S BAND DUAL POLARIZATION WEATHER RADAR

The S band dual polarization full coherent weather radar is a new generation weather radar of China, which is a version with addition of dual polarization function based on the Doppler weather radar. It has two operation modes, one is the dual linear polarization transmit/receive mode, the other is the horizontal linear transmit and dual linear polarization receive mode.

The S band dual polarization weather radar can detect in real time not only the conventional Doppler weather parameters, such as echo intensity (dBz), radial velocity (v) and spectrum width (w), but also the dual polarization Doppler weather parameters, such as echo horizontal vertical differential reflectivity factor (ZDR), special differential phase (Kdp), zero delay correlation variable phv (0) and linear depolarization ratio (LDR). The radar can detect the shape, size, pointing angle and dielectric constant of relevant particles to realize the identification of echo characters, improve the accuracy of quantitative measurement on precipitation so as to do more accurate weather forecast. The radar is applicable for weather, weather artificial intervention, water conservancy, aviation, military and scientific research sectors.

Main Technical Features

H/V dual polarization transmit and horizontal single polarization transmit selectable;
Dual channel simultaneous receive and processing of echo H/V polarization signal;
Long range wireless remote control and data transmission;
Advanced BITE function and on-line failure identification/help system;
Dual channel large dynamic linear digital IF receiver and Doppler signal processor;
Real time echo range unfolding and velocity unfolding;
Real time dual channel on-line auto Doppler signal detection and calibration;
Antenna azimuth positioning by sun method and automatic detection of pitch position;
Network terminal and various dual polarization weather produc
Multi-scan modes (PPI /RHI /volume scan), continuous operatio

Main Performance Specifications

Operation frequency 2700-2900MHz
Intensity monitoring range ≥500KM
Intensity measuring range ≥250KM
Velocity monitoring range ≥300KM
Dual polarization monitoring range ≥250KM
Azimuth scanning 0° ~360°
Elevation scanning -2° ~+90°
Positioning accuracy 0.1° for azimuth
0.1 ° for elevation
Parameter measuring range
Intensity -10 ~ +70dBz
Velocity +-52m/s
Spectrum width 12m/s
Parameter measuring accuracy
Intensity 1dBz
Velocity 1m/s
Spectrum width 1m/s
Differential reflectivity factor (ZDR) 0.2dB
Special differential phase (Kdp) 0.2° /km
Correlation variable (phv) 0.01
Linear depolarization ratio (LDR) 1dB

Probecom

http://www.probecom.cn

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Main Performance Specifications

Radar system phase stability ≤0.3°

Clutter cancellation capability 30~50dB

Main Technical Specifications

Antenna radome

Diameter 12m

Wind resistance able to work at wind 50m/s

no damage at wind 60m/s

Antenna

Diameter 8.54m

Beam width ≤0.95°

Gain ≥45dB

Side lobe level ≤-29dB

Polarization horizontal and vertical linear polarization

Linear polarization isolation ≥37dB

Antenna servo scanningmode PPI, RHI and volume scan

Antenna PPI speed 0~36° /s

Antenna RHI speed 0~12° /s

Transmitter

Pulse power ≥250kw

Pulse width 1μs, 4μs

PRF 300~1300Hz (1μs)/ 300~450Hz (4μs)

Receiver

Linear dynamic range ≥92dB

Minimum detectable sensitivity ≤-107dBm (1μs)

≤-113dBm (4μs)

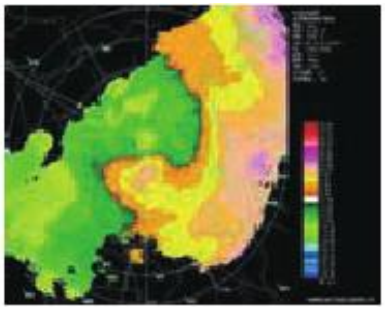
Signal processor

RVP8 digital IF signal processor, 14 bitA/D, 79MHz sampling frequency, PPP/FFT/DPRF velocity unfolding, random phase coding range unfolding.

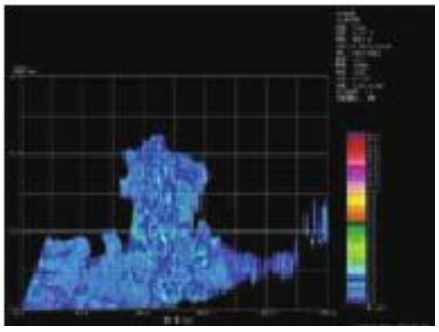
Terminal

Echo intensity (dBz), radial velocity (v), Spectrum width (w), differential reflectivity factor (Zort), special differential phase (Kdp), correlation variable (phv), linear depolariza-tion ratio (LDR).

PPI/RHI/CAPPI basic data products/physical products/identification products/forecast products/wind shear products.



PPI radial velocity (32 layer)



RHI spectrum width (32 layer)

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