

METEOR 1700S

METEOROLOGY
Gematronik Weather Radar Systems

METEOR 1700S WEATHER RADAR

The METEOR 1700S uses cutting-edge klystron technology to optimize the forecasting of extreme precipitation and severe thunderstorms at long ranges. Its technological superiority is based on a highly sophisticated klystron transmitter, which delivers excellent data quality. The METEOR 1700S combines maximum clutter suppression capability with the inherent penetration power of S-Band transmission.

The powerful METEOR 1700S 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 1700S 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 16 bit signal processor GDRX® 5
- Dynrex receiver technology

- Unattended remote operation 24 hours a day, 365 days a year
- Long-life, state-of-the-art technology
- 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 configurations

METEOR 1700S SYSTEM ADVANTAGES

- Cutting-edge klystron technology
- Improvement of up to 15 dB 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
- Wide dynamic range receiver, based on Dynrex dual-channel implementation
- S-Band advantage: Optimized for long-range surveillance under conditions of extreme precipitation

TECHNICAL DATA

SYSTEM	METEOR 1700S
Mode	Doppler, Dual-Polarization
Operating Frequency Range	2700 – 2900 MHz (S-Band)
Pulse Width Range	0.4 – 4.5 µs
Pulse Widths	410, freely selectable in increments of 10 ns
Pulse Repetition Frequency [PRF]	250 – 1400 Hz, user selectable
Typical Operational Range /Technical Range	400 km / 600 km
Maximum Doppler Velocity	± 146 m/s
System Phase Stability	≤ 0.05°
ANTENNA	
Type	Parabolic, prime-focus reflector with elevation-over-azimuth positioner
Reflector Diameter	8.5 m
Minimum Gain	≥ 44.5 dBi
Maximum Half Power Beam Width	≤ 1.0°
Step Response Time for 2° step ± 0.1°	≤ 1.5 s
Polarization	Horizontal / Horizontal and vertical
Angle Span	0° – 360° continuous in azimuth, -2° – +182° in elevation
Angular Positioning Accuracy	± 0.05°
Maximum AZ Scanning Speed	6 rpm
RADOME	
Size	11.8 m
Type	Sandwich, fiberglass with foam core; quasi-random panel cut
Transmission Losses - one-way, dry surface	0.2 dB
TRANSMITTER	
Type	Klystron with solid state, IGBT-switched modulator
Peak Power	1000 KW



RECEIVER	
Type	Superheterodyne, dual downconversion
Noise Figure (Total Receiver)	≤ 2.0 dB
Linear Dynamic Range @2.0 µs	≥ 118 dB
GDRX® 5 DIGITAL RECEIVER & SIGNAL PROCESSOR	
Type	Modular, multi-channel digital receiver, connected to commercial-off-the-shelf industrial PC as signal processor
Intermediate Frequency [IF]	60 MHz
IF Sampling	16 bit, 180 MHz, 6 channels
Maximum Number of Processed Range Bins	10.000 per polarization @ fully activated algorithm chain
Minimum Processing Resolution	15 m
Processing Mode	PPP, FFT/DFT, Trip recovery and filtering
Clutter Filters	IIR, DFT linear or GIP (Gaussian iterative) interpolation
Matched Filter	Dynamic pulse-to-pulse, TNC
RAVIS® MAINTENANCE SOFTWARE	
Recommended Computer Platform	Commercial Off-the-Shelf Notebook
Operating System	Linux or Windows
RAINBOW® 5 METEOROLOGICAL SOFTWARE	
Recommended Computer Platform	Commercial Off-the-Shelf PC
Operating System	Linux or Windows
Standard Radar Meteorological Products	PPI, MPPI, RHI, CAPPI, Pseudo-CAPPI, MCAPPI, MAX, VCUT, MVCUT, EHT
Optional Product Groups	Hydrological, Aviation, Shear, Short-Term Forecasting, Phenomena Detection, Dual-Polarization, Pre- and Post-Processing, Warning
standard values, not an absolute limitation	

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METEOR 700S



METEOROLOGY
Gematronik Weather Radar Systems

METEOR 700S WEATHER RADAR

The METEOR 700S sets the benchmark in weather radar technology for Meteorological Services with special emphasis on long-range surveillance and extreme precipitation in tropical regions.

The METEOR 700S combines cutting-edge technologies with straight-forward and reliable implementation. It features an S-Band magnetron transmitter with a 2nd generation solid-state modulator, a digital receiver, a high-precision antenna and Rainbow® 5, the most up-to-date software package for meteorological users.

METEOR PRODUCT LINE ADVANTAGES

- Optimized for Rainbow® 5, the most advanced meteorological software available on the market today
- Cutting-edge 16 bit signal processor GDRX® 5
- Dynrex receiver technology
- Unattended remote operation 24 hours a day, 365 days a year
- Long-life, state-of-the-art technology
- 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 configurations

METEOR 700S SYSTEM ADVANTAGES

- High-end DWR with unparalleled price-performance ratio
- Proven magnetron technology
- Graceful degradation modulator
- Wide dynamic range receiver, based on Dynrex dual-channel implementation
- Compliant with EU RTTE Directive due to proprietary high-power filter technology
- Minimization of lifecycle costs due to high reliability
- Improved range resolution and scanning speed through multi-trip echo recovery
- S-Band advantage: Optimized for long-range surveillance under conditions of extreme precipitations



TECHNICAL DATA

SYSTEM	METEOR 700S
Mode	Doppler, Dual-Polarization
Operating Frequency Range	2700 – 2900 MHz (S-Band)
Pulse Width Range	0.5 – 3.3 µs
Pulse Widths	280, freely selectable in increments of 10 ns
Pulse Repetition Frequency [PRF]	250 – 2000 Hz, user selectable
Typical Operational Range /Technical Range	400 km / 600 km
Maximum Doppler Velocity	± 214 m/s
System Phase Stability	≤ 0.15°
ANTENNA	
Type	Parabolic, prime-focus reflector with elevation-over-azimuth positioner
Reflector Diameter	8.5 m
Minimum Gain	≥ 44.5 dBi
Maximum Half Power Beam Width	≤ 1.0°
Step Response Time for 2° step ± 0.1°	≤ 1.5 s
Polarization	Horizontal / Horizontal and vertical
Angle Span	0° – 360° continuous in azimuth, -2° – +182° in elevation
Angular Positioning Accuracy	± 0.05°
Maximum AZ Scanning Speed	6 rpm
RADOME	
Size	11.8 m
Type	Sandwich, fiberglass with foam core; quasi-random panel cut
Transmission Losses - one-way, dry surface	0.2 dB
TRANSMITTER	
Type	Coaxial Magnetron with solid state, IGBT-switched modulator
Peak Power	850 KW

RECEIVER	
Type	Superheterodyne, dual downconversion
Noise Figure (Total Receiver)	≤ 2.0 dB
Linear Dynamic Range @2.0 µs	≥ 118 dB
GDRX® 5 DIGITAL RECEIVER & SIGNAL PROCESSOR	
Type	Modular, multi-channel digital receiver, connected to commercial-off-the-shelf industrial PC as signal processor
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