JMA-912 RAINWATCHER

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

Included product screens of J-BIRDS™
JMA-912 X-Band Polarmetric Radar Rainfall Sensor RAINWATCHER

**System**

- **Type:** Polarimetric radar with solid state technology
- **Operating Frequency:** 5.70 - 6.80 GHz (Option: 9.35 - 9.70 GHz)
- **Scan Mode:** PPI, RH4, CAPPI
- **Pulse Width:** Short (PON): 1.0 μsec, Long (QON): 50 μsec
- **Pulse Repetition Frequency (PRF):** 2000 Hz max.
- **Maximum Doppler Velocity:** 12, 24, 36 or 48 mps (depend on PRF)
- **Observation Range:** 80 km @ 23 dBZ, 120 km @ 27.8 dBZ
- **TR Duplexer:** Cavity with Dielectric Limiter (no TR tube)
- **Output Raw data:** Uncorrected Reflectivity (Zu), Corrected Reflectivity (Zc), Doppler Velocity (V), Spectral Width (W), Differential Reflectivity (ZDR), Correlation Coefficient (ρHV), Differential Phase (ΦHV), Specific Differential Phase (KDP), Linear 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 90 % @ 25 °C
- **Power Consumption:** ≤ 400 VA @ 100 - 240 VAC, 50/60 Hz

**Antenna / Pedestal**

- **Type:** Parabolic, prime-focus reflector
- **Reflector Diameter:** 1.2 m (= 3.9 feet)
- **Antenna Gain:** ≥ 36 dB
- **Half Power Beam Width (Typical):** ≥ 2.0°
- **Polarization:** Linear Horizontal & Vertical Dual Polarization (Simultaneous HV & Fixed Horizontal or Vertical Transmission)
- **Side Lobes (max):** ≤ -23 dB
- **XPDI (Cross Pol Discrimination):** ≥ 30 dB
- **Azimuth 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:** ± 0.5°
- **Antenna & Pedestal System Weight:** ≤ 150 kg (include radar equipment 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 HV & Fixed Horizontal or Vertical Transmission
- **Peak Power:** 155 W (P) + 155 W (V)
- **Occupied Frequency Bandwidth:** ≤ 4 MHz, VON (PON-QON)
- **Receiver Type:** Double Superheterodyne with Image Reject mixing
- **Minimum Detectable Signal:** ≤ -10 dBm @ 1.0 μsec pulse width
- **Linear Dynamic Range:** ≥ 90 dB 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 i3 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 RTF
  - Calibration with sun tracking
  - Radar supervision on remote Web IP
  - Support of single and multi-radar networks

**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 target Detection & Correction
  - Bright Band Correction
  - Vertical Profile Correction
- **Data Support Data Type:** NetCDF, BUFR, HDF5, XML, ASCII, UF, NEXRAD Level 2, GRIB2 (Selectables)
  - Automatic Output Data: GIF, PNG, JPG, NetCDF (Selectables)
  - Data Transfer Type: FTP
  - Graphical Indication by Region, Basin or Route
- **Standard Meteorological Products:**
  - PPI, RH4, CAPPI & RTT
  - Echo Top, Echo Base & Echo Thickness
  - Vertical Maximum Radar Reflectivity
  - Anomaly Vertical Cross Section & Multi-Layer 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-A or Dual Polarization Parameter
  - Surface Rainfall Intensity by Z-A or Dual Polarization Parameter
  - Echo Classification, Echo Clustering
  - Wind Shear Detection & Analysis, Layer Turbulence
  - 3D CAPPI, 3D Cross Section
- **Hydrological Products:**
  - Vertically Integrated Liquid (VIL)
  - Anomaly N-Hours Rainfall Accumulation by Z-A or Dual Polarization Parameter
  - Point Rainfall Total and Rainfall Intensity Histogram
- **Forecasting and Warning Products:**
  - Rain Tracking & Coordination Support for Forecasting
  - Strong Rainfall and Wind Warning of Specified District with text output
  - Severe Weather Analysis, Hail Detection
- **Sensor & Data Integration:**
  - Multisensor Data Composite
  - Data Integration with 3rd Party Weather Radars, Rain Gauges / AWS, Satellites and etc.
  - Correction with Rain Gauges Data

**Data Archival & 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 BURP priority over other formats

*Specifications may be subject to change without notice.

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**Since1915**

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