



QXP-120P portable Quad-Pol Weather Radar

QXP-120P is MetaSensing's compact and portable Doppler weather radar, the latest addition to our family of weather radars.

This radar features state-of-the-art solid-state technology, including transmit/receive modules and high efficiency power amplifiers. This allows for a compact design, low power consumption, and virtually maintenance-free operations.

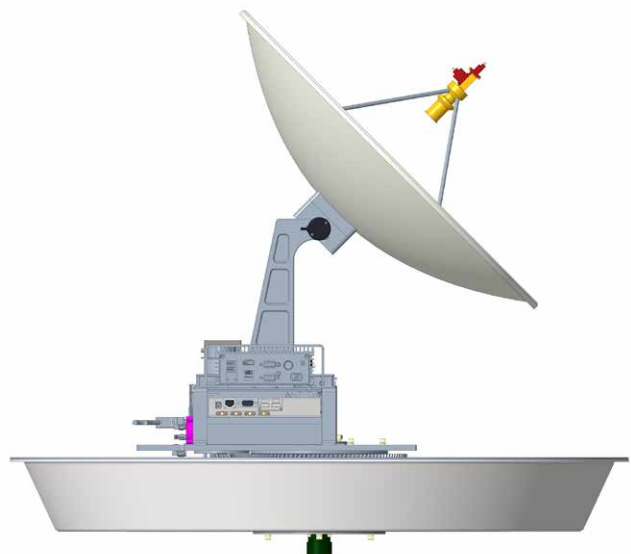
Thanks to its advanced technology, QXP-120P can provide precipitation monitoring with high sensitivity and a spatial resolution of 15m, with a 120km diameter of coverage.

The standard full polarimetry, accurate Doppler performance and fully coherent receiver allow more information to be captured at every moment. This produces not only single-pol spectral moments (reflectivity Z , velocity V , spectrum width w) but all polarimetric variables at the same time: differential reflectivity (Z_{DR}), linear depolarization ratio (LDR), propagation differential phase (ϕ_{DP}), specific differential phase (KDP), copolar correlation coefficient (ρ_{HV}) and cross-polar correlation coefficient (ρ_{XH}).

The compact, single-antenna design makes QXP-120P suitable both for fixed installations and semi-permanent or mobile operations.

It can be easily transported, and installation in the field can be performed in a few minutes by two operators.

X-band systems are smaller, cheaper and therefore especially suited for the coverage of smaller, more isolated geographic areas that long-range radars often miss, providing cost-effective coverage of the lower troposphere in locations that need it the most.



QXP-120P specifications

SYSTEM	
Frequency	9.3-9.5 GHz
Polarization	Full Pol (Quad-Pol)
Minimum operational range	200 m
Maximum operational range	60 Km
Highest range resolution	5 m
Sensitivity	10 dBZ (@ 30 Km)
Scanning modes	PPI-RHI-VCP-Fixed

ANTENNA	
Half-power beam width	$\leq 3.0^\circ$
Antenna gain	> 35 dBi
Side-lobe level	< -28 dB
Integrated cross polarization isolation	< 30 dB
Azimuth operating range	$0^\circ - 360^\circ$ continuous
Elevation operating range	$-2^\circ - 90^\circ$
Angular positioning accuracy	$\pm 0.1^\circ$
Scanning speed	Az (0-6 rpm) El (0-6 rpm)

TRANSMITTER	
Power transmitter	100 W (per channel)
Power stability	$< \pm 0.1$ dB per second $< \pm 0.5$ dB per day
Phase stability	$< \pm 0.5^\circ$ per second
Tx channels	2 independent (H and V)
Pulse Repetition Frequency (PRF)	up to 20 KHz

RECEIVER	
Channels	2 simultaneous (H and V)
Noise figure	< 2 dB
Minimum Detectable Signal @ 1 MHz	≤ -118 dBm
Dinamic Range @ 1 MHz	> 90 dB
Data Rate	20 MBps / channel
DAC/ADC resolution	16 bit
Computer system	COTS PC with CUDA enabled processing

DATA PROCESSOR	
Output data	Raw data (I&Q) Reflectivity (Z), Radial Velocity (V) Spectrum Width (W) Differential Reflectivity (Z_{DR}) Linear Depolarization Ratio (LDR) Differential Propagation Phase (ϕ_{DP}) Specific Differential Phase (KDP) Copolar Correlation Coefficient (ρ_{HV}) Cross-polar Correlation Coefficient (ρ_{xH}) Rain Rate Estimators (R-Z / R-KDP) Wind Direction, Wind Speed Hydrometeor classification
Data correction	Rain attenuation Clutter suppression

OPERATIONAL CONDITIONS	
Temperature	$-20^\circ / 55^\circ$ C
Environmental condition	All weather / Outdoor
Wind	up to 65 m/s
Power characteristics	230 V, Single phase, 50/60 Hz, 3 A
Weight	< 70 Kg

ADVANCED OPTIONAL FEATURES	
Synchronization	Time and Phase
Synchronization mode	GNSS
Configuration	Networked into Radar Sensor Network
Operation	Monostatic, Bistatic, Multistatic
Data Product	3D wind vector 3D view of rainstorm Bistatic / Multistatic observation of hydrometeors

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