

METEOR 50DX COMPACT WEATHER RADAR

The METEOR 50DX sets the benchmark in cost efficient high-end weather radar technology in X-band.

With its ultra compact design with receiver and transmitter over elevation, the 50DX is suitable both for fixed installation and mobile applications. The innovative mobility option is based on a trailer approved for road service in Europe and most countries worldwide.

With dual polarization as a standard feature, the magnetron-based system is a full-fledged high-end weather radar system, which delivers high-quality data for a large variety of applications such as regional campaigns in hydrological forecasting or scientific research, as a gap-filler in meteorological networks or as stand alone TDWR at airports.

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®
- Unattended remote operation 24h a day, 365 days a year (in fixed installations)
- 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

METEOR 50DX SYSTEM ADVANTAGE

- All METEOR high-end features in compact design
- Full METEOR system capabilities at X-band price
- Dual Polarization capability is a STANDARD feature
- Proven magnetron technology
- Improved range resolution and scanning speed through multi-trip echo recovery
- X-Band advantage: Optimized for maximum sensitivity in the short to medium range
- Suitable for fixed installation and mobile applications
- Trailer-based mobility solution is officially approved for road service according to EU law



- Mobile radar operation is independent from fixed electricity and telco networks
- Towing weight of trailer < 2.8 tons, i.e. trailer can be moved by most SUV

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TECHNICAL DATA

SYSTEM	METEOR 50DX			
Operating Frequency (other frequencies on request)	9375 MHz \pm 30 MHz			
Pulse Modes	Up to 4			
Default Pulse Modes	Short (SPM)	Medium 1	Medium 2	Long (LPM)
Pulse Width	0.3 – 3.3 μ s, selectable in steps of 50ns			
Default Pulse Width [PW]	0.3 μ s (SPM)	0.67 μ s	1.67 μ s	3.3 μ s (LPM)
Range Resolution @ default PW	50 m	100 m	250 m	500 m
Pulse Repetition Frequency [PRF]	300 – 3000 Hz, selectable			
Maximum PRF @ default PW	3000 Hz	1500 Hz	600 Hz	300 Hz
Unambiguous Range @ max PRF	50 km	100 km	250 km	500 km
Unambiguous Range with 2nd Trip Recovery Option	100 km	200 km	500 km	1000 km
Typical Operational Range	100 km			
Unambiguous Velocity @ single PRF & 9375 MHz	\pm 24 m/s	\pm 12 m/s	\pm 4.8 m/s	\pm 2.4 m/s
Unambiguous Velocity @ dual PRF 4:5 & 9375 MHz	\pm 96 m/s	\pm 48 m/s	\pm 19.2 m/s	\pm 9.6 m/s
Sensitivity - Reflectivity @ unambiguous range without 2nd Trip Recovery Option	7.8 dBZ	7.8 dBZ	7.8 dBZ	7.9 dBZ
Sensitivity - Rain rate @ unambiguous range	0.11 mm/h	0.11 mm/h	0.11 mm/h	0.12 mm/h
Angular Resolution @ default antenna size	1.55° (equivalent to beam width)			
Clutter Suppression Capability	> 40 dB			
Data Output – Dual polarization [DP] (standard)	Reflectivity (UZ,CZ), Radial Velocity (V), Spectrum Width (W), 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	XDP15 (default)	XDP10	XDP20	
Type	Parabolic, prime-focus reflector			
Reflector Diameter	1.8 m (default)	2.4 m (opt.)	1.2 m (opt.)	
Gain – minimum / typical	> 42 dB	> 44.5 dB	> 38.5 dB	
Half Power Beam Width – minimum / typical	1.55° / 1.50°	1.05° / 1.00°	2° / 1.95°	
Polarization	Horizontal and vertical			
Angle Span	0° - 360° continuous in azimuth, -6° - +182° in elevation			
Angular Positioning Accuracy	\pm 0.1°			
Scanning Speed	0.2 – 6 rpm			
Step Response Time – for 2° step \pm 0.1°	1.5 s	1.5 s	1.5 s	
RADOME	2.55 m (default) Radome only required for extreme weather conditions	4.5 m	No radome required	
Type	Sandwich, fiberglass with polyurethane foam core; helix-cut			
Transmission Losses – one-way, dry surface	0.3 dB			
TRANSMITTER	TX 50X (installed over Elevation)			
Type	Coaxial Magnetron with solid state, IGBT-switched modulator			
Peak Power	55 kW min.			
RECEIVER	RX 50X (installed over Elevation)			
Type	Superheterodyne, single down-conversion with IR mixing			
Minimum Discernable Signal @ default PW	- 103 dBm	- 106 dBm	- 110 dBm	- 113 dBm
Noise Figure	< 3.0 dB			
Linear Dynamic Range @ LPM	90 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	2 parallel channels, 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			
Standard Radar Meteorological Products	PPI, RHI, CAPPI, Pseudo-CAPPI, MAX, VCUT, MVCUT, EHT, ITAF			
Optional Product Groups	Extended, Hydrological, Aviation, Forecasting, Warning, Phenomena Detection			
TRAILER SPECIFICATIONS	(XDP15 and XDP20 only)			
Total Weight incl. Radome	2800 kg (Radome: 130 kg)			
Length	2808 mm			
Width	2550 mm (supports retracted), 3560 mm (supports extended)			
Height (incl. Radome)	3891 mm			
Tongue Load	120 kg			

