

# GAMIC Multifunctional Weather Radar System

## GMWR-25-SP/DP



### X-band Doppler Weather Radar with Single or Dual Polarization

The GMWR-25-SP/DP is a cost-effective and flexible X-Band Doppler weather radar with magnetron transmitter. It is designed for operation with ranges up to 150 km and uses Doppler technology for accurate radial wind velocity measurements. The dual polarization option enables attenuation correction, advanced product generation, and hydrometeor classification.

#### WELL PROVEN AND RELIABLE HARDWARE

Our GMWR-25-SP/DP radars use a stable, well proven design based on standard radar technology and built with a minimum number of components. This enables a system with **low investment and small operating costs while being highly reliable**. Hardware maintenance can be performed by any local technical service experienced in radar maintenance. The GMWR-25-SP/DP hardware is entirely solid state, except the magnetron transmitter. Alternatively, we also offer weather radar systems with solid state transmitters, the GMWR-400/1000-SST.

GMWR-25-SP/DP radars are **available with single or dual polarization**. For dual polarization we offer our GAMIC designed symmetric splash plate antenna providing perfect conditions for ideal dual polarization measurements. If you are not sure which type of radar you need, feel free to contact us.

#### ADVANCED SIGNAL PROCESSING

All GAMIC radars include our digital receiver and signal processor ENIGMA which allows **rapid scanning and analysis products of scientific quality and accuracy**. Digital Doppler velocity processing enables accurate velocity measurement.

The processing allows filtering of the input data, including clutter suppression (40 dB or better) resulting in less ground clutter, and the removal of distortions, speckles, interferences, and more. The result is **clean weather output data** which can be further processed as meteorological products.

#### COMPREHENSIVE SOFTWARE SUITE

The perfect enhancement for your radar system is our weather radar software suite FROG-MURAN. It provides **full product generation capability**, including volume scan products and hydro-meteorological rainfall analysis. The **visualization system** serves high quality radar images which can also be displayed via our browser-based Webview application.

#### FLEXIBLE OPERATIONAL APPLICATIONS

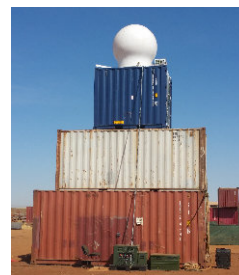
Besides the typical **stationary radar installation**, we also offer **transportable and mobile radars**. Our custom solutions comprise mounting on a vehicle or trailer, a self-erecting hydraulic mast, a flexible container for transport and deployment in remote areas, and more. Tell us about your needs, we will find a solution that suits you.

#### Features

- » **Weather radar** for hydrology, aviation, population and asset protection, agriculture, research, gap-filling, early warning systems, and more
- » **Compact design** – stationary, transportable, or mobile
- » **Powerful signal processing** with ENIGMA
- » **Software suite FROG-MURAN** for meteorological and hydrological data analysis

#### Technical Details

- » X-Band weather radar system
- » Doppler velocity wind measurement
- » Single or dual polarization
- » Splash plate antenna (1.3 m with  $<2^\circ$  or 1.8 m with  $<1.3^\circ$  pencil beam)
- » Single polarization antenna (1.2 m,  $1.8^\circ$  pencil beam)
- » Max. range up to 150 km
- » Magnetron transmitter with 25 kW peak power, solid state modulator and power supplies
- » Integrated low noise receiver front end



# GMWR-25-SP/DP

## Technical Specifications



Transmitter	GMWR-25-SP	GMWR-25-DP
Polarization	Single Polarization (H)	Dual Polarization (H/V)
Peak Power	25 kW	25 kW (12.5 kW per channel)
Operating Frequency	9410 MHz $\pm$ 30 MHz	
Transmitter	Magnetron	
Pulse Width	0.75 $\mu$ s / 0.25 $\mu$ s	
PRF (Pulse Repetition Freq.)	650 Hz / 1300 Hz	
Modulator	Solid State	
TX Signal Generation	Magnetron & Modulator	

Receiver	GMWR-25-SP	GMWR-25-DP
Type	Single Pol. / Doppler	Dual Pol. (2 independent channels) / Doppler
A/D Conversion	16 bit	2x16 bit
Sample Rate	76.8 MHz (others available)	
Dynamic Range	~94 dB, >80 dB nominal	
Sensitivity	-112 dBm @ 0.75 $\mu$ s	
Intermediate Frequency (IF)	60 MHz	
Noise Figure LNA	<1 dB	
Tuning	AFC (Automatic Frequency Control)	

Antenna	GMWR-25-SP (1.2 m)	GMWR-25-DP (1.3 m)	GMWR-25-DP (1.8 m)
Type	Parabolic / Pencil Beam / Center fed	Parabolic / Pencil Beam / Splash Plate	Parabolic / Pencil Beam / Splash Plate
Diameter	1.2 m	1.3 m	1.8 m
Beam Width (H/V)	<1.8°	<2°	<1.3°
Side Lobes	-25 dB within 10°	-23 dB within 10°	-23 dB within 10°
Gain	39 dBi	39 dBi	42 dBi
Cross-Polar Isolation	-	>36 dB	>36 dB
Antenna Motion	Volume Scan		
Azimuth	360° (continuous)		
Elevation	-2° to 92°		
Azimuth max. Speed	36°/sec		
Elevation max. Speed	15°/sec		
Weight (Antenna + Pedestal)	<250 kg	<250 kg	<270 kg
Radome Size / Weight	1.8 m / 80 kg	1.8 m / 80 kg	2.4 m / 100 kg
Radome Type	Laminated Glass Fibre		

Signal Processor	GMWR-25-SP	GMWR-25-DP
Type	ENIGMA IV (2 channels)	ENIGMA IV (3 channels)
Moments	Z, V, W, SNR, CCR, SQI, ...	Z, V, W, SNR, CCR, SQI, ZDR, PhiDP, RhoHV, KDP, ...
Processed Bins	>4000 (max. 8000)	
Clutter Correction	DFT, PPT, CMAP	
Pulse Integration	Fixed or angle synced	
Calibration	Manual with support tools (automatic optional)	

Software	FROG-MURAN
Operating System	Linux
Data Resolution (raw)	8, 16, 32 bit IEEE Floating Point
Max. Range	400 km
Range Resolution	25 m – 10 km
Vertical Resolution	<100 m
Horizontal Resolution	100 m – 1 km
Output Products for Meteorology, Hydrology, ATC, and more	>50 (please consult us)

General	
Power Consumption	500 W average / <2000 W peak (without radome A/C)

