EVO
BALLISTIC

EB-MK ONE

TECHNICAL DATA SHEET



RADAR-BASED BALLISTIC
HIGH-END ANALYZER
FOR TRACKING HIGH-VELOCITY OBJECTS

24 GHz	±0.24 m/s	20 M/s	30–2,000
K-BAND RADAR	VELOCITY PRECISION	SAMPLES PER SECOND	M/S VELOCITY RANGE

EB-MK ONE

Advanced Radar-Based Ballistic Measurement & Analysis System



K-Band 24 GHz	±0.24 m/s	2.5–20 million	All-weather
CONTINUOUS-WAVE DOPPLER	PRECISION	SAMPLES PER SECOND	INDOOR & OUTDOOR

MEASUREMENT PERFORMANCE

The EB-MK ONE delivers exceptional measurement performance through its advanced continuous-wave Doppler radar technology. It covers a velocity range from **30 m/s up to 2,000 m/s**, allowing it to detect and track any moving object – including projectiles of various materials, sizes, or shapes – across this full spectrum without limitations. Velocity is measured with a precision of **±0.24 m/s** at any speed within the range. This high accuracy is achieved by directly evaluating the true Doppler frequency shift, where approximately 160 Hz of shift corresponds to a velocity change of 1 m/s.

The system operates at an extremely high measurement rate of **2.5 to 20 million samples per second**. This ultra-fast sampling enables the detection of even the smallest signal variations during the projectile's flight, capturing subtle phenomena such as spin (self-rotation), tumble (pitch/yaw instability), muzzle exit events, unburnt powder particles, fragments, shot exit irregularities, and overall flight stability after leaving the barrel.

For typical muzzle-velocity measurements, the effective range is around 30 meters for standard projectiles, though significantly greater distances are achievable with larger calibers or by repositioning the unit down-range along the actual flight path (down-range profiling). The sensor's beam opening angle is nominally 11°, optimised at approximately 12.5° for close muzzle-velocity setups (~50 cm distance), while angles below 5° are recommended for extended long-range measurements.

In addition to basic velocity profiling, the system provides comprehensive real-time data including complete trajectory curves, flight angle, energy retention, drift, drop, and deviation analysis across multiple shots. It excels at identifying ammunition inconsistencies through series comparisons and supports full automatic bursts or dozens of individual shots in seconds via its high-rate burst recording capability (up to 2.4 seconds of raw data, ~50 MB per burst). Spectral analysis further differentiates the main projectile from smaller secondary objects by tracking their distinct velocity changes over time.

KEY SPECIFICATIONS

Velocity Range	30 m/s – 2,000 m/s (any projectile material, size, or shape)
Velocity Precision	±0.24 m/s across the entire velocity range
Doppler Resolution	~160 Hz frequency shift per 1 m/s velocity change
Effective Range (MV)	~30 m typical; extended range achievable with larger calibers
Trigger – Acoustic	Microphone with adjustable threshold
Trigger – Radar	Fully automatic signal detection
Burst / Auto Mode	Up to 2.4 seconds recording per burst (~50 MB raw data)
Multi-Shot Support	Dozens of shots in seconds; full automatic burst supported

RADAR & TRANSMISSION

Frequency Band	K-Band, 24 GHz
Adjustable Frequency Range	24.000 – 24.250 GHz (50 MHz steps)
Channels / Frequency Step	9 channels per step – multi-device, interference-free operation
Transmit Power	Max. 100 mW (selectable: 60 / 80 / 100 mW)
Safety Compliance	Complies with highest low-power radar regulations
Measurement Rate	2.5 – 20 million measurements per second
Beam Opening Angle	11° nominal; optimised at ~12.5° for muzzle-velocity setups at 50 cm distance; < 5° recommended for long range; max. 20° advised

PHYSICAL & ENVIRONMENTAL SPECIFICATIONS

Dimensions (L × W × H)	250 × 200 × 100 mm
Weight (incl. battery)	2.5 kg / 5.5 lbs
Power Supply	Proprietary rechargeable battery pack only – no AC mains operation (ensures maximum measurement precision)
Battery Runtime	6–8 hours depending on ambient conditions and usage intensity
Operating Conditions	Indoor & outdoor; all weather incl. rain; any lighting; temperature & humidity independent
Setup Time	< 5 minutes

CONNECTIVITY & USER INTERFACE

Wireless	2.4 GHz WiFi (one controlling device at a time)
Wired	LAN / Ethernet
Control Interface	Browser-based web UI – no app or software installation required; works on smartphone, tablet, and PC
Display Modes	Dark / Light mode switchable
Network Requirement	Local network only – no internet required; access via IP address
Units	Metric / imperial switchable
Multi-Device Support	Yes – measuring chain with multiple EB-MK ONE units supported

INTEGRATED SENSORS & ANALYSIS

On-board Weather Station	Live measurement of pressure, temperature & humidity for accurate ballistic calculations
Real-time Outputs	Trajectory, drop, energy, drift, deviation, rate of fire (RoF/cadence), group size estimation
Advanced Features	True drag model (beyond G1/G7 BC), custom drag profile editor, BC/CD converter, spectral analysis, shot exit / particle detection

DATA HANDLING & EXPORT

Shooters Log	Comprehensive log with environmental data, weapon & ammunition presets
Database	Expandable weapon & ammunition database
Export Formats	CSV (shot data), full PDF reports, raw signal files (Expert mode)

EB-MK ONE EXPERT SOFTWARE (OPTIONAL)

Optional EB-MK ONE EXPERT (Windows software) provides deep raw-signal analysis:

- Raw Doppler signal visualisation (pre/post-trigger window)
- Spectral / frequency decomposition
- Look-back analysis
- Custom drag model creation & multi-BC calculation
- Offline mode & FTP raw data download
- Burst reports & advanced filter options

RECOMMENDED ACCESSORIES & POSITIONING

Tripod	Min. 5 kg load capacity; large base plate recommended to minimise vibration transfer
Optimal MV Position	5–50 cm behind muzzle, 10–40 cm lateral offset, aligned with barrel axis height
Down-Range Deployment	Position along flight path for extended velocity profiling (use radar trigger mode)

AT A GLANCE

- Browser-based UI – no software installation
- Indoor & outdoor use, all weather
- Raw signal data access
- Setup in under 5 minutes

EVO BALLISTIX

German engineering,
made in the UAE

LONG-RANGE SHOOTERS

Shooters log, drop tables, drag profiles

WEAPON MAKERS

Test conditions, raw radar data, certificates

AMMO MAKERS

Bullet-specific drag models, shot exit analysis

FORENSICS & RESEARCH

Raw radar data, all projectiles, all conditions

RANGES & TEAMS

Fixed or mobile, multiple user profiles



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