JMA-912 RAINWATCHER

JRC

X-Band Polarimetric Radar Rainfall Sensor with Fully Solid State Technology

RAINWATCHER is compact in size and provides high performance based on polarimetric processing and pulse compression technology.

High accuracy rainfall sensor which can be used for various applications in our everyday society.


For River Water Level Control


For Disaster Prevention & Early Warning


For Safety of Airport / Railway Operation


For Road Management

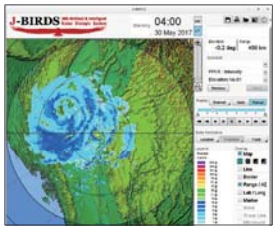
Operation and maintenance cost can be drastically reduced due to low power consumption, no consumables, and long life design.

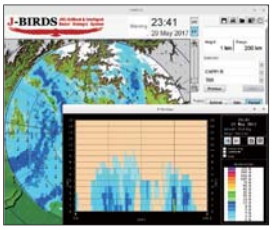
Easy installation, mobile transportable application.

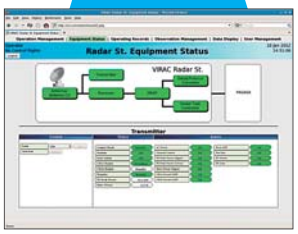
J-BIRDS Software Package

provides optimized observation data for easier meteorological analysis

Open file format







Included product screens of J-BIRDS™

JMA-912 X-Band Polarimetric Radar Rainfall Sensor RAINWATCHER

SYSTEM	
Type	Polarimetric radar with solid state technology
Operating Frequency	9.70 - 9.80 GHz (Option: 9.35 - 9.70 GHz)
Scan Mode	PPI, RHI, CAPPI
Pulse Width	Short (P0N): 1.0 µsec, Long (Q0N): 50 µsec
Pulse Repetition Frequency (PRF)	2000 Hz max.
Maximum Doppler Velocity	12, 24, 36 or 48 m/s (depend on PRF)
Observation Range	80 km @ 23 dBz, 120 km @ 27.8 dBz
T/R Duplexer	Circulator with Diode Limiter (no TR tube)
Output Raw data	Uncorrected Reflectivity (Zu), Corrected Reflectivity (Zc) Doppler Velocity (V), Spectral Width (W) Differential Reflectivity (Z_{DR}), Correlation Coefficient (ρ_{hv}) Differential Phase (Φ_{DP}), Specific Differential Phase (K_{DP}) Liner Depolarization Ratio (LDR)
Operating Temperature	Outdoor: 0 °C to +50 °C (Option: -20 °C to +50 °C) Indoor: +5 °C to +35 °C
Operating Relative Humidity	Outdoor: ≤ 95 % @ < 40 °C, ≤ 75 % @ ≥ 40 °C Indoor: 20 % to 80 % @ 25 °C
Power Consumption	≤ 450 VA @ 100 - 240 VAC, 1φ2W, 50/60 Hz
ANTENNA / PEDESTAL	
Type	Parabolic, prime-focus reflector
Reflector Diameter	≤ 1.2 m (= 3.9 feet)
Antenna Gain	≥ 38 dB
Half Power Beam Width (Typical)	≤ 2.0 °
Polarization	Linear Horizontal & Vertical Dual Polarization (Simultaneous H/V& Fixed Horizontal or Vertical Transmission)
Side Lobes (max)	≤ -23 dB
XPD (Cross Polarization Discrimination)	≥ 30 dB
Angle Span	AZ: Full 360 ° EL: -2 to +182 ° (0.1 °step)
Scanning Speed	AZ: 0 - 6 rpm (0.1 rpm step) EL: 0 - 3 rpm (0.1 rpm step)
Positioning Accuracy	+/-0.1 °
Antenna & Pedestal System Weight	≤ 150 kg (include radar equipments inside)

RADOME	
Type	Sandwich, fiberglass with polyurethane foam core
Size	Approx. 1.8 m (= 6 feet) diameter
Weight	Approx. 200 kg
Transmission Loss	≤ 0.3 dB (one way, dry surface)
Survival Wind Speed (gust)	≤ 60 m/s (Option: 70 m/s)
TRANSMITTER / RECEIVER	
Transmitter Type	Solid State Power Amplifier (no transmitting tube), Simultaneous H/V& Fixed Horizontal or Vertical Transmission
Peak Power	125 W (H) + 125 W (V)
Occupied Frequency Bandwidth	≤ 4 MHz, V0N (P0N+Q0N)
Receiver Type	Double Superheterodyne with Image reject mixing
Minimum Discernible Signal	≤ -110 dBm @ 1.0 µsec pulse width
Linear Dynamic Range	≥ 90dB with STC
IF DIGITAL RECEIVER/SIGNAL PROCESSOR	
Type	Multi-channel Digital Receiver & Signal Processor
IF Sampling	16 bits, 96 MHz, each per polarization
Pulse Compression Ratio	< 150
Maximum No. of Processed Range Bins	up to 2,500
Minimum Processing Resolution	25 m
Processing Mode	FFT
Clutter Suppression Capability	≥ 40 dB
Various Processing Functions	Range Correction, Velocity De-aliasing, 2nd Trip Echo Suppression, Interference Rejection, Noise Reduction
RADAR WORKSTATION	
Computer System	Commercial Off-the-Shelf PC, Core i5 or higher spec.
Operating System	Linux
Application Software	- Radar control, monitoring and observation schedule - Quick graphical overview of the status of the radar units - Presentation of BITE - Calibration with sun tracking - Radar supervise on remote Web image - Support of single and multi-radar networks*

Center System for Master Station (not included in JMA-912, * =option)			
Computer System	Commercial Off-the-Shelf PC, Core i5 or higher spec.		
Operating System	Linux		
Application Software	J-BIRDS™ Software Package		
Radar Product Server	- Remote radar supervision on Web image - Radar control, monitoring and observation schedule - Alarm monitoring and reset function - Quick graphical overview of the radar unit status - Multi-windows showing different products - Customizable geographic display maps and text annotation - Data zooming, animation & screenshot utility - Radar Volume Corrections:* - Sea Clutter Detection & Correction - Bright Band Correction - Vertical Profile Correction - Occultation Correction - Support Data Type: NetCDF, BUFR, HDF5, XML, ASCII, UF, NEXRAD Level 2, GRIB2 (Selectable) - Automatic Output Data: GIF, PNG, JPG, NetCDF (Selectable) * - Data Transfer Type: FTP - Graphical Indication by Region, Basin or Route *	- Standard Meteorological Products	- PPI, RHI, CAPPI & RTI - Echo Top, Echo Base & Echo Thickness - Vertical Maximum Radar Reflectivity - Arbitrary Vertical Cross Section & Multi Line Cross Section - Height of Maximum Radar Reflectivity, Column Maximum - Layer Average / Maximum Reflectivity - VAD, VVP, Wind Direction and Wind Speed
		- Extended Meteorological Products	- Precipitation Intensity by Z-R or Dual Polarization Parameter - Surface Rainfall Intensity by Z-R or Dual Polarization Parameter - Base Reflectivity, Echo Classification - Wind Shear Detection & Analysis, Layer Turbulence - 3D CAPPI, 3D Cross Section
		- Hydrological Products	- Vertically Integrated Liquid (VIL) - Arbitrary N-hours Rainfall Accumulation by Z-R or Dual Polarization Parameter - Point Rainfall Total and Rainfall Intensity Histogram
		- Forecasting and Warning Products	- Rain Tracking & Centroid Tracking Support for Forecasting - Strong Rainfall and Wind Warning of Specified District with text output - Severe Weather Analysis, Hail Detection
		- Sensor & Data Integration	- Multi-radar Data Composite* - Data Integration with 3rd Party Weather Radars, Rain Gauges / AWS, Satellites and etc.* - Correction with Rain Gauge Data*
		Data Archival and Retrieval Server	- Archive radar data temporarily on a PC hard disk by appropriate method - Transfer to external media such as Optical Disk - Archival data: Raw data, Product Data, System Log and BITE Messages - Open data structure and the file format of archived raw and products data - Archive and retrieve data: HDF5 or BUFR priority over other formats

• Specifications may be subject to change without notice.

For further information, contact:

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ISO9001, ISO14001 Certified