

**MINK MODULAR COMBAT SUPPORT VEHICLE**



# CAPABILITY DESCRIPTION



**MINK FORWARD ARTILLERY OBSERVER VEHICLE // MFAO**

# MODULAR COMBAT SUPPORT VEHICLE

## DESIGN AND SAFETY

### PROTECTION LEVELS

- Protected passenger monocoque cell
- Ballistic protection on passenger cabin is STANAG level 2 as standard with STANAG level 3 optionally available.
- The blast frame and cabin floor act as a blast attenuating double skin, energy absorbing mechanism and provides exceptional safety characteristics for the occupants of the vehicle.

Mine & IED protection up to STANAG levels 3A & 3B

### Protected engine compartment

- Radiator grill and engine compartment sides protected to STANAG level 2.
- Bonnet protected to STANAG level 2 at 45 degrees angle of incidence.



# MODULAR COMBAT SUPPORT VEHICLE

## TECHNICAL SPECIFICATIONS

Parameter	MFAO Specification
Engine	6.7 l Cummins / 300 hp/ 223 kW 6.8 l MAN (OPTION) 340 hp/ 253 kW
Torque	1100Nm/ 1200NMm @1200 - 1800rpm
Transmission	Allison 6-speed Automatic
Engine Idle	750 - 850 rpm
Range	700 km
GVW/ Payload: MINK2	12,000 kg/ 2.700 kg, 2.000 kg (STANAG 2, 3)
GVW/ Payload: MINK3	20,000 kg/ 9.000 kg, 8.000 kg (STANAG 2, 3)
Alternator	24 V/ 360 A Standard: 1 <sup>st</sup> belt: Alternator, Engine, water pump 2 <sup>nd</sup> belt: AC system and auxiliary equipment
Batteries	x 2 at the front, inside engine compartment x 2 in the v-hull compartment (option)

Parameter	MFAO Specification
Dimensions (LWH): MINK2	6.120 x 2.370 x 2.640 mm
Dimensions (LWH): MINK3	7.000 x 2.370 x 2.640 mm
Track Width/ Axle	1.908 mm/ 4x4 independent front/ rear
Wheel Base: MINK2	3.600 mm
Wheel Base: MINK3	3.830 mm
Ground Clearance	484 mm
Angle of approach/ departure	40 degrees
Obstacle Crossing	484 mm
Crew Capacity: MINK2	6-8
Crew Capacity: MINK3	10-12
Protection Level	STANAG 4569 3A/3B

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## TECHNICAL SPECIFICATIONS

### PERFORMANCE MFAO STANDARD

Range	700km
Maximum Speed on Road	120km/h*



\*Limited to tire manufacturer specifications

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## STANDARD AND OPTIONAL EQUIPMENT

Standard Equipment	Optional Equipment	
<ul style="list-style-type: none"> <li>▪ CAN Bus Electrical System</li> <li>▪ Forward and Rear View Cameras</li> <li>▪ Air Conditioning Unit, tropical or extreme desert options</li> <li>▪ Central Tire Inflation System (CTIS)</li> <li>▪ Run-flat inserts in all tires</li> <li>▪ Anti-Locking Brake System (ABS)</li> <li>▪ Central Main Switch</li> <li>▪ Battery protection system</li> <li>▪ Mine blast certified seats</li> <li>▪ Multipoint seat belts</li> <li>▪ Towing Eyes</li> <li>▪ Black out lighting</li> <li>▪ Engine fire suppression system</li> </ul>	<ul style="list-style-type: none"> <li>▪ Customer equipment integration</li> <li>▪ Self Recovery Winch</li> <li>▪ NBC overpressure filtration system</li> <li>▪ Sniper detection system</li> <li>▪ Fire suppression system underbody</li> <li>▪ Smoke grenade launchers</li> <li>▪ Weapon mount*</li> <li>▪ Turret options</li> <li>▪ Strobe lights</li> <li>▪ IED Jamming systems</li> <li>▪ Night Vision System</li> <li>▪ Fit for radio and navigation system</li> </ul>	<ul style="list-style-type: none"> <li>▪ PA /Intercom system</li> <li>▪ Converter 24V to 220-230V</li> <li>▪ Window wire mesh protection</li> <li>▪ Antenna mounts</li> <li>▪ Rifle holders</li> <li>▪ Wire cutters</li> <li>▪ Camera recording system with DVR</li> <li>▪ FLIR and thermal vision systems</li> </ul>

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### Capability Overview

The MINK Forward Artillery Observer (MFAO) Vehicle is a protected, highly mobile land platform designed to provide forward observation, target acquisition, fire support coordination, and battlefield surveillance in support of joint and combined arms operations. The vehicle enables persistent observation and rapid sensor-to-shooter connectivity while operating in close proximity to the forward edge of the battlespace. The MFAOS is the nuclear element within Joint Fire Operations.



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## CAPABILITY DESCRIPTION

### Mission Role

MFAO supports the following operational roles:

- Target Acquisition & Intelligence: Using advanced optics, laser rangefinders, and unmanned aerial vehicles (UAVs) to locate targets from a forward position.
- Call for Fire (CFF): Initiating, adjusting, and directing fire on targets using grid, polar, or shift methods.
- Fire Adjustment & Correction: Observing shell bursts and correcting for deviation and range to achieve first-round, fire-for-effect accuracy.
- Fire Support Coordination: Advising manoeuvre commanders on the best use of artillery, mortars, close air support (CAS), and naval gunfire.
- Battle Damage Assessment (BDA): Assessing the impact of strikes to determine if further engagement is necessary.
- Terminal Control: Joint Fire Observers (JFOs) are certified to request and control air-to-ground strikes.

# MODULAR COMBAT SUPPORT VEHICLE

## CAPABILITY DESCRIPTION

### Core Components and Devices

- Target Acquisition and Observation Systems: These are portable or mounted units often featuring integrated day-sights, thermal imagers ( for night operations), and laser rangefinders.
- Laser Rangefinders/Designators (LRF/LTD): Devices such as the TYR or HPLT are used to determine precise distances and mark targets for laser-guided munitions.
- Digital Magnetic Compass (DMC) & Gyroscope: Essential for determining the azimuth and orientation to the target.
- GPS/Positioning Systems: Integrated with inertial navigation to ensure accurate self-location and target coordinate.
- Communication Equipment: Secure digital radio systems (e.g., for DTCS) to transmit target data to fire control center.
- Computing/Visualization Devices: Rugged tablets or handheld devices (like the Lightweight Forward Entry Device) that run target acquisition software.
- Tripods with Goniometers: Used for stabilizing sensors and providing precise angle measurements.

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## CAPABILITY DESCRIPTION

### Engagement Modes

#### a. Types of Fire Missions

- Fire for Effect (FFE): Immediate engagement of a target with all allocated guns, used when the initial location data is highly accurate.
- Adjustment/Registration: The observer conducts a "fire-and-adjust" mission to calibrate fires, using one or more guns to spot shots and move them onto the target.
- Suppression/Neutralization: Non-lethal or lethal fire, such as smoke or illumination, intended to disrupt enemy operations or restrict vision rather than destroy.

#### b. Operational Context

- Direct Support: The FO is embedded with frontline manoeuvre units (infantry/armour) to provide immediate, on-demand fire support.
- Deep Operations: Using long-range surveillance or aerial assets to target enemy units far behind the forward line of troops.
- Digital Data Transmission: Modern systems use automated target acquisition and digital, computerized, or laser-assisted data to reduce time and errors in the sensor-to-shooter loop.

Forward observers are part of a FIST (Fire Support Team) and are critical in integrating mortars, artillery, and close air support.

# MODULAR COMBAT SUPPORT VEHICLE

## CAPABILITY DESCRIPTION

### Platforms and Integration

MFAO is platform-agnostic and can be integrated into:

- MINK2 4x4 Combat Cabin in STANAG 2 or STANAG 3
- MINK3 6x6 Combat Cabin in STANAG 2 or STANAG 3

The system is designed for rapid integration into NATO-standard vehicle architectures and battle management systems.



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## CAPABILITY DESCRIPTION

### Interoperability and Networking

- Digital Data Integration: Systems are increasingly moving away from voice commands to digital "Call for Fire" (CFF) messages, directly linking laser rangefinders and GPS-enabled devices with artillery fire control systems.
  - Key Interoperability Standard (ASCA): The Artillery Systems Cooperation Activities protocol is a crucial standard for multinational operations, allowing different nations' artillery fire control systems to communicate, share target data, and coordinate fire missions automatically.
  - Joint Operations Support: Modern FO tools are designed to work across domains, integrating with Forward Air Controllers (FACs), Unmanned Aerial Vehicles (UAVs), and Battle Management Systems (BMS).
  - Unified Architectures as Fire Support System (FSS) use open standards and middleware (like Data Distribution Services) to enable low-cost, flexible integration of new, external, and third-party systems.
- The MFOA Vehicle aligns with NATO concepts such as Multi-Domain Operations (MDO) and Joint Fires.

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### Operational Advantages

- Expedited "Kill Chain" (Speed and Accuracy).
- Massed and Responsive Firepower.
- Improved Target Acquisition and Damage Assessment.
- Force Protection and Safety.
- Versatility in Mission Types.
- Psychological Impact.
- Strategic Adaptability (Modernized Tools).



# MODULAR COMBAT SUPPORT VEHICLE

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### Summary Statement

The MFAO vehicle consists of specialized personnel, high-tech surveillance equipment and communication tools designed to locate enemy targets and direct - indirect fire, such as artillery, mortars and joint gunfire from a forward position. As the highly mobile "eyes and ears of the battlefield"



# PARTNERSHIP & CONTACT

## SECTOR FOCUSED SOLUTIONS



Our platforms support European defense autonomy and NATO interoperability, contributing directly to national security and industrial strength. Designed for seamless integration with allied forces, GermanTec vehicles align with EU strategic goals and compliance requirements.

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Open system architecture and standardized interfaces enable collaboration on next-generation vehicle systems. GermanTec Automotive is committed to co-development with European suppliers and supports local production networks.

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