



RANGER® SERIES

X-BAND



Solid State X-Band

Affordable dual-polarity • 100 or 500W of radiated power
Ideal for short and medium range applications
Compact design for permanent or portable installation



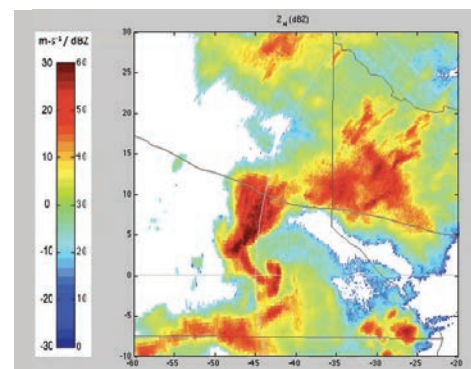
PROTECTING PEOPLE AND ASSETS®

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THE NEW RANGER® FROM EEC

This is the future of X-Band

The new era of X-Band is here! Everything you want in an X-Band is in EEC's new Ranger weather radar system. Designed in collaboration with the Atmospheric Radar Research Center at the University of Oklahoma, the Ranger system features dual-polarity accuracy, solid-state transmitters, and low power consumption, all in one affordable and portable unit.



Put the accuracy of dual-polarity to work anywhere

Operating on the shorter X-Band wavelength, EEC's Ranger weather radars have dual-polarity built-in so they can detect even tiny particles such as high altitude water droplets or light snow at short to mid-range distances. The Ranger's compact size means you can install it in a hard-to-reach permanent location or take it almost anywhere, anytime as a truly portable unit. And with a very affordable price, EEC's new Ranger is the ideal solution for everything from small airports to offshore oil platforms to rapid deployment military maneuvers.

Dual-polarization – The future is here today

Over 15 years ago, EEC pioneered dual-polarity radar. Today, all of our Ranger models are equipped with our new, highly advanced dual-polarization system incorporating features that are years ahead of anything else on the market.

Working with world-renowned experts and the University of Oklahoma's Atmospheric Radar Research Center, we have developed better algorithms and end-to-end dual-polarization measurements. This not only results in more accurate estimates of rainfall, but also provides better discrimination between different types of precipitation and non-meteorological signals, such as birds, insects, dust storms, or even the debris field of an approaching tornado.

We have also developed proprietary technology to significantly improve clutter suppression performance in our popular and dependable solid-state systems. The final result is clearly obvious – EEC dual-polarity systems provide the highest resolution data available in the industry.

THE RANGER-X1 & X5: This is what X-Band should be!

Developed by EEC in collaboration with the prestigious Atmospheric Radar Research Center at the University of Oklahoma, the affordable Ranger-X1 is a compact system weighing less than 430 lbs/195kg yet featuring a 100-watt dual-polarity, advanced solid-state transmitter and very low power consumption.

Whether you choose the Ranger-X1 or Ranger-X5 with more radiated power, EEC's turn-key design, manufacturing, and installation processes allow us to configure your system to your exact specifications. Among the many options are a variety of full-featured control and display systems, and precise Doppler processing through our super-sensitive digital receivers. You can even choose permanent or mobile installation options.

RANGER SYSTEM ADVANTAGES

- Algorithms developed and specifically tuned for performance at X-Band
- Advanced technologies in a compact and light-weight design
- Ultra high resolution data for short and medium range weather detection
- Designed for fixed installations or rapid mobile deployment
- Dual transmitter design:
 - Allows for simultaneous or alternating dual-polarization modes
 - High availability
- Low maintenance and Life-cycle costs
 - Simplified design removes complex wave guide and switches
 - Decreased system power consumption
 - Patent-pending revolutionary sealed bearing design
- The most efficient pulse compression techniques available
- Super-high resolution IQ2 16-bit digital signal-processor

SYSTEM	RANGER-X1*	RANGER-X5†
Operating Frequency	9200-9700 MHz	9200-9700 MHz
Pulse Width	0.4-100.0 usec	0.4-100.0 usec
Pulse Repetition Frequency	100-2500 PRF	100-2500 PRF
Transmitter Output Power	100 Watts	500 Watts
Maximum Velocity (unambiguous)	64 m/s	64 m/s
Sensitivity-reflectivity	18dBz at 60km	18dBz at 120km
Data Output	UZ (h/v), Z (h/v), V, SW, Zdr, Phv, Φdp, KDP, LDR	UZ (h/v), Z (h/v), V, SW, Zdr, Phv, Φdp, KDP, LDR
Max. Sustained Wind Performance	65kts / 120km/hr	65kts / 120km/hr
Max. Wind Gust Performance	78kts / 144km/hr	78kts / 144km/hr
Max Wind Survival	130kts / 240km/hr	130kts / 240km/hr
Max Operating Temperature	-50° C (-58° F) - 60° C (140° F)	-50° C (-58° F) - 60° C (140° F)

ANTENNA/PEDESTAL	1m / 1.8m* / 2.44m*			1m / 1.8m* / 2.44m*		
Type	Parabolic, Prime Focus Reflector	Parabolic, Prime Focus Reflector	Parabolic, Prime Focus Reflector	Parabolic, Prime Focus Reflector	Parabolic, Prime Focus Reflector	Parabolic, Prime Focus Reflector
Gain-Minimum	≥ 37.3 dB	≥ 40.0 dB	≥ 45.0 dB	≥ 37.3 dB	≥ 40.0 dB	≥ 45.0 dB
Half Power Beam Width (typical)	≤ 2.3°	≤ 1.3°	≤ 0.95°	≤ 2.3°	≤ 1.3°	≤ 0.95°
Polarization	Dual Polarization Orthogonal Feed (Simultaneous H + V)			Dual Polarization Orthogonal Feed (Simultaneous H + V)		
Transportability	supports land, sea, and air deployment environments			supports land, sea, and air deployment environments		
Mounting Configurations	guyed pole, tower, vehicle, skid, trailer or conventional fixed installation			guyed pole, tower, vehicle, skid, trailer or conventional fixed installation		
Max Drive Motor Torque	350 ft-lbs (477 Nm)			350 ft-lbs (477 Nm)		
Continuous Drive Motor Torque	88.5 ft-lbs (120 Nm)			88.5 ft-lbs (120 Nm)		
Angle Span (azimuth)	Continuous 360°			Continuous 360°		
Angle Span (elevation)	-5° to +95°			-5° to +95°		
Positioning Accuracy	≤ 0.05°			≤ 0.05°		
Scanning Speed	0 to 8 rpm			0 to 8 rpm		
Drive and Bearing Continuous Service Life	≥ 10 years with no maintenance or lubrication required			≥ 10 years with no maintenance or lubrication required		

TRANSMITTER		
Type	Solid State	Solid State
Peak Power (per channel/total)	100 Watts/200 Watts 2 Transmitters (H/V)	500 Watts/1000 Watts 2 Transmitters (H/V)

RECEIVER		
Type	Frequency Programmable	Frequency Programmable
Minimum Discernible Signal	-114 dBm typical	-114 dBm typical
Linear Dynamic Range	≥ 95 dB	≥ 95 dB

DIGITAL RECEIVER/ SIGNAL PROCESSOR		
Type	16-bit Modular, multi-channel Digital Receiver, Signal Processor	16-bit Modular, multi-channel Digital Receiver, Signal Processor
Maximum No. of Processed Range Bins	up to 8192	up to 8192
Minimum Processing Resolution	as low as 16 meters	as low as 16 meters
Clutter Filters	Time Domain or Spectrum-Based Time Estimation and Processing (STEP) - An advanced adaptive clutter identification and mitigation and noise reduction algorithm	Time Domain or Spectrum-Based Time Estimation and Processing (STEP) - An advanced adaptive clutter identification and mitigation and noise reduction algorithm

METEOROLOGICAL USER SOFTWARE		
METEOROLOGICAL USER SOFTWARE	PULSE	PULSE
Computer System	Commercial off-the-Shelf PC	Commercial off-the-Shelf PC
Meteorological Products	See PULSE Data Sheet for additional details.	See PULSE Data Sheet for additional details.

* Systems with a 1.8m antenna require a 3.66m (12ft) radome. Systems with a 2.44m antenna require a 4.0m (13.2ft) radome.

† All Ranger-X5 systems require a radome (1.8m/6ft radome used with 1.0m antenna)



**PERFECT APPLICATION FOR OFFSHORE OIL PLATFORMS, RAPID DEPLOYMENT EXERCISES,
REGIONAL AIRPORTS, MILITARY, WATER MANAGEMENT AND MUCH MORE**



PROTECTING PEOPLE AND ASSETS®

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EEC is an ISO 9001:2008 company.

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