LPP HOLDING | PRODUCT CATALOGUE

AUTONOMOUS DEFENCE SYSTEMS POWERED BY AI

Future ideas made now.

LPP develops smart technologies for the defense and civil sectors. As a part of the LPP Holding, we unite companies with deep expertise in development, manufacturing, and integration. We focus on leveraging AI and autonomous systems to deliver reliable, advanced solutions for complex challenges. Our work spans three key segments.

Avionics draws on nearly 90 years of heritage for cutting-edge, autonomous air systems. Land Systems offers modular solutions including vetronics, C4ISR, and the autonomous UGV. Civil Industries focuses on safety and efficiency via intelligent video analytics, virtual simulation environments, and advanced railway systems.

EXCELLENCE THROUGH COOPERATION

LPP Holding

LPP

LPP UNMANNED SYSTEMS

LPP CONTROL SYSTEMS

ZOFITECH

LPP AMMO

AVIONFLY

ARCHER LPP

T-CZ

MTG EXPORT

QUANTASOFT

2REALISTIC

JRJ SOLUTIONS

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REMOVE BEFORE FLIGHT
REMOVE BEFORE FLIGHT

LPP HOLDING

Aerospace

With a legacy dating back to 1937, our company has been at the forefront of avionics innovation for nearly 90 years. We have evolved from this deep component-level expertise into a full-system manufacturer, designing and building every element of our unmanned platforms in-house.

Today, we deliver cutting-edge systems tailored for modern air operations. The fully autonomous MTS ecosystem exemplifies this total control over technology, offering disruptive performance in heavily contested environments.

- Unmanned Aerial System
- Jet Engines
- Avionics

MODULAR TACTICAL UAS FOR ONE-WAY ATTACK

Autonomous UAV System MTS

- Fully autonomous UAV designed for one-way attack missions.
- Features onboard AI navigation and visual positioning, eliminating reliance on external signals.
- Bypasses electronic warfare systems, ensuring reliable performance in heavily contested environments.
- Contains various payloads, including HEAT, HEFRAG, and AT-TBFRAG warheads.
- Precise waypoint planning, optical tracking, and catapult launch for rapid deployment.

MTS is a fully autonomous combat UAV system. The key feature of this system is its visual navigation, which allows the MTS to navigate in full autonomy (without GNSS or other external signals), and with complete immunity to jamming.

The system is easily transportable and launches from a mobile catapult, which allows for rapid deployment and fast operator exfiltration. The included mission planning software allows intuitive flight plan management and target specification. Optical tracking is used to accurately identify the target and adjust the terminal flight path. MTS supports variable payloads, including HEAT, HE-FRAG, and AT-TBFRAG warheads.

MTS features a custom LPP communication system that provides a jamming-resistant radio link with frequency hopping and multi-band transmission to ensure reliable man-in-the-loop oversight

MODULAR TACTICAL UAS FOR ONE-WAY ATTACK

Autonomous UAV System MTS

Technical description

	MTS-5E	MTS-25C	MTS-40C
Purpose	One Way Attack	One Way Attack	One Way Attack
MTOW	5,5 kg	25 kg	40 kg
Payload	Up to 2 kg	Up to 6 kg	Up to 12 kg
Maximum Range	40 km	450 km	650 km
Maximum Speed	160 km/h	200 km/h	230 km/h
Launch	Catapult / RATO	Catapult / RATO	Catapult / RATO
Wingspan	1670 mm	3320 mm	3320 mm
Propulsion	Electric	Combustion	Combustion

STEALTH FLYING WING

Stealth UAS MTS Nightray

- Stealth one-way attack UAS designed to strike high-value targets deep in contested environments.
- Our Visual navigation with a custom autopilot enables fully autonomous operation in GPS-denied areas.
- Optional jamming-resistant radio for human-in-the-loop control, target adjustment, and live telemetry link.
- Stealth aspects include a custom flying wing design and radar-deflecting material developed in-house.
- Can be launched by catapult or from runways and roads using a reusable trolley launch system.

Nightray is a stealth one-way attack unmanned aerial system (UAS). As part of the MTS ecosystem, it utilises the same jamming-resistant Visual navigation technology as our battle-proven MTS aerial vehicles, while focusing on low observability. Its stealth features include an optimised flying wing shape, custom radar-deflecting material, and a buried turbojet engine. Nightray is designed to strike high-value targets deep in contested environments.

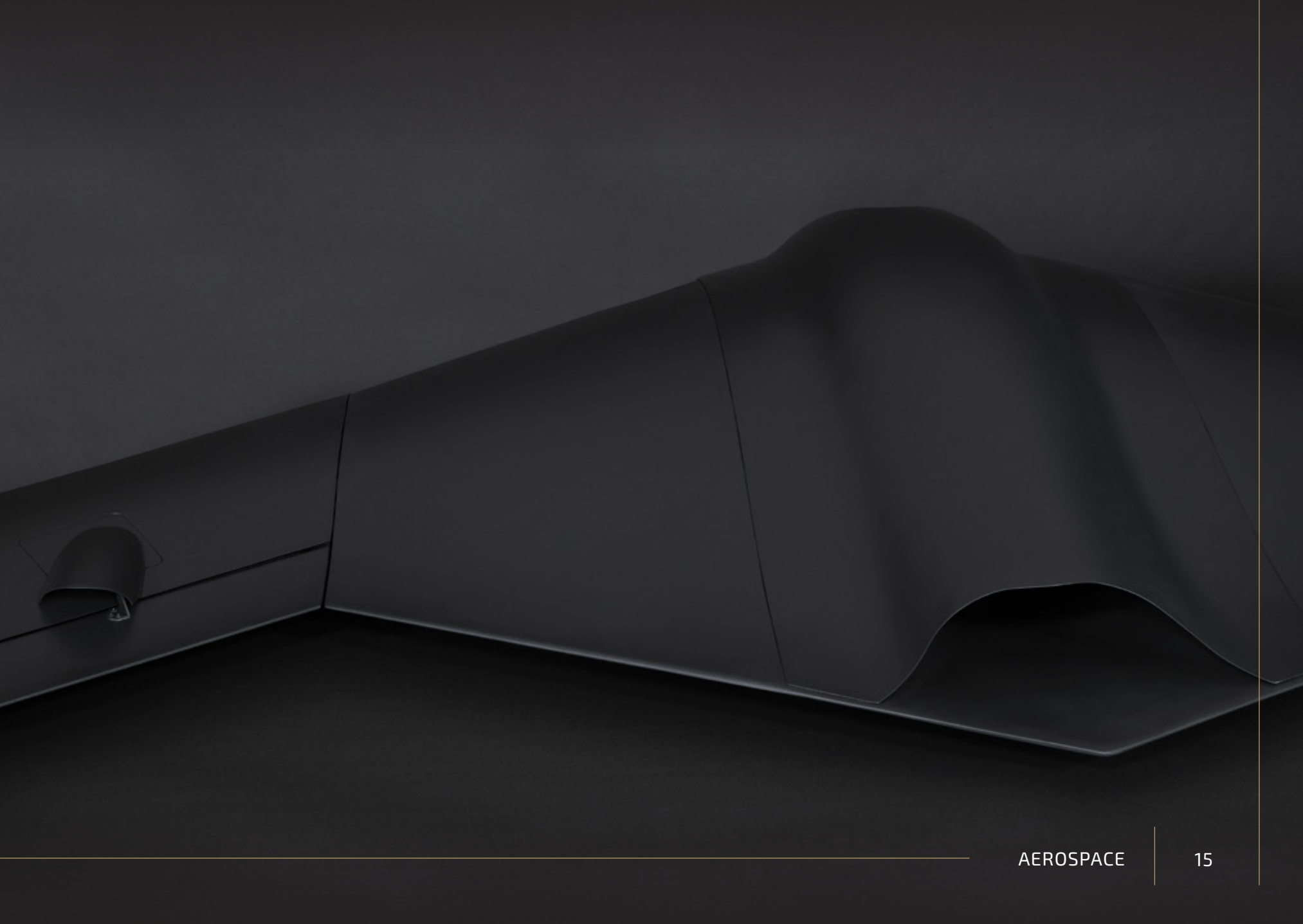
Nightray is delivered as a ready-to-deploy package and comprises all components, including the autopilot, Visual navigation, electronics, propulsion system, warhead, aerial vehicle, mission planner, and more. The entire system is developed and manufactured in-house in the Czech Republic.

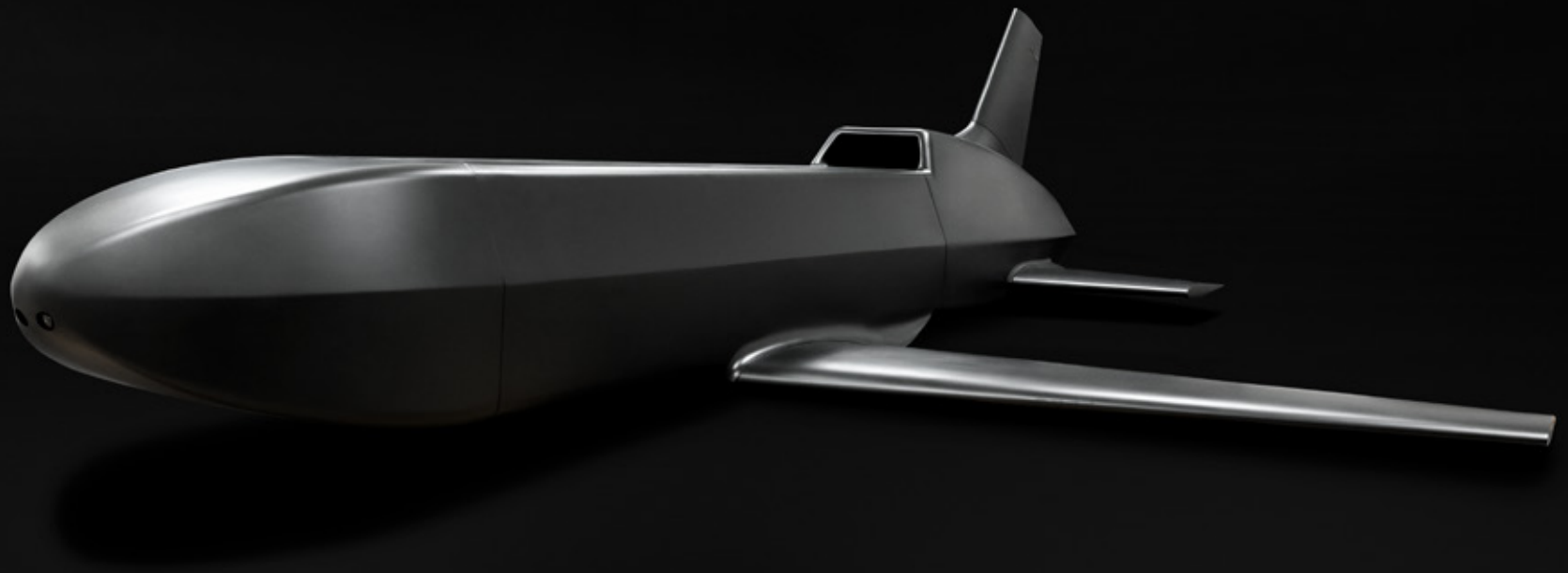
STEALTH FLYING WING

Stealth UAS MTS Nightray

Technical description

Length	1.77 m
Wingspan	4 m
Empty weight	63.2 kg
Max takeoff weight	140 kg
Fuel capacity	46.8 kg
Combat payload	30 kg
Average fuel consumption	1 000 g/min
Maximum speed	500 km/h
Range	400 km
Endurance	46 min





GROUND-LAUNCHED SUBSONIC MISSILE

Cruise Missile MTS Narwhal

- Turbojet-powered cruise missile designed to strike targets deep in contested environments.
- Our Visual navigation with a custom autopilot enables fully autonomous operation in GPS-denied areas.
- Optional jamming-resistant radio for human-in-the-loop control, target adjustment, and live telemetry link.
- Includes variants carrying 120 kg warheads at ranges up to 680 km, reaching a maximum speed of 750 km/h.
- Can be launched by catapult or from runways and roads using a reusable trolley launch system.

Narwhal is a ground-launched subsonic cruise missile powered by a turbojet engine. As part of the MTS ecosystem, it utilises the same Visual navigation technology as our battle-proven MTS aerial vehicles. Narwhal can deliver a 120 kg warhead to a range of 680 km. It can reach speeds of 750 km/h while maintaining low-altitude flight. This makes it capable of striking targets deep in GPS-denied areas.

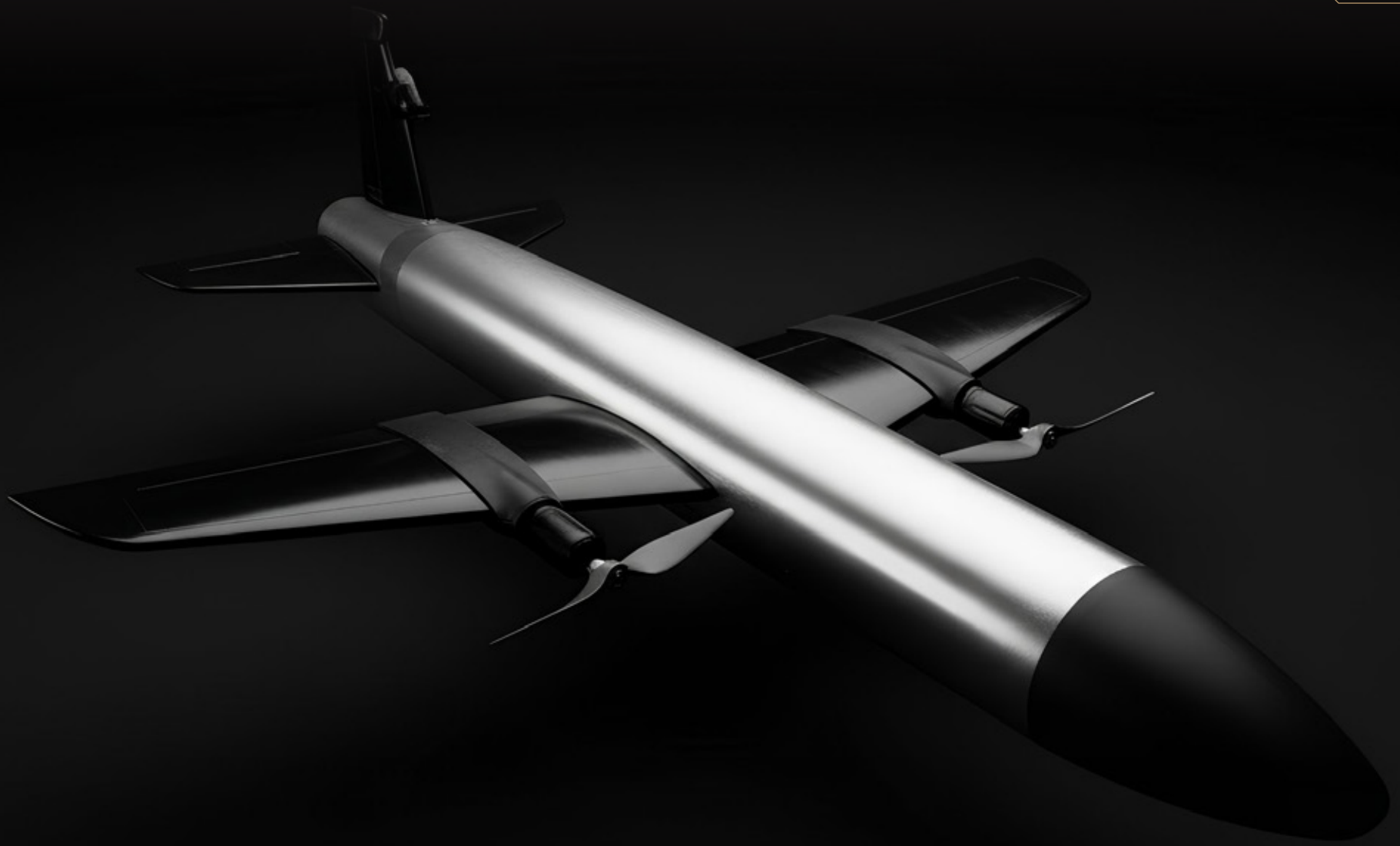
Narwhal is delivered as a ready-to-deploy package and comprises all components, including the autopilot, Visual navigation, electronics, propulsion system, warhead, aerial vehicle, mission planner, and more. The entire system is developed and manufactured in-house in the Czech Republic.

GROUND-LAUNCHED SUBSONIC MISSILE

Cruise Missile MTS Narwhal

Technical description

	Narwhal 270	Narwhal 140
Length	4 m	3 m
Wingspan	2.6 m	2.6 m
Empty weight	62 kg	28.5 kg
Max takeoff weight	260 kg	127 kg
Fuel capacity	78 kg	58.5 kg
Combat payload	120 kg	40 kg
Average fuel consumption	1 900 g/min	1 020 g/min
Maximum speed	750 km/h	550 km/h
Range	680 km	730 km
Endurance	55 min	80 min



COUNTER-UAS

JWI-4000 Interceptor

- Complete counter-UAS solution for hard-kill neutralisation of hostile UAVs.
- Launches from a compact catapult with a built-in base station serving as middleware.
- Reaches up to 4 000 m altitude and 300 km/h, with 10 minutes of flight time at max altitude.
- The interceptor contains an in-house autopilot, navigation unit, and multiple sensors.
- Neutralisation is carried out by a thermobaric warhead with an omnidirectional pressure effect.

The JWI-4000 is an advanced unmanned aerial system (UAS) designed to intercept and neutralise hostile UAVs. Special emphasis is placed on the ability to counter the Geran-2/Shahed 136 type and its derivatives.

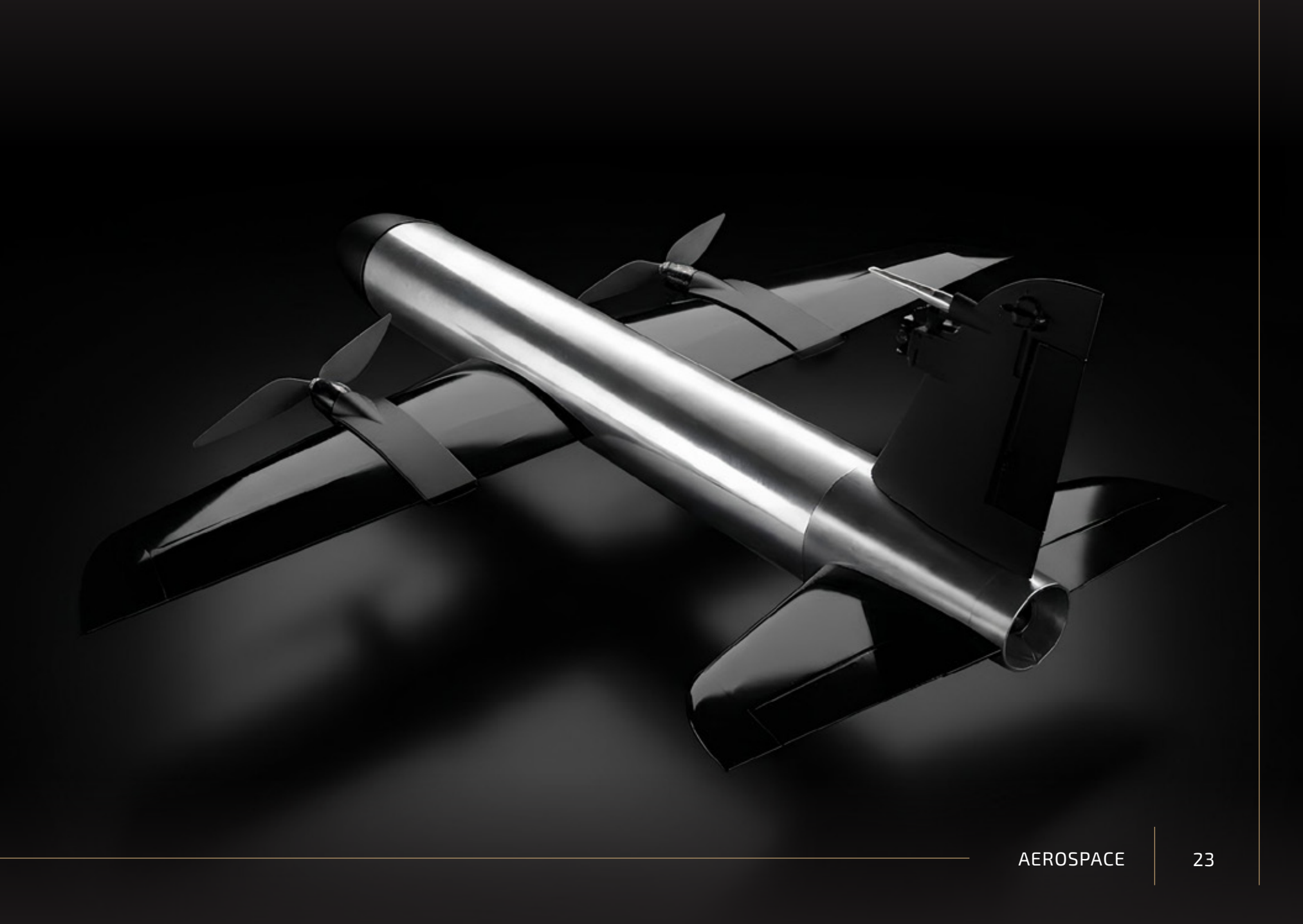
The system consists of the interceptor, base station, ground station, radar, jamming-hardened multiband radio, and catapult equipment. The method of neutralisation is hard-kill via a thermobaric warhead. It is designed to work with and integrate into existing air defence detection segments, primarily dedicated detection radars using the ASTERIX protocol, to support cueing and engagement.

COUNTER-UAS

JWI-4000 Interceptor

Technical description

Length	1200 mm	**Ceiling**	Up to 4 000 m
Wingspan	990 mm	**Rate of climb**	Up to 35 m/s
Height	320 mm	**Operation time (@max alt.)**	Up to 10 min
Weight	Up to 7.5 kg	**Operation range (@max alt.)**	Up to 10 km
Combat payload	Up to 1.8 kg	**Communications**	Proprietary MBR
Speed (cruise / max.)	250 / 300 km/h	**Radar data format**	Asterix CAT 62
Requirements	Data integration from/with existing airborne defence system (ASTERIX ready)		
Extension features	The proprietary communication supports swarm flight of several JWI family UAVs		



COUNTER-UAS

ARTEMIS 2.0 Interceptor

- High-speed quadcopter drone system for remote counter-UAV operations.
- Warhead creates a directed beam of fragments that covers a target area up to 10 m2 large.
- The system performs vertical take-off from rough terrain or from vehicle.
- Combines radar detection, VIS/IR camera guidance, and laser rangefinder initiation.
- Mechanical and electronic safety fuses with in-flight self-destruct function.

Counter-UAS Interceptor ARTEMIS 2.0 is designed to detect, track, and eliminate hostile drones and UAVs. Upon obtaining radar verification of an airspace violation, the Interceptor is launched and directed towards the area of predicted contact. Once in range, it employs onboard sensors, automatically locks onto the target, and eliminates it with a directed fragmentation warhead.

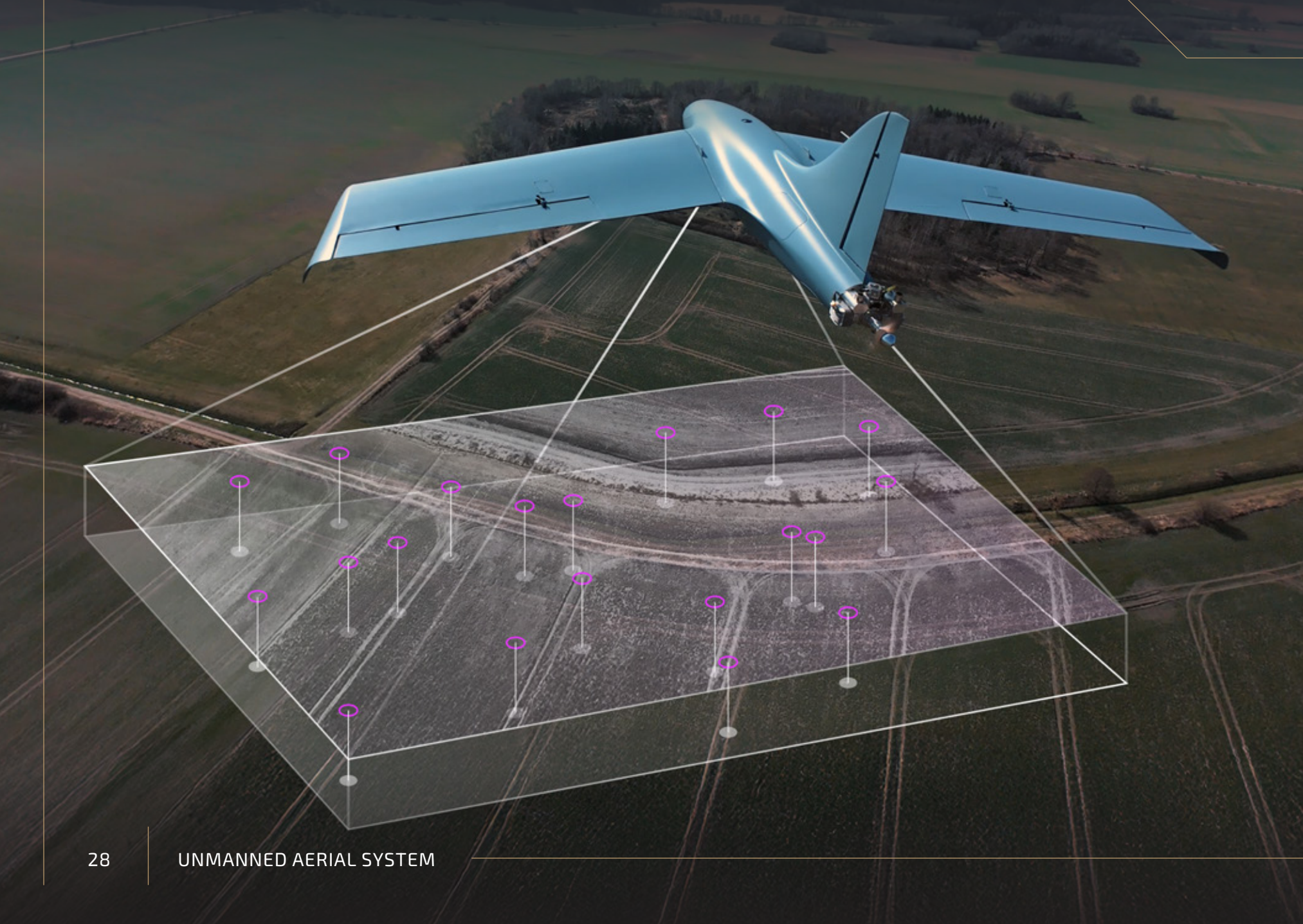
Interceptor drones can also be deployed on our fully autonomous UGV as part of the LPP Hornet anti-drone configuration. The platform also includes additional components to support a wider range of operations.

COUNTER-UAS

ARTEMIS 2.0 Interceptor

Technical description

Speed	300 km/h	**Operating range**	5000 m
Weight	Up to 10 kg	**Endurance at maximum power**	4 min
Combat payload	Up to 2 kg	**Endurance at standby power**	10 min
Payload type	HE-FRAG / HEAT	**Temperature range**	-40 to 60 °C
Height	700 mm	**Precipitation**	rain/snow resistant
Span without propeller	700 mm	**Crosswind speed**	up to 12 m/s
Span with propellers	1100 mm	**Communications**	Proprietary MBR
Body diameter	150 mm	**Radar data format**	Asterix CAT 62
Requirements	Data integration from/with existing airborne defence system (ASTERIX ready)		
Optical conditions	day/night/reduced visibility (spring and autumn fog + low cloud cover)		



AUTONOMOUS UAV POSITIONING IN JAMMED AREAS

Visual Navigation

- Ensures precise UAV localisation in GNSS-denied and jammed environments.
- Operates autonomously without external signals, making UAVs resistant to electronic warfare.
- Integrates flight data, visual odometry, and map matching for drift correction.
- Proprietary algorithms process sensor data, determining position without GNSS reliance.
- Provides full autonomy, accurate mission execution, and seamless compatibility with UAV systems.

Visual Navigation System enables UAV positioning in GNSS-denied and jammed environments, ensuring reliable navigation despite electronic warfare. By integrating multiple sensor inputs, the system provides fully autonomous navigation without relying on external signals. In the final phase of a mission, optical tracking is employed for precise target recognition and terminal flight path adjustment.

AUTONOMOUS FLIGHT CONTROL FOR DRONES

UAV Autopilot

- Enables full drone autonomy with GNSS, IMU, and barometric navigation for precise flight control.
- Supports takeoff, cruise, landing, and in-flight adjustments for flexible mission execution.
- Designed for the MTS drone family, it integrates with LPP planning software and LPP Visual Navigation.
- Can be easily adapted for existing UAV platforms.
- Configurable autopilot software for autonomous flight control for various applications.

Technical description

Airspeed Ranges	45-600 kt
Gyro Range	±500 °/s (all axis)
Accelerometers Range	'±8 g, all axis
Sampling Rate (IMU + Attitude)	Up to 1000 Hz
CAN	2
Voltage Supply	9 to 36 V DC
Power Consumption	2 W @ 12 V
Environmental Qualification	MIL-STD-810H
EMC / EMI Qualification	MIL-STD-461
Temperature Range	-40°C to +85°C


Panasonic
FZ-G2
TOUGHBOOK
Missions
Mission Planner
Asset Details
Alert Details
Path Planner
Unmanned Aerial Vehicle
Unmanned Ground Vehicle
Surveillance Towers
Manned Vehicles
No Drone Connected

FLIGHT PLANNING SOFTWARE FOR DRONES

UAV Mission Planner

- AI-powered UAV mission planning software for flight planning, mission execution, and target specification.
- Enables optimized UAV path creation and threat detection before deployment.
- Integrates with UAV Autopilot and LPP Visual Navigation for autonomous navigation in jammed areas.
- Supports multiple UAV missions, ensuring synchronized operations across multiple drones.
- Uses optical tracking for precise target identification, tracking, and locking, enhancing mission accuracy.

UAV Mission Planner is a mission planning and flight management software designed for precise UAV route planning and execution. Featuring a 3D map-based and AI-powered interface, it enables operators to create optimized flight paths and set mission objectives.

Originally developed for MTS UAVs, the mission planner transfers pre-planned waypoints directly to the UAV Autopilot for seamless execution. In GNSS-denied environments, the LPP Visual Navigation autonomously guides the UAV to its target. Upon reaching the final location, the system employs optical tracking technology to recognize and lock onto the designated target, ensuring mission accuracy and operational effectiveness.

MODULAR PAYLOADS FOR TACTICAL UAVS

Drone Warheads

- Modular payloads for one-way attack UAVs, designed and manufactured in-house by LPP.
- ITAR-free payloads include HEAT, HE-FRAG, and AT-TBFRAG warheads, ranging from 0.8 to 12 kg.
- The capabilities cover design, prototyping, testing, and production for mission-specific solutions.
- Universal mounting bracket ensures compatibility with third-party UAVs and scalable explosive potential.
- Features dual fail-safes, standardized initiators, and UN-classified transport packaging.

Technical description

Effect (HEAT)	High-explosive Anti-tank/Cumulative
Overall Weight	745 g
Explosive Amount	320 g
Penetration	up to 300 mm RHA
Effect (HE-FRAG)	High-explosive Fragmentation
Overall Weight	865 g
Explosive Amount	151 g
Explosive Radius	25m lethal / 50m shock wave
Effect (AT-TBFRAG)	Thermobaric with increased fragmentation
Overall Weight	max. 12 kg
Explosive Amount	max. 4,1 kg
Explosive Radius	max. 100m lethal / 150m shock wave

AIRBREATHING JET ENGINES

Turbojet Engines ZT J-Series

- Compact turbojet engines delivering high thrust for UAVs, target drones, and light aerial platforms.
- High thrust-to-weight ratio with optimised diffuser stage for additional efficiency.
- Spool up from idle to maximum RPM in under four seconds for rapid throttle response.
- Support for manual, air-start, or electric start for flexible integration.
- Streamlined design fits demanding space-constrained installations without performance trade-offs.

ZT J-Series is a line of compact, high-performance turbojet engines for UAVs, target drones, and light aerial platforms. It includes the ZT J23, ZT J40, ZT J60, ZT J80, and ZT J160 – covering the 230 to 1 600 N thrust class. Each engine uses a single-stage radial compressor and a single-stage axial flow turbine. The result is a high thrust-to-weight ratio and fast throttle response. The compact design suits airframes with tight space constraints without sacrificing power or capability.

All models support multiple start modes. Options include manual start, automated air-start, and fully automatic electric start. Depending on configuration, acceleration from idle to maximum RPM takes as little as four seconds. This enables rapid reaction times and mission flexibility.

AIRBREATHING JET ENGINES

Turbojet Engines ZT J-Series

Technical description

	ZT J23	ZT J40	ZT J60	ZT J80	ZT J160
Engine diameter	130 mm	147 mm	175 mm	201 mm	261.4 mm
Engine length	374 mm	385 mm	470 mm	524 mm	700 mm
Engine weight	2 900 g	3 645 g	6 850 g	9 150 g	21 450 g
System airborne weight *	3 845 g	5 211 g	7 900 g	11 300 g	25 650 g
Thrust at S.T.P.	230 N	392 N	588 N	784 N	>1 569 N
Maximum RPM	108 500	96 000	72 000	61 500	46 000
Thrust at Idle RPM	13 N	13 N	25 N	40 N	75 N
Mass flow	450 g/s	660 g/s	950 g/s	1 250 g/s	2 500 g/s
Max EGT	750 °C	850 °C	875 °C	875 °C	850 °C
Fuel consumption	640 g/min	1 020 g/min	1 648 g/min	1 900 g/min	3 600 g/min
Starting method	Direct kerosene starting, on request propane start for ZT J23 and ZT J40.				

* Total weight includes engine-specific additional equipment configuration.


J6
J5
J7
J1

INTEGRATED AIRCRAFT INFORMATION SYSTEM

Mission Computer

- Controls all aircraft types, integrates ADC, AHRS, ADS-B, FMS, SMS, and data recording.
- Includes 10 expansion slots with boards for video output, serial interfaces, and map rendering.
- Equipped with Ethernet, serial interfaces, ARINC429 (24 inputs/12 outputs), and MIL-STD-1553 channels.
- Supports Large Area Display (LAD) for EW and EO/IR systems integration.
- Compliant with ARINC 429, RS-232, RS-422, MIL-STD-1553, and DS standards.

Technical description

Display Output	4x 1024*768px / 30Hz
Base Board Size	10 expansion slots
Integration	ADC, AHRS, EICAS NAV, GPS, ADS-B FMS, SMS VOR, DME, ILS, MARKER
Operational Ceiling	12 000 m
Temperature Range	-40°C to +85°C
Environmental Qualification	DO-160G
EMC / EMI Qualification	MIL-STD-461E

ELECTRONIC FLIGHT INSTRUMENT SYSTEM

Electronic Flight Display EFIS

- Electronic flight instrument system family featuring 7" (EFIS 207) or 10" (EFIS 210) MFDs.
- Integrates with Mission Computer or directly with systems like ADC, AHRS, and GPS.
- Displays data from FMS, SMS, VTS, and HUMS, configurable for glass cockpit solutions.
- Supports mission simulation, debriefing, and VR/AR training applications.
- Compliant with ARINC 429, RS232, RS422, MIL-STD-704F, MIL-STD-810E, and DO-160G.

Technical description

Air and Ground Speed	10 -1100 km/h
Altitude	-500 to 16800 m
Continuous Operating Time	min. 10 hours
G-load	-4G / + 9G
Weight	max. 1,8 kg
Dimensions	205 x 266 x 80 mm
Operating Voltage	24...34 V
Input Current	up to 0.80 A
Screen Brightness	1200 cd / m2
Temperature Range	-55°C to +70 °C


PFD
NAV
EICAS
FPLN
SMS
STPT EDNY
DTK 293°
DIST 3.2km
XTK ---
TRACK UP
RNG 80km
ATI 129.600 N 47.6713
THR 128.870 E -9.5115
ETE
ALT ft
DTK
DIST km
BRIGHT
GNSS STATUS


VOR 141
ОТ
003 км
30
20
360
338
км/ч
320
15
10
5
500
400
340
300
м
200
10
ГПА 1013
КП 000
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E

INTEGRATED STANDBY INSTRUMENT SYSTEM

Standby Instrument ESIS

- 3ATI standby instrument system for military, turboprop, and transport aircraft, backing up essential flight data.
- Provides key flight data, including attitude, altitude, airspeed, heading, and navigation during failures.
- Includes an Air Data Computer (ADC) and Attitude and Heading Reference System (AHRS).
- Features a sunlight-readable LCD with LED backlighting, auto-dimming, and NVIS compatibility.
- Compliant with ARINC 429, RS232, MIL-STD-704F, MIL-STD-810E, and DO-160G standards.

Technical description

Air and Ground Speed	0 - 963 km/h
Operational Ceiling	11 582 m
Continuous Operating Time	min. 10 hours
G-load in Z axis	-4G / + 8G
Attitude Rate Measuring Range	max. 200 °/s
Weight	max. 0,9 kg
Dimensions	80,4 x 80,4 x 203 mm
Operating Voltage	28 V (range 18 V ÷ 32,2 V)
Resolution/Frequency	480 x 480p / 50 Hz
Number of CBX Boards	1

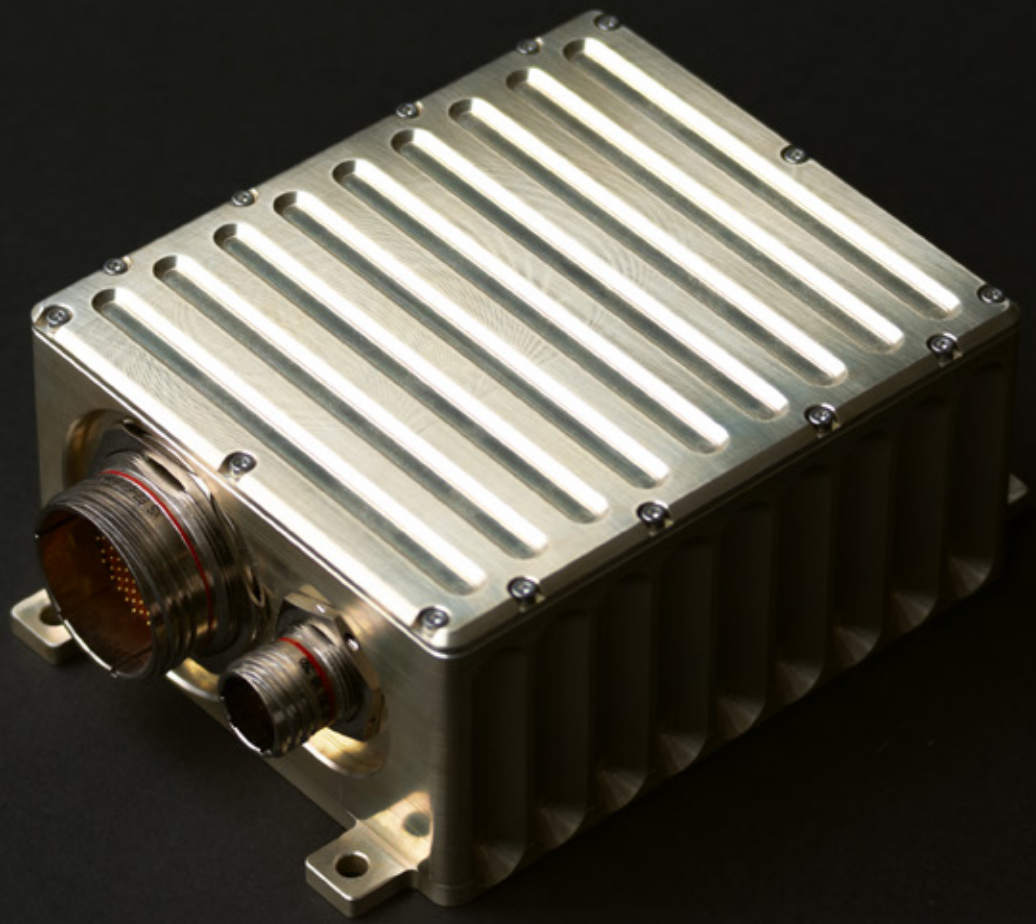
AIRCRAFT WEAPONS CONTROL SYSTEM

Stores Management System SMS

- Enables advanced stores carriage, release, and launch, integrating with a Targeting Sensor system.
- Functions as a standalone system or within the Mission Computer, controlled via EFIS or LPP WX-80.
- EO/IR integration, pylon configuration, fault detection, and mission data management.
- Calculates steering cues, weapon constraints, and ballistics, synchronizing optical navigation for guided weapon releases.
- Compliant with MIL-STD-1760, MIL-STD-1553, and ARINC 664.

Technical description

No. store points	7
Weight	0.6kg
Power consumption	max. 84W @ 28VDC
Modes	CCIP, CCRP, LAR
Comm Interface	MIL-STD-1760 2x ARINC 825-4 7x DSI for HOTAS 1x RS 232 (reserve)




GNSS STATUS
FIX
DIFF
SAT_USED 8/25
UTC_DATE 2023-09-18
UTC_TIME 07:04:22
UTC_TOW 1d07:04:40
GNSS_LAT N·50.10568
GNSS_LON E·14.47796
GNSS_HEIGHT 255m
ACC 4.5m
DOP 2.14
ADJ_LCL
SIM_GPS
BACK

FIRE MANAGEMENT AND FLARE LAUNCHING SYSTEM

Cloud Seeding System WX-80

- Based on the Stores Management System (SMS) technology, designed for aerial cloud seeding control.
- Supports manual and preprogrammed flare firing via a standardized interface with WX-80 Distribution Boxes.
- Includes safety mechanisms to prevent accidental flare deployment.
- Logs flare deployment locations for post-flight analysis by pilots and meteorologists.
- Allows pilots to select and trigger flare sequences manually or via HOTAS for automated deployment.

Technical description

Display	800 x 480px / 50Hz
Dimensions	188 x 150 x 58 mm
Internal GNSS Receiver	Yes
Optional	Meteo radar integration
Environmental Qualification	DO-160G
Comm Interface	2x ARINC 825-4 2x DSI (HOTAS) 40x DSO per Remote station 1x RS 232 (reserve)

INERTIAL NAVIGATION FOR MANNED AND UNMANNED AIRCRAFTS

Attitude and Heading Reference AHRS

- Determines aircraft position, orientation, and velocity with multi-system GNSS support.
- Operates as an inertial unit for navigation in GNSS-denied environments for manned and unmanned aircraft.
- Built for medium to large drones, it also integrates as a standard component in the ESIS unit.
- Uses Kalman filtering to process gyro, distance, pitch, and roll data for accurate navigation.
- Measures acceleration and angular velocity along three axes for real-time position updates.

Technical description

Attitude Rate Measuring Range	min. ±200°/s
Linear Acceleration in Z axis	-4 to +8 g
Gyro Bias Stability	Better than 3 deg/h Dynamic range of 500 deg/s
Measuring Linear Acceleration	40 g
Attitude Data Stability	up to 0.1 deg/h

AIRCRAFT MONITORING SYSTEM WITH PREDICTIVE MAINTENANCE

Health and Usage Monitoring HUMS

- Provides aircraft health status, condition-based maintenance, and fleet management.
- Functions as a standalone system displayed on EFIS EICAS or integrates into the Mission Computer architecture.
- Uses machine learning for predictive diagnostics - can predict failures, detect anomalies, and estimate component lifespan.
- Possible to modify the system for unmanned vehicles, offering real-time health monitoring and diagnostics.
- Compliant with ARINC 429, RS232, RS422, MIL-STD-1553, and CANas standards.

Technical description

Qualification – interconnection	MIL-STD-1553
Inputs/Outputs	ARINC429 RS232/422 CAN Aerospace Analog interfaces

LPP HOLDING

Land systems

Our Land Systems portfolio supports modern ground forces with advanced solutions in vetronics, C4ISR, and optoelectronics. Designed for mission flexibility and battlefield awareness, these systems have proven reliable in demanding environments. Their performance includes successful deployment by the Czech Army. Our HORNET UGV represents the forefront of this development, offering full autonomy and versatility for future battlefields.

- + Unmanned Ground Vehicle System
- + Vetronics
- + C4 ISR Systems
- + Optoelectronics

GROUND DRONE WITH ONBOARD AI NAVIGATION

Autonomous UGV HORNET

- Lightweight ground vehicle designed for logistics missions, adaptable for combat, ISR, medical, and CBRN operations.
- Navigates autonomously in unknown terrain, optimizes route calculation, and avoids obstacles.
- Uses LiDAR, an Inertial Measurement Unit, and environmental segmentation.
- The autonomous navigation modes include waypoint navigation, follow-me, and return to base.
- Operates effectively even in GNSS-denied areas with the aid of an inertial navigation system.

Technical description

Type	Electro-Hybrid
Drive Type	4x4
Weight	750 Kg
Payload	350 Kg
Power	4x5 Kw
Speed	max. 55 Km/h
Autonomous Mode Speed	max. 25 Km/h
Number of Axles	2 pcs
Dimensions	2820 x 1590 x 970 mm
Loading Area	2200 x 1250 mm


Panasonic
FZ-G2
TOUGHBOOK
MAP
FLEET
ALERTS
CAN
LEFT CAMERA
REAR CAMERA
ROAST CAMERA
PULL TO SUMMON
FRONT CAMERA
9.75
14.1
6.24

AUTONOMOUS NAVIGATION FOR UNMANNED GROUND VEHICLES

Autonomous Navigation System

- Allows ground vehicles to navigate unknown and GNSS-denied areas autonomously using neural networks.
- Automatically adjusts routes, responds to unexpected conditions, and works without prior terrain data.
- Fuses data from cameras, LiDAR, and IMU, using SLAM for waypoint driving, obstacle avoidance, and path re-planning.
- Trained in virtual environments with real-world physics simulation to prepare for unpredictable scenarios.
- Ready for implementation in any unmanned system and vehicle equipped with default sensors.

Autonomous Navigation System empowers the HORNET UGV and other unmanned vehicles to navigate unknown environments. It uses neural networks and machine learning for terrain segmentation and object recognition. The system provides waypoint-based driving with real-time obstacle avoidance and route re-planning, even in GNSS-denied areas. It adjusts routes dynamically and reacts to unexpected situations without requiring prior terrain mapping, ensuring reliability in challenging conditions.

A user-friendly Ground Control Station (GCS) enables reliable path planning and integration with other drone units, including UGVs and UAVs, offering a versatile solution for autonomous navigation and seamless coordination across multiple platforms.

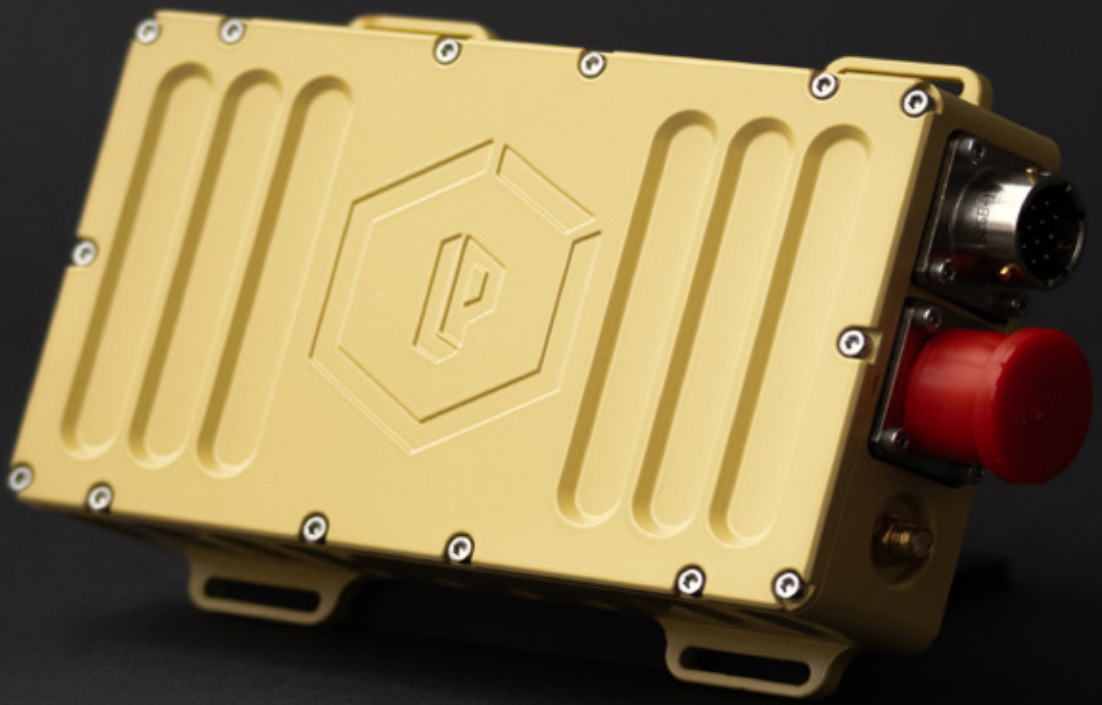
INERTIAL NAVIGATION SYSTEM FOR GNSS-DENIED ENVIRONMENT

Inertial Navigation Unit

- Enables accurate navigation without relying on GNSS by utilizing dead reckoning.
- Onboard Inertial Measurement Unit features MEMS gyroscopes, accelerometers, and magnetometers.
- Advanced algorithms integrate data from sensors, including GNSS receivers and external odometry.
- Features diagnostics and a Driver's Display Unit (DDU) for improved usability.
- Qualified to MIL-STD 810 G/H standards, it is ideal for armoured vehicle and UGV navigation systems.

Technical description

Position Accuracy	2% of distance travel without GNSS
Pitch/Roll (Dynamic)	0.5° RMS
Pitch/Roll (Static)	0.1° RMS
Heading (Dynamic, GNSS)	1.5° RMS
Heading (Static)	2° RMS
Angular Resolution	0.1° RMS
Output Rate (IMU Data)	Up to 10 Hz
Temperature Range	-20°C to +85°C
Electromagnetic Compatibility	Mil-STD-416F Class B
Environmental Qualification	MIL-STD-810H




SPEED 34.02 km/h
KILOMETRAGE 0.56 km
DISTANCE 0.00 km

DISPLAY DRIVER WITH NAVIGATION AND DIAGNOSTICS INTERFACE

Display Driver Unit

- Human-machine interface that provides real-time navigation and vehicle condition updates.
- Integrates with the LPP Inertial Navigation Unit to offer location tracking even in GNSS-denied areas.
- Paired with a diagnostic unit, it delivers condition updates and predictive diagnostics recommendations.
- Equipped with a 7" touchscreen and 8 programmable buttons, it ensures easy control and monitoring.
- The display unit is an integral part of the LPP Vehicle Information Battle Management System.

Technical description

Screen	7'' QLED capacitive touch
Display Resolution	1024 x 600
Viewing Angle	170° wide
Operating Temperature	0°C to +70°C
Storage Temperature	-40°C to +75°C
Dimensions	215 x 125 x 57,5 mm
Weight	1040 g
Input Voltage	28 VDC (Mil-STD 1275D)
Electromagnetic Compatibility	Mil-STD-416F Class B
Environmental Qualification	MIL-STD-810H

MISSION COMPUTER FOR ARMORED VEHICLES

Commander Driver Terminal

- Serves as a mission computer, processing sensor data and managing armoured vehicle functions.
- Integrates with other units to display diagnostics, navigation, and communication data.
- Supports connection of 2 radio communication devices on independent networks.
- Enables commanders to share data with multiple Interface Driver Terminal blocks for real-time coordination.
- Part of the VIBMS system deployed in PANDUR II and T-72 Czech Army vehicles.

Technical description

Comm Interface	1x CAN 125 kBd 4x Ethernet 1xPAL
Operating Temperature	-30 °C to +50 °C
Storage Temperature	-40 °C to +70 °C
Relative Humidity	98 % at 25 °C
Operating Voltage	24 V (range 18 V ÷ 33 V)
Dimensions	310 x 190 x 180 mm
Weight	max. 3kg
Environmental Qualification	MIL-STD-810H

DRIVER VEHICLE CONTROL AND DATA INTERFACE

Interface Driver Terminal

- Mission computer for armoured vehicles, interfacing with the LPP VIBMS system.
- Collects CAN bus data, including vehicle status and operational parameters, for real-time processing.
- Transmits the data to the driver's tablet via Ethernet.
- Supports video streaming from cameras to enhance driver situational awareness.
- Part of the VIBMS system deployed in PANDUR II and T-72 Czech Army vehicles.

Technical description

Comm Interface	1x CAN 125 kBd 4x Ethernet 1xPAL
Operating Temperature	-30 °C to +50 °C
Storage Temperature	-40 °C to +70 °C
Relative Humidity	98 % at 25 °C
Operating Voltage	24 V (range 18 V ÷ 33 V)
Dimensions	250 x 180 x 50 mm
Weight	max. 3kg
Environmental Qualification	MIL-STD-810H

DIAGNOSTIC UNIT WITH PREDICTIVE ALGORITHMS

Predictive Diagnostics for Vehicles

- Enables real-time vehicle condition monitoring and streamlined maintenance planning for fleets.
- Helps schedule repairs proactively, reduces unexpected downtime, lowers maintenance costs, and extends lifespans.
- Continuously learns from new data, refines its predictions, and improves its accuracy over time via machine learning.
- Includes a diagnostics unit, a control display unit, predictive maintenance software, and integration with logistics systems.
- Part of the VIBMS system deployed in PANDUR II and T-72 Czech Army vehicles.

Technical description

Comm Interface	1x CAN 125 kBd 1x RS 232 1x RS 422 1x Ethernet
Operating Temperature	-30 °C to +50 °C
Storage Temperature	-40 °C to +70 °C
Relative Humidity	98 % at 25 °C
Operating Voltage	24 V (range 18 V ÷ 33 V)
Memory	min. 4GB
Weight	max. 3kg


CONTACTS
VEH
MAP
MSG
CAM
FCS
SPEED
MILAGE
RPM
FUEL
TEMPERATURES
PRESSURES
MOTOR
OUTSIDE
COOLER
TRANSMISSION
NUMBER OF FCS SHOTS
CANNON
MACHINE-GUN
ROCKETS
MOTOHOURS
0:25 MIN
NUMBER OF PROBLEMS
WARNINGS
ERRORS
CSV REPORT
POWER SUPPLY
MAINS VOLTAGE
BATTERY VOLTAGE
CHARGING
RAMP CONTROL
DOWN
UP
CBRN
CO
CO2
RAID XP
FILTRATION
ON
OFF
SHOOTING OCCURED
ALERT
DANGER

COMMAND AND CONTROL BATTLE MANAGEMENT SYSTEM

Battle Management System VIBMS

- Real-time monitoring and control of military vehicle subsystems. Greatly enhances situational awareness.
- Integrated mission planning and joint execution for coordinated actions among platoon vehicles.
- Integrated communication systems allow seamless connection among platoon vehicles and headquarters.
- Centralized control of the platoon's weapon systems for coordinated firing and increased effectiveness.
- Real-time health monitoring of subsystems enables early issue detection and preventive maintenance.

VIBMS is a command and control system offering real-time monitoring and vehicle control. It manages propulsion, weapons and navigation subsystems, and greatly enhances situational awareness.

It provides operators with critical alerts, map overlays, and communication links for seamless coordination. It also integrates with additional LPP C4ISR systems such as the Blue Force Tracker (BFT) and Target Acquisition System (ARTS) for enhanced mission effectiveness.

FRIENDLY FORCES MONITORING

Blue Force Tracker BFT

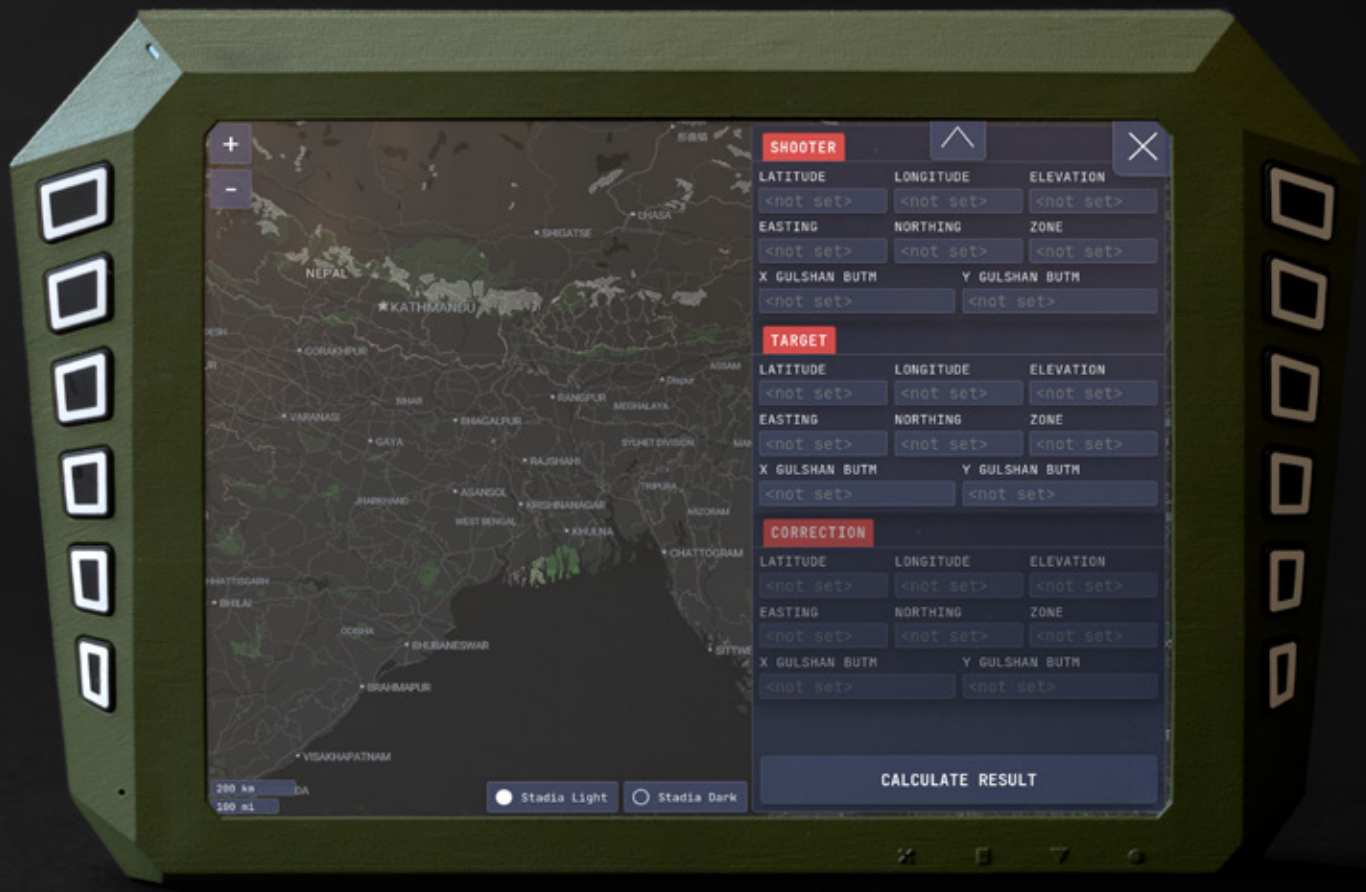
- Enhances situational awareness for ground units by tracking the location and movement of friendly forces in real-time.
- Reduces the risk of friendly fire incidents in the field.
- Alerts for potential threats, messaging capabilities, and historical data on unit movements and locations.
- As part of the Common Operational Picture, it improves coordination and communication among units.
- Integrates with other C2/C4 systems, such as fire support and logistics systems.

BFT provides ground units, including infantry and armoured vehicles, with a common operational picture.

By utilizing GPS and satellite communication, it tracks friendly forces in real-time, displaying unit locations, movements, speed, and identification on a digital map. The system connects units through a network of transceivers, transmitting data to a central server that processes and displays information on a tablet or other interface.

Its adaptable design allows for deployment across various unit sizes and platforms, ensuring flexible and scalable operational support.


CONTACTS
MAP
CAM
CREATING
headquarter_1
SAVE
MENU
COMMAND
MSG
PLANNER
REPORTER
POINT
LINE
FIND MORE
MOVE
ERASE
CLEAR ALL


SHOOTER
LATITUDE
LONGITUDE
ELEVATION
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EASTING
NORTHING
ZONE
X GULSHAN BUTM
Y GULSHAN BUTM
TARGET
CORRECTION
CALCULATE RESULT
Stadia Light
Stadia Dark
NEPAL
KATHMANDU
SHIGATSE
GORAKHPUR
VARANASI
GAYA
BHAGALPUR
RANGPUR
RAJSHAHI
ASANSOL
KRISHNANAGAR
KHULNA
CHATTOGRAM
BHILAI
BHUBANESWAR
BRAHMAPUR
VISAKHAPATNAM

MAN-PORTABLE SURVEILLANCE AND TARGET ACQUISITION

Target Acquisition System ARTS

- Enables advanced surveillance and target acquisition by integrating multiple data sources to support fire missions.
- Processes target acquisition, meteorological, weapon type, ammunition characteristic, and ballistic table data.
- Displays interactive map layers and waypoints for fire navigation, and position markers for friendly and enemy units.
- Optoelectronic locator unit MSB-8 integration enables real-time situational awareness.
- Integrates with other C2/C4 systems, such as blue forces tracking and logistics systems.

ARTS provides artillery forward observers with interactive map layers, waypoints, and real-time target acquisition data for precise fire control. Users can analyze real-time or recorded data for hit evaluation and waypoint mapping.

The system automatically calculates fire corrections based on changing battlefield conditions, significantly improving accuracy and overall operational effectiveness.

INFRARED MONOCULARS, BINOCULARS AND RIFLESCOPES

Thermal Imaging Devices

- Detection of subjects in challenging conditions like darkness, fog, or smoke, through infrared technology.
- The product range includes riflescopes, monoculars, and binoculars designed for thermal imaging.
- Devices contain laser rangefinders, customizable colour settings, integrated compasses, and accelerometers.
- Automatic adjustments for environmental shifts and windage calculations are supported.
- Additional compatibility options include weather stations and ballistic tables.

Technical description

Riflescope TSA-7	
Objective	75 mm
Objective F number	F/1.0
Laser Rangefinder	max. 5 000 m
LRF Accuracy	± 1 m

Binocular MSB-8	
Objective	75 mm
Objective F number	F/1.0
Laser Rangefinder	max. 15 000 m
LRF Accuracy	less than 1,5 m


RAYTHEON
PHOENIX, ARIZONA, USA

OPTOELECTRONIC SURVEILLANCE AND RECONNAISSANCE SYSTEMS

Multispectral Imaging Systems

- Terrain monitoring and detection of passive and active heat sources in limited visibility conditions.
- Combined thermal imaging, a day channel, and a laser rangefinder for advanced surveillance and reconnaissance.
- Automatic target detection and tracking features for enhanced situational awareness.
- Automatic detection of camouflaged optical aiming and tracking devices.
- Factory customized for various platforms, such as armoured vehicles and stationary stations.

Technical description

Day Camera	CMOS
Day Focal Length	max. 17 ÷ 1100 mm
Day Sensitivity	max. 0.001 Lx
Thermal Focal Length	max. 45 ÷ 900 mm
Thermal Detection (Vehicle)	max. 25 km
Laser Rangefinder	max. 30 km
Digital Image Processing	Combination of 2 channels
Temperature Range	-30°C to +55°C
Protection Class	IP67, ice protection
Interfaces	RS422, RS232 (Ethernet, CAN)

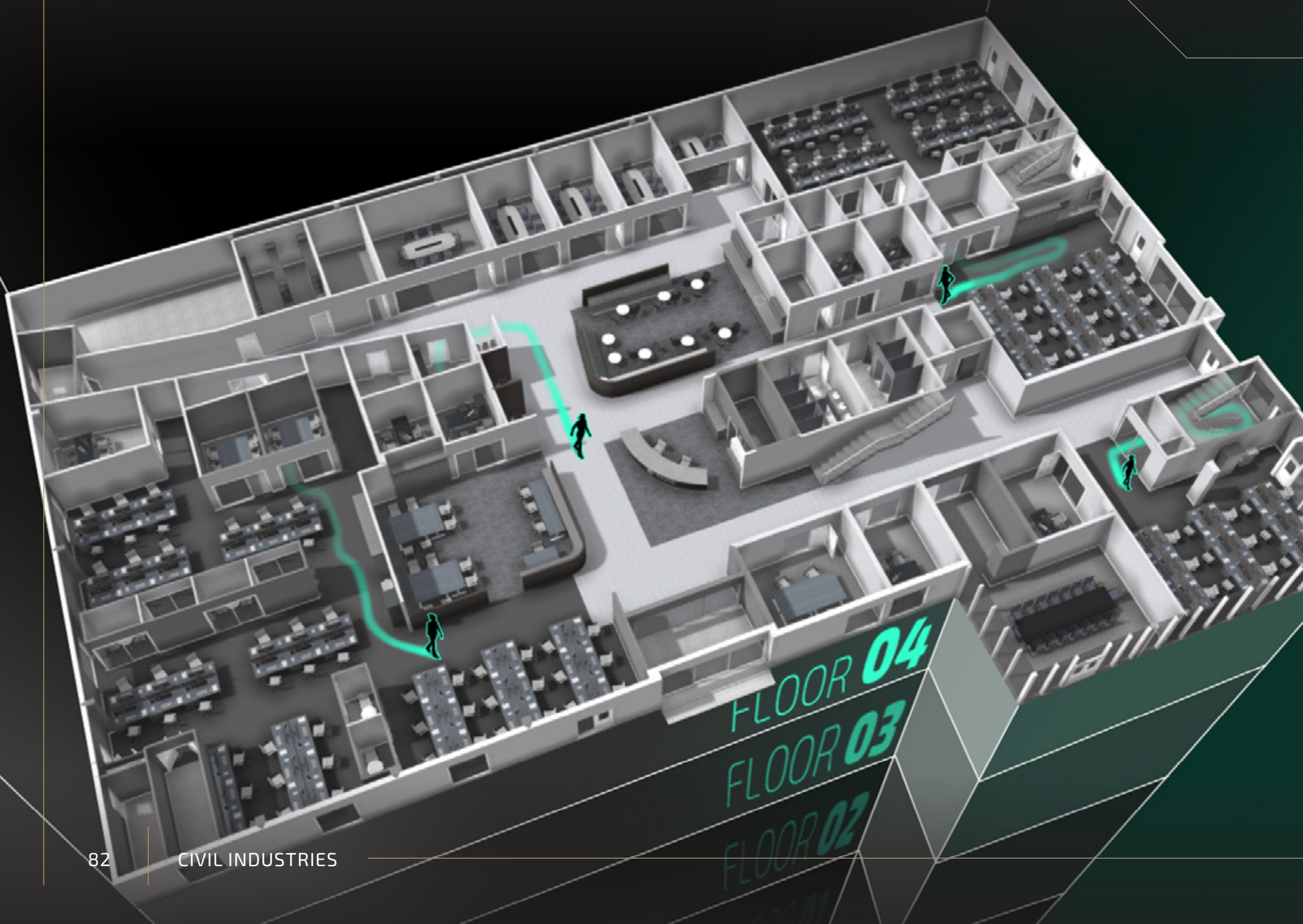
MONOCULARS, BINOCULARS, GOGGLES AND CLIP-ONS

Night Vision Devices

- Night vision devices with advanced Gen 3 image tubes ensure visibility in low-light environments.
- Automatic brightness control, bright light shut-off, and an adjustable IR illuminator with spot/flood options.
- Various form factors, including monoculars, binoculars, goggles, and clip-ons.
- Can be used hand-held, mounted on the head, or attached to helmets.
- The clip-on model is optimized for long-range shooting, providing visibility up to 1000 meters.

Technical description

Generation	III
Resolution	60-64 lp/mm
Magnification	standard 1x
Battery Life	up to 40 hours
Operating Temperature	-40°C ÷ +50°C
Protection	IP67


FLOOR 04
FLOOR 03
FLOOR 02

LPP HOLDING

Civil industries

Our Civil Industries solutions support a wide range of sectors with technologies focused on safety, reliability, and operational insight. We develop intelligent video analytics for real-time threat detection and access control, virtual environments for simulation and planning, and advanced systems for railway communication and diagnostics. From security centres to critical transport networks, each system is built to improve performance, safety, and decision-making.

- Intelligent Video Analytics
- Virtual Environment
- Railway Transport
- Diagnostics


FACE RECOGNITION
John Doe
SELECTED PERSON
MALE | 67 YEARS | GRAY HAIR
ANALYSIS COMPLETED
MATCHED PERSON
98% MATCH

FACIAL RECOGNITION SYSTEM

Inspector

- Facial recognition solution that accelerates criminal investigations by quickly identifying individuals.
- AI analyzes large datasets to detect faces and objects in images, creating detailed profiles for persons of interest.
- 1:1 and 1:N face comparisons within databases, offering robust identification and recognition capabilities.
- Includes attribute-based search, enabling queries by age, gender, clothing, and more.
- Can't be deceived by masks, beards, or even plastic surgery. Reliably recognizes faces even in blurred or altered images.

Inspector is an advanced facial recognition and person identification system designed to enhance investigative processes with both speed and precision. It automatically creates connections between analyzed data, enabling identity profiling and tracing subjects through timelines for a comprehensive investigative approach.

The system demonstrates exceptional accuracy, surpassing the competition by achieving more than twice the number of Top-1 matches on a 10s million faces national database.

It achieves outstanding speed and efficiency. With the ability to enrol up to a million faces per day on a single GPU server, including image checks and seamless import into the Inspector system, this technology offers unmatched performance and scalability.

AI VIDEO ANALYSIS FOR PERIMETER PROTECTION

Protector

- AI video analysis tool that boosts perimeter security through live video surveillance and monitoring.
- Automates intrusion alerts and event recognition across numerous cameras in security operation centres.
- Identifies and categorizes individuals, objects, actions, and events within specified zones.
- Integrated gun detection and license plate recognition for quick response to security threats.
- Behaviour recognition and active watchlist management enhances comprehensive perimeter protection.

Protector is an advanced AI video analysis system specifically designed for perimeter protection and intrusion detection. It tracks individuals and objects within specific zones, classifies various attributes, filters events, and creates connections between data.

Used by security operator centers, it significantly enhances area protection by enabling continuous, real-time video surveillance and live monitoring. The Protector operates without requiring constant staff oversight, as it automatically issues security alerts from multiple cameras.


RESTRICTED AREA INTRUSION
Security Centre
SUBJECT DETAILS
ID: 909_20963
MALE | 42 YEARS | BLACK HAIR
BLACK TRUCKER HAT | BROWN SHIRT
CALL SECURITY
ENCLOSE AREA
ACTIVATE ALARM
ID: 909_20963
UNAUTHORISED PERSON
ALERT
RESTRICTED AREA INTRUSION
ALERT


PROCEED
VERIFICATION SUCCESSFUL
MR. TERRY GWALTER | BUSINESS MANAGER

BIOMETRIC ACCESS CONTROL SYSTEM

Guardian

- Biometric access control system focused on securing entry to restricted areas through accurate identity checks.
- Leverages advanced facial recognition to verify individuals by matching their faces with stored databases or ID documents.
- Core features include face identification (1:N), face verification (1:1), and face enrolment.
- Enhances security with watchlist management, real-time alerting, and verification for IDs or passports.
- Works reliably even with masks, glasses, plastic surgery, or varied face angles.

Guardian is a biometric access control system specifically designed to streamline authorization at secure checkpoints. By utilizing advanced facial recognition and biometric door locks, it automates precise person identification and verification, ensuring controlled access to restricted areas.

In addition, this access control system includes multiple modules for comprehensive security. These modules handle identity verification, person identification, face enrolment, access management, watchlist monitoring, and real-time alerts. As a result, the Guardian enables secure and efficient access authentication.

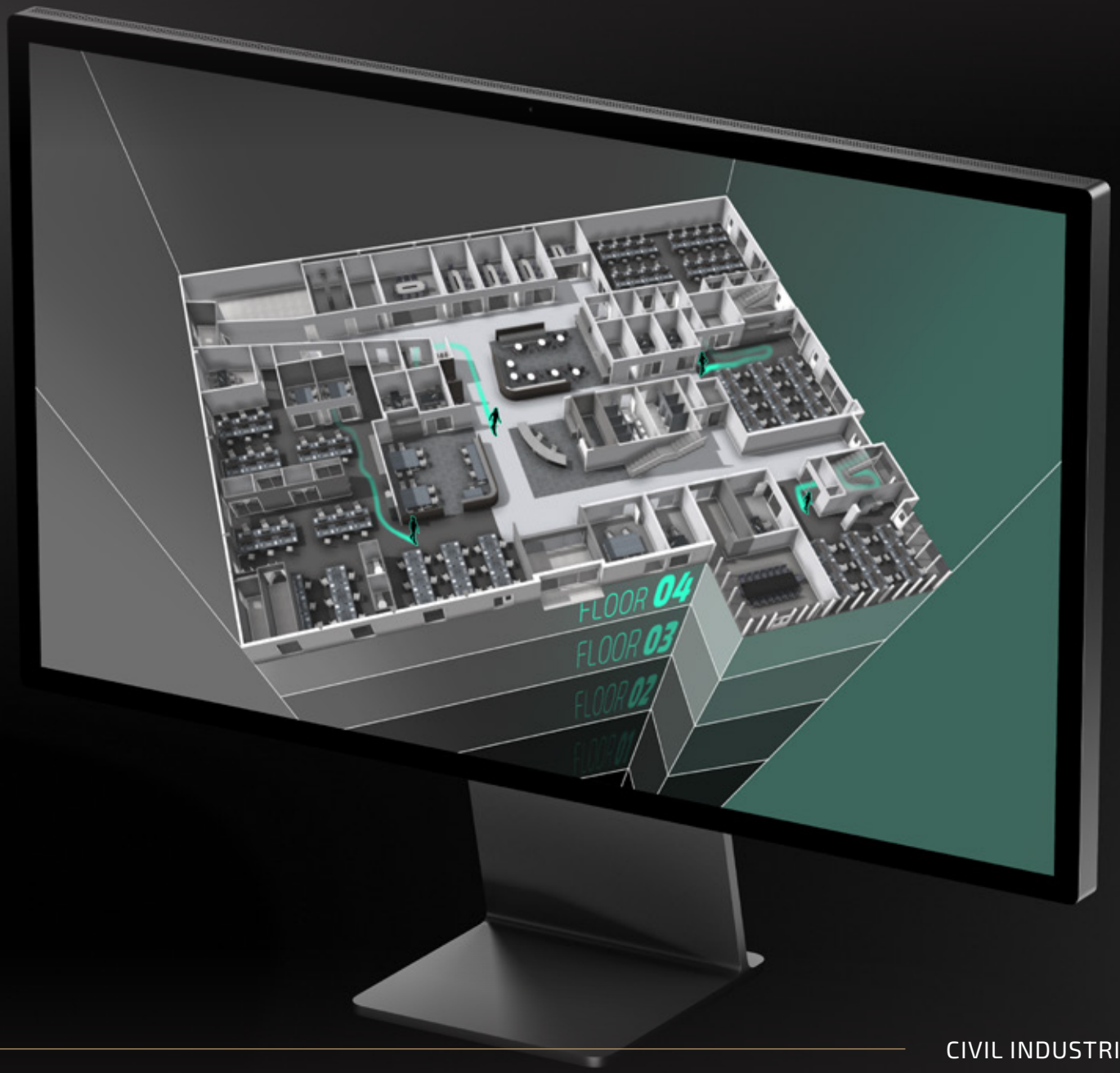
3D MONITORING AND SCENARIO TESTING

Digital Twin

- Creates a detailed virtual model of a physical space, object, or system for further integration or scenario testing.
- Mirrors the real environment in a 3D space, integrating with Protector AI video analysis for security centre monitoring.
- Projects real-world events into the digital model in real-time, enabling proactive monitoring and situation awareness.
- Scenario testing allows simulating real-world events like evacuations to assess performance and potential risks.
- Enhances monitoring, supports proactive decision-making, and enables scenario testing.

Digital Twin is an advanced virtual representation of a physical environment, system, or object. Our solution stands out by integrating the Protector AI video analysis system. This integration allows the digital twin to reflect real-world events in real time. Security centre operators receive detailed visual notifications of incidents as they happen, enhancing situational awareness and response efficiency.

Another use case is realistic prototyping and scenario testing, including the simulation of various emergency events in a safe digital environment. By analyzing system behaviour and testing potential improvements within the twin, organizations gain valuable insights without disrupting real-world operations, ensuring safer and more efficient processes.


FLOOR 04
FLOOR 03
FLOOR 02

VISUALIZATION OF OBJECTS, PREMISES, OR MAP LAYERS

3D Visualization

- Turn objects, areas, and maps into fully immersive 3D environments.
- Detailed view of urban settings or secured perimeters - ideal for sectors like urban planning, defence, and aerospace.
- Integrated simulation engine enables models that support realistic simulations.
- 3D Model-driven approach is suitable for in-depth analysis, training, and decision-making in complex scenarios.
- The 3D visualizations also serve for integration with virtual and augmented realities.

Our 3D visualization capability transforms objects, premises, and map layers into immersive 3D environments, which are adaptable for various applications.

Integrated with a simulation engine, our solution incorporates physical models to enable realistic mission simulations and detailed debriefing, particularly for the aerospace industry. This model-driven, 3D approach serves as a powerful tool for analysis, training, and decision-making in complex environments.

AERIAL AND GROUND VEHICLE MISSION SIMULATION

Mission Simulation

- Aerial and ground vehicle mission simulation in 3D environments with customizable scenarios.
- Flight simulation uses the JSBSim model to create an ultra-realistic experience with true flight dynamics.
- Ground vehicle simulations feature custom Lidar integration and Chaos Physics for precise interaction with terrain.
- Procedural content generation introduces dynamic landscapes for varied and immersive simulation experiences.
- Machine learning and AI neural networks integration for autonomous vehicle system training.

We implement high-fidelity physical models in 3D environments to provide realistic mission simulations for aerial and ground vehicles.

Custom-generated 3D maps enable true-to-life navigation, and procedural content generation makes each scenario immersive and unique. By integrating machine learning and AI neural networks, we use these simulations to train autonomous control systems for unmanned ground vehicles (UGVs) in a safe, virtual environment, ensuring robust and reliable real-world performance.


ENEMY UNIT
TANK


close
← Back
Annotations
Showing annotations for LightVehicle
Task #1
Confidence: 95.4%
2025-02-23 23:28:42
Confidence: 93.4%
2025-02-23 23:28:42
Confidence: 90.3%
2025-02-23 23:28:42
Confidence: 52.1%
2025-02-23 23:28:42
Confidence: 49.1%
2025-02-23 23:28:42
Confidence: 48.0%
2025-02-23 23:28:42
Confidence: 40.1%
2025-02-23 23:28:42
Confidence: 40.0%
OpenStreetMap
CartoDB Positron
Stamen Toner
Without background
Layer
LightVehicle (12)
Person (4)
Building (60)
UPole (5)
Boat (3)
Container (3)
Truck (9)
Gastank (2)
Digger (19)
2023
Firefighting
2024
Prelet 3
Prelet2
2025
2026

3D MAPPING AND OBJECT DETECTION IN UNKNOWN ENVIRONMENTS

Automated Drone Mapping

- Generates a detailed 3D model of the surrounding terrain in minutes using an autonomous drone and a mobile device.
- AI automatically detects and labels objects such as buildings, cars, forests, and water bodies in generated maps.
- Drone autonomously follows an optimal path for the mapping process even in GNSS-denied areas.
- On-device processing means the system works completely offline with low computing requirements.
- Valuable for both civilian emergency services and military reconnaissance operations.

Our mapping solution allows users to rapidly generate detailed 3D models from 2D aerial imagery captured by autonomous drones. The accompanying application, accessible on a phone, a tablet, or a computer, processes these images within minutes. The user can then display the captured area in 3D with an option to mark points of interest.

An integrated AI model not only automatically identifies and labels diverse objects like structures and vehicles, but can also track their changes over subsequent flights. This timeline capability is invaluable for monitoring evolving situations, such as the spread of a wildfire or movements in a monitored zone, providing clear insights for critical decision-making.

REAL TIME PUBLIC TRANSPORT SITUATION MONITORING

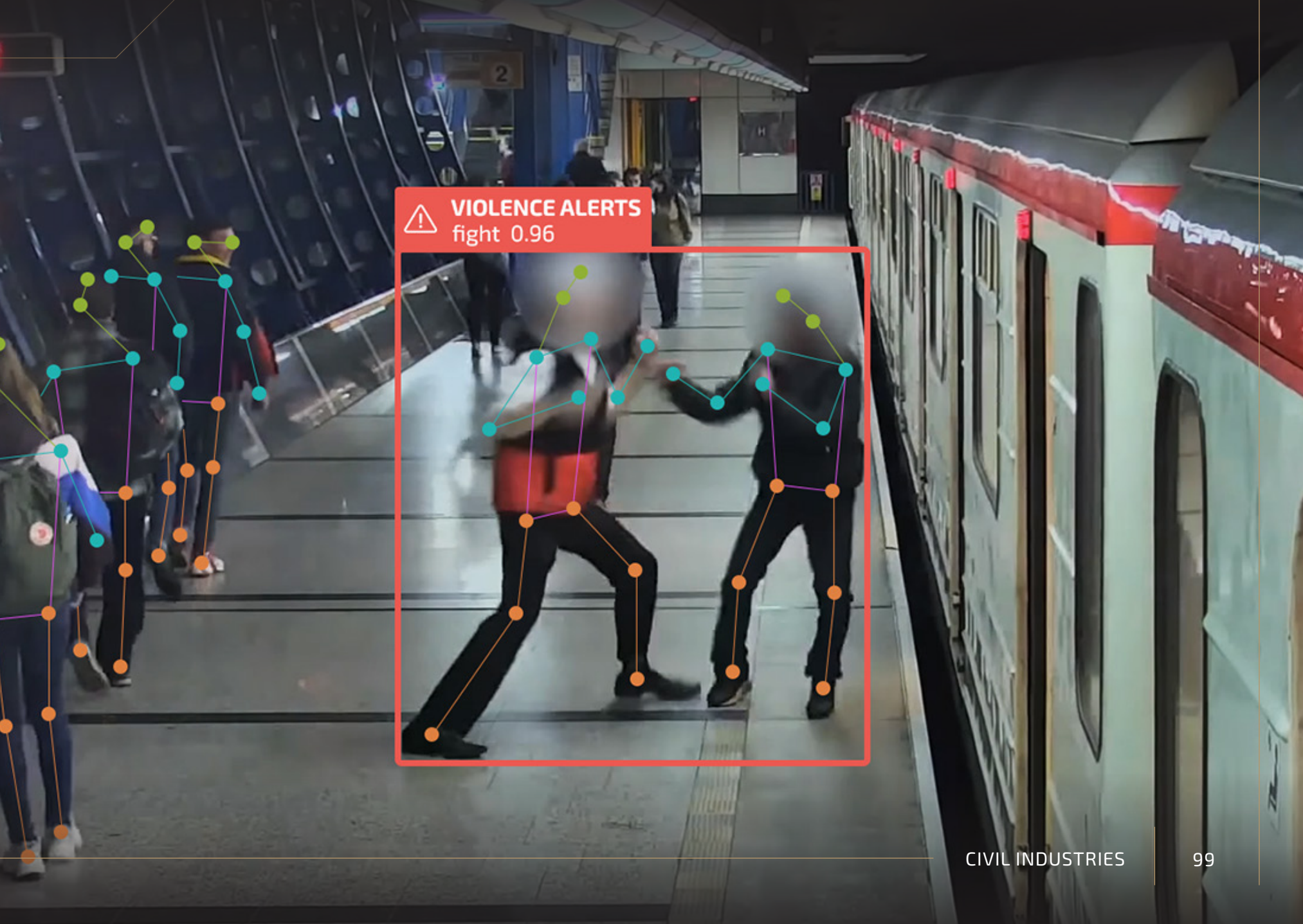
Image Analysis in Public Transport

- Public transport monitoring for passenger safety and operational efficiency.
- Behavioural analytics identify falls, violent behaviour, suspicious activities, and early signs of medical emergencies.
- Detects weapons, abandoned luggage, and other suspicious objects.
- Person and object counting with the capability to classify them (gender, age, ethnicity).
- Valuable data source for predictive planning of transport resources and situation monitoring.

The system enables real-time monitoring of public transport through intelligent image analysis, enhancing passenger safety and operational efficiency. The system provides early warnings for violations, theft, abandoned baggage, and medical emergencies.

The system performs person reidentification, seamlessly monitoring people as they move through different zones. Heatmaps enable tracking of people's concentration in specific areas for managing crowd flow and planning transportation capacity and resources.

In addition, the system supports object and person counting, with classification by age, gender, or ethnicity. This data is valuable for transport planning and can be integrated into Business Intelligence (BI) tools.


VIOLENCE ALERTS
fight 0.96

TRAIN RADIO STATION, CONTROL UNIT AND ANTENNA

Train Radio Communication

- Devices for coordinated communication across railway networks, connecting controllers, dispatchers, and drivers.
- Control Unit VO87 integrates with modern and legacy CAB Radio systems, featuring multi-language support.
- Multiband Antenna VA56 operates on multiple frequencies, supports GSM-R radio, and GSM public/data transmission.
- CAB Radio VS87 supports digital and analogue transmission, GSM-R and GSM-P, and has a remote STOP functionality.
- Base Radio ZR47S and the TRS System offer duplex communication between control points and rail vehicles.

Our Train Radio Communication System delivers robust, real-time communication between rail vehicles and control centers, ensuring operational safety and coordination across railway networks.
The system is built upon a foundation of key components designed for performance and integration, including the Control Unit VO87, the Multiband Antenna VA56, the CAB Radio VS87, the Base Radio ZR47S, and the TRS System. Together, these components provide a comprehensive solution for railway communication needs and serve as viable upgrades for their predecessors.

RAILWAY SAFETY

Anti-Collision System

- Prevents accidents of public transit vehicles by AI video analysis of the vehicle's surroundings.
- Neural networks segment the environment and recognize objects near the vehicle to assess the accident risk.
- Detects both moving and stationary elements, such as pedestrians, vehicles, animals, and obstacles on tracks.
- Alerts drivers on possible accidents and initiates automatic braking in high-risk scenarios.
- Enables automation in collision avoidance when combined with the CAB Radio VS87's remote STOP feature.

Anti-Collision System enhances accident prevention for rail vehicles, including trams, trains, and other forms of public transport. Continuously monitoring the surroundings and performing risk assessment analysis, the system ensures safer operations.

It detects moving elements, such as people, cars, or animals, and stationary obstacles on the railway. By calculating collision risks, the system provides alerts to drivers about potential hazards. In high-risk situations, it can even automatically stop the vehicle, offering an additional layer of safety and reliability.


traffic light 0.47
train 0.57
traffic light 0.67
traffic light 0
car 0.89
person 0.70


FLOTILA
UDÁLOSTI
REPORTY
NASTAVENÍ
VIZUALIZACE
PREDIKCE
TRASY
ODHLÁSIT
PŘEHLED
PROBLÉMY
ÚDRŽBA
INTEGROVANÉ VELIČINY
ROKY
MĚSÍCE
LINEÁRNÍ
SYMLOG
celkem záznamů
643
80
66
176
32
37
datum
VYGENEROVAT
14 / 11 / 2011
23 / 11 / 2011
VLASTNÍ
OBDOBÍ
ZAHRNOUT 0
Napětí baterie
60 V - high critical limit
50 V - high warning limit
pětí baterie - V

SUPPLY CHAIN OPTIMISATION WITH AI MAINTENANCE

Predictive Maintenance for Railway

- Diagnostic system that boosts train reliability, cuts costs, and reduces downtime.
- Optimizes the supply chain by forecasting maintenance needs of train sets.
- Identifies potential failures early, allowing maintenance to be scheduled before issues arise.
- Enables accurate analysis of equipment condition, reducing unexpected breakdowns.
- Learns from historical data, which supports long-term planning and increases precision.

Train Diagnostics utilizes AI-driven predictive maintenance to optimize railway operations. Through continuous monitoring and data analysis, the system detects potential failures early, allowing for timely maintenance that prevents unexpected downtime and improves overall safety.

The system is comprised of three subsystems: a diagnostic recorder unit, a train-borne recorder, and a graphical user interface. Machine learning algorithms are then applied to the processed data, leveraging historical data and expert knowledge to identify patterns and correlations between different parameters.

WIRELESS BRIDGE DIAGNOSTICS

Vibration Sensor AMODIS

- Monitors vibrations in reinforced concrete bridges using advanced MEMS accelerometers.
- Enables optimized maintenance schedules, reducing costs while improving bridge safety and reliability.
- High-sensitivity measurements provide insights into structural health and integrity.
- Machine learning algorithms detect anomalies and forecast deterioration of concrete bridges.
- The vibration detection sensor is set to be deployed on all future reinforced concrete bridges in the Czech Republic.

Technical description

GPS GNSS	GPS, Galileo, GLONASS and BeiDou
GPS RTC Battery	Rechargeable battery 1mAh – total 35h backup
LoRa Sub-G Module	Supported frequencies from 868 to 915 MHz
On board LoRa Antenna	868MHz; -0.5dBi Ceramic Loop Antenna
Temperature Range	-40°C to +125 °C
USB	5V 2A DC power
Wi-Fi	2.4 GHz Wi-Fi (IEEE 802.11b/g/n)
Micro SD Card	16GB
LED	RGB side pixel
Environmental Qualification	MIL-STD-810H

CONTACT US

L.P.P. holding a.s.
Pod Hajkem 406/1a,
180 00 Prague, Czech Republic

www.lpp-holding.com
+420 605 295 772
info@lpp-holding.com