

Baron Gen3 Radar

1 MW S-BAND KLYSTRON SYSTEM

Superior weather detection in every meteorological environment, from convective and tropical to arctic environments.

Enables more effective weather alerting, helping reduce loss of life during hydrometeorological events.

Remote system monitoring and 24/7 support



Features and Benefits

POWERED BY A 1 MW KLYSTRON TRANSMITTER

The klystron's stable transmission delivers better clutter suppression and velocity data, plus more average available power—superior performance in every 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 onboard Baron signal processor delivers value-added product creation and automated storm tracking, along with full command and control. RHI and sector scans can be performed at the operator's discretion.

SUPERIOR CLUTTER SUPPRESSION

Available exclusively from Baron through 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

Klystrons deliver longer operational lifespan compared to magnetrons. In addition, 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.

CLEAN-AP (TM) trademark owned by The Board of Regents of the University of Oklahoma



Specifications GEN3-1000SK-DP

GENERAL

Peak Power	1 MW
Operational Frequency	2700 to 2900 MHz
Polarization	Single: Horizontal; Dual: Simultaneous Transmit and Receive (STAR), Horizontal-Only
Pulse Width Modes	Adjustable, 0.8 – 4.5 μ sec
Pulse Repetition Frequency	200 - 1875 Hz
Typical Operational Range	Up to 480 km
Range Resolution	Down to 25 m
Recommended Standard Operation	250 m Range Resolution, 300 km Range

TRANSMITTER

Type	Klystron
Peak Output Power	1 MW
RF Duty Cycle	0.0015
Internal Protection	Reverse Power Detection, Waveguide Pressure, External Interlock Monitoring
Pulse Widths (nominal)	0.8 μ s, 1.0 μ s, 2.0 μ s, and 4.5 μ s
Modulator	Solid-State IGBT Switched
Pulse Repetition Frequency (nominal)	0.8 μ s: 250 – 1875 Hz 1.0 μ s: 250 – 1000 Hz 2.0 μ s: 250 – 750 Hz 4.5 μ s: 250 – 333 Hz

RECEIVER

Type	Super-Heterodyne, Image Reject
Noise Figure	2 dB maximum
Linear Dynamic Range	\geq 95 dB for a 2 μ s pulse
Minimum Detectable Signal	-114 dBm for a 2 μ s pulse

DOPPLER SIGNAL PROCESSOR

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

ANTENNA

Type	Prime Focus Parabolic w/ Orthomode Linear feed, Dual-Pol Standard
Construction	Lightweight Composite Reflector
Diameter	8.5 m (28 ft), 6.1 m (20 ft)
Gain	44.5 dB typical at 2.8 GHz, 42 dB
Beam-width	\leq 1.0°, \leq 1.26°
Side-lobes	27 dB typical Principal Planes, 30 dB optional
Cross-Polarization Isolation	30 dB minimum
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	\leq 0.1°
Scanning Rates	Up to 36°/sec

RADOME

Construction	Fiberglass Foam Sandwich w/ Quasi Random Panel Geometry
Diameter	12 m (for 8.5 m antenna), 8.5 m (for 6.1 m antenna)
Transmission Loss, Dry Condition, One-way	\leq 0.2 dB
Coating	Hydrophobic Gel Coat with 25 year service life

CALIBRATION

System dBZ ₀ determination accuracy	\leq 1 dB
System ZDR bias determination accuracy	\leq 0.2 dB (In Dual Polarization (Simultaneous Transmit and Receive) Configuration)
System PHI _{DP} determination accuracy	\leq 1° (In Dual Polarization (Simultaneous Transmit and Receive) Configuration)

METEOROLOGICAL DATA

Single Polarimetric Mode	T, Z, V, W
Dual Polarimetric Mode	T, Z, V, W, ZDR, PHI _{DP} , RHO _{HV} , K _{DP} , LDR _H (in Horizontal-Only configuration)
Radar Products	Optional. Ask your Baron representative about available products.



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