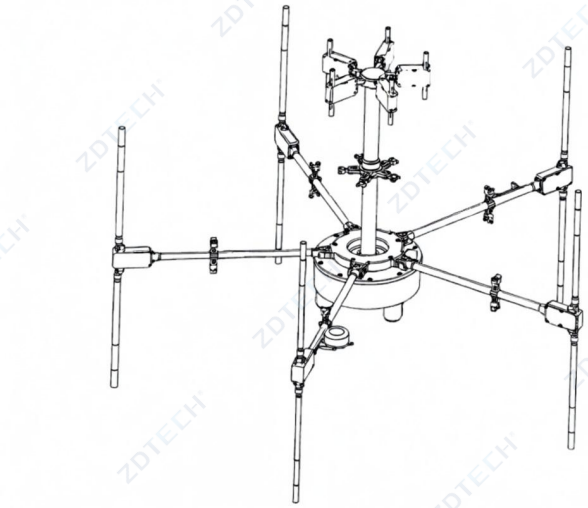
1. Overview

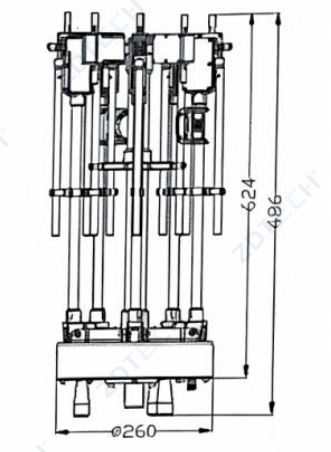
This product is used for receiving ultra-short wave communication signals in the 30MHz~3000MHz frequency range. It features lightweight design, compact size, and foldable storage for excellent portability.

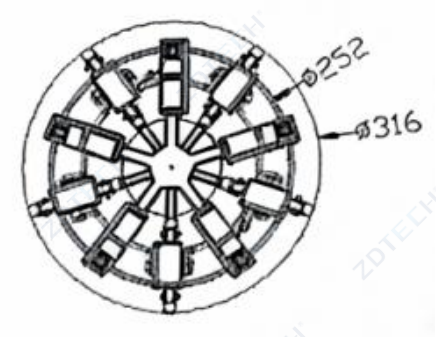
2.Product Composition

The portable five-element array direction-finding antenna consists of direction-finding antenna units, a direction-finding switch, antenna cables, an antenna support frame, output sockets, control power supply sockets, and other components.

Each antenna unit employs broadband active antenna technology with optimized broadband matching design. This significantly reduces the antenna size, thereby minimizing mutual coupling effects between antenna units. The phase distribution of the antenna array remains stable across the entire frequency band with no singularities.Folded state dimensions: ≤690mm × Φ320mm.Weight: ≤5.2kg (excluding Beidou differential antenna).

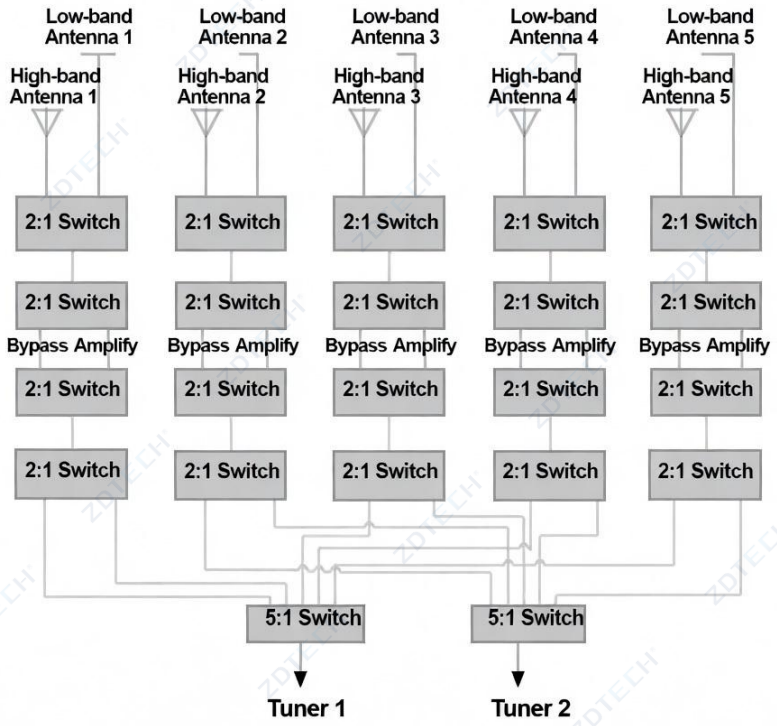






3.Working Principle

The antenna receives 5 channels of low-band signals and 5 channels of high-band signals. These signals are processed through the direction-finding switch to output 2 channels of signals, which are then fed into the direction-finding receiver.



The antenna adopts a miniaturized, modular, and foldable structural design. It can be fixed with a tripod. Installation and setup are convenient. It offers excellent wind resistance, rain resistance, and lightning protection performance, making it suitable for field portable use.

4.Antenna Structure

The antenna unit is the core component of this equipment. When designing the antenna unit, the main considerations are the operating frequency range, receiving dynamic range and sensitivity, and the amplitude-phase consistency and stability of the antenna units.

The antenna array is designed for two frequency bands with a wide frequency span. All antenna units are vertically polarized dipole antennas. Therefore, ultra-wideband antenna design methods are required to ensure that the antenna characteristics remain consistent or change minimally across the operating frequency range.

5.Performance

Frequency Range	30MHz-3000MHz (divided into two bands: 30-600MHz and 600-3000MHz)
Antenna Gain	≥0dBi (typical value)
Antenna Non-circularity	≤3dB (typical value, design guaranteed)
VSWR	≤2.5:1
Polarization	Vertical
Characteristic Impedance	50Ω (nominal)
Antenna Array Configuration	30-600MHz: Five-element circular array 600-3000MHz: Five-element circular array Two-layer coaxial installation, with low-band antenna arms foldable
Antenna Array Aperture	30-600MHz: 1200mm 600-3000MHz: 252mm
Low-band Element Length	680mm
Active Antenna Section	Output second-order intercept point: ≥45dBm (design guaranteed) Output third-order intercept point: ≥30dBm (design guaranteed)
Consistency Between Array Elements	30-600MHz: Amplitude inconsistency ≤2dB(RMS),Phase inconsistency 3° (RMS) 600-3000MHz: Amplitude inconsistency ≤2dB (RMS),Phase inconsistency 5° (RMS)
Element Antenna Receiving Sensitivity	30-600MHz: ≤10 μV/m (typical value, S+N/N=3dB, BW=15kHz); 600-3000MHz: ≤15 μV/m (typical value, S+N/N=3dB, BW=15kHz)
Burnout Resistance Power	1W continuous wave (design guaranteed)
Switching Time Between Two Frequency Ban	≤1ms (design guaranteed)
Switching Time Between Different Channels In The Same Frequency Band	≤1μs (design guaranteed)
Power Supply Input	9-36VDC (occupies 4 pins in the control interface)
Power Consumption	≤24W
Color	Painted GY05 brown-green (orange peel texture). The mounting adapter and support feet on the antenna base are black

6.Environmental Adaptability

Temperature	Operating temperature: -40℃ ~ +55℃ Storage temperature: -50℃ ~ +65℃
Damp Heat	Alternating damp heat test per GJB150.9A-2009: 95% ± 5% (alternating damp heat at +30℃ and +60℃; relative humidity may drop to 85% during temperature decrease). One 24-hour cycle, total 10 cycles
Sand And Dust	Meets GJB150.12A-2009 test method
Shock	Meets GJB150.18A-2009 test method. In backpack carrying state, tested according to Procedure IV of GJB150.18A-2009. Dropped once each from 1 meter height onto the bottom, left side, right side, and outer side using free fall. Equipment performance and structure shall remain intact
Vibration	In transportation state, meets GJB150.16A-2009. Frequency: 10Hz~500Hz. Vertical axis: 1.04grms, Longitudinal axis: 0.74grms, Lateral axis: 0.204grms. Three axes, 1 hour per axis. Equipment not operating
Plateau Adaptability	Suitable for altitudes of at least 5000m
Immersion	1 meter water depth for 30 minutes
Mold	Capable of inhibiting mold growth. Mold growth rating: Grade 2
Salt Spray	Meets the requirements of GJB150.11A-2009. The antenna shall use corrosion-resistant materials and treatments. It can operate normally for long periods under salt spray sedimentation rate of (1~3) mL/(80cm²·h)
Wind Resistance	The equipment can operate normally in Level 6 winds and will not be damaged in Level 8 winds