Baron Gen3 Radar

300 KW X-BAND MAGNETRON SYSTEM

- Designed to deliver exceptional accuracy for research applications and short-range meteorological surveillance
- Available in mobile, transportable and fixed configurations
- Remote system monitoring and 24/7 support

Features and Benefits

POWERED BY A 300 KW X-BAND MAGNETRON

Proven magnetron performance in any weather situation.

DUAL-POLARIZATION AS STANDARD OPTION

Simultaneous horizontal and vertical transmission results in more precise analysis for flooding, hail, winter precipitation and tornadoes.

NEXT-GENERATION RADAR PROCESSOR

The on-board Baron signal processor delivers value-added product creation and automated storm tracking. Full command and control enables on-the-fly RHI and sector scans at the meteorologist's discretion.

SUPERIOR CLUTTER SUPPRESSION

Available exclusively from Baron though a license of technology with the University of Oklahoma, CLEAN-AP™ enables superior ground clutter suppression, in addition to optimally and dynamically adapting the suppression process to the ground clutter environment.

RADIAL-BY-RADIAL ZDR CALIBRATION

This new patent-pending technology provides reliable and continuous network-wide calibration during any weather conditions, with less maintenance and on-site expertise required.

OPEN DATA ARCHITECTURE

All Baron Gen3 radars feature an open architecture for easier access to data at various points throughout the processing chain.

RELIABLE AND EASY TO MAINTAIN

Wide-access panels provide easy access to major components, reducing man hours on preventive maintenance and repair. Pedestal motors deliver rugged durability, and can be easily replaced without removing the elevation head. Spare parts can be shared across multiple systems in the field, which reduces costs and maximizes uptime.

REMOTE SYSTEM MONITORING AND 24/7 SUPPORT

Built-in test equipment provides automatic notification to personnel if potential issues occur. Additionally, meteorologists from the Baron operations center are available to address questions and troubleshooting around the clock.

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Critical Weather Intelligence

Specifications GEN3-300XM-DP

GENERAL

Peak Power	300 kW max
Operational Frequency	9300 to 9600 MHz
Polarization	Single: Horizontal; Dual: Simultaneous Transmit and Receive (STAR), Horizontal-Only
Pulse Width Modes	Adjustable, 0.4 – 2.0 µsec
Pulse Repetition Frequency	250 - 2500 Hz
Typical Operational Range	Up to 480 km
Range Resolution	Down to 25 m

TRANSMITTER

Type	Magnetron
Peak Output Power	300 kW nominal
RF Duty Cycle	0.001
Internal Protection	Reverse Power, Modulator Over Duty
Frequency Modulation	N/A
Pulse Widths (nominal)	0.4 µs, 0.8 µs, 1.0 µs, and 2.0 µs
Modulator	Solid-State IGBT Switched
Pulse Repetition Frequency (nominal)	0.4 µs : 250 – 2500 Hz 1.0 µs : 250 – 1000 Hz 0.8 µs : 250 – 1250 Hz 2.0 µs : 250 – 500 Hz
Velocity De-Aliasing (Dual PRF Selection)	2:3, 3:4, and 4:5

RECEIVER

Type	Super-Heterodyne, Image Reject
Noise Figure	3 dB maximum
Linear Dynamic Range	≥ 95 dB for a 2 µs pulse
Minimum Detectable Signal	≥ -114 dBm for a 2 µs pulse
IF Digitizer	16-Bit

DOPPLER SIGNAL PROCESSOR

Type	Four (4) Channel, 16-bit / Polarization
IF Frequency	60MHz
Maximum Supported Range Bins	Up to 8175 per channel
Minimum Range Resolution	25 m
Processing Modes	PPP, FFT, Dual PRF, Staggered PRF
Clutter Filters	Spectral Notch Filter, Spectral Linearly Interpolative Filter

ANTENNA

Type	Prime focused Parabolic with Orthomode Linear Feed
Diameter	1.8 m
Gain	> 42 dB Typical at 9.4 GHz
Beam-width	<1.3°
Side-lobes	≥ 25 dB Typical Principal Planes
Cross-Polarization Isolation	≤ -30 dB
Polarization	Single: Horizontal; Dual: Simultaneous Transmit and Receive (STAR), Horizontal-Only

PEDESTAL

Pedestal Type	Elevation over Azimuth
Azimuth Movement	360° continuous
Elevation Movement	-2° to 90°
Positional Accuracy	< 0.05°
Scanning Rates	Up to 36°/sec

RADOME

Construction	Frequency Tuned "A" Sandwich
Diameter	Mounted to Antenna
Transmission Loss, Dry Condition, One-way	< 0.3 dB
Coating	Hydrophobic Gel Coat

CALIBRATION

System dBZ_0 determination accuracy	≤ 1 dB
System ZDR bias determination accuracy	< 0.1 dB (In Dual Polarization (Simultaneous Transmit and Receive) Configuration)
System PHI_{DP} determination accuracy	< 1° (In Dual Polarization (Simultaneous Transmit and Receive) Configuration)
System LDR_H bias determination accuracy	< 0.1 dB (In Dual Polarization (Horizontal-Only) Configuration)

METEOROLOGICAL DATA

Single Polarimetric Mode	T, Z, V, W
Dual Polarimetric Mode	T, Z, V, W, ZDR, PHI_{DP}, RHO_{HV}, KDP, LDR_H (in Horizontal-Only configuration)

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