SELEX
Sistemi Integrati

Gematronik Weather Radar Systems

METEOR 1600S WEATHER RADAR

The METEOR 1600S uses cutting-edge klystron technology to optimize the long-range forecast of extreme precipitation and severe thunderstorms. Its technological superiority is based on a highly-sophisticated klystron transmitter leading to advanced data quality with respect to clutter suppression and signal-to-noise ratio in combination with the inherent penetration power of S-Band transmission.

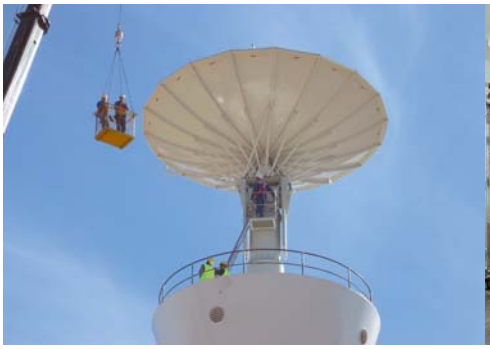
The powerful METEOR 1600S is typically employed in severe weather regions, where extremely heavy rainfalls pose a challenge to precise measurement and long-range surveillance. Its outstanding performance and reliability have made the METEOR 1600S one of the most popular weather radar systems in this field of specialization.

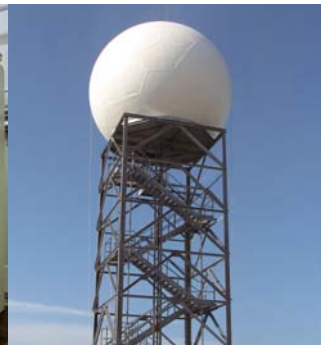
METEOR PRODUCT LINE ADVANTAGE

- Optimized for Rainbow® 5, the most advanced meteorological software available on the market today
- Cutting-edge 14 bit signal processor GDRX®
- Dynrex Receiver technology
- Unattended remote operation 24h a day, 365 days a year
- Long-life, state of the art technologies
- Full remote surveillance and control capability based on RAVIS® maintenance tool
- Comprehensive BITE system
- Full network capability in heterogeneous networks
- Maximum use of COTS components (e.g. PC-based signal processing)
- Simultaneous Dual Polarization Capability available in conventional and receiver over elevation configuration

METEOR 1600S SYSTEM ADVANTAGE

- Cutting-edge klystron technology
- Improvement factors up to 15dB in stability and clutter suppression compared to coaxial magnetron systems
- Improved data quality, scanning speed and range resolution through frequency agility and multi-trip echo recovery
- Less interference with other radio transmitters due to less occupied RF bandwidth
- S-Band advantage: Optimized for long-range surveillance under conditions of extreme precipitation





TECHNICAL DATA

SYSTEM	**METEOR 1600S**			
Operating Frequency Range	2700 – 2900 MHz (S-Band)			
Pulse Modes	Up to 4			
Default Pulse Modes	Short (SPM)	Medium 1	Medium 2	Long (LPM)
Pulse Width	0.4 – 3.3 µs, selectable			
Default Pulse Width [PW]	0.67 µs (SPM)	0.83 µs	1.67 µs	3.3 µs (LPM)
Range Resolution @ default PW	100 m	125 m	250 m	500 m
Pulse Repetition Frequency [PRF]	250 – 1300 Hz, selectable			
Maximum PRF @ default PW	1300 Hz	1200 Hz	600 Hz	300 Hz
Unambiguous Range @ max PRF	115 km	125 km	250 km	500 km
Unambiguous Range with 2nd Trip Recovery Option	230 km	250 km	500 km	1000 km
Typical Operational Range	400 km			
Unambiguous Velocity @ single PRF & 2860 MHz	± 34.1 m/s	± 31.4 m/s	± 15.7 m/s	± 7.9 m/s
Unambiguous Velocity @ dual PRF 4:5 & 2860 MHz	± 136.3 m/s	± 125.8 m/s	± 62.9 m/s	± 31.4 m/s
Sensitivity - Reflectivity @ unambiguous range without 2nd Trip Recovery Option	5.7 dBZ	4.6 dBZ	4.5 dBZ	4.6 dBZ
Sensitivity - Rain rate @ unambiguous range	0.08 mm/h	0.07 mm/h	0.07 mm/h	0.07 mm/h
Angular Resolution @ default antenna size	1.0° (equivalent to beam width)			
Clutter Suppression Capability	> 50 dB			
Data Output – single polarization [SP] (standard)	Reflectivity (UZ,CZ), Radial Velocity (V), Spectrum Width (W) simultaneously			
Additional Data Output – dual polarization [DP] (option)	Differential Reflectivity (ZDR), Differential Phase Shift (ϕ_{DP}), Specific Differential Phase Shift (K_{DP}), Polarimetric Correlation Coefficient (ρ_{HV}) simultaneously. Linear Depolarization Ratio (LDR) on request			
ANTENNA		**SLP20**	**SLP13**	**SLP10**
Type	Parabolic, prime-focus reflector with elevation-over-azimuth pedestal			
Reflector Diameter		4.2 m (opt.)	6.4 m (opt.)	8.5 m (default)
Gain – minimum / typical		38 / 40 dB	42.3 / 43 dB	44.5 / 45 dB
Half Power Beam Width – minimum / typical		2.0 ° / 1.9 °	1.3 ° / 1.25 °	1.0 ° / 0.97 °
Polarization – SP (standard) / DP (option)	Horizontal / Horizontal and vertical			
Angle Span	0° - 360° continuous in azimuth, - 2° - + 182° in elevation			
Angular Positioning Accuracy	± 0.1°			
Scanning Speed	0.2 – 6 rpm			
Step Response Time – for 2° step ± 0.1°		1.0 s	1.5 s	1.5 s
RADOME		**6.5 m (opt.)**	**9.1 m (opt.)**	**11.8 m (default)**
Type	Sandwich, fiberglass with polyurethane foam core; For DP applications: quasi-random panel cut only			
Transmission Losses – one-way, dry surface	0.3 dB			
TRANSMITTER	**TXS 1600**			
Type	Klystron with solid state, IGBT-switched modulator			
Peak Power	750 KW			
RECEIVER	**RXS 1600**			
Type	Superheterodyne, dual down-conversion			
Minimum Discernable Signal @ default PW	108 dBm	109 dBm	112 dBm	115 dBm
Noise Figure	2 dB			
Linear Dynamic Range @ LPM	105 dB			
DIGITAL RECEIVER & SIGNAL PROCESSOR	**GDRX®**			
Type	Modular, multi-channel digital receiver based on Compact PCI, connected to commercial off-the-shelf industrial PC as signal processor			
Intermediate Frequency (IF)	60 MHz			
IF Sampling – SP (standard) / DP (option)	2 parallel channels in SP / 2 x 2 parallel channels in DP, 80 MHz, 14 Bit ea.			
Maximum Number of Processed Range Bins	Default: 2500, more on request			
Minimum Processing Resolution	30 m			
Processing Mode	Multi-lag autocorrelation with pulse-pair or Discrete Fourier Transform (DFT/FFT)			
Clutter Filters	16 Time domain, 16 Frequency domain			
MAINTENANCE SOFTWARE	**Ravis®**			
Recommended Computer Platform	Commercial PC, dual-core processor, 2.8 GHz, 2 GB RAM			
Operating System	Linux or Windows			
METEOROLOGICAL USER SOFTWARE	**Rainbow®**			
Recommended Computer Platform	HP workstation or commercial PC			
Operating System	Unix, Linux or Windows			

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