



METASENSING
RADAR SOLUTIONS

METASAR-P

AIRBORNE SAR PAYLOAD

ADVANCED RADAR SOLUTIONS REDEFINING PRECISION MAPPING

Your Ultimate Solution for Advanced
SAR Imaging



METASAR-P CAPABILITIES

The MetaSAR-P is an advanced multichannel airborne Synthetic Aperture Radar (SAR) operating at VHF/UHF radio frequency. Designed to deliver calibrated airborne SAR images, it supports diverse applications including Interferometric SAR (InSAR), Polarimetric SAR (PolSAR), and Tomographic SAR (TomoSAR). MetaSAR-P serves both mapping applications, such as Digital Terrain Models (DTM) generation, and monitoring applications, including Foliage and Sand Penetration (FOPEN/SAPEN), vegetation and biomass mapping, pipeline monitoring, and the detection of targets or structures beneath the canopy.



SYSTEM DESIGN AND OPERATIONAL FLEXIBILITY

MetaSensing offers a compact and efficient radar sensor that integrates high-quality P-band radar performance with customizable swath sizes and resolutions. The system is designed for all-weather operation, with a portable enclosure adaptable to various aircraft types. Combining over a decade of expertise in airborne SAR solutions, MetaSAR-P enables users to collect synchronized SAR and navigation data. These datasets are processed using MetaSAR-PRO, MetaSensing's proprietary software based on the Global Back Projection algorithm, producing georeferenced GeoTiff images. These Polarimetric SAR images support applications such as Automatic Feature Extraction and Land Cover Classification.



TERRAIN MAPPING AND FOREST APPLICATIONS

The MetaSAR-P's long wavelengths allow it to penetrate forest canopies, providing accurate measurements of terrain surface elevation. In repeat-pass InSAR mode, the system generates precise Digital Terrain Models (DTMs), even in densely forested areas. This capability makes MetaSAR-P an indispensable tool for forestry applications, including forest height analysis and biomass estimation.

METASAR-P TECHNICAL DATA

MetaSensing MetaSAR-P	MetaSAR-P Airborne SAR
Frequency	P-band (300 – 600 MHz)
Bandwidth	Up to 250 MHz
Ground Resolution	From 0.6 m
Channels	2 Alternating Transmitters, 2 Simultaneous Receivers
IMU/GNSS	Embedded High-Performance IMU/GNSS Unit
Interferometry	Repeat-Pass
Polarization	Full Polarimetric (Linear Vertical & Horizontal): HH, VV, HV, VH
Swath (from 10,000 feet altitude AGL)	From 2 km to 10+ km (depending on configuration)
Output Format	GeoTIFF, NetCDF (with all necessary metadata)
Power Consumption	<560 W @ 28 VDC
Payload Mass	<20 kg
Dimensions	Electronic Enclosure: 320 x 320 x 370 mm

KEY FEATURES

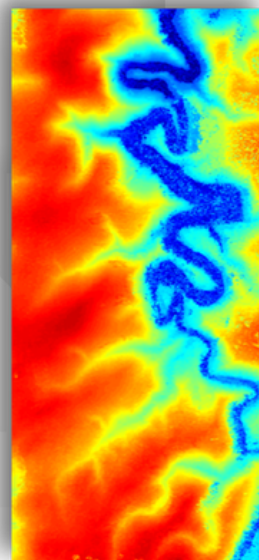
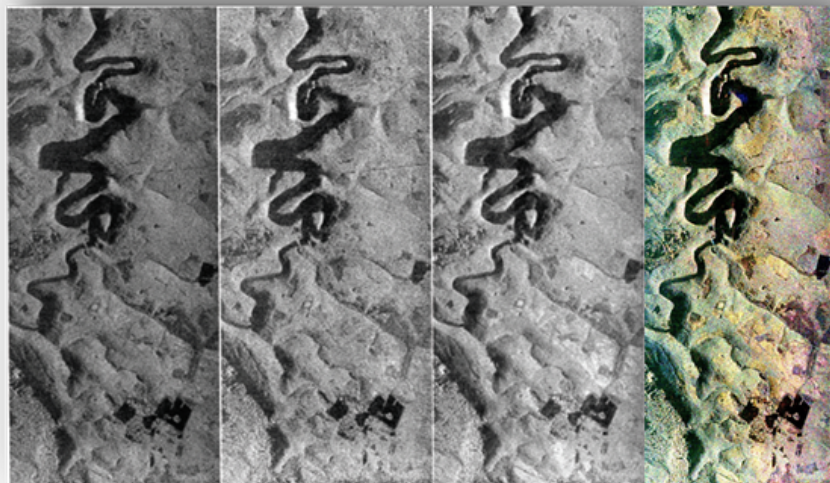
- Multichannel P-Band Radar: High-quality imaging with long wavelength penetration.
- Compact Design: Lightweight radar electronics with easy installation on multiple aircraft.
- Advanced Processing Software: Proprietary MetaSAR-PRO for GeoTiff outputs and precise analysis.

KEY BENEFITS

- Accurate Terrain Mapping: Generates precise DTMs and DEMs, even in forested areas.
- All-Weather Operation: Reliable performance in challenging weather conditions.
- Cost-Effective Efficiency: Lightweight design with low power consumption for versatile deployment.

APPLICATIONS:

- Environmental Monitoring: Biomass and vegetation mapping.
- Infrastructure Surveillance: Pipeline monitoring and structure detection.
- Forestry Applications: Canopy penetration for forest height and terrain analysis.



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