

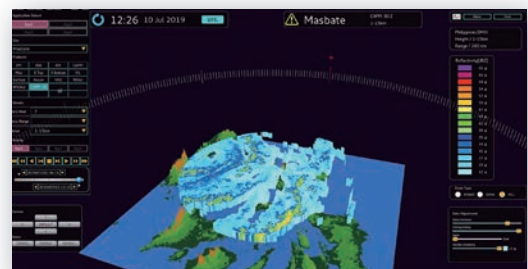


JMA-543 RAINWATCHER Series

C-band Polarimetric Radar Rainfall Sensor with Full Solid-State Technology

Features

- **C-band Dual Polarization System with Advanced Full Solid-State Technology**
- **All-in-One System**
 - No extra space required for Tx/Rx. Antenna unit and Tx/Rx Unit are in One Radome. Observation data is directly connected to the radar workstation via LAN cable.
- **Severe Weather Resistant - 125m/sec**
 - JRC has extensive experience for radar observation in severe weather.
- **Higher Technology with Smaller Power**
 - JMA-543 consumes less power than conventional systems and allows the use of smaller, less expensive generators in case commercial power supply is not available.
- **Long Life Design**
 - The replacement cycle is significantly longer than that of conventional technologies, which greatly reduces the time required for maintenance.
- **Maintenance Support**
 - Technical experts will help you to troubleshoot and solve any problem as soon as possible. (Optional)
- **No Warm-Up Time/ Ready to Start**
 - No preheating is needed for activation. Even in case of contingent shutdown, the system will resume in no time.
- **Optimized for JRC Weather Radar Software**
 - Combining with JRC Weather Software, ideal and optimized weather data analysis will be in your hand.
- **Accurate Observation for Various Fields**
 - JMA-543 is able to observe any rainfalls in various fields with high accuracy, for worldwide high-end Disaster prevention, Dam control, Flood Warning, Landslides etc.





SYSTEM	
Type	Solid State Dual-Polarization Doppler Radar
Operating Frequency	5.6 - 5.8 GHz
Pulse Width	Short Pulse (P0N) : 1.0 / 2.0 μsec Long Pulse (Q0N) : 50 / 100 μsec
Pulse Repetition Frequency(PRF)	Up to 2,500 Hz
Staggered PRF Ratio	Non, 3:2, 4:3 or 5:4 (Selectable)
Maximum Mean Radial Velocity	±16, 32, 48 or 64 m/s (Depends on PRF)
Observation Range	300 km @ 23 dBZ (Max. 400 km)
Output Raw Data	Received Signal Power (Pr) Radar Reflectivity (Zhh, Zvv) Doppler Velocity (Vh) Spectrum Width (Wh) Differential Reflectivity (ZDR) Differential Phase (φdp) Specific Differential Phase (Kdp) Correlation Coefficient (ρhv) Linear Depolarization Ratio (LDRvh/hv)
Operating Temperature	Outdoor: 0°C to +50°C Indoor: +5°C to +35°C
Operating Relative Humidity (Non-dew condensation)	Outdoor: ≤ 95% @ <40°C, ≤ 75% @ ≥40°C Indoor: 20% to 80% @ 25°C
Power Consumption	≤ 5.0 kVA @ 100-240 VAC, 50/60 Hz
ANTENNA / PEDESTAL	
Type	Parabolic, prime-focus reflector
Reflector Diameter	Approx. 4.3 m (=14.1 feet)
Antenna Gain	≥ 45 dB
Half Power Beam Width (Typical)	≤ 1.0°
Polarization	Linear Horizontal & Vertical Dual Polarization (Simultaneous & Alternative H/V & Fixed Horizontal or Vertical Transmission)
Side Lobes (max)	≤ -26 dB
XPD (Cross Polarization Discrimination)	≥ 35 dB
VSWR	≤ 1.4
Pedestal Structure	Elevation over Azimuth
Angle Span(Azimuth)	Full 360°
Angle Span(Elevation)	-2 to +90° (0.1° step)
Scanning Speed	AZ: 0 - 6 rpm (0.1 rpm step) EL: 0 - 3 rpm (0.1 rpm step)
Angle Resolution	≤ 0.1° (angle bits: ≥ 14 bits)
Angle Data Accuracy	≤ 0.1°
Weight	Approx. 1,500 kg
Safety Devices	Safe Switches

RADOME	
Type	Sandwich, Fiberglass with Polyurethane Foam Core
Size	Approx. 8.2 m (= 26.9 feet)
Weight	Approx. 2,800 kg (without Base Rings) Approx. 4,600 kg (with Base Rings *) *Base Rings Weight may change depending on radar building design
Transmission Loss	≤ 0.5 dB (one way, dry surface)
Difference of Loss between H/V	≤ ±0.1 dB
Beam Shift	≤ ±0.1°
Survival Wind Speed (gust)	≤ 125 m/s
Lightning Protection	Lightning rod
Accessories	Zenith hatch, Obstruction lights, Maintenance ladder
TRANSMITTER / RECEIVER (RF-IF)	
Transmitter Type	Solid State Power Amplifier · Simultaneous & Alternative H/V & Fixed Horizontal or Vertical Transmission · No transmitting tube
Peak Power	400 W (H) + 400 W (V)
Occupied Frequency Bandwidth	≤ 4.4 MHz, V0N (P0N+Q0N)
Off-center Attenuation	≥ 60 dB @ ±10 MHz
Transmission Blanking	AZ and EL
Receiver Type	Double Superheterodyne with Image Reject Mixing
Minimum Discernible Signal	≤ -110 dBm @ 1.0 μsec pulse width
Noise Figure	≤ 2.0 dB
Linear Dynamic Range	≥ 110 dB (With STC)
IF DIGITAL RECEIVER / SIGNAL PROCESSOR	
Type	Multi-channel Digital Receiver & Signal Processor
Intermediate Frequency	60 MHz
IF Sampling	Up to 96 MHz
A/D Resolution	16 bits for each polarization
Pulse Compression Ratio	< 150
Processed Range Bins	Up to 2,500
Processing Resolution	25 m
Processing Mode	FFT
Clutter Suppression Capability	≥ 50 dB
Clutter Filter	Coherent MTI method
2nd Trip Echo suppression	2nd trip echo removal by near / chirp frequency shift 2nd trip echo removal by phase control
Interference rejection	Pulse interference noise rejection by comparing receiving power from the same distance
RADAR WORKSTATION	
Computer System	Commercial Off-the-Shelf PC, with latest technology
Operating System	Linux
Application Software	· Radar control, monitoring and observation scheduling of volume scan observation · Quick graphical overview of the status of the Radar units · Presentation of BITE for all radar system equipment · Calibration for geographical alignment by means of sun tracking · ZDR calibration by Zenith Scan and Sun Noise · Radar supervise on remote Web image · Support of single and multi-client networking with secure connection

• Specifications may be subject to change without notice.

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