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THE MILITARY TECHNICAL INSTITUTE

PRODUCT CATALOG

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ANTOS 60 mm Ultralight Commando Mortar

ANTOS is an ultralight 60 mm commando mortar. Most parts are made of aluminium alloys, titanium alloys and plastics. It has been designed to comprise only the essential quantity of components that can be easily disassembled and maintained. The integrated liquid sight clearly displays the range of fire.

Its modular design allows the production of different variants in term of features and accessories.

The ANTOS 60 mm mortar is intended for paratroops and special forces. | **Tab. 1, p. 96**

ANTOS-LR 60 mm Long-Range Mortar

ANTOS-LR is an ultralight 60 mm mortar assembled from high strength aluminium-titanium alloys and plastic components. The 60.7 mm standardised mortar calibre allows use of the Czech-produced 60 mm mortar round and also selected mortar rounds from NATO countries.

The ANTOS-LR 60 mm mortar has been designed to increase the firepower of paratroops, reconnaissance teams and special forces. | **Tab. 2, p. 96**

ZSRD 08 12.7 mm Weapon Station

The ZSRD 08 Weapon Station is designed to be equipped with the 12.7 mm machine gun or the 30 mm grenade launcher mount. The ZSRD frame is based on the U-type pan&tilt with an integrated weapon mount, including a sensor container comprising a surveillance TV camera, an aiming TV camera, an IR camera and a laser rangefinder. The ZSRD 08 weapon station allows for the interchange of two types of machine guns for both types of the 12.7 mm rounds ("eastern" and "western") in field conditions. A derivative of the weapon station is the 30 mm automatic grenade launcher variant. | Tab. 3, p. 97

ZSRD 07 7.62 mm Weapon Station

The ZSRD 07 Weapon Station is designed to be equipped with the 7.62 mm machine gun mount for 7.62×54 mm or 7.62×51 mm ammunition. The ZSRD 07 frame is based on the U-type pan&tilt with an integrated weapon mount, including a sensor container comprising a surveillance TV camera, an aiming TV camera and an IR camera. It may optionally be fitted with a laser rangefinder. The ZSRD 07 features a user-friendly interface, The HW and SW components allow for easy command and control by the gunner-operator. | Tab. 4, p. 98

2 AMMUNITION

PRODUCTS

- 60 mm Mortar Rounds for Commando Mortars
- 60 mm Mortar Rounds for LONG RANGE Mortars
- 40 mm Grenade LV Practice
- 12.7 mm Ammunition
- 9 mm NATO AP Round

60 mm Mortar Rounds for Commando Mortars

The 60 mm mortar rounds of NATO standard are intended for firing from the ANTOS 60 mm Ultralight Commando Mortar and from the ANTOS-LR 60 mm mortar. The following mortar rounds are manufactured for 60 mm mortars:

- **60 mm HEF**
- **60 mm HEI**
- **60 mm ILL V**
- **60 mm ILL IR**
- **60 mm SMK**
- **60 mm TRAIN (JUMP)**

60 mm HEF and HEI

The 60 mm HEF round body (standard high-explosive round) is filled with TNT explosive, and the 60 mm HEI round body is filled with HTX blasting explosive with thermobaric effect. All rounds are fitted with a PDSQ nose fuze according to NATO standards.

Characteristics	60-HEF	60-HEI
Mortar round weight (g)	1,420 ± 20	
Explosive	TNT	HTX
Weight of explosive (g)	214 ± 2	268 ± 2
Detonation velocity (m/s)	6,850	7,020
Detonation pressure (GPa)	19.2	21.1
Effective fragments over 0.5 g	> 350	> 350
Lethal radius in m (2 effective fragments per m^2)	8.5	11.8
Overpressure at 3 m distance (kPa)	50	71
TNT equivalence in pressure (%)	100	141 - 174
TNT equivalence in pulse (%)	100	157 - 170
Distance to reach equivalent pulse	1.00	1.27 - 1.66
UN Number	0321	
Classification Code	1.2 E	
Weight of packing box containing 10 rounds (kg)	20 ± 1	

¬ 60 mm ILL V and ILL-IR

The 60 mm ILL flare emits light in the visible part of the electromagnetic spectrum. Light emission of the ILL-IR bomb flare is suppressed in the visible part of the electromagnetic spectrum, and its maximum light emission is approximately of 800 to 900 nm.

Characteristics	
Mortar round weight	1,150 g ± 20 g
Flare weight	0.15 kg ± 0.02 kg
Mortar round length	267 mm ± 3 mm
Flare luminous intensity (ILL V)	min. 100,000 cd
Flare luminous intensity (ILL-IR)	min. 52 W. sr^{-1}
Period of flare ejection from bomb ignition	7.5 s ± 1.2 s
Illumination time	min. 20 s
Height of flare ejection	min. 200 m
UN Number	0254
Classification Code	1.3G
Container weight incl. 10 mortar rounds	20 kg ± 1 kg

¬ 60 mm SMK

The 60 mm mortar round SMK (SMOKE) is designed to mark a location in the terrain (enemy position, object of interest) within mortar range distance to create a smoke screen at the point of impact. The round is based on the 60 mm HEF/HEI, but instead of an explosive it contains a signalling red phosphorus composition.

Characteristics	
Mortar round weight	1,420 g ± 20 g
Smoke made composition weight	200 g ± 15 g
Mortar round length	293 mm ± 3 mm
Time of smoke cloud duration (windless conditions)	min. 15 s
UN Number	0015
Classification Code	1.2G
Container weight incl. 10 mortar rounds	20 kg ± 1 kg

Characteristics	
Mortar round weight	1,290 g ± 30 g
Mortar round length	285 mm ± 3 mm
Range of fire from ANTOS mortar (65° elevation)	12 m
Range of fire from ANTOS-LR mortar (65° elevation)	5 m
Rejected cartridge (is not part of 60 mm JUMP)	9 mm TEMPO 6 ANTOS
Container weight incl. 10 mortar rounds	20 kg ± 1 kg

¬ 60 mm TRAIN (JUMP)

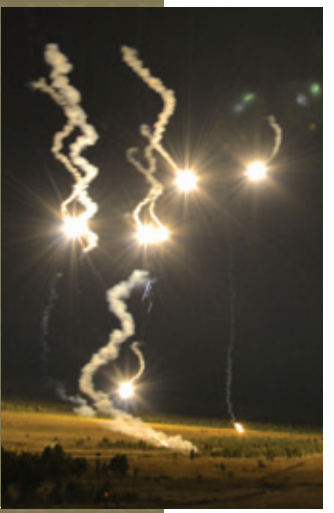
The 60 mm TRAIN (JUMP) training round is designed for the initial training of mortar operators, specifically weapon and ammunition preparation before firing, loading, aiming and practice firing. The TRAIN mortar round is inert and has a rubber fuze mock-up. The 60 mm TRAIN mortar round is reusable. The round is ejected from the mortar barrel by means of the 9 mm TEMPO 6 BLANK CARTRIDGE inserted into the fin stabilizer carrier. After the mortar has been fired, the mortar round should be cleaned, the fin stabilizer unscrewed, and the spent TEMPO 6 blank cartridge removed and replaced with a new blank cartridge. Once the fin stabilizer has been screwed back on, the mortar round is again ready to be fired.

〉 60 mm Mortar Rounds for LONG RANGE Mortars

The ammunition is compatible with NATO mortars meeting the STANAG 4110 requirement for the maximum operating pressure of the barrel at 63.5 MPa. Our new advanced ammunition features enhanced effect on target and a maximum range of 3,500 m (barrel length 1 m).

List of products:

- **60 mm HEI-LD**
- **60 mm ILL-LD**
- **60 mm SMK-LD**



¬ 60 mm HEI-LD

The 60 mm HEI-LD round filled with EBX, featuring an excellent fragmentation effect, has been designed to suppress unprotected and covered troops and for combat against unarmoured and light-armoured vehicles.

Characteristics	
Initial velocity of mortar round (charge 4, +21 °C)	243 m/s
Minimum range	125 m
Maximum range	3,578 m
Mortar round weight	1,720 g ± 30 g
Weight of HTX in mortar round body	330 g
Mortar round length	334.5 mm
Operating temperatures	(-32 to +50) °C
Storage temperatures	(-32 to +50) °C
Ammo box	PA 70
Weight of ammo box with rounds	19 kg
Number of rounds per ammo box	8 rounds

¬ 60 mm ILL-LD

The 60 mm ILL-LD round has been designed to illuminate areas of interest in the battlefield and to ensure support to the troops during combat operations at night or under reduced light conditions. The flare emits light in the visible spectrum; the illuminating effect is comparable to higher calibre ammo.

Characteristics	
Initial velocity of mortar round (charge 4, +21 °C)	243 m/s
Minimum range	240 m
Maximum range	3,314 m
Mortar round weight	1,720 g ± 30 g
Payload	Illuminating pyrotechnical composition with parachute
Illumination time	min 35 s
Illumination power	min 250,000 cd
Mortar length	435 mm
Fuze	DM 93 MTSQ
Operating temperatures	- 32 + 63 °C
Storage temperatures	- 32 + 50 °C
Ammo box	PA 124
Weight of ammo box with rounds	19 kg
Number of rounds per ammo box	8 rounds
Class of explosion hazard, UN Code	1.2G; UN 0171

Characteristics	
Initial velocity of mortar round (charge 4, +21 °C)	243 m/s
Minimum range	106 m
Maximum range	3,314 m
Mortar round weight	1,720 g ± 30 g
Payload	Red phosphorous pellets
Smoke emission	min. 40 s
Mortar length	435 mm
Fuze	DM 93 MTSQ
Operating temperatures	- 32 + 63 °C
Storage temperatures	- 32 + 50 °C
Ammo box	PA 124
Weight of ammo box with rounds	19 kg
Number of rounds per ammo box	8 rounds
Class of explosion hazard, UN Code	1.2G; UN 0015

¬ 60 mm SMK-LD

The 60 mm SMK-LD has been designed to screen areas of interest to cover friendly forces or to signal areas of interest for firing and supporting devices, weapon systems, and air forces. The smoke effect is comparable to higher calibre ammo.

Ammunition for 40 mm grenade launchers GRENADE LV PRACTICE

The 40×46 mm LV PRACTICE grenades and dummy variant 40×46 mm LV DRILL are designed for fire and weapons handling training of mortar teams on the 40×46 mm LV grenade launchers type M79 and M203.

The 40×46 mm LV PRACTICE-T variant is a tracer round that makes the trajectory of the grenade visible up to a distance of ca 250 m to enhance accuracy during fire training.

Characteristics	
Type	40×46 mm LV
Grenade weight	250 g
Projectile weight	210 g
Round length	115 mm
Initial velocity	78 m/s
Maximum range	400 m

12.7×99 mm Ammunition

The ammunition is designed for the FALCON BARRETT and other types of 12.7×99 mm sniper rifle and M2HB and other types of machine guns type.

The ammunition consists of a standard 12.7×99 mm cartridge case, ignition cap, propelling charge (smokeless powder D100-02) and 12.7 mm AP, AP (HC), and BALL projectiles. | **Tab. 5, p. 99**

PROJECTILE CHARACTERISTICS:

AP – armour-piercing projectile with steel penetrator designed to support troop combat operations

AP (HC) – armour-piercing projectile with tungsten penetrator designed to support troop combat operations

BALL – basic projectile (brass single-piece) ntended to support troop combat operations and training

MP – multipurpose projectile with armour-piercing effect and enhanced fragmentation effect to "light up targets", designed to support troop combat operations

MP-T – multipurpose projectile with tracer and armour-piercing effect and enhanced fragmentation effect "light up targets" designed to support troop combat operations

AP-S – armour-piercing incendiary projectile designed to support troop combat operations

12.7×107 mm Ammunition

The ammunition is designed for the FALCON and other types of 12.7×107 mm sniper rifle and the DSKM and NSV machine guns.

The ammunition consists of a standard 12.7×107 mm cartridge case, ignition cap, propelling charge (smokeless powder D100-02) and 12.7 mm AP, AP (HC), and BALL projectiles or MP, MP-T and AP-S projectiles produced by the Norwegian company Nammo-Raufoss. | **Tab. 6, p. 99**

9 mm NATO AP Round

The 9 mm NATO armour-piercing round is designed especially for personnel targets equipped with individual ballistic protection (body armour) sheltered unarmoured or light armoured vehicles. The armour-piercing effect is a result of the armour-piercing core made of a tungsten alloy using kinetic energy. The round complies with STANAG 4090 (9 mm Parabellum round). The 9 mm NATO AP round is suitable for Luger type weapons, e.g. CZ 75, Glock 17, Beretta 92F pistols and HK MP5 submachine gun.

Characteristics	
Calibre	9 mm
Type of projectile	Armour-piercing
Projectile weight	7.4 g
Round weight	11.4 g
Velocity $V_{7,5}$	420 m/s (barrel 200 mm)
Max. pressure $p_{max.}$	285 MPa (piezo)
AP effect	4.2 mm Armox 500 (10 m)
Rounds per box	50 rounds
Rounds per hermetically sealed ammo container (M2A1)	1,600 rounds

3 RECONNAISSANCE AND MONITORING SYSTEMS

PRODUCTS

- UGV-Pz Unmanned Ground Vehicle - Reconnaissance variant
- LOV-Pz Light Armoured Artillery Reconnaissance Vehicle
- IVECO LOV-ISR Light Armoured Multipurpose Vehicle
- MMSB 01 Mobile Monitoring System in a Box
- Short Range Warning System
- SOM Security and Monitoring System
- BRUS Unmanned Aerial Universal System
- LOS-M Artillery Reconnaissance Assembly
- Reconnaissance System for PANDUR II Vehicle
- STERNA-V Portable Assembly for Artillery Observer
- SNĚŽKA-M Artillery Reconnaissance Assembly
- Dual-Axis Mechanical Manipulator (DMM)
- Container Workstation of Central Protection
- RBS-70 Man-Portable Air Defence System TRAINING KIT

UGV-Pz Unmanned Ground Vehicle - Reconnaissance variant

The UGV-Pz automated unmanned ground vehicle has been designed to perform ground surveillance tasks in compliance with the requirements for ISTAR capabilities according to the Capability Targets 2013/2017. The main purpose of the UGV-PZ is to perform ground surveillance for the Czech Army ISR as a complementary system to the already deployed recce systems and portable reconnaissance sets with a view to replace these systems on the most dangerous battlefield sections. | **Tab. 7, p. 100**

LOV-Pz Light Armoured Artillery Reconnaissance Vehicle

The LOV-Pz Light Armoured Reconnaissance Vehicle is based on the integrated vehicle concept designed on the basis of an IVECO M65E 19 WM 4×4 vehicle with a light armoured cabin. The LOV-Pz assembly is equipped with a rooftop structure with a ZSRD07-Pz weapon station containing a 7.62 mm FN MAG machine gun. The vehicle is equipped with an SNPz Alternative Reconnaissance Kit for out-of-vehicle reconnaissance.

The LOV-Pz is part of an artillery battalion firing control system and is designed for artillery battlefield reconnaissance and for securing data needed for firing solutions when performing fire support missions. | **Tab. 8, p. 101**

IVECO LOV-ISR Light Armoured Multipurpose Vehicle

The LOV-ISR Light Armoured Multipurpose Vehicle, featuring the reconnaissance mission kit, is based on the IVECO M65E 19 WM 4×4 vehicle concept with a light armoured cabin. The LOV-ISR system is equipped with a special mission kit integrating the BAA II system that is connected to the C4ISR architecture. | **Tab. 9, p. 102**

MMSB 01 Mobile Monitoring System in a Box

„The MMSB 01 Mobile Monitoring System in a Box" installed in an inconspicuous rooftop cargo box has been designed to guard objects of interest and to monitor areas of interest. The main subsystem is the sensor unit comprising optical-electronic sensors operating both on the visible and also on the far IR spectrum. A colour TV camera provides operation on the visible spectrum, functioning as a daytime image sensor. A thermal camera with an uncooled detector ensures nighttime observation and the detection of camouflaged objects during the day.

The user SW is capable of various functions, such as a lifting mechanism control, monitoring and automatic surveillance of an area of interest, creation of a panorama, image collection, video recording, mapping operations, etc. | **Tab. 10, p. 103**

Short Range Warning System

The VSKD short range warning system has been designed to detect and indicate intruders whether personnel or vehicles. The system must be located in a guarded area or near guarded objects. The VSKD works on the basis of a combined physical principle, using both optical and acoustic principles, with priority given to the optical principle. The system ensures the automatic monitoring of the selected sector by means of mutually separable subsystems operating at long ranges. | **Tab. 11, p. 103**

SOM Security and Monitoring System

The SOM security and monitoring system is a rigorously modular system featuring open architecture enabling incorporation into superior level systems according to the desired customer configuration. The system comprises multispectral guarding sensors, control devices and data communication equipment. These specific system sets are complemented by logistic support equipment that may be integrated into various types of vehicles as specified by the customer.

The complete system is designed to guard objects of interest and to monitor areas of interest as part of fulfilling military police assignments. | **Tab. 12, p. 104**

BRUS Unmanned Aerial Universal System

BRUS is the ideal means for some air activities in cases where it is not possible or economically feasible to use conventional aviation technology. Here are some examples:

- Documentation of accidents, fires and natural disasters
- Inspection of power lines: high voltage, gas pipelines, heating, etc.
- Air pollution and environmental controls
- Checking for heat leakage from buildings
- Filming aerial scenes, shooting tall structures
- Checking the state of agricultural crops
- Forestry
- Collecting information for the police, the army, and the state authorities. | **Tab. 13, p. 105**

LOS-M Artillery Reconnaissance Assembly

The LOS-M artillery Artillery reconnaissance assembly is a modification of the LOS artillery reconnaissance assembly. It features a special mission kit enabling performance of all the required functions of the artillery reconnaissance assembly implemented onto the BVP-1 platform.

LOS-M is an integral part of the artillery battalion FCS and has been designed to provide artillery battlefield reconnaissance and firing data collection while performing fire support missions for the troops. | **Tab. 14, p. 105**

Reconnaissance System for PANDUR II Vehicle

The reconnaissance wheeled infantry fighting vehicle is a modified variant of the 8×8 PANDUR II wheeled IFV. A common platform is fitted with a special reconnaissance superstructure.

The main subsystems of the reconnaissance system are:

- An integrated IPzS recce system
- SQUIRE ground surveillance radar
- An SDPz remote portable recce system

The reconnaissance system assembly ensures the following capabilities:

- Sensor head providing continuous terrain surveillance and target reconnaissance in the autonomous mode of detection and targeting;
- Visual display unit showing combat situation information;
- Visual display unit showing navigation information;
- Visual display unit showing map layouts;
- Display indicating vehicle position;
- Flexibility allowing the ground surveillance radar system to be used both in the vehicle or as a fully portable system (where the operator is also outside the vehicle). | **Tab. 15, p. 106**

STERNA-V Portable Assembly for Artillery Observer

The STERNA-V is a portable assembly providing target acquisition and fire control data collection. The assembly consists of the STERNA-TNF true north finding target location system, a Leica Vector 21 Nite binocular rangefinder to determine target distance and a tripod. The self-positioning required for target position determination may be entered manually or collected from a GPS receiver.

The STERNA-V is intended for target detection, reconnaissance and identification followed by full target acquisition during artillery reconnaissance whilst providing effective and fast fire support and troop protection during military operations. | **Tab. 16, p. 107**

SNĚŽKA-M Artillery Reconnaissance Assembly

The SNĚŽKA-M reconnaissance observation assembly is a modification of an existing assembly at the level of a system solution. It includes an integrated reconnaissance system, control systems (HW and SW), communication a means, power source and support subsystems. This system solution increases its useful characteristics to the level of contemporary reconnaissance systems.

The SNĚŽKA-M reconnaissance observation assembly is an integral part of the artillery battalion firing control system and is designed for artillery battlefield reconnaissance and for securing data needed for firing solutions when performing fire support missions. | **Tab. 17, p. 108**

Dual-Axis Mechanical Manipulator (DMM)

The Dual-Axis Mechanical Manipulator (DMM) presents provides for the precise positioning of optoelectronic sensor systems. The DMM serves as a supporting tool for object recognition and identification by a human operator to get a global image of operation and the tactical situation. The DMM is electromechanical equipment comprising a mechanical construction and electric, electromechanical and electronic components. The electronic components further include the proprietary SW.

The equipment is assembled using wiring and fasteners. The sensor head is expected to comprise a set of several sensors (camera modules, laser rangefinders, inertial units, etc.). | **Tab. 18, p. 108**

KPCO Container Workstation of Central Protection

KPCO is a workstation integrating multispectral guarding equipment, control devices and data communication equipment into a ballistic-resistant armoured container. The ballistic-resistant armoured container incorporates workstations for each operator. This creates a suitable environment for their effective and long-term operation in field conditions. It also provides for predispositions for the operation and the protection of operators during potential combat action, including protection against NBC attacks. The KPCO is a mobile system for safeguarding and monitoring during both daytime and nighttime conditions. It is transportable by air or by special transportation vehicles to the base of deployment.

KPCO is mainly intended to ensure the safeguarding of bases for foreign mission deployments at an increased level of risk. | **Tab. 19, p. 109**

RBS-70 Man-Portable Air Defence System TRAINING KIT

The RBS-70 Man-Portable Air Defence System TRAINING KIT provides highly effective and economic training for RBS-70 Man-Portable Air Defence System (RBS-70 MANPADS) operators.

RBS-70 MANPADS TRAINING KIT contains two main subsystems:

1. External Power Supply Unit (EPSU): This unit serves as an external power source for RBS-70 MANPADS during training (replacing lithium batteries) in case the electrical grid, power generator or vehicle network are available.

2. Objective Check Unit (OCHU): The unit's primary task is to provide a safety check during field firings with the RBS-70 MANPADS. Its secondary task is to evaluate missile guidance accuracy during field firing and archiving and editing from the firing sequences conducted.

4 MAST TECHNOLOGY

PRODUCTS

- AN-25 Mobile Mast
- AN-17 Mobile Mast
- AN-12 Mobile Mast
- AN-12 UMG Mobile Mast

AN-25 Mobile Mast

The AN-25 mobile mast is intended both for short-term and long-term use as a carrier of specific equipment up to 300 kg, in particular for antenna superstructures. The base of the antenna carrier is created by a platform with ISO 1C container anchoring and equipped with a lifting hook for a hook loader. On the platform, there are five-sectional composite telescopic tubes, made of carbon fibres, erecting and telescopic mechanisms, electric power sources and cases for all equipment. It is possible to place and transport the platform on any transporter with corresponding dimensions and load capacity (vehicle, trailer).

POSSIBLE USES: Carrier of mobile wind power plants, camera systems, lighting sets, special antenna superstructures (mobile operators). | **Tab. 20, p. 110**

AN-17 Mobile Mast

The AN-17 mobile mast is intended both for short-term and long-term use as a carrier of specific equipment up to 350 kg, in particular for antenna superstructures. The base of the antenna carrier is created by a trailer with a mechanism for horizontal levelling, and the platform is placed on this trailer. The steel telescopic tube erecting and extensible mechanism, driving elements, mast stays, the supporting system, cases for all of the accessories and the electrical energy source are all mounted on the platform.

POSSIBLE USES: Carrier of mobile wind power plants, camera systems, lighting sets, special antenna superstructures (mobile operators). | **Tab. 21, p. 110**

AN-12 Mobile Mast

The AN-12 mobile mast is intended both for long-term and short-term usage, as a carrier of equipment up to 200 kg, in particular for antenna superstructures. The base of the antenna carrier is created by a trailer with a mechanism for horizontal levelling with a frameless platform. The four-piece composite telescopic tube made from carbon fibre, erecting and telescopic mechanisms, driving elements, mast stays, supporting the system, cases for all of the accessories and the electrical energy source are all mounted on the platform.

POSSIBLE USES: Carrier of mobile wind power plants, camera systems, lighting sets, special antenna superstructures (mobile operators). | **Tab. 22, p. 111**

AN-12 UMG Mobile Mast

The AN-12 UMG mobile mast is intended for short-term or long-term use, as a carrier of superstructures, mainly antennas, with a weight of up to 200 kg. The mast (composite telescopic tube) is fixed on the carrier. It is equipped with a supporting/levelling system, basic equipment, storage cases for accessories, a tool box, a mechanical interface and a multi-cable with an inertia-reel cylinder.

BASIC USE: As a carrier of antennas with an optional special superstructure assembly according to the customer's wishes, up to the allowed weight and dimensions. | **Tab. 23, p. 111**

5 FILTRATION AND VENTILATION UNITS

PRODUCTS

- FVZ-98M (NG)
- FVZ-98M (KP)
- FVZ-98M (T)
- KLIMABOX - S Microclimate Securing System


ČÁSTICOVÝ
FILTR
BOJOVÝ
FILTR

FVZ-98M (NG)

Filtroventilation unit;
Filters;
Control box;
CO_2 sensor

The FVZ-98M (NG) ensures protection of the required area and its supply with filtered air even under WMD use conditions. The sophisticated control system of the FVZ-98M (NG) is able to automatically maintain the required positive pressure in the protected area at a constant level and to respond to a possible leakage of the protected area. The three-stage filtration system ensures a dust separation of more than 99.95 % (filtration class H13 according to ČSN EN 1822-1).

THE INNOVATIVE ELEMENTS:
CO_2 sensor; Air quality control based on CO_2 concentration; Integration of interface for CAN communication.

The equipment is primarily equipped with the KFM-200 collective filter and is ready for installation with an equivalent third-party collective filter if required by the customer. | **Tab. 24, p. 112**

FVZ-98M (KP)

The FVZ-98M (KP) is intended for supplying a COLPRO protected space with filtered air even under conditions of WMD usage. It ensures the air is cleared of dust (even radioactive particles) and of combat chemicals in the form of gas and aerosols. It is to be installed outside the object being protected.

THE FVZ-98M (KP) IS CHARACTERISED BY:
Compact construction; Use of a cyclone air separator with continuous dust exhaustion; Remote (electrical) switching from the ventilation mode to filtration; Use of additional filters in the ventilation mode up to the HEPA level; Simple operation and more quiet motion; The device may be fitted with a positive pressure sensor to ensure the safety of the protected space. | **Tab. 25, p. 112**

Filtroventilation unit;
Filters;
Control box;
Vent valves

FVZ-98M (T)

The FVZ-98M (T) is intended for supplying mobile units with by filtered air under conditions of WMD usage. It ensures the clearance of dust (even radioactive particles) and combat chemicals in the form of gas and aerosols. It creates an overpressure in the protected space that prevents toxic substances from penetrating into the crew compartment. It is installed inside the protected object. It is possible to adjust it on demand for the outdoor mounting, too. The FVZ-98M (T) is only a filtering device, and therefore it is suitable as an accessory device in vehicle cabins and similar units that are equipped by the manufacturer with standard ventilation for common operation. | **Tab. 26, p. 112**

Filtering unit;
Pre-filter;
Combat filter;
Ventilation valves (if necessary);
Control panel (if the FVZ control is not integrated into the vehicle control panel);
Accessories (connectors, hoses, etc.)

Filtroventilation unit;
Thermal unit;
Control box;
Vent valves

KLIMABOX – S Microclimate Securing System

The KLIMABOX – S is a filtering and ventilating device, which is a part of a system for ensuring the required microclimate for persons staying within a closed area. This microclimate is maintained using internal circulation with thermal air modification (heating / cooling) and by creating overpressure. The overpressure is created by air delivery through individual filtering boxes (blocks). The air is distributed into the protected area through a cyclone cleaner, combat filter box and auxiliary filters box. After the dust particle and combat substance filtering, the air is thermally modified in the thermal unit block, according to the requirements of the crew in the protected area. The device is able to ensure sufficient air delivery for 10 persons. | **Tab. 27, p. 112**

6 SPECIAL WORKPLACES AND PRODUCTS

PRODUCTS

- BLESK Mobile Brigade - type Hydrometeorological Station
- OBLAK I Hydrometeorological Station
- GeMoZ-C Geographic Operations Mobile Workplace
- POKA-4 Mobile Field Kitchen
- SGEOB Geographic Operations Brigade Mobile Set
- ZZ-EC 4kW Lifting Device
- UMBL Universal Mobile Packing Line
- AM-70 Bridging Vehicle


MAX 19F

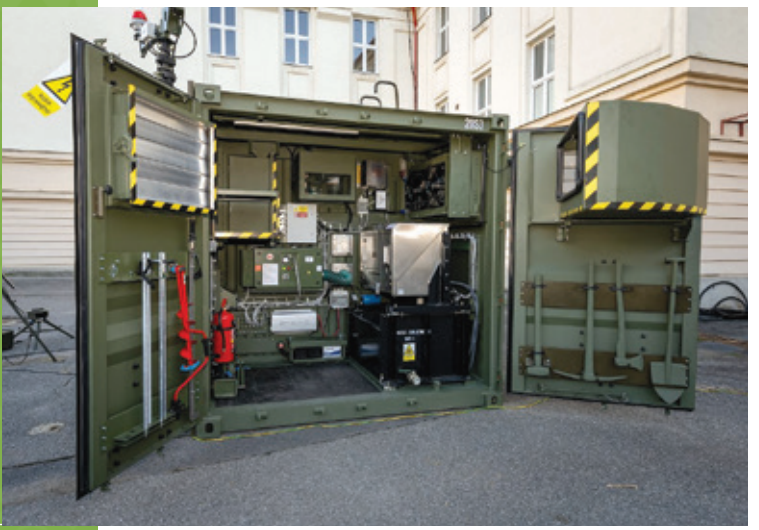
BLESK Mobile Brigade - type Hydrometeorological Station

The mobile hydrometeorological station, positioned on two SCAM vehicles and two PM 35 trailers, is intended for protecting military personnel assigned to collect hydrometeorological data for assessing the area of interest. The task of this station is to collect, analyse and provide all available hydro meteorological data and information for the brigade tasks assigned.

The BLESK station is able to measure, observe and interpret the following meteorological elements and phenomena: air temperature and humidity at various altitudes; air pressure at various altitudes; wind direction and speed at various altitudes; cloud altitude and quantity; precipitation characteristics (intensity, amount, physical state); weather conditions; earthbound visibility; lightning detection (direction and distance). | **Tab. 28, p. 113**

OBLAK I Hydrometeorological Station

The OBLAK I hydrometeorological station is a specially equipped ISO 1C container designed for the needs of the hydrometeorological service of the Army of the Czech Republic (ACR). Its technical equipment enables the accurate measurement of basic data on the state of the atmosphere, such as temperature, pressure, flow, and wind direction. For water surfaces, the crew can measure temperature, flow velocity, bottom profile, and ice cover thickness. It is equipped with accurate meteorological sensors from Vaisala and can be connected to the TACMET system used by the ACR meteorological service. The station has workplaces for observers, a synoptist, and an electric generator operator. The station is energy independent.



GeMoZ-C Geographic Operations Mobile Workplace

The GeMoZ-C is mobile equipment intended for the theatre-level support of units deployed abroad. It enables, in line with the aim of E 2861 – NETWORK ENABLED SERVICES (Supporting information systems) power creation, the collection, analysis and distribution of all available military-geographical data and information about the war scenario both in analog and digital forms and to generate a REP (Recognized Environmental Picture) into an integrated C2 system. The task of this workplace is to make military-geographical analyses, to create special geographical documents up to the security level "Secret" and to submit meteorological data and information from the service area.

The mobile workplace consists of two ISO 1C containers – operational and support, and one briefing tent.

POKA-4 Mobile Field Kitchen

The POKA-4 is intended for the preparation, regeneration and distribution of high-quality hot meals for troops in field conditions.

BASIC FUNCTIONS: Raw food processing; Food processing by cooking, steaming, frying and roasting, Food defrosting; Regeneration of cooled or frozen foods and keeping these foods at the appropriate temperature during their distribution; Storage and distribution of heated food for up to 4 hours after it has finished cooking; Water heating for washing the dishes and kitchen equipment and for crew hand hygiene; Independent operation for drinking water consumption from its own storage tanks; Optional connection to an external source of pressurised or non-pressurised drinking water; Optional universal connectivity to an external 3×230/400V, 50 Hz electrical power distribution net with full protection against electrical shock. | **Tab. 29, p. 114**

SGEOB Geographic Operations Brigade Mobile Set

The SGEOB is mobile equipment intended for the informational support of personnel using military-geographical data for assessing the service area.

BASIC FUNCTIONS: Acquisition, analysis, and supply of all available military-geographical data and information on the war scenario in analog and digital forms for the commander and staff and for each military unit; Preparation and printing of analog geographic data; Elaboration of simple and complex geographical analysis incl. graphic outputs; Creation and management of a geographic database; Creation of multimedia military-geographical evaluations of service areas; Preparation and printing of documents in A3 format; Realization of reprographic tasks; Creating graphic designs; Printing of large documents; Use of GPS measurements to create and update geographic databases; Implementation of geodetic support tasks; Comprehensive work in the reprographic support of the commander, staff or individual military units, including the basic binding of books, reproduction and distribution of processed data (maps and other materials) in digital and analog forms.

ZZ-EC 4kW Lifting Device

The ZZ-EC 4kW lifting device is intended for use with the EC 4 kW. It is used for unloading, lowering to the ground, lifting to the vehicle's floor, placing into the vehicle's body and fixing the generator unit. It is mounted within the EC's body. It is operated by a crank, by which the coiling drum rotates via a wormgear unit. | **Tab. 30, p. 114**

UMBL Universal Mobile Packing Line

The UMBL is intended for the disassembly of particular military and civil materials from ISO containers and from pallets, and for the assembly of supplying sets on non-returnable pallets with standard dimensions, suitable for air transport. The probable primary application is the assembly of foodstuffs, packaged water, and other unspecified common materials. Multiple material categories can be stored on one palette. The assembled material is fastened on the palette by straps and is protected against climatic conditions by foil. The assembled material will be transported from the UMBL to the destination (forward issuing location, directly to supply battalions and companies, etc.) by the user's transport means. The materials assembled by the packing line are intended for supplying Czech troops operating abroad. Eventually, the UMBL's use may be expanded to include of brigade-sized special task groups and the European Battle Group (EUBG).

AM-70 Bridging Vehicle

The AM-70 is a mobile unit intended for the construction of bridges which meet MLC 70 parameters according to STANAG 2021. By connecting multiple bridge sections, it is possible to construct a single flow bridge to a length of 108 m. The loadability of the steel bridge according to MLC 70 from STANAG 2021 ensures the passage of tracked vehicles up to 63.5 tons and prime movers with a trailer up to 73.02 tons up to a speed of 20 km/h. The length of one bridge section is 13.5 meters, A multi-span bridge with eight bridge sections is able to span road obstacles even 107 meters wide and 5.65 meters deep. A full 4-meter wide carriageway is intended for the safe passage of both military and civilian vehicles. | **Tab. 31, p. 114**

7 WORKSHOP VEHICLES AND SERVICE WORKPLACES

PRODUCTS

- T815-7-D 8×8 Workshop Vehicle
- R T815-7-D 8×8 Recovery Vehicle
- MOP-PVTM Land Forces Mobile Repair Workplace
- Mobile Workshops for Repairs of Wheeled and Tracked Vehicles
- MOP Mobile Repair Workplace within an Aircraft Hanger for Repairing Aircraft Components
- MPZD Mobile Workplace for Woodworking
- PSP Field Service Workplace Complex
- Technical Maintenance Hall

T815-7-D 8×8 Workshop Vehicle

The workshop vehicle is intended for equipment maintenance, common repairs in peacetime, and common and intermediate-level wartime repairs of wheeled armoured vehicles in various climatic and field conditions.

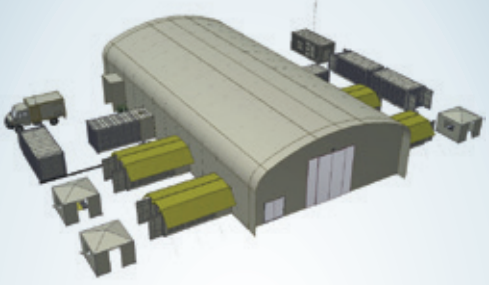
The workshop vehicle is capable of providing technical assistance to other types of wheeled vehicles with the use of basic and special logistics tool sets. | **Tab. 32, p. 115**

T815-7-D 8×8 Recovery Vehicle

The rescue truck is designed to salvage the works, vehicles and to remove and evacuate damaged wheeled armored vehicles, primarily KBV a KOT types. In addition, it can extract immobilised vehicles (using the coupling rod or the cargo winch on the back of the evacuation fork) of IVECO, DINGO, Tatra T815 and Tatra T810 series vehicles in different climatic conditions and terrain types. The vehicle is further able to ensure rapid transport of the crew to the place of deployment and their protection. It also provides technical assistance by employing the most suitable types of techniques with the use of logistics sets of universal tools and repair equipment from its own stock of onboard equipment. | **Tab. 33, p. 115**

MOP-PVTM Land Forces Mobile Repair Workplace

The MOP-PVTM is intended for level 1 and 2 inspections, maintenance and repairs (squad, platoon, company). The MOP-PVTM technical and technological equipment ensures level 1 and 2 maintenance and repairs can be conducted quickly and efficiently.



WORKPLACE STRUCTURE:

- Mobile mounted repair hall;
- Mechanical workshop in container (intended for repair of military technology groups and subgroups);
- Special workshop in container (intended mainly for welding and tyre repair);
- Electrical workshop in container (intended for maintenance and repair of military technology electrical parts);
- Armament workshop in container (intended for maintenance and repair of military technology armament);
- Power and distribution set (ensures electrical energy delivery and distribution for the workplace);
- Diagnostic vehicle (intended for diagnostic activities outside the workplace);
- Tent shelters (for welding, charging and storage).

Mobile Workshops for Repairs of Wheeled and Tracked Vehicles

These workshops are intended for the maintenance and common repairs of tracked and wheeled vehicles, special vehicles, generating sets, high-voltage current and low-voltage current systems, and the main types of equipment at the level of technical maintenance I and II. They consist of a box body carried by the TATRA chassis and supplemented by a trailer or a portable tent (according to the specialisation).

TYPES OF WORKSHOPS:

- Wheeled vehicles (K);
- Tracked vehicles (P);
- Electrical (E);
- Engineering (MZD);
- Battery repair (OA);
- Chemical (CH);
- Connecting (S);
- Armament (V).

MOP Mobile Repair Workplace within an Aircraft Hangar for Repairing Aircraft Components

The MOP is intended for conducting both planned and unplanned maintenance and repairs of damaged aircraft components, specifically transport and combat helicopters.

The aircraft hangar for repairing aircraft components is equipped with a set of air conditioning, ventilation, heating, lighting and electric power distribution. | **Tab. 34, p. 116**

MPZD Mobile Workplace for Woodworking

The mobile workplace for woodworking (MPZD) is intended for operation within the Corps of Engineers of the Czech Army. It enables operations in field conditions and on natural disaster sites.

The special-purpose equipment allows carpentry and joinery work inclusive with converting the sawlog. Using the inflatable tent creates better conditions for the long-term crew activity.

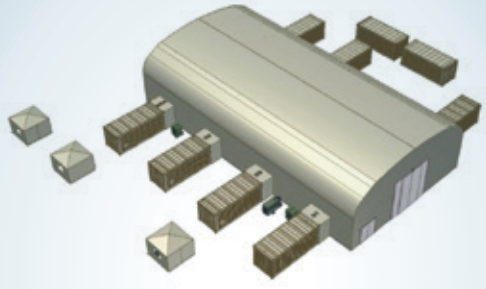
The workplace is independent of a stationary electrical energy source, because it is equipped with its own powerful generating set. | **Tab. 35, p. 116**

PSP Field Service Workplace Complex

The PSP complex is intended for conducting inspections, maintenance and repairs of levels I and II (servicing crew, servicing platoon, servicing company).

The mechanical and electrical equipment of the PSP complex supports technical activities on levels I and II of maintenance and repairs consisting of:

- Military technology inspections;
- All kinds of maintenance;
- Finding points of failure;
- Common and moderately difficult. | **Tab. 36, p. 116**



WORKPLACE STRUCTURE:

- Mobile repair hall;
- Workshop containers:
  - Locksmith's workshop;
  - Electrician's workshop;
  - Metalwork and welding workshop;
- Diagnostic devices storeroom;
- Tent shelters.

Technical Maintenance Hall

The Military Technical Institute has supplied, for the needs of the Ministry of Defense of the Czech Republic, several halls intended for the maintenance of aircraft and ground equipment. It has also subcontracted special-purpose technology for the equipment maintenance hall, which was supplied in 2019.

8 SOURCES OF ELETRICITY AND SOURCE SYSTEMS

PRODUCTS

- Č-EDM 4-T400/230-2V type 4 kW Power Generating Set
- Č-EDM 16-T400/230-2V type 16 kW Generating Set
- 20 kVA LR Power Supply and Distribution Set
- ZRS 60 kW IN ISO-1C CONTAINER 60 kW Power Supply and Distribution Set
- SEC Energy Center Assembly

Č-EDM 4-T400/230-2V type 4 kW Power Generating Set

This 4 kW power generating set is an electric energy portable source for supplying three-phase 3×230/400 V, 50 Hz appliances, single-phase 1×230 V, 50 Hz appliances and for accumulator charging and supplying extra-low voltage appliances with an input up to 300 W from a 28.5 V DC supply network.

The construction of this 4 kW power generating set and the quality of the output energy complies with the requirements of ČOS 611501 and STANAG 4135 standards. The EMC fulfills the requirements of MIL STD 461E. | **Tab. 37, p. 117**

Č-EDM 16-T400/230-2V type 16 kW Generating Set

The 16 kW generating set (EC) is an independent electrical energy source for general use intended for supplying three-phase and single-phase appliances in a 3×230/400 V, 50 Hz voltage system. Its construction and output energy quality correspond to the ČOS 611501 and STANAG 4135 requirements. The EMC corresponds to MIL STD 461E. | **Tab. 38, p. 118**

20 kVA LR Power Supply and Distribution Set

The 20 kVA power supply and distribution set on the LAND ROVER DEFENDER 130 chassis with a rated output power of 20 kVA (16 kW) represents a mobile, independent electrical energy source for general use, which enables the supply of the both three-phase and single-phase appliances in a 3×230/400 V, 50 Hz voltage system. When used together, it enables accumulator charging or supplying the extra-low voltage appliances up to 1000 W from a 28 V DC voltage system. It is intended for operation in field conditions to ensure electrical energy delivery immediately when the unit arrives in the operational area. | **Tab. 39, p. 118**

ZRS 60 kW IN ISO-1C CONTAINER 60 kW Power Supply and Distribution Set

The 60 kW generating set (EC) is an independent electric energy source for general use which enables supplying both three-phase and single-phase appliances in a 3×400/230 V, 50 Hz voltage system. The ZRS 60 kW set in an ISO 1C container is intended for use by the immediate reaction units in a complex container system. The set is not intended for operation on a chassis but as an independently standing container placed on the ground. | **Tab. 40, p. 119**

SEC Energy Center Assembly

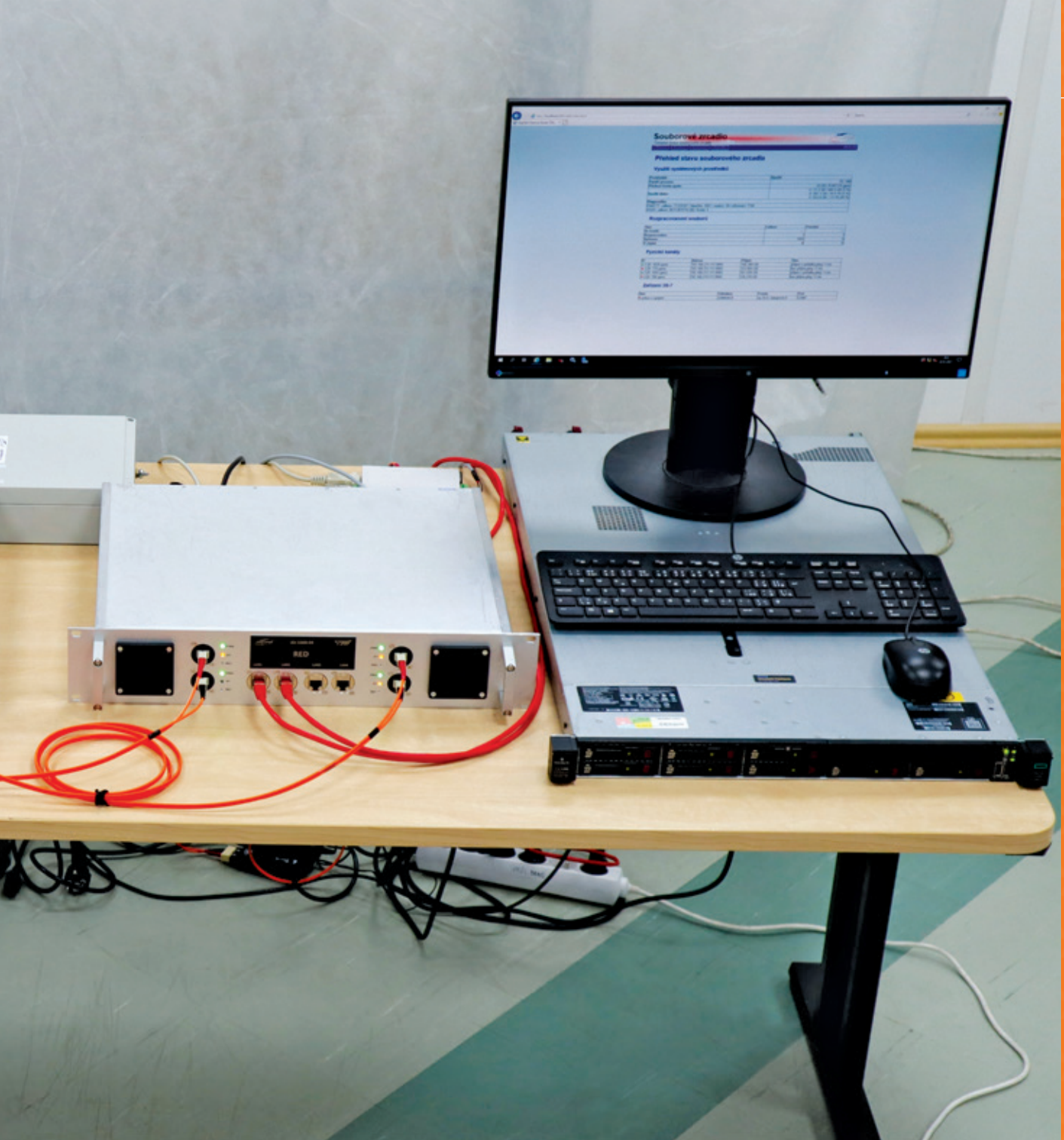
The SEC serves as an independent source of electricity for general use, such as for a field hospital or parts thereof. With its concept, the SEC is designed for deployment in units of immediate response forces in a complex system of container security. The SEC consists of generating sets EC1, EC2, and EC3, a KR 1080 substation, and a fuel tank for KN 16 generating sets. | **Tab. 41, p. 119**

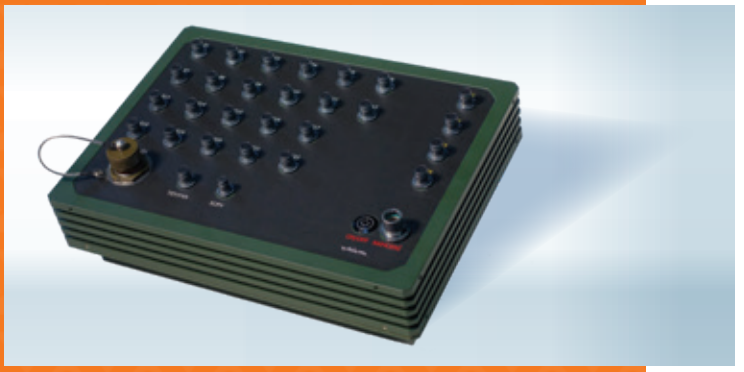

V. šr. ROBÁNEK

9 RUGGED HARDWARE COMPONENTS

PRODUCTS

- SWITCH – Rugged Network Elements
- ALL IN ONE PC – Rugged Control Units
- CONTROL UNIT – NBC Filter Unit Control
- Digital Data Diode
- Data Diode – File System Mirroring
- VTU-DRC-63-POE Military Tactical Router
- VTU-DSC-0.08GP Military Tactical Data Switch
- VTU-DSC-2.08GPU Military Tactical Data Switch
- VTU-DSC-2.24GP Military Tactical Data Switch


Souborové zrcadlo
Přehled stavu souborového zrcadla



SWITCH – Rugged Network Elements

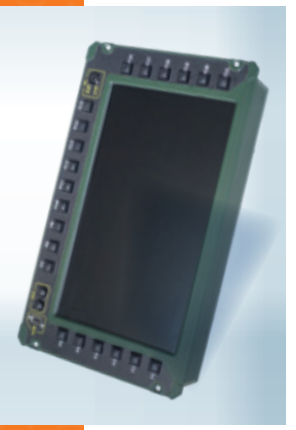
The design of network elements is modular, so that the model series may be equipped with the requested number of ports or extended with further capabilities, such as routing, I/O ports, and other specific interfaces.

These network elements in a rugged design are specially implemented in wheeled and tracked platforms and container systems. These network elements enable the setting up of a vehicle LAN network featuring 100 Mbit/s, 1 Gbit/s, or even 10 Gbit/s speed if requested. Based on the selected configuration, these network elements manage L2 or L3 layer switching or full routing, including advanced functions such as QoS, Radius, etc. | **Tab. 42, p. 120**

ALL IN ONE PC – Rugged Control Units

ALL IN ONE PC Rugged Control Units are custom-produced for specific applications. The processors i3, i5 and i7 are integrated based on the performance requirements (all in a “fan-less” design). The display is also optional, featuring high resolution and contrast ranging in sizes between 7“ up to 26“ display-diagonal. The inner display is connected to the graphic adapter via a digital LVDS interface. These devices are provided standard with rugged TERRAPIN connectors (different types may be implemented if requested). The front panels of control units can be optionally equipped with SW programmable side buttons.

ALL IN ONE PC Rugged Control Units are intended to be implemented both in wheeled and tracked vehicles and in stationary workstations such as container types, etc. | **Tab. 43, p. 121**



ALL IN ONE PC A weapon station joined to the control system

CONTROL UNIT – NBC Filter Unit Control

The control unit of the NBC filter unit is a modular processor system designed to directly control the NBC filter unit, indirectly control the RAID XP detection system and to deliver information from these systems to the vehicle Battle Management Information System (BMIS).

The control unit of the NBC filter unit is intended to control the complete NBC system in military mobile or stationary conditions. All the data collected from the connected sensors are delivered to the Ethernet data interface and further distributed via a data network to the vehicle Battle Management Information System. The NBC control unit can control the connected subsystems directly (buttons on the panel) or indirectly via the vehicle BMIS. Even if the data connection with the vehicle Battle Management Information System is lost, the NBC control unit operates autonomously and provides automated protection of military means against NBC weapons. | **Tab. 44, p. 121**

The diode is supplied in two variants:

- Simple device for transmitting UDP datagrams and streams;
- Equipment, including software for transmission and control of transmitted data (file mirror). This device can be cascaded. This can increase the baud rate and also ensure redundancy of the diodes in the event of a failure of one of them. The file mirror can be supplemented with special feedback to ensure trouble-free and fully automatic file transfer while maintaining system certifiability.

Digital Data Diode

The Digital Data Diode (3D-100, 3D-1000) is used to transfer data from a lower degree of secrecy network to a higher degree of secrecy network. The number after the dash indicates the bit rate in Mbps.

The basic assembly of the diode consists of two devices. The transmitting part receives data from networks with a lower classification level and sends it via a “one-way” optical interface to a receiving part connected to networks with a higher classification level. The advantage is that the diode works on the basis of the IP protocol, and it is also available from other routable networks.

Data Diode – File System Mirroring

The data diode is a security device providing an assured single-direction data stream from an unclassified (BLACK) data network to a classified (RED) data network. A software extension for file mirroring enables copying data, including the file tree structure and user access rights. Customization of this SW extension is possible. Reverse transferred data checking can be manually performed using a USB flash memory or automatically using a dedicated security gateway.

The basic HW configuration is composed using a cascade of data diodes, which provides redundancy for the system core. The other parts of the device are two TASAG servers for data transmission and receiving process control. Optionally it is possible to supplement the security gateway for automatic feedback.

The basic configuration has a throughput of 1.6 Gbps, with throughput increases available on demand. A graphical user interface is included. It facilitates the supervision of the file transfers and statistical data representation. The data diode's status can be monitored by SNMP or email.

VTU-DRC-63-POE
Military Tactical Router

The VTU-DRC-63-POE is a highly efficient compact data router based on Cisco 6300 line hardware and an IOS-XE operating system. The design is optimised for military deployment. Its 19"/1U dimension is suitable for installations in a 19" rack or EDAK MILEX military transport boxes, but it is also possible to use it stand alone.

The main technical parameters are:

- 2× router ports 10/100/1000Base-T:
- 4× switch ports 10/100/1000 Base-T PoE+
- VoIP CME for 48 users
- Power voltage 18–36 V DC / 90–250 V AC
- AC 3 m and DC 3 m power cables included
- Operating temperatures -40°C to 70°C
- RIP, OSPF, EIGRP and others depending on license, CUCME, VPN, VRF, DHCP, MPLS, QoS, etc.
- Mechanical standards MIL-STD-810 G and IP 65

VTU-DSC-0.08GP
Military Tactical Data Switch

The VTU-DSC-0.08GP is a data switch optimised for military deployment. Its 19“ design is suitable for installations in a 19“ rack or EDAK MILEX military transport boxes, but it is also possible to use it stand alone.

The main technical parameters are:

- 8x 10/100/1000 Base-T: RJF-21 interface with IEEE802.3at support/ PoE output 30 W per port
- Operating temperatures -40 °C to 70 °C
- Power voltage 18–32 V DC and 230 V AC
- AC 3 m and DC 3 m power cables included
- STP / RSTP / MSTP and ITU-T G.8032 ring recovery time <50 ms, advanced PoE control functions as automatic PoE device control and restart, Ethernet IGMP layer 2, VLAN, QoS, IPv6, bandwidth control, port mirroring, cable diagnostics, etc.
- Mechanical standards MIL-STD-810 G and IP 65

VTU-DSC-2.08GPU
Military Tactical Data Switch

The VTU-DSC-2.08GPU is a data switch optimised for military deployment. Its 19“ design is suitable for installations in a 19“ rack or EDAK MILEX military transport boxes, but it is also possible to use it stand alone.

The main technical parameters are:

- 2× 100 / 1000Base-X: HMA-J FO plugs: 8× 10/100/1000 Base-T: interface RJF-21 with IEEE802.3at support / PoE output 30 W per port
- Single-mode optical convertors provide a signal coverage range of up to 15 km
- Operating temperatures -40 °C to 70 °C
- Power voltage 18–32 V DC / 90–250 V AC
- Backup battery provides capacity for 15 minutes‘ operation at 8x15.4 W load
- AC 3 m and DC 3 m power cables included
- STP / RSTP / MSTP and ITU-T G.8032 ring recovery time <50 ms, advanced PoE control functions as automatic PoE device control and restart, Ethernet IGMP layer 2, VLAN, QoS, IPv6, bandwidth control, port mirroring, cable diagnostics, etc.
- Mechanical standards MIL-STD-810 G and IP 65

VTU-DSC-2.24GP
Military Tactical Data Switch

The VTU-DSC-2.24GP is a data switch optimised for military deployment. Its 19“/1U design is suitable for installations in a 19“ rack or EDAK MILEX military transport boxes, but it is also possible to use it stand alone.

The main technical parameters are:

- 2× 100 / 1000Base-X: HMA-J FO plugs: 24× 10/100/1000 Base-T: Interface RJ-45 with IEEE802.3at support/ PoE output 30 W per port
- Single-mode optical convertors provide a signal coverage range of up to 15 km
- Operating temperatures -40 °C to 70 °C
- Power voltage 18–32 V DC / 90–250 V AC
- AC 3 m and DC 3 m power cables included
- STP / RSTP / MSTP and ITU-T G.8032 ring recovery time <50 ms, advanced PoE control functions as automatic PoE device control and restart, Ethernet IGMP layer 2, VLAN, QoS, IPv6, bandwidth control, port mirroring, cable diagnostics, etc.
- Mechanical standards MIL-STD-810 G and IP 65

10 MEDICAL TECHNOLOGY

PRODUCTS

- Field Hospital
- Medical Modules
- PHEL-2 Mobile Hygienic-Epidemiological Laboratory
- BIOBOX – M1 Transport Box
- POP-3 Mobile Medical Unit


SURGICAL MODULE

Field Hospital

The field hospital is a comprehensively equipped unit of medical and logistical workplaces that should be used as an accommodation workplace in case of natural disasters, mass traffic disasters, pandemics, humanitarian missions, mass migration, etc.

The logistical support is arranged in such a way that it ensures trouble-free operation, mainly electricity, water and food delivery, waste disposal and other services to protect the life and work of medical staff and patients.

ELEMENTARY MODULES OF THE FIELD HOSPITAL:

Medical part:

- Reception and sorting of patients (incl. hygienic cleaning);
- Laboratory;
- Radiographic workplace;
- Operating theatres and intensive care units;
- Preparatory rooms for operating theatres and postoperative rooms;
- Rooms for doctors and nurses;
- Sterilizing workplace;
- Hospitalization for seriously injured;
- Hospitalization for slightly injured;
- Isolation ward;
- Pharmacy;
- Dentistry;
- Evacuation department;
- Mobile medical workplaces (POP and PHEL);
- Morgue.

Logistical part:

- Workplace for securing electrical energy;
- Kitchen with dining section;
- Accommodation blocks;
- Laundry;
- WC and showers;
- Vehicle fleet.

Medical Modules

- 10P Operating Room Workplace
- 20P Operating Room Workplace
- BHL-PN Biochemical-Hematological Laboratory
- KTN-RTG Radiographic Workplace in an ISO 1C Container
- JIP Workplace
- MPML Mobile Field Microbiological Laboratory
- Dentistry Workplace
- KTN-CT Container Workplace
- Pharmacy – Dressing Material Storeroom
- KTS-PN Sterilizing Workplace in an ISO 1C Container
- Medical Module - Disinfection
- Sanitary Cabin for Patients
- MHJ Mobile Hospitalizing Unit
- Pharmacy – Dispensary for Pharmaceuticals and Medical Stores in ISO 1C
- Mobile Surgical Team Workplace

10P Operating Room Workplace

The Medical module – 10P operating room workplace (MM-10P Workplace) is intended for simultaneously performing operations on two operating tables in field conditions. This part of the hospital base equipment complies with the requirements for health services on the level of the NATO member state armies.

20P Operating Room Workplace

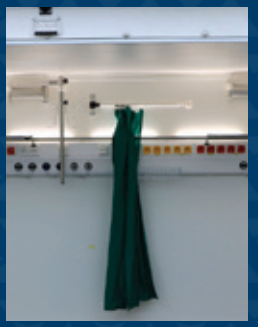
The Medical module – 20P operating room workplace (MM-20P Workplace) is intended for imultaneously performing operations on two operating tables in field conditions. This part of the hospital base equipment complies with the requirements for health services on the level of the NATO member state armies.

BHL-PN Biochemical-Hematological Laboratory

The Container laboratory is intended for carrying out biochemical and hematological examinations for the field hospital – especially for the preoperative examination of blood derivates and the urine of wounded and diseased persons, for the primary diagnosis of serious illnesses and for the monitoring of their treatment in field conditions. The BHL-PN also serves as a blood bank (store of blood transfusion preparations in the cooling/freezing box).

¬ KTN-RTG Radiographic Workplace in an ISO 1C Container

The KTN-RTG roentgen container workplace is intended for roentgen diagnostics in field conditions and is equipped with an X-ray system for performing sciographic examinations, imaging of the skeleton, stomach, chest, and other examinations of the patient while lying on the examination table or imaging of the lungs, skeleton, and chest of the patient sitting/standing at the vertical imaging stand. The KTN-RTG serves especially for the complete X-ray diagnostics of serious injuries and the suspicion of serious illnesses. If needed, it can also be directly used in the operating room while operating. Likewise, it can also be used in the intensive care unit for diagnosing postoperative state setbacks and in the ward block of field medical complexes.

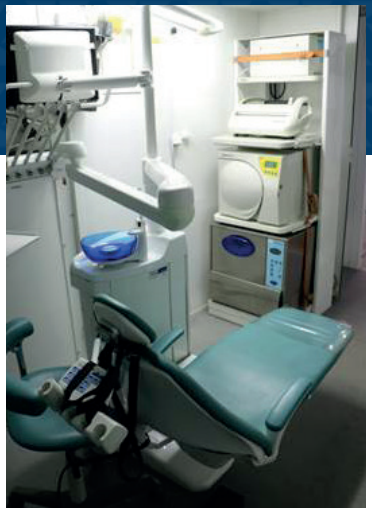


¬ JIP Workplace

The Medical module – JIP workplace (MM - JIP Workplace) is intended for the execution of the intensive and postoperative care of patients on 4 sickbeds at once in field conditions. This part of the hospital base equipment complies with the requirements for health services on the level of the NATO member state armies.

¬ MPML Mobile Field Microbiological Laboratory

The mobile field microbiological laboratory is intended for performing bacteriological, virologic–serum and parasitological examinations in field conditions. The workplace fulfills the requirements for laboratories with BSL 4 level of biological safety. This ensures increased handling security with highly risky biological agents, as defined by Czech Decree No. 474/2002 Col.



¬ Dentistry Workplace

The medical module – Dentistry workplace (MM – Dentistry workplace) is intended for performing dental care in field conditions. This part of the hospital base equipment complies with the requirements for health services on the level of the NATO member state armies.

¬ KTN-CT Container Workplace

The KTN-CT container workplace is intended for carrying out diagnoses of iserious internal injuries and for the preparation and execution of lifesaving operations in field conditions. The KTN-CT container workplace consists of two containers: KTN-CT and KTN-OVL. Both these containers have one removable side. (In transport it is covered by transportation panels.)

The KTN-CT container is conceived as a single-space; the place with the CT is X-ray shielded.

The CT container workplace is functional only as a complet set.

¬ Pharmacy – Dressing Material Storeroom

The medical module – Pharmacy – dressing material storeroom (MM – SOM-Pharmacy) is intended for the stocking and distribution of dressing material in field conditions. This part of the hospital base equipment complies with the requirements for health services on the level of the NATO member state armies.

¬ KTS-PN Sterilizing Workplace in ISO 1C Container

The KTS-PN sterilizing workplace container is intended for performing medical stores' sterilization in field conditions. It serves especially for sterilizing materials for the operating room, the intensive care unit and other medical facilities of the field medical complex.

The space of the sterilizing workplace is divided into an entrance area for storing sterilized material and the sterilized space itself with an autoclave and the devices needed for continuing the sterilizing cycle.

¬ Medical Module - Disinfection

The medical module – Disinfection (MM – Disinfection) is intended for the decontamination and disinfection of clothing and accoutrements in field hospitals by means of hot air. This part of the hospital base equipment complies with the requirements for health services on the level of the NATO member state armies.

¬ Sanitary Cabin for Patients

The medical module – Sanitary cabin for patients (MM – Sanitary cabin) is designed for carrying out patient hygiene in field conditions. This part of the hospital base equipment complies with the requirements for health services on the level of the NATO member state armies.

MHJ Mobile Hospitalizing Unit

The MHJ is intended for isolation and quarantine precautions and for the treatment of 26 contagiously diseased patients in field conditions. It has two detached special isolation wards with 13 sickbeds. In both wards, there is also an intensive care sickbed.

LV-PN Pharmacy - Dispensary for Pharmaceuticals and Medical Stores in an ISO 1C Container

The LV-PN pharmacy-dispensary for pharmaceuticals container allows the preparation of the basic kinds of individually prepared pharmaceuticals, pharmaceutical controls within the range of the routine medical controls, and determination of the identity, content, and stocking of controlled pharmaceutical materials and laboratory chemicals, including narcotics. The Interior of the LV-PN contains a distribution post for picking up pharmaceuticals and medicaments, and it is secured with a roller shutter and a metal lockable bar. It also contains dispensary boxes for stocking medicaments and work counters for administrative operations and pharmaceuticals preparation.

Mobile Surgical Team Workplace

The medical module – mobile surgical team workplace (MM – Mob. Sur. Team) is intended for providing urgently needed care in field conditions as a surgical workplace/anesthetic / resuscitation unit. This part of the hospital base equipment complies with the requirements for health services on the level of the NATO member state armies.

PHEL-2 Mobile Hygienic-Epidemiological Laboratory

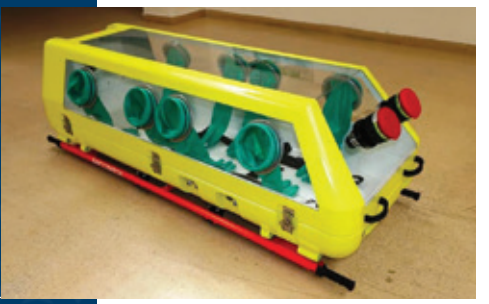
The Mobile Hygienic-Epidemiological Laboratory is intended for conducting basic laboratory examinations to ensure hygienic and anti-epidemiological conditions for the troops in field conditions, including veterinary examinations It enables the accurate laboratory determination of the properties of food, water, external ambient samples and biological materials . Such matter, if contaminated and coming into contact with personnel in field conditions, would negatively affect their health and fighting capabilities. It also enables sample examinations to determine the extent of contamination by biological substances.

THE PHEL-2 SET CONSISTS OF:

- TATRA 815 4×4 chassis;
- ISO 1D box bodywork with container fixtures;
- Two-axle PANAV trailer with a built-in 16 kW generating set and hermetic area for material transport;
- Inflatable tent for a preparatory workplace with a connection to the rear wall of the box bodywork;
- Basic climate-control technology to ensure the safety of the set when passing through a contaminated area and the internal climate of the workplace (FVZ filtering and ventilating device, independent heating and air conditioning).

BIOBOX – M1 Transport Box

The BIOBOX Transport Box is intended for the isolation and transport of patients suspected of carrying highly infectious viral diseases of all known types, posing a significant biological risk for all other persons, environments and equipment. The box consists of two fixed fibreglass parts, mutually connected by quick-acting fasteners. The transported person's position can be fixed by a 6-point seat belt. The transported person can be accessed through an opening in the upper part of the box. The openings are equipped with four pairs of nitride gloves. | **Tab. 45, p. 122**



❭ POP-3 Mobile Medical Unit

The POP-3 mobile medical unit with ballistic protection is designed for usage in the framework of the Czech Army medical services. The POP-3 is intended to provide lifesaving first aid and to carry out small surgical interventions at the locations of tactical units, field hospital assemblies and garrison infirmaries. The POP-3 allows passage through contaminated areas and operations in deployment locations within temperatures ranging from -32°C to +49°C. The POP-3 is independent of an external power source, but it may be connected to an external electrical source 3×230/400V/50Hz, 32A/5p with any touch voltage protection.

MEDICAL OPERATIONS ARE GENERALLY AIMED AT:

- Surgical operations;
- Non-surgical treatment;

THE POP-3 SET CONSISTS OF:

- T 815-7, 6×6 Tatra cross-country vehicle with ballistic protected cabin;
- Special container body with ballistic protection, and medical equipment;
- Dual-axle trailer with a hermetic space for transporting of material and for emergency resting of the operators;
- Main independent source of electric energy-power generator EC 16 kW;
- Backup independent source of electric energy-power generator EC 10 kW;
- Climate-control equipment enabling passage through a contaminated area and ensuring the safety of the inner microclimate of the workplace (filtration and ventilation unit, independent heating and air conditioning);
- Overpressure tent with equipment sufficient for preparing wounded persons for medical treatment (preparatory unit).

11 AVIATION

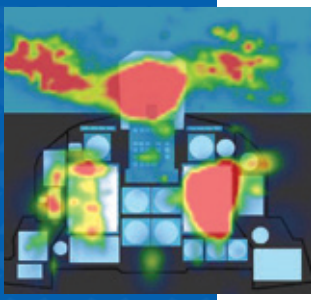
PRODUCTS

AVIATION

- Human Factors in Aviation
- Artificial Intelligence Based Systems
- VLIS Modernization and Certification of the Military Aviation Information Service Workplace
- Miss Tractor VTU Air Target Imitator

COMMUNICATION SYSTEMS

- VKV Position Signaling
- BASA III. L Set Aircraft Ground Facility
- Equipment Installation in Air Traffic Control Towers of Czech Army Bases
- VCS3020X Integration of Voice Communication System



Human Factors in Aviation

Human factors in aviation conduct analyses and evaluations of the degree of human responses in stressful situations and the application of this knowledge to the decision-making process when controlling complex systems.

IT IS USED FOR:

- Analysis of heart rate changes;
- Measurement of eye and voice activity;
- Subjective evaluation, by the instructor, of the success of the activity performed;
- Self-assessment using a software application created in collaboration with psychologists.

It performs an analysis of physiological reactions and human eye activity using a mobile "eye-tracking" camera. So, it uses commercially available equipment from the retail environment to test and measure ergonomics.

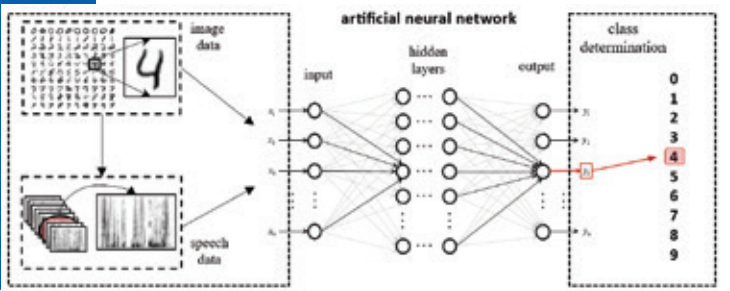
OUTPUTS FROM "EYE-TRACKING":

- Heat map (attention map);
- Focus map (display of places the respondent viewed);
- Scan Path (depiction of the course of saccades and vision fixation);
- Gridedd AOI s (statistical map according to a selected parameter).

Artifical Intelligence Based Systems

Artificial intelligence (AI) is a concept that includes several scientific disciplines. In general, it is the ability of a system to mimic human abilities such as thinking, learning, creativity, and more.

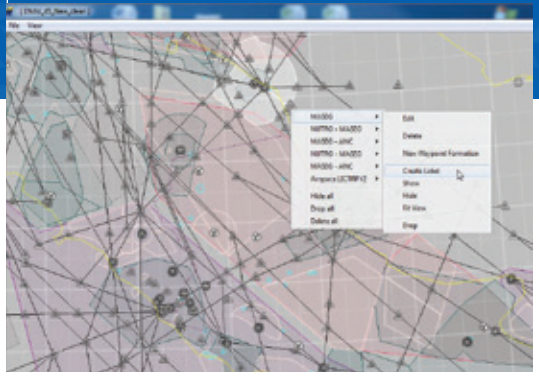
AI is also used in a project that focuses on extracting information from speech across different spectra of human activity. In cooperation with the Army of the Czech Republic, long-term experimental research focused on the quality of training processes in highly exposed professions, such as fighter and helicopter pilots, is being conducted. A simple analysis of pilots' speech can be highly likely to detect stress and the stress factor. The use of artificial intelligence has made it possible to objectify the individual assessment of each pilot's emotional load and to create a simple classification model that detects increased levels of stress.



Classification of audiovisual data using AI

VLIS Modernization and Certification of the Military Aviation Information Service Workplace

The workplace of the Military Aviation Information Service (VLIS) is able to collect and distribute updated information necessary for the air traffic controlled by the Czech Air Force. The change procedure service will run on a single SW platform, from the submission of a proposal for change, e.g. by the airport, through the approval of the change, to the change itself and electronic and paper form distribution to all concerned authorities. The software will be newly introduced for updating flight procedures for which two Czech Air Force professionals were trained within the project. In addition, VLIS prints and distributes large-format aerial maps and must have close cooperation with its civilian counterpart. The Military Technical Institute supplies the entire system with the help of its subcontractors.



Miss Tractor VTU Air Target Imitator

The air target imitator was developed and is manufactured at the Military Technical Institute as a means for real fire training by anti-aircraft operators. It consists of a light unmanned aircraft, capable of fully autonomous flight according to a preprogrammed flightpath, which tows a 50 m long rope and textile sleeve with a diameter of 0.6 m and a length of 5 m. The sleeve simulates the fuselage of an aircraft in the L-39 category. Firing is directed into the sleeve from a distance of about 3,000 m. An aircraft towing a sleeve can reach a speed of 110 km/h and can fly for about 30 minutes. Takeoff and landing can be done from a grass field directly in military training areas.

VKV Position Signaling

This system provides optical and audible marking of the moment of overflight of the VKV position marker (part of the ILS system) during the descent phase of the final approach to runway. These are beacons outside the airport in the extended axis of the runway, part of the stations of the OM, MM position radio beacons. The system of VKV position markers installed on airbases of the Czech Air Force are NORMARC NM 7050D types, and it meets the requirements of L10 / I (ANNEX10) and has been used since 2016.

BASA III. L Set Aircraft Ground Facility

The BASA III. L Set – a mobile air traffic control-centre was developed and delivered to the Armed Forces of the Czech Republic in 2010. This modular facility can be used together with DSQOC or separately – depending on the mission. It allows a helicopter to operate on grass airfields and to control helicopter operations at a distance of 30 km (tested up to 70 km UHF). The lighting equipment ensures safe helicopter approaches both during the day and at night It also uses NVG from a distance of 10 km under standard weather conditions. The system can be operated with a “secret” classification level.

Equipment Installation in Air Traffic Control Towers of Czech Army Bases

The Department of Aviation Technology provides for the development, implementation, and systems integration of a newly integrated air traffic management in an environment of military and civil air traffic control and management.

An integrated air traffic control environment enables deeper interaction between military and civilian air traffic control and a new level of responsibility and cooperation of both components in air traffic management of the airspace.

THE DEPARTMENT OF AVIATION TECHNOLOGY OFFERS THE FOLLOWING SERVICES:

- Project and pre-project activities for the preparing the modernization of the air traffic control customer;
- Preparation of existing air traffic control technologies at airports and managing the workplace for transitioning to an integrated air traffic control environment;
- Modification of the operating environment and its design and optimisation;
- Custom development and modification of technologies for integration between systems of different technological levels;
- Testing and certification of technologies and their implementation into practical operation.

VCS3020X Integration of Voice Communication System

The Frequentis VCS3020X telephone and radio voice communication system provides the workstations in ATC facilities the communication means necessary for air traffic control and air traffic management.

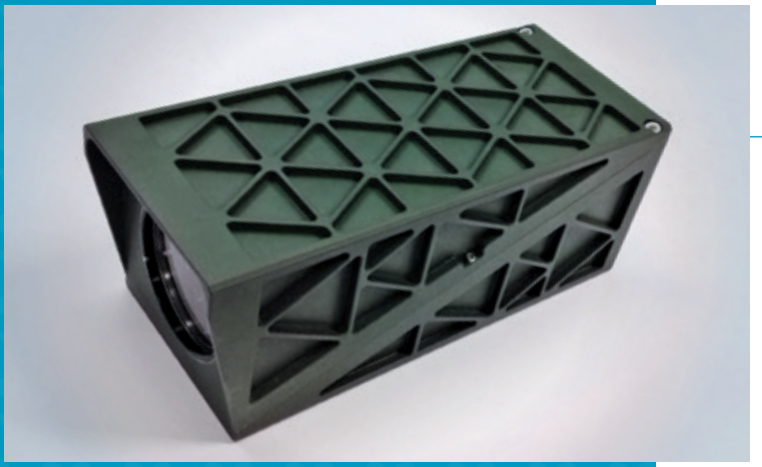
The following services are offered as part of a Frequentis VCS3020X system integration:

- Project and pre-project activities in preparing the system installation;
- Removal of the former communication system;
- Preparation of workstations for installation of the VCS3020X system;
- Reconstruction of the connection infrastructure;
- Installation of the system, including modifying installation locations;
- Systems integration, testing, and certification;
- Training of operators and technicians.

12 DAY AND NIGHT VISION

PRODUCTS

- PUMA FHD 2 TV Camera
- RYS FHD TV Camera
- FALCON TV Camera
- LEMUR-2/200 TV Camera
- SPIRIT-140 INFRARED (Thermal Imaging) Camera
- SPIRIT 25-150 INFRARED (Thermal Imaging) Camera
- SPIRIT 25-225 INFRARED (Thermal Imaging) Camera
- IPoS1 Integrated Surveillance Subsystem

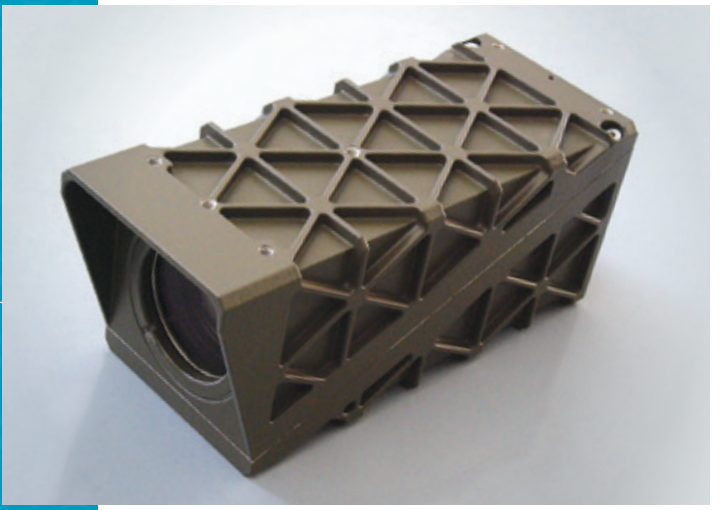


PUMA FHD 2 TV camera

The PUMA FHD is a colour/monochromatic Day&Night TV camera featuring a rugged design to ensure high mechanical resistance against shocks and vibrations. Therefore, it is most suited for installation to weapon systems as a surveillance camera or to mounted weapons as a sighting camera. The PUMA FHD operates during daytime and at nighttime. | **Tab. 46, p. 122**

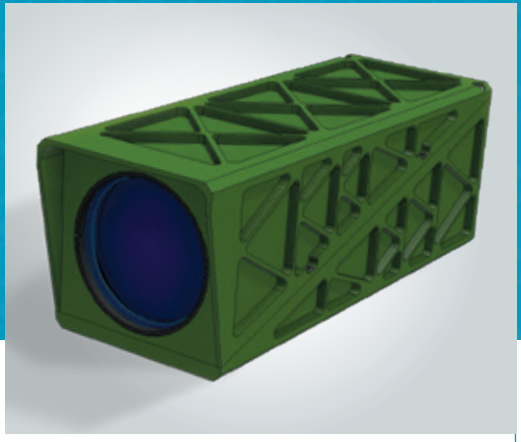
RYS FHD TV camera

The RYS FHD is a colour/monochromatic Day&Night TV camera designed for installation to stationary and mobile reconnaissance systems where impact load caused by fire from mounted weapons is not expected. Therefore, it is suited for both near and especially long-range optical reconnaissance during daytime and at nighttime. | **Tab. 47, p. 123**



FALCON TV camera

The FALCON family of monochromatic TV cameras (latest types FALCON-2 and FALCON-3) feature a rugged design to ensure high mechanical resistance against shocks and vibrations. Therefore, it is most suited for installation to mobile reconnaissance and weapon systems as a sighting camera for mounted weapons and narrow beam laser rangefinders. The camera is equipped with an image module featuring high resolution capability and increased light sensitivity. Custom-tailored cameras can be delivered with 135 mm, 200 mm or 400 mm focal distance lens. | **Tab. 48, p. 123** | **Tab. 49, p. 124**



LEMUR-2/200 TV camera

The LEMUR-2/200 monochromatic SWIR camera is designed for twilight and night terrain reconnaissance and target detection and acquisition. The module can **provide visualisation of the designator laser beam** in band according to STANAG 3733. The LEMUR-2/200 integrates a camera module operable within a spectral area ranging from 0.9 to 1.7 μm and a lens featuring a 200 mm fixed focal distance. | **Tab. 50, p. 124**

SPIRIT-140 INFRARED (Thermal Imaging) Camera

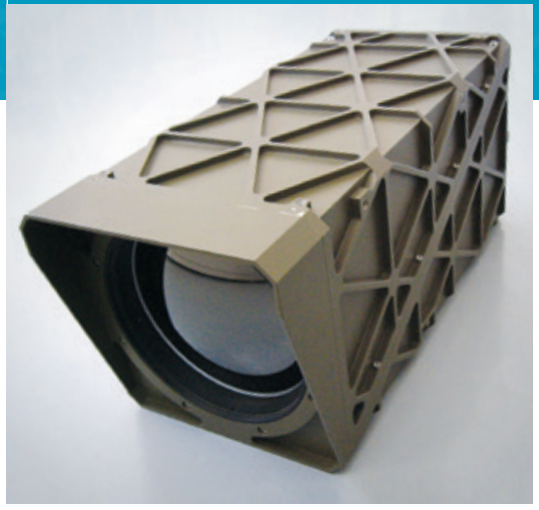
The SPIRIT-140 IR camera module is designed for terrain reconnaissance and target detection and acquisition at night and to increase the detection range of camouflaged objects during the day. The camera module is fitted with an uncooled FPA detector, XGA resolution and fixed focal distance. This camera features a rugged design to ensure high mechanical resistance against shocks and vibrations. The SPIRIT-140 is suited for installation to weapon systems as a surveillance, or eventually as a sighting, camera module. | **Tab. 51, p. 125**

SPIRIT 25-150 INFRARED (Thermal Imaging) Camera

The SPIRIT 25-150 is an IR camera module designed for installation to stationary and mobile reconnaissance systems where impact load caused by fire is not expected. Therefore, it is suited for both near and especially long-range optical reconnaissance at night and to increase the detection range of camouflaged objects during the day. The camera module is fitted with an uncooled microbolometric FPA detector featuring XGA resolution, lens with 6× continuous optical zoom and multiple digital zoom settings. | **Tab. 52, p. 125**

SPIRIT 25-225 INFRARED (Thermal Imaging) Camera

The SPIRIT 25-225 IR camera module is designed for installation to stationary and mobile reconnaissance systems where impact load caused by fire is not expected. Therefore, it is suited for both near and long-range optical reconnaissance at night and to increase the detection range of camouflaged objects during the day. The camera module is fitted with an uncooled microbolometric FPA detector featuring XGA resolution, lens with 9x continuous optical zoom settings and multiple digital zoom. | **Tab. 53, p. 126**



IPoS1 Integrated Surveillance Subsystem

The IPoS1 integrates six colour camera modules providing 360° surveillance. These modules together with the central electronic unit are symmetrically located in a single sensor head casing. Each camera module features 3.19 MPix resolution and horizontal FOV 65°. The system ensures on-line 360° surveillance of terrain around the post during the day and at nighttime. | **Tab. 54, p. 126**

13 SPECIAL CAR INSTALLATIONS

PRODUCTS

- Bibliobus OSCAR
- Command and Staff Mobile Workplace of the Police of the Czech Republic (PCR)

Bibliobus OSCAR

Based on a contract concluded between the Municipal Library in Prague and the Military Technical Institute a mobile library based on the Fiat Ducato minibus was developed and manufactured. It is a vehicle that can be driven by a librarian with a driver's license for a personal vehicle. Up to 500 individual books can be carried in the mobile library, and it also serves as a book rental point in places where access to a bus-sized mobile library is impossible (courtyards of retirement homes, school groups, etc.). It also serves as an mobile educational centre. For this purpose, the vehicle includes internal and external sound systems, an internet-connected computer, and an outdoor image projector.

Command and Staff Mobile Workplace of the Police of the Czech Republic (PCR)

The mobile workplace was established based on a specification prepared by the PCR. It allows personnel to manage the operations of riot police units in field conditions. It is equipped with computer technology, radio communication, and special software that allows the coordination of activities during an intervention and the effective use of forces. The workplace is built on a Mercedes Benz Sprinter off-road chassis. It is a workplace for up to 6 staff members. It is energy independent and allows a wireless connection to the internal police network and the Internet.

14 TESTING LABORATORIES

PRODUCTS

- Electromagnetic Compatibility Testing Laboratory
- Electrical Safety Testing Laboratory
- Special Systems and Fuel & Lubricants Testing Laboratory
- Vehicle Testing Laboratory
- Diving Equipment Testing Laboratory
- Tribodiagnostic Testing Laboratory
- Special Measurement Testing Laboratory
- Testing Laboratory for Small Arms & Ammunition, Ballistic Resistant Materials and Ammunition Packages
- Bzenec Firing Range
- Testing Laboratory of Rescue Equipment and Parachute Technology


IVECO

Electromagnetic Compatibility Testing Laboratory

Notified body No 2452.

EU type-examination certification covering electromagnetic compatibility, personal protective equipment and marine equipment.

The EMC Testing Laboratory was founded in 1993, and it is a leading workplace fully comparable with highly advanced foreign laboratories. It provides both accredited and non-accredited testing in the EMC area (interference – EMI and susceptibility – EMS) for the needs of the Czech Army and also the civil sector.

The EMC Testing Laboratory consists of several workplaces:

- Electromagnetic Interference (EMI)
- Electromagnetic Susceptibility (EMS)
- Equipment technical testing laboratory; (automotive pulses, EHK 48, AKB, auto-electrics, lighting, etc.)
- Workplace of power electromagnetic pulses UWB, NEMP
- Climatic laboratory

Climatic Chambers

This workplace is part of the EMC Testing Laboratory. It is used to perform accredited and non-accredited tests to determine the ability of components, equipment and other items to be used, transported and stored under certain climatic conditions.

Environmental testing:

- Cold
- Dry heat
- Humid heat (cyclic / constant)
- Temperature and humidity

Corrosion tests in artificial atmospheres:

- Salt spray test (cyclic / constant)

Test in a controlled environment:

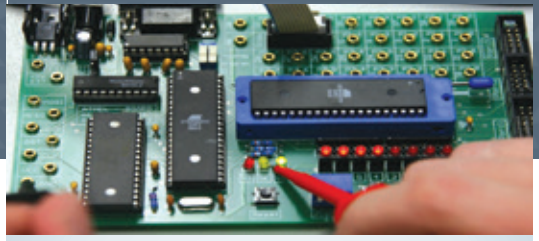
- Low / high air pressure

Simulation of storage effects, ageing

| Tab. 55, 56, 57, p. 127 | Tab. 58, p. 128

Electrical Safety Testing Laboratory

The testing laboratory is focused on performing electrical safety tests on low voltage electrical equipment. Also, it is used to conduct a verification of power parameters and output electricity parameters on electrical source sets. | **Tab. 59, 60, p. 128**



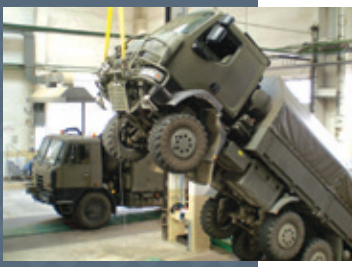
PERFORMS TESTS ON:

- Audio/video equipment, information and communication technology (EN 62368-1 and EN 60950-1)
- Automatic controls for household and similar purposes (EN 60730)
- Electrical measuring, control and laboratory equipment (EN 61010-1)
- Low voltage switchboards (EN 61439)
- Charging stations for electric vehicles (EN 61851)
- Electrical equipment of machines (EN 60204)
- Transformers, power supplies and similar products (EN 61558)
- Luminaires and control devices (EN 60598, EN 61347)
- Household appliances including gaming and amusement machines (EN 60335)
- Railway equipment (EN 50155)
- Measuring relays and protection devices (EN 60255)
- Boxes and complete covers (EN 60670)
- Degree of protection by the cover (protection IP code) up to degree IP68 (EN 60529) – IPX8 up to a depth of 60m
- Degree of protection by the cover (IK code) against mechanical impacts (EN 50102, EN 62262)
- Source sets

Special Systems and Fuel & Lubricants Testing Laboratory

The testing laboratory performs assessment, verification and testing of special systems and related operational parameters of military equipment and material, including:

- FTIR spectroscopy
- Analysis of engine, transmission and hydraulic oil samples
- Stable anti-combustion devices built into military technology
- Combat vehicle information system of mobile military equipment
- Communication system of mobile military equipment
- Diagnostic system for mobile military equipment
- Lifecycle costs of military ground equipment
- Technical and operational documentation
- Technical conditions of military equipment
- VTM maintenance and repair
- Means for the maintenance of military equipment
- Military equipment cataloguing | **Tab. 61, 62, 63, p. 129**



Vehicle Testing Laboratory

The workplace is focused on:

- Measurement of weight, dimensions, and the centre of gravity of wheeled and tracked vehicles
- Static lateral stability tests
- Static and dynamic tests of the parameters of vehicles
- Special tests (transportability, swim ability, reliability, maintainability, reparability)
- Approval testing of the technical competence of military vehicles in cooperation with the Military Police
- Approval testing of the technical competence of military vessels
- Brake tests

The testing laboratory acts as the national authority to the extent of:

- STANAG 4357 – Testing of military vehicles
- STANAG 4358 – Mutual acknowledgement of state tests and vehicle evaluation

Diving Equipment Testing Laboratory

The workplace performs tests to assess the conformity of the personal protective equipment:

- Open-circuit diving breathing apparatus
- Lifesaving flotation devices with internal buoyancy material
- Diving buoyancy compensators
- Wet and dry diving suits

The testing laboratory also offers:

- Inspection of compressed air breathing apparatus with open circuit
- Filling pressure vessels with air/with pure air
- Simulated descents of divers to a depth of 60 m in the dry and wet parts of the HS-60 hydraulic simulator (with the possibility of video recording)
- Free descents of divers to a depth of 7 m in the diving tower
- Testing of the resistance of devices and equipment against pressure up to 0.6 MPa in the air and water | **Tab. 64, 65, p. 129**

Tribodiagnostic Testing Laboratory

The workplace is focused on the indirect diagnostics of the main friction nodes of aircraft technology through the analysis of oil samples or filter inserts. Routine diagnostics are performed by an analysis of metal abrasion (atomic emission spectroscopy, ferrography, optical microscopy) or an analysis of lubricants (viscosity, TAN, flash point, determination of water content, determination of the amount of mechanical impurities). In addition to routine analyses, the laboratory also participates in specialised analyses in the investigation of air accidents and analyses of atypical contaminants of operating materials and analyses of samples from unknown sources. For non-standard analyses, the laboratory uses its experience with the infrared spectroscopy of lubricants. It also owns internal and commercial libraries of spectra and a Nikolet 380 FTIR spectrometer modified with various ATR attachments.

Special Measurement Testing Laboratory

The testing laboratory is focused on:

- Temperature, pressure, noise and acoustic power measurements
- Force, trajectory and acceleration measurements
- Strain gauge accelerations
- Mechanical resistance, strength and reliability testing
- Protective equipment testing
- Seismic proficiency testing
- Measurement of physical quantities
- Aircraft propeller testing

3D Stand for Seismic Tests

Thanks to putting the three-axial seismic hydrodynamic stand into operation, a unique workplace at the top of its class in Europe is available in the Czech Republic. This workplace is able to secure a large extent of services in the unique workplace of mechanical resistance, vibration ageing and tests of seismic qualification under significantly improved conditions. The device can be used not only in the energy industry (especially the nuclear industry) but also in many other areas, e.g. testing for the automotive and tractor industries, the building industry, military forces, etc. | **Tab. 66, p. 129**

Testing Laboratory for Small Arms & Ammunition, Ballistic Resistant Materials and Ammunition Packages

Certified testing laboratory N°1128

- Small-calibre ammunition testing
- Ballistic resistance
- Protective material
- EPVAT for small-calibre ammo
- Checking service life of explosive materials in rockets and missiles and other types of ammo
- Testing of ammunition containers

National Authority (STANAG 4170, 4297)

Bzenec Firing Range

- Max danger zone 1600×400 m, firing range up to 800 m for direct fire and 850 m for indirect fire
- Various fire posts, small-arms testing range
- Static tests, other special tests of explosives and ammunition
- Trials with customer weapons based on contractual relationships

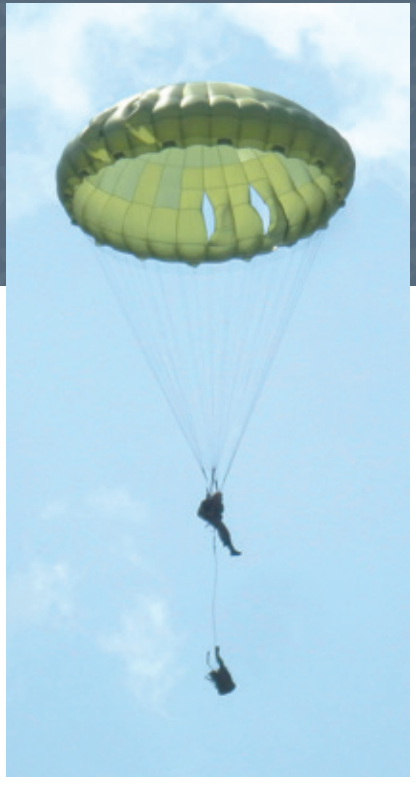
Testing Laboratory of Rescue Equipment and Parachute Technology

The ZL 1220 testing laboratory of rescue equipment and parachute technology is accredited by the Czech Institute for Accreditation, and the testing laboratory of rescue parachutes with ÚCL authorization performs tests to ensure compliance with AS 8015, CS ETSO c23, etc. and ČOS 167002, ČOS 167003 standards.

The testing laboratory performs:

- Tests and other tasks to technically assist the Army of the Czech Republic
- Jumps or drop tests of manikins according to the requirements of parachute manufacturers
- Parachute packaging, tests for fire brigades, revision of manuals, parachute packaging manuals, consulting and expertise on the basis of the order
- Training of professional competence in parachute technology

The testing laboratory is equipped with modern devices and jigs and uses standardised procedures when performing the test. During all performed tests, the presence of the client is allowed upon agreement.

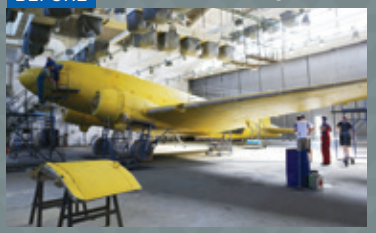


15 RENOVATION OF HISTORICAL EXHIBITS

PRODUCTS

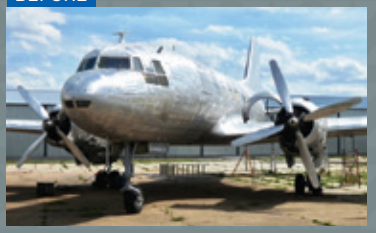
- Aircraft
- Schovel Towing Stairs
- German Freya Radar
- ZUBR Prototype

BEFORE Douglas DC-3



AFTER

BEFORE Il-14, OK-MCI



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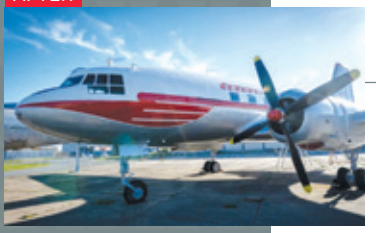


BEFORE MiG-15

AFTER

Aircraft

The Military Technical Institute of the Air Force and Air Defence has been regularly carrying out exhibition preparations of aircraft for the Military Historical Institute in Prague. Some examples include the renovation of the Avia Av-14-32A twin-engine transport aircraft (Ilyushin Il-14), Me-262, Jak 17, MiG-15bis, B-5, Douglas DC-3 and IL-18.

Me-262

Bohemia B-5

Schovel Towing Stairs

The Military Technical Institute is carrying out reconstruction of the „Schovel“ Towing Staircase, intended for use with large transport aircraft. It also belongs to the collection of the Military Historical Institute in Prague for exhibition purposes.

BEFORE

AFTER

BEFORE

AFTER

German Freya Radar

In the Military Technical Institute, the German Freya radar from the collection of the Military Historical Institute in Prague is being renovated for exhibition purposes.

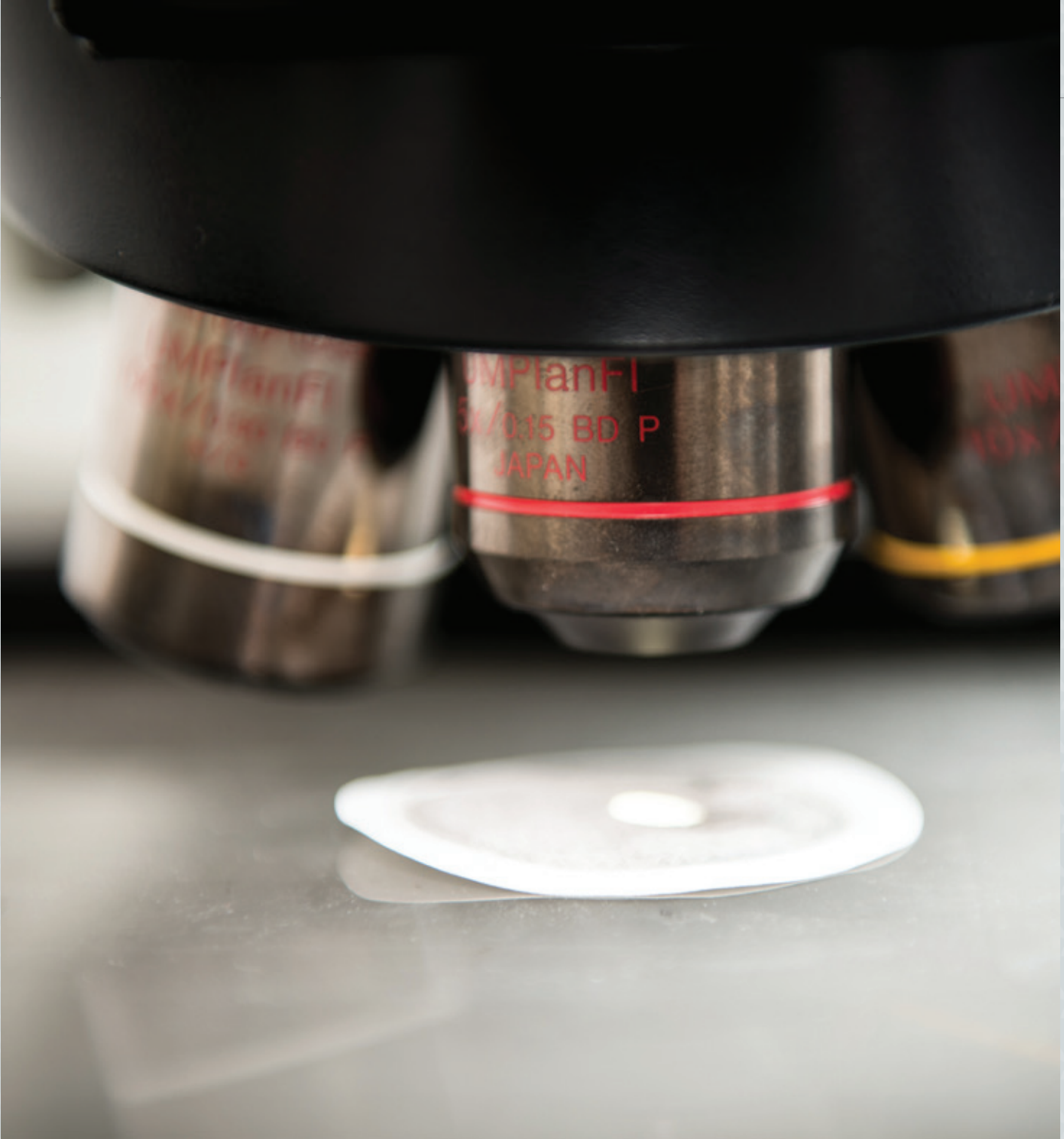
ZUBR Prototype

The Military Technical Institute has renovated a prototype of ZUBR the Czech wheeled armoured personnel carrier from the collection of the Military Historical Institute in Prague. It has been renovated for exhibition purposes.

BEFORE

AFTER

TECHNICAL AND TACTICAL DATA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JAPAN

1 | WEAPONS AND WEAPON SYSTEMS

Tab. 1 | ANTOS 60 mm Ultralight Commando Mortar	
Mortar assemblies	Barrel
	Base plate
	Breech ring with safety and striking mechanism
	Handgrip with trigger mechanism
	Liquid sight
	Carrier belt
	Muzzle cap
Calibre (acc. to STANAG NATO)	60.7 mm
Weapon length	905 mm
Barrel length	650 mm
Total weight of the weapon	4.9 – 5.3 kg per configuration
Elevation	45° - 85°
Minimum range (+21°C, 85°, primary charge 0)	80 m
Maximum range (+21°C, 45°, full charge 1)	1,230 m
Maximum operating pressure	18 MPa
Firing mode	by gravity
	by trigger
Operating temperatures	-30 °C to +60 °C

Tab. 2 | ANTOS-LR 60 mm Long-Range Mortar	
Mortar assemblies	Barrel with muzzle matrix
	Breech ring
	Baseplate with loops for carrying
	Bipod
	Sight with case
Calibre (acc. to STANAG NATO):	60.7 mm
Barrel length	1 000 mm
Total weight including sight	<15.9 kg
Aiming angles in traverse, no change of bipod position	+/-6°
Elevation	40° – 85°
Minimum range with 60 mm HEI, HEF mortar bombs (+21°C, 85°, primary charge 0)	102 m
Maximum range with 60 mm HEI, HEF mortar bombs (+21°C, 45°, full charge 3)	3,098 m
Minimum range with 60 mm HEI-LD mortar bombs (+21°C, 85°, primary charge 0)	125 m
Maximum range with 60 mm HEI-LD mortar bombs (+21°C, 45°, full charge 4)	3 578 m
Maximum operating pressure	54 MPa
Firing mode	by gravity
Operating temperatures	-30 °C to +60 °C

Tab. 3 | ZSRD 08 Weapon Station	
Combat weight	External mount NSVT (incl. MG with ammo) – 255 kg
	External mount AGS-17 (incl. MG with ammo) – 231 kg
	81 mm SGL (incl. SG DGO-3) – 30.5 kg
	Operator's station – 19.5 kg
Weapon system	12.7 mm NSVT (NSWT) machine gun
	12.7 mm WKM-B machine gun
	30 mm AGS-17 smoke grenade launcher
Ammo at armed position	NSVT machine gun – 200 rounds
	AGS-17 smoke grenade launcher – 40 SG or optionally 80 SG
Range of aimed fire	MG NSVT – 2,000 m
	AGS-17 – 1,700 m
Stabilization	In both axes, RMS up to 1.5 mrad
SGL	Derived type 81 mm VZ-902
Number of SGL	6 SGL
Ammunition (type SG)	81 mm DGO-3
SG camouflage	min. 30 s
Laser detection	360° - optional
Sensors	1× surveillance TV camera, colour CCD, 36× zoom
	1× aiming TV camera, monochromatic CCD, focus 75 mm
	1× IR, uncooled
	1× laser rangefinder - optional
Integrated operator's workstation	15,6" display, resolution 1,920×1,080
	CPU architecture×64
	Control panel with 2 joysticks
Range of elevation	-15° to + 70°
Range of traverse	n×360°
Operating temperature	-32°C to + 44°C
Storage temperature	-33°C to + 63°C

Tab. 4 | ZSRD 07 Weapon Station	
Combat weight	External mount (incl. MG with ammo) – 186 kg
	81 mm SGL (incl. SG DGO-3) – 30.5 kg
	Operator's station – 19.5 kg
Basic dimensions (with MG)	1130×624×1046 mm (l×h×w)
Weapon system	7.62 mm PKT MG for 7.62×54R round
	7.62 mm UKM-2000C MG for 7.62×51 NATO round
	7.62 mm FN MAG MG for 7.62×51 NATO round
Ammo at armed position	Ammo container for 500 rounds
Range of aimed fire	maximum 1,200 m
Stabilization	In both axes, RMS up to 1.5 mrad
SGL	Derived type 81 mm VZ-902
Number of SGL	6 SGL
Ammunition (type SG)	81 mm DGO-3
Smoke screen period	min. 30 s
SG camouflage	Wavelengths ranging between 0.4 and 14 μm
Laser detection	360° – optional
Sensors	1×surveillance TV camera, colour CCD, 36×zoom
	1×aiming TV camera, monochromatic CCD, focus 75 mm
	1×IR, uncooled
	1×laser rangefinder - optional
Integrated operator's workstation	15.6" display, resolution 1920×1080 p
	CPU architecture x64
	Control panel with 2 joysticks
Range of elevation	-15° to + 70°
Range of traverse	n×360°
Operating temperature	-32 °C to + 44 °C
Storage temperature	-33 °C to + 63 °C

2 | AMMUNITION

Tab. 5 | 12.7×99 mm Ammunition			
	AP	**AP (HC)**	**BALL**
Origin of projectile	own	own	own
Initial velocity	860 m/s	925 m/s	885 m/s
Weight of projectile	43 g	42 g	47 g
Accuracy	up to 4.0 MOA	up to 1.5 MOA	up to 2.0 MOA
Armour penetration at a distance of 1,000 m	22 mm	25 mm	–

Tab. 6 | 12.7×107 mm Ammunition					
	AP	**AP (HC)**	**BALL**	**MP/MP-T**	**AP-S**
Origin of projectile	own	own	own	NAMMO (Norway)	NAMMO (Norway)
Initial velocity	860 m/s	925 m/s	885/820 m/s	925 m/s[1]	885 m/s
Weight of projectile	43 g	42 g	47 g	43/44 g	47 g
Accuracy	3.0 – 5.0 MOA	2.0 – 2.5 MOA	2.0 – 4.0 MOA	2.0 – 4.0 MOA	2.0 – 4.0 MOA
Armour penetration at a distance of 1,000 m	22 mm	25 mm	–	18 mm	30 mm

3 | RECONNAISSANCE AND MONITORING SYSTEMS

Tab. 7 | UGV-Pz Unmanned Ground Vehicle - Reconnaissance variant		
TAROS 6×6 Unmanned platform	Max speed (road/off-road)	≤ 20 km/h
	Max speed (terrain)	≤ 15 km/h
	Range (road)	≥ 20 km
	Climbing ability	30°/ 30°
	Total dimensions (radar in transport position)	2.4×1.7×2.3 m
Special-purpose superstructure	Ground surveillance radar	SQUIRE
	Range of sensor head pan&tilt motion in azimuth	n×360°
	Range of sensor head pan&tilt motion in elevation	-25°/+65°
	Day surveillance TV camera – wide FOV	59.0°×46.0°
	Day surveillance TV camera – narrow FOV	2.2°×1.6°
	Aiming TV camera – FOV	2.5°×1.9°
	Spectral region – cooled IR camera	8 – 14 µm
	IR camera – wide FOV	35.0°×27.0°
	IR camera – narrow FOV	4.4°×3.3°
	LRF – range of measurement	80 to 20,000 m
	Range of laser pointer	15 km
Communication system	Long-range communication between UGV and GCS	3 to 5 km
UGV weight	Combat weight of UGV-Pz	1,870 kg

Tab. 8 | LOV-Pz Light Armoured Artillery Reconnaissance Vehicle		
Dimensions	Length	5,045 mm
	Width	2,450 mm
	Height	2,830 mm
Weight	Total weight	7,100 kg
Weapon	7.62 FN MAG machinegun	1 pc
	Emergency ammo	500 pc
	Carried ammo	1,500 pc
Power supply assembly	Battery type Li-pol	240 Ah
External communication subsystem	RF-7800UL-V250 Wideband Vehicular Amplifier Adapter	1 pc
	Harris AN-PRC-117G Multiband Networking Manpack Radio	2 pc
	SATCOM	1 pc
Internal communication subsystem	VICM 200 assembly	5 pc
Navigation subsystem	DAGR AN/PSN-13A GPS receiver	1 pc
	TALIN 3000 inertial navigation unit	1 pc
Optical sensors target range, type TANK	Day camera detection	up to 12.2 km
	Day camera reconnaissance	up to 7.7 km
	Day camera identification	up to 4.2 km
	IR camera detection	up to 7.7 km
	IR camera reconnaissance	up to 4.6 km
	IR camera identification	up to 3.1 km
	Laser rangefinder range	up to 20 km
SNPz Alternative Reconnaissance Kit	Leica Vector 21 Nite	1 pc
	STERNA V	1 pc
	Getac K120 data terminal	1 pc
	DAGR AN/PSN-13A GPS receiver	1 pc
	Tripod	1 pc
	TL 98 S UV VZ 95 VTUVM Backpack	2 pc

Tab. 9 | IVECO LOV-ISR Light Armoured Multipurpose Vehicle		
BAA II Surveillance and Reconnaissance System	Mast lifting height	1,320 mm
	Pan&Tilt in azimuth	n×360°
	Pan&Tilt in elevation	-30°/+70°
	CCD TV camera – wide FOV	17.5°×13.1°
	CCD TV camera – mild FOV	8°×6°
	CCD TV camera – narrow FOV	2°×1,5°
	CCD TV camera – super narrow FOV	1.25°×0.95°
	Cooled IR camera – spectral area	3 µm – 5 µm
	IR camera – Wide FOV	16°×12.8°
	IR camera – Mild FOV	8°×6.4°
	IR camera – Narrow FOV	2°×1.6°
	IR camera – Super Narrow FOV	1°×0.8°
	Image fusion FOV	14.6°×11.7°
	Laser rangefinder – range of measurement	50 to 20,000 m
	Laser rangefinder – wavelength	1,572 nm
	Range of laser rangefinder	5.3 km
	Range of laser illuminator	2 km
Power System	Add-on Li-pol accumulator batteries	240 Ah
External Communication System	Harris RF-117 G radio station	1 unit
	MPU-5 radio station	1 unit
	SATCOM	1 unit
Internal Communication System	VICM 200 system	4 units
Navigation System	DAGR AN/PSN-13A GPS receiver	1 unit
	TALIN 2000 INU	1 unit
Jammers	STARLIGHT 3-M1	1 unit
Detection Systems	GSD Fire Detection System	1 unit
	SDIO Laser Warning System	1 unit
UAV Video Receiver	Rover 6i	1 unit

Tab. 10 | MMSB 01 Mobile Monitoring System in a Box

Roof Autobox

Dimensions (l, w, h)	1470×960×420 mm
Weight (total, excl. crossbars)	70 kg
Sensor unit retraction/extension time	35 s
Height of sensor unit extension above autobox	50 cm

Day TV camera

Image sensor	colour CMOS
Image size	1920×1080 p
Zoom optical / digital	30× / 12×
FOV	59.3°×46.0° to 2.2°×1.6°
Focus	automatic
Rated static range to target type PERSON (1.8 m×0.5 m) – narrow FOV, 20 km meteorological visibility, 30% contrast of target against background, 50% resolution probability:	
Detection / recognition / identification	6.5 km / 3.0 km / 2.0 km

Thermal camera

Detector	uncooled VOx microbolometer
Detector resolution	640×512 (17 m)
Spectral band	8 to 14 m
Optical zoom	continuous
FOV	24.5°×18.5° to 4.2°×3.1°
Rated static range to target type PERSON (1.8 m×0.5 m) – narrow FOV:	
Detection / recognition / identification	4.0 km / 1.5 km / 0.8 km

Operator's terminal (laptop)

Display	17.3" LCD, touchscreen
Resolution	1920 (W)×1080 (H) p

Direction positioner

Range of azimuth / elevation	n×360° / -30° to +30°

Tab. 11 | Short Range Warning System

OPTO1 optical system

Detection	10,500 / 10,100 / 500 m
Recognition	5,200 / 4,500 / 500 m
Identification	2,800 / 2,500 / 500 m

OPTO2 optical system

Detection	860 / 250 m
Recognition	280 / 100 m
Identification	140 / 50 m

Tab. 12 | SOM Security and Monitoring System		
Type	SOM 1	integration to LR 110 vehicle
	SOM 2	integration to LR 130 vehicle
	SOM 3	integration to T815 4×4 vehicle
	SOM 5	portable system
Control HW	Central console	display, keyboard, positioner
		DVR recorder
		GPS
		radio transceiver
		user SW
	Operator's terminal	rugged PC integrated into the body user SW
Sensors	Sensor unit	colour TV camera
		monochromatic TV camera
		IR camera
		laser rangefinder
		GPS
	Near Range Surveillance Warning System	PIR sensors
		IR barrier
	Short Range Surveillance Warning System	PTZ camera
		blocs of monochromatic TV cameras
		IR reflector
Transmission	Cables	metallic
		optical
	Wireless	analogue
		digital
Power pack	Accumulator battery	gel, Li-pol
	Power generator	compression ignition engine

Tab. 13 | BRUS Unmanned Aerial Universal System

Characteristics	BRUS	BRUS H
Diameter	120 cm	
Height	50 cm	
Propeller (ø)	28"	30"
Number of propellers	6 pieces	
Construction	C-F composite	
Power unit	BLDC electric motors, 6×	
MTOW	12 kg	25 kg
Maximum load capacity	3 kg	8 kg
Maximum speed	60 km/h	70 km/h
Maximum endurance	75 min	90 min
Standard endurance	50 min (depending on load, wind and battery)	
Wind resistance	<10 m/s	<12 m/s
Additional property	Dust, snow and rain resistant system	

Tab. 14 | LOS-M Artillery Reconnaissance Assembly

Dimensions	Length	6,735 mm
	Width	2,940 mm
	Height	2,068 mm
Weight	Total weight	13,000 kg
External communication subsystem	Harris RF7800M-HH handheld radio transceiver	1 unit
	RF 1325 vehicular radio transceiver	1 unit
	AN PRC 117G compatible vehicular radio transceiver	1 unit
Navigation subsystem	DAGR AN/PSN-13A GPS receiver	1 unit
	TALIN 3000 inertial navigation unit	1 unit
Optical sensors target range, type TANK	Day camera detection	up to 13 km
	Day camera reconnaissance	up to 5 km
	Day camera identification	up to 2.5 km
	IR camera detection	up to 9 km
	IR camera reconnaissance	up to 3 km
	IR camera identification	up to 2 km
	Laser rangefinder range	up to 20 km
SNPz Alternative Reconnaissance Kit	Leica Vector 21 Nite	1 unit
	GonioLight V or STERNA V	1 unit
	IX104C5DMSR data terminal	1 unit
	DAGR AN/PSN-13A GPS receiver	1 unit
	Tripod	1 unit
	TL 98 S UV VZ 95 VTUVM Backpack	1 unit

Tab. 15 | Reconnaissance System for PANDUR II Vehicle		
Typical ranges of the integrated recce system	Detection of target type MBT according to STANAG 4347 from a vehicle in stationary position, at meteorological visibility of min 10 km, target contrast against background 30%, target temperature contrast against background 2.0 K and 50% probability:	
	Detection (day/night)	8,000 m / 7,000 m and greater
	Target recognition (conduct of fire day/night)	4,000 m / 3,000 m and greater
	Identification (day/night)	2,500 m / 2,000 m and greater
Typical radar ranges	Personnel detection	4,000 m and greater
	MBT detection	10,000 m and greater (16,000 m)
Typical ranges of the remote portable reconnaissance system	Detection of target type MBT according to STANAG 4347 from a vehicle in stationary position, at meteorological visibility of min 10 km, target contrast against background 30%, target temperature contrast against background 2.0 K and 50% probability:	
	Daytime detection	4,000 m and greater
	Night-time detection (STANAG 4347)	2,000 m and greater

Tab. 16 | STERNA-V Portable Assembly for Artillery Observer		
STERNA TNF + VECTOR 21 Nite	Horizontal sensor range	6,400 mil, unlimited
	Vertical sensor range	+700 to -700 mil
	Laser rangefinder safety class	1
	Laser range	5,500 m (target – TANK)
	Orientation accuracy	< 5 mil 0° 65° lat NS
	Accuracy, horizontal angle	(1s) ± 1 mil
	Accuracy, vertical angle	(1s) ± 3 mil
	Fast/accurate north finding	96s/120s
	Power supply	4× CR123A or external battery
Data terminal	Type	Getac K120
	Processor	Intel Core i7
	Touchscreen	TFT (1920×1080 p)
	SSD disk	512 GB
	Operating system	Windows 10 Professional
GPS receiver	Type	DAGR AN/PSN-13A
External battery	Type	BT-70791BK
	Model	Li-ION
	Voltage	28,8 V
	Capacity	7.5 Ah

Tab. 17 | SNĚŽKA-M Artillery Reconnaissance Assembly		
Dimensions	Length	7,485 mm
	Width	3,150 mm
	Height	3,700 mm
	Combat height	15,090 mm
Weight	Total weight	17,000 kg
External communication subsystem	Harris RF7800M-HH handheld radio transceiver	1 pc
	RF 1325 vehicular radio transceiver	1 pc
	Harris RF7800M-MP vehicular radio transceiver	1 pc
Navigation sub-system	DAGR AN/PSN-13A GPS receiver	1 pc
	TALIN 4000 inertial navigation unit	1 pc
Optical sensors target range, type TANK	Day camera detection	up to 18 km
	Day camera reconnaissance	up to 10 km
	Day camera identification	up to 6 km
	IR camera detection	up to 14 km
	IR camera reconnaissance	up to 8 km
	IR camera identification	up to 5 km
	Laser rangefinder detection	up to 20 km
Radar unit	Type – Squire	1 pc
	Range	up to 48 km
SNPz Alternative Reconnaissance Kit	Leica Vector 21 Nite	1 pc
	GonioLight V or STERNA V	1 pc
	IX104C5DMSR data terminal	1 pc
	DAGR AN/PSN-13A GPS receiver	1 pc
	Tripod	1 pc
	TL 98 S UV VZ 95 VTUVM Backpack	1 pc

Tab. 18 | Dual-Axis Mechanical Manipulator (DMM)	
Azimuth range of motion	n × 360°
Elevation range of motion	± 90
Azimuth and elevation speed	0.03 °/s to 360 °/s
Acceleration for azimuth and elevation	> 10 rad/s^2
Accuracy	< 0.1 mrad
Load capacity	max. 20 kg

Tab. 19 | KPCO Container Workstation of Central Protection		
Command and control workstation	Ballistic resistant container	external length max. 6,130 mm
		external width max. 2,505 mm
		external height max. 2,625 mm
		weight max. 12,000 kg
Sensors	Sensor unit	colour TV camera
		monochromatic TV camera
		infrared camera
		laser rangefinder
		GPS
	Close range warning system	PIR sensors
		IR barriers
	Short range warning system	PTZ camera
		monochromatic TV cameras blocks
		IR reflector
	Medium range warning system	colour TV camera
		radar
	Set of close range warning sensors	IP cameras
		PTZ cameras
	RSS	passive IR barriers
		dual detectors - combination of infrapassive and microwave detection
		detection cables – pressure and vibrations
Transmission	Cables	metallic
		optical
	Wireless	digital
Power supply	Storage battery cells	gel, Li-pol
	Electric central unit	CI engine

4 | MAST TECHNOLOGY

Tab. 20 | AN-25 Mobile Mast	
Total length in transport position	6,058 mm
Total width in transport position	2,438 mm
Total height in transport position	2,250 mm
Total weight	7,500 kg
Max. height of the mast (to the heel of the superstructure)	25 m
Weight of the superstructure (antennas)	300 kg
Area of the superstructure (antennas)	2 m^2
Wind speed – functional	35 m/s
Wind speed – survival	40 m/s
Torsion of the mast on the heel of antenna unit	±0.75°
Mast tilt angle on the heel of the antenna unit	±1.5°
Operating temperatures	-32 °C to +50 °C
Operating personnel	2÷3 persons
Time of deployment	45 min.
Climatic resistance for all climatic zones	–
Electric motive system, mechanical back-up system	–
Cableways by multi-cable to the cable drum	–

Tab. 21 | AN-17 Mobile Mast

RESISTENCE AGAINST WIND IMPACT AT MAXIMUM HEIGHT IN OPERATING POSITION:

Functional	up to 30 m/s (108 km/h)
Non-functional	up to 40 m/s (144 km/h)
Operating temperatures	-32 °C to +44 °C

DIMENSIONS AND WEIGHT OF AN-17 IN TRANSPORT POSITION:

Total length	8,545 mm
Total width	2,545 mm
Total height	2,930 mm
Total weight	8,500 kg

MAXIMUM HEIGHT:

In operating position	cca 17 m (up to the antenna unit flange)
In starting position	cca 6.8 m
Mast load capacity	350 kg
Loading active area	cca 2 m^2
Mast torsion at point of antenna unit manipulator	max. ± 0.75°
Mast tilt angle at point of antenna unit manipulator	max. ± 1.5°
Slope angle for deployment	max. 7°
Time for deployment	max. 1 h
Operating personnel	3 persons

TRANSPORT SPEED:

On the road	80 km/h
Off road	18 km/h

Tab. 22 | AN-12 Mobile Mast	
Total length in transport position	6,000 mm
Total width in transport position	2,000 mm
Total height in transport position	2,200 mm
Total weight	3,500 kg
Max. height of the mast (to heel of the superstructure)	12 m
Weight of the superstructure (antennas)	200 kg
Area of the superstructure (antennas)	1 m^2
Wind speed – functional	25 m/s
Wind speed – survival	30 m/s
Torsion of the mast on the heel of antenna unit	±0.75°
Mast tilt angle on the heel of antenna unit	±1.5°
Operating personnel	2 persons
Time of deployment	30 min.
Climatic resistance for all climatic zones	–
Electric motive system, hand cranked mechanical back-up system	–
Cableways by multi-cable to the cable drum	–

Tab. 23 | AN-12 UMG Mobile Mast	
Total length in transport position	6,304 mm
Total width in transport position	2,510 mm
Total height in transport position	2,746 mm
Total weight	8,500 kg
Max. height of the mast (to heel of the superstructure)	12.28 m
Weight of the superstructure (antennas)	200 kg
Area of the superstructure (antennas)	1 m^2
Wind speed – functional	30 m/s
Wind speed – survival	35 m/s
Torsion of the mast on the heel of antenna unit	±0.75°
Mast tilt angle on the heel of antenna unit	±1.5°
Operating personnel	2 persons
Time of deployment	30 min.
Climatic resistance for all climatic zones	–
Electric motive system, backing-up mechanically by crank	–
Cableways by multi-cable to the cable drum	–

5 | FILTRATION AND VENTILATION UNITS

Tab. 24 | FVZ-98M (NG)	
Dimensions	530×780×540 mm
Weight without filters	59 kg
Nominal air flow	100 m^3/h
Maximum air flow (KFM-200)	200 m^3/h
Positive air pressure (protected area)	300 Pa
Rated voltage	24 V DC
Ambient temperature (operating)	-32 °C to +50 °C

Tab. 25 | FVZ-98M (KP)		
Dimensions	400×610×892 mm	Electromagnetic radiation: ČOS 599902:2007, 2nd edition (MILSTD 461E:1999) RE 102, CE 102.
Nominal air supply	100 m^3/h	
Air overpressure in the crew compartment	300 Pa ± 10 %	
Nominal voltage/current	24 V DC/7A	Electromagnetic resistance: ČOS 599902:2007, 2nd edition (MILSTD 461E:1999), methods RS103, CS101, CS114, CS115, CS116; AECTP- 500: 2000, method 511.
Operating temperatures	-32 °C to +44 °C	
Weight without filters	max. 54 kg	

Tab. 26 | FVZ-98M (T)	
Dimensions	650×550×470 mm
Rated air supply	100 m^3/h / 300 Pa
Rated voltage/current	24 V DC/7A
Maximum starting current	18 A
Operating temperatures	-32 °C to +44 °C
Weight without filters	40 kg

Tab. 27 | KLIMABOX - S Microclimate Securing system	
Dimensions	1,000×610×892 mm
Nominal air supply	200 m^3/h
Air overpressure in the crew compartment	300 Pa ± 10 %
Nominal voltage/current	24 V DC/7A
Operating temperatures	-32 °C to +50 °C
Weight	85 kg

6 | SPECIAL WORKPLACES AND PRODUCTS

Tab. 28 | BLESK Mobile Brigade - type Hydrometeorological Station

SCAM VEHICLE TECHNICAL PARAMETERS:

Technical data	SCAM SMT55.3,5 MIL
Engine power, kW	92
Engine power, kW (MIL option)	122
Engine stroke volume, cm^3	2,800
Fuel consumption, l/100 km -city	17.5
off road	20.5
motor way	13.3
combination	17.1
Seating places	3
External dimensions, mm – length/wide/height	5,560 / 1,998 / 2,420
Clear height, mm	300
Total weight/effective weight, kg	5,500 / 2,950
Maximum load of front/rear axle	2,450 / 3,700
Axle base, mm	3,550
Wheel track front/rear, mm	1,700 / 1,700
Tyre dimensions (all-year design)	255 / 100 R 16

ONE-AXLE TRAILER TECHNICAL PARAMETERS:

Type marking		PM 35MiU SCII
Dimensions	length	4,870 mm
	width	2,360 mm
	max. height	2,535 mm
Weights	service	3,000 kg
	curb	1,750 kg
	effective	1,250 kg

Tab. 29 | POKA-4 Mobile Field Kitchen	
Chassis type	TATRA T 815 26WR45 17.255 4×4.1/T13
Vehicle external dimensions (l×w×h)	8,350×2,500×3,420 mm
Weight (operational)	14,000 kg
Trailer type	PV 18P
Trailer external dimensions (l×w×h)	8,450×2,520×3,360 mm
Trailer weight (operational)	11,000 kg
Electric source	own EC 16 kW, Č-EDM 16-T400/230-2V-C type
Crew	3 persons
Capacity	50 to 150 meals, 3×a day (For a single mealtime, up to 250 simple meals)
Fuel (basic)	diesel oil (F-54)
Operating temperatures	-32 °C to +44 °C

Tab. 30 | ZZ-EC 4kW Lifting Device	
Outside dimensions (l×w×h)	1,065×630×840 mm
Lift	1,800 mm
Weight of the lifting device	75 kg ± 1 %
Weight of the device with the hinged EC	225 kg ± 2 %
Loading limit of the device	200 kg
Main cable:	
Diameter	5 mm
Length	5 m

OPERATING CONDITIONS:

Outside temperature	-30 °C to +44 °C
Relative humidity	to 90% at +30 °C

Tab. 31 | AM-70 Bridging Vehicle	
Operating temperatures	-32 °C to +44 °C
Length	12,500 mm
Width	3,350 mm
Height	3,530 mm
Weight	33,700 kg
Maximum speed	85 km/h
Climbability	30°
Static roll	25°
Overhang angle in front (vehicle with the breast)	15°
Overhang angle in the rear	18°
Fordability	750 mm
Max. permissible gradient of AM70 in bridge construction	10°
Max. permissible crossfall of the AM70 in bridge construction	5°

7 | WORKSHOP VEHICLES AND SERVICE WORKPLACES

Tab. 32 | T815-7-D 8×8 Workshop Vehicle

OPERATION IN CLIMATIC ZONES a1, a2, a3, b1, b2, b3, c0 AND c1 ACCORDING TO STANAG 2895:

Ambient air temperature	from -32 °c to +44 °c
Ambient temperature – storability	from -33 °c to 55 °c
Relative air humidity	up to 78% at +28 °c
Vehicle dimensions (l×w×h)	10 720×2 550×3 150 mm
Maximum speed	105 km/h (speed limiter 85 km/h)
Ability to overcome obstacles	600 mm
Ability to cross an obstacle	2,100 mm
Wading depth	1,200 mm – shallow ford
	1,500 mm – deep ford
Total weight of the vehicle	38,000 kg
Maximum permissible weight of the trailer	18,000 kg
Crew	4 persons

Tab. 33 | R T815-7-D 8×8 Recovery Vehicle

Vehicle dimensions (l×w×h)	11,915×2,550×3,850 mm
Maximum speed	105 km/h (85 km/h with speed limiter)
Climbing ability	vertical step 450 mm
Crossing ability	trench width 2,000 mm
Fording capability	1,200 mm shallow ford, 1,500 mm deep ford
Gross vehicle weight	38,000 kg
Gross combination weight	57,000 kg
Crew	4 people

Tab. 34 | MOP Mobile Repair Workplace in an Aircraft Hangar for Repairing Aircraft Components	
Operating temperatures	-20 °C to +45 °C
Inner width of the hall	23.2 m
Inner length of the hall	35.3 m
Inner height of the hall	9.1 m
Side clearance	5 m
Wind resistance	40 m/s
Snow resistance	1,500 N/m^2

Tab. 35 | MPZD Mobile Workplace for Woodworking	
BASIC COMPOSITION:	
TATRA 815 8×8 UNK vehicle chassis	
ISO 1C container in the MPZD variant	
Fischer Panda 14,000 NE PVK-U generating set	
Independent oil heating	
Dimensions (l×w×h)	9,325 mm×2,500 mm×3,990 mm
Max. total weight inclusive of the accessory	38,000 kg
Max. weight of the fully equipped container	9,500 kg
Max. speed on the road	85 km/h
Max. speed off-road	40 km/h
Operational temperatures	-30 °C to +49 °C

Tab. 36 | PSP Field Service Workplace Complex	
Area for deployment	50×50 m
Hall length	30 m
Hall width	16 m
Hall height	7.26 m
Entry and departure port	4.5×4.5 m
Workshop length	6.06 m
Workshop width	2.43 m
Workshop height	2.44 m
PSP input power	40.5 kW
Snow resistance	1,500 N/m^2

8 | SOURCES OF ELECTRICITY AND SOURCE SYSTEMS

Tab. 37 | Č-EDM 4-T400/230-2V TYPE 4 kW Power Generating Set		
Driving engine type	four-stroke, diesel, air-cooled	
	HATZ 1B40	
Electric rotating machine	synchronous alternator	
Voltage system	three-phase	single-phase
Rated output (COP ČSN ISO 8528-1)	5 kVA	5 kVA
Rated voltage	3×230/400 V, 50 Hz	1×230 V, 50 Hz
Rated current	7.2 A	21.7 A
DC voltage	28.5 V (ss)	
DC output	300 W	
Generating set protection according to the EN 60 529	IP 23	
Starting action	manual or electric	
Fuel consumption	1.7 l/h	
Fuel tank capacity	5 l	
Dimensions (l×w×h)	810×485×660 mm	
Weight of generating set with fuel	150 kg ± 10 %	
Operating conditions	–30 °C to +44 °C	
	altitude up to 1,000 m	
	relative humidity up to 98 % at 25 °C	

Tab. 38 | Č-EDM 16-T400/230-2V TYPE 16 kW Generating Set

TRANSPORTABLE VARIANT:

Rated output power	20 kVA
Rated voltage, frequency	3×230/400 V, 50 Hz
Motor	DEUTZ, compression ignition, four-stroke
Fuel consumption (NM 35) at the rated power	5.1 l/h
Dimensions (l×w×h)	1,700×900×1 200 mm
Weight (without accessories)	960 kg

MOBILE VARIANT:

External dimensions (l×w×h, d inclusive tow)	4,620×2,300×2,165 mm
Total weight (inclusive of the EC accessories)	2,640 kg
Service brake	overrunning
Maximum permitted speed on the road	80 km/h
Chassis voltage system	24 V

Tab. 39 | 20 kVA LR Power Supply and Distribution Set

LAND ROVER DEFENDER 130:

Motor	compression ignition, supercharged, 5 cylinders
Stroke volume	2,498 cm^3
Maximum power	90.0 kW at 4,200 min^{-1}
Fuel consumption	12.7 l/100 km
Dimensions (l×w×h)	5,130×1,930×2,330 mm
Total weight	3,500 kg
Generating set type	Č-EDM 16-T400/230-2V
Rated voltage, frequency	3×230/400 V, 50 Hz
Motor EC	compression ignition, supercharged, 4 cylinders, air cooling
Fuel consumption at the rated power	5 l/h
Fuel tank capacity	40 l
Alternator	synchronous, brushless
Total length of the distribution set cables	225 m

Tab. 40 | ZRS 60 kW IN ISO-1C CONTAINER 60 kW Power Supply and Distribution Set	
External container dimensions (l×w×h)	6,058×2,438×2,438 mm
Total weight	7,210 kg
Stacking ability (number of containers with a weight of 24,000 kg)	3 layers
Rated output power (COP ČSN ISO 8528–1, art.13.3.1)	75 kVA
Rated voltage, frequency	3×400/230 V, 50 Hz
IP code (in case of closed boxes)	IP 44
Engine type / fuel consumption	DEUTZ BF6 M 1013 E / 18 l/h
Cylinder volume	7,146 cm^3
Starting action	electric
Noise level	75 dB / 7 m

OPERATIONAL CONDITIONS:

Ambient temperature	from -30 °C to +44 °C
Relative humidity	up to 90% at +30 °C
Rain intensity	up to 3 mm per minute, falling under a 30° angle in all directions
Air dustiness	up to 0.5 g/m^3 for at least 1 h
Air flow velocity	up to 20 m/s

Tab. 41 | SEC Energy Center Assembly	
External dimensions (l×w×h)	6,058×2,438×2,438 mm
Gross container weight	9,200 kg

OPERATIONAL CONDITIONS:

Ambient temperature	-32 °C to +55 °C
Relative humidity	up to 90% at +30 °C
Air dust	air dust up to 0.5 g.m^3 (measured at a height of 0.5 m above the ground)
Intensity of atmospheric precipitation	3 mm/min (Incident angle 30° in all directions)

9 | RUGGED HARDWARE COMPONENTS

Tab. 42 | SWITCH - Rugged Network Elements		
Standards	IEEE 802.3 10Base-T	IEEE 802.1w Rapid Spanning Tree
	IEEE 802.3u 1000Base-TX/FX	IEEE 802.1p Priority
	IEEE 802.3ab 1000Base-T	IEEE 802.1q Tag VLAN
	IEEE 802.3z 1000Base-X	IEEE 802.1X Port Based Network Access Control
	IEEE 802.1ad Link aggregation	

Optional properties	IEEE 802.1p Priority	IEEE 802.1q Tag VLAN
	IEEE 802.1w Rapid Reconfiguration of Spanning Tree	IEEE 802.1x Port Based Network
	Acces Control Support	
	SNMP, Web, Telnet and Console management	IGMP fast leave
	IEEE 802.1ag CFM	IGMP Filtering vi Filtering Profile
	IEEE 802.3ad Link Aggregation Control Protocol (LACP)	Multicast channel limitation per port
	Jumbo frame on all ports up to 9,600 bytes size	Multicast VLAN Register (MVR)
	QoS Classification based on IEEE 802.p, VID, TOS/DSCP	DHCP client and provision server
	Ethernet Type and L4 Port	RFC3046 DHCP relay agent with option 82
	DHCP Snooping	FTP, TFTP server and client firmware upgrade
	Provider bridging with multiple VLAN tags (Q-in-Q)	Radius Authentication
	Rate Limit Control	SNMP v1, v2c and network management
	SNMP Time Server	Private RFC-1213, RMON MIBs
	Static Multicasting	Port Mirror
	IGMP Snooping v1, v2	

Ports	4 to 24
Network element	L2 switch, L3 switch, Router
Operating temperature	-32°C to +44°C
Storage temperature	-33°C to +63°C

Tab. 43 | ALL IN ONE PC – Rugged Control Units	
RAM	Up to 8 GB DDR3
LAN	2×10/100/1000 Mbit Ethernet
COM	2×RS232
USB	8×USB 2.0
SSD	250 GB (Standard)
Optional extensions	I/O ports card
	COM ports card
	LAN ports card
	Radio-module
	CAN
Operating systems	Windows XP, Windows 7, Windows 8.1, Windows Embedded Standard 7, Windows Embedded Compact 7, Windows Embedded 8, Linux
Power Supply	12 V to 24 V DC
Operational temperatures	-32 °C to +60 °C
Storage temperatures	-40 °C to +63 °C
Dimensions	488×356×101 mm
Weight	13 kg

Tab. 44 | CONTROL UNIT – NBC Filter Unit Control	
Basic functions	Communication with superior BMIS
	Communication with RAID-XP
	Reading values from pressure, humidity and CO_2 sensors
	Activating NBC unit bypass flap, incl. assessment of bypass flap closing position
	Activating NBC unit engine
	Activating flow line heating electronics for RAID-XP detector incl. ventilator fan
	Diode light indication of operational / alarm status
	Automatic chemical and radiation alerts based on the data collected from RAID-XP detector
Interface	1×Ethernet (BMIS)
	1×USB (service)
	1×RS 485 (humidity sensor)
	1×RS 232 (RAID XP)
	1×A/D input (CO_2 sensor)
	1×A/D input (thermistor)
	1×digital input (ventilator fan speed monitoring)
Power supply	24 V DC
Pressure difference range of measurement	0 to 500 Pa
Flow line to record pressure	ø6 mm
Range of humidity measurement	0 to 100 %
Alarms	chemical, radiation, CO_2
Status indication	LED diodes or LCD display
Resistance	Vibrations and shocks for wheeled and tracked vehicles
Dimensions	270×120×188 mm
Weight	2.2 kg
Operating temperature	-10 °C to +44 °C
Storage temperature	-33 °C to +63 °C

10 | MEDICAL TECHNOLOGY

Tab. 45 | BIOBOX – M1 Transport Box	
Dimensions (l×w×h)	2,000×720×595 mm
Weight	60 kg
Relative humidity	20 to 80% Rh

OPERATIONAL CONDITIONS:	
Carrying capacity	110 kg
Internal underpressure	min. 100 Pa
Air exchange	120 – 235 l/min (6-stage regulation)
FVJ time of oparation	5 h (depend on adjusted air flow)

12 | DAY AND NIGHT VISION

Tab. 46 | PUMA FHD 2 TV Camera	
Image sensor	1/2.8" CMOS
Resolution	1920×1080 p (16:9)
Zoom optical / digital	continuous 30× / 12×
Wide FOV	66.5°×40.6°
Narrow FOV	2.5°×1.4°
Focus	automatic / manual
Spectral area	400 to 1000 nm
Frame frequency	30 fps (1920×1080 p)
Total sensitivity (Wide FOV, 50%, 30 fps)	0.1 lx (colour) / 0.01 lx (mono)
Total sensitivity (Narrow FOV, 50%, 30 fps)	0.5 lx (colour) / 0.1 lx (mono)

Function	IR cut, Defog, High Sensitivity, WDR
Interface	GigE Vision
Power supply	24 V DC
P.T.O.	max 1.0 A
Operating temperatures	-32 °C to +50 °C
Storage temperatures	-33 °C to +63 °C
Dimensions (l×h×w)	220×85×90 mm
Weight	max 1.5 kg
Ranges D / R / I (STANAG 4348)	14.0 / 7.0 / 4.0 km

Tab. 47 | RYS FHD TV Camera

Image sensor	1/2.8" CMOS	**Function**	IR cut, Defog, High Sensitivity, WDR
Resolution	1920×1080 p (16:9)	**Interface**	GigE Vision
Zoom optical / digital	continuous 30× / 12×	**Power supply**	24 V DC
Wide FOV	66.5°×40.6°	**P.T.O.**	max 1.0 A
Narrow FOV	2.5°×1.4°	**Operating temperatures**	-32 to +50 °C
Focus	automatic / manual	**Storage temperatures**	-33 to +63 °C
Spectral area	400 to 1000 nm	**Dimensions (l×h × w)**	190×80×75 mm
Frame frequency	30 fps (1920×1080 p)	**Weight**	max 1.0 kg
Total sensitivity (Wide FOV, 50%, 30 fps)	0.1 lx (colour) / 0.01 lx (mono)	**Ranges D / R / I (STANAG 4348)**	14.0 / 7.0 / 4.0 km
Total sensitivity (Narrow FOV, 50%, 30 fps)	0.5 lx (colour) / 0.1 lx (mono)		

Tab. 48 | FALCON-2 TV Camera

	FALCON-2/135	FALCON-2/200	FALCON-2/400
Image sensor	2/3" CCD	2/3" CCD	1/1.8" CCD
Resolution	1936×1456 p (4:3)		
Frame frequency	max 30 fps (1936×1456 p)		
FOV	3.7°×2.8°	2.5°×1.9°	1.3°×1.0°
Spectral area	400 to 1000 nm		
Total sensitivity (50%, 25 fps)	0.5 lx	0.5 lx	1.5 lx
Focus	manual		
Interface	GigE Vision		
Power supply	12 V DC		
P.T.A.	max 800 mA		
Operating temperatures	-32 °C to +55 °C		
Storage temperatures	-33 °C to +63 °C		
Dimensions (l×h × w)	240×90×85 mm	270×90×85 mm	370×90×90 mm
Weight	max 2.5 kg		
Ranges D / R / I (STANAG 4348)	15.0 / 8.0 / 4.5 km	16.0 / 9.0 / 5.0 km	18.0 / 13.0 / 8.5 km

Tab. 49 | FALCON-3 TV Camera

	FALCON-3/75	FALCON-3/200
Image sensor	2/3" CMOS	
Resolution	2464×2056 p (1.19:1)	
Frame frequency	max 30 fps (2464×2056 p)	
FOV	6.4°×5.4°	2.4°×2.0°
Spectral area	400 to 1000 nm	
Total sensitivity (50%, 25 fps)	0.2 lx	0.5 lx
Focus	manual	
Interface	GigE Vision	
Power supply	24 V DC	
P.T.A.	max 800 mA	
Operating temperatures	-32 °C to +55 °C	
Storage temperatures	-33 °C to +63 °C	
Dimensions (l×h×w)	195×88×80 mm	280×88×80 mm
Weight	max 1.4 kg	max 1.9 kg
Ranges D / R / I (STANAG 4348)	11.5 / 5.0 / 3.0 km	17.0 / 10.0 / 6.5 km

Tab. 50 | LEMUR-2/200 TV Camera

Image sensor	FPA InGaAs
Resolution	640×512 p (4:3)
FOV	3.7°×2.9°
Spectral area	400 to 1700 nm
Frame frequency	30 fps (640×512 p)
Total sensitivity (50%, 25 fps)	0.015 lx
Focus	manual
Interface	GigE Vision
Power supply	24 V DC
P.T.A.	max 1.0 A
Operating temperatures	-32 °C to +50 °C
Storage temperatures	-33 °C to +63 °C
Dimensions (l×h×w)	360×80×75 mm
Weight	max 4.5 kg
Ranges D / R / I (STANAG 4348)	6.5 / 3.0 / 1.7 km

Tab. 51 | SPIRIT-140 INFRARED (Thermal-Imaging) Camera	
Image sensor	FPA ASi (1024×768 p, 17 µm)
Spectral area	7.5 to 14 mm
NETD	50 mK (f1.0)
FOV	7.1°×5.3°
Frame frequency	25 fps (1024×768 p)
Image spectrum	monochromatic / colour
Focus	automatic / manual
Interface	GigE Vision
Power supply	12 V DC
P.T.A.	max 1.0 A
Operating temperatures	-32 °C to +55 °C
Storage temperatures	-33 °C to +63 °C
Dimensions (l×h×w)	⌀130×335 mm
Weight	max 2.5 kg
Ranges D / R / I (STANAG 4348)	7.4 / 3.8 / 2.2 km

Tab. 52 | SPIRIT 25-150 INFRARED (Thermal-Imaging) Camera	
Image sensor	FPA ASi (1024×768 p, 17 µm)
Spectral area	7.5 to 14 mm
NETD	50 mK (f1.0)
Wide FOV	38.4°×29.2°
Narrow FOV	6.6°×5.0°
Frame frequency	25 fps (1024×768 p)
Image spectrum	monochromatic / colour
Focus	manual
Interface	GigE Vision
Power supply	24 V DC
P.T.A.	max 1.0 A
Operating temperatures	-32 °C to +55 °C
Storage temperatures	-33 °C to +63 °C
Dimensions (l×h×w)	390×170×170 mm
Weight	max 8.0 kg
Ranges D / R / I (STANAG 4348)	6.0 / 2.5 / 1.5 km

Tab. 53 | SPIRIT 25-225 INFRARED (Thermal-Imaging) Camera	
Image sensor	FPA ASi (1024×768 p, 17 µm)
Spectral area	7.5 to 14 mm
NETD	50 mK (f1.0)
Wide FOV	38.4°×29.2°
Narrow FOV	4.4°×3.3°
Frame frequency	25 fps (1024×768 p)
Image spectrum	monochromatic / colour
Focus	manual
Interface	GigE Vision
Power supply	24 V DC
P.T.A.	max 2.0 A
Operating temperatures	-32 °C to +55 °C
Storage temperatures	-33 °C to +63 °C
Dimensions (l×h×w)	470×220×220 mm
Weight	max 10.0 kg
Ranges D / R / I (STANAG 4348)	8.5 / 5.5 / 4.0 km

Tab. 54 | IPoS1 Integrated Surveillance Subsystem	
Image sensor	1/1.8" CMOS
Resolution (each camera)	2064×1544 p (4:3)
FOV (each camera)	65.5°×51.5°
Total FOV	360°×51.5°
Total resolution of sensor head	19 MPx
Focus	fixed
Spectral area	400 to 650 nm
Frame frequency	30 fps (2064×1544 p)
Total sensitivity (50%, 30 fps)	0.2 lx
Interface	Ethernet
Power supply	24 V DC
P.T.A.	max 0.8 A
Operating temperatures	-32 °C to +50 °C
Storage temperatures	-33 °C to +63 °C
Dimensions (l×h×w)	228×252×95 mm
Weight	up to 3.5 kg
Ranges D / R / I (STANAG 4348)	0.75 / 0.25 / 0.1 km

14 | TESTING LABORATORIES

Tab. 55 | Vötsch VCS 7150-5 Climatic Chamber	
Internal dimensions (w×h×d)	1,100×940×1,450 mm
Internal volume	1.5 m^3
Load capacity	60 kg
Temperature range	-75 °C to +180 °C
Temperature gradient	5 °C/1 min.
Relative humidity range	10 % to 98 % Rh.
Programmable climate chamber	Yes

Tab. 56 | Heraeus Vötsch VSKZ 07/110 Climatic Chamber	
Internal dimensions (w×h×d)	1,840×2,845×3,000 mm
Internal volume	15.5 m^3
Entrance door (w×h)	1,495×2,695 mm
Load capacity	3,000 kg/m^2
Temperature range	-70 °C to +85 °C
Temperature gradient	3.5 °C/2 min. (Heating)
	2 °C/1 min. (Cooling)
Relative humidity range	20 % to 95 % Rh.
Programmable climate chamber	Yes

Tab. 57 | 200 MHz – 18 GHz Reverbation Chamber	
Reverbation chamber dimensions (l×w×h)	4.84×3.72×3.11 m
Working volume dimension (l×w×h)	2.62×1.64×2.11 m
Frequency range	from 200 MHz to 18 GHz
RC Shielding effectiveness	from 1 to 1,000 MHz - 120 dB
	from 1,000 to 10,000 MHz - 100 dB
	from 10,000 to 18,000 MHz - 80 dB

Tab. 58 | Semi-Anechoic Chamber	
Range of measurement	20 Hz - 40 GHz
External dimensions	18.88×11.68×8.72 m
Internal dimensions	16.80×9.60×7.50 m
Entry gate	5×5 m
Side door	2×1.5 m
Floor carrying capacity	15,000 kg/m^2
Rotating table	diameter 3 m
	carrying capacity 4,000 kg
Car exhaust gases suction	
Water supply/drain	
Compressed air supply	
Filters	three- and single-phase max. current 200 A
LAN and telephone line	
Monitoring TV system	
HF bushings and waveguides	
Shielding area for personnel	4.96×3.04×3.44 m
Shielding area for conducted emissions testing	7.04×4.96×3.44 m

ELECTROMAGNETIC DAMPING:

Magnetic Field	Electric Field
from 10 kHz = 80 dB	10 kHz to 20 GHz = 120 dB
from 100 kHz = 100 dB	20 GHz to 40 GHz = 100 dB

Tab. 59 | 1.2 / 50 µs Pulse Generator	
Wave form	front time 1.2 µs ± 20 %
	tail time 50 µs ± 20 %
Amplitude range 5 kV	± 0.90 ÷ 5.00 kV ± 2%, increment 10 V
Amplitude range 22 kV	± 5.05 ÷ 22.00 kV ± 2%, increment 50 V
Grounded coaxial impedance output	500 or 133 Ω ± 5%
Repetition period	2 to 120 s
Trigger output	5 V

Tab. 60 | Dust Chamber	
Designed for test coverage	IP5X and IP6X (according to IEC 60529)
Vacuum pump	Vacuum indicator on the sample
Flow meter	Flow meter for measuring air flow with dust
Application	Talc according to the stated standards
Circulation	Circulation pump operating in a closed circuit
Heating	Electric heating to ensure the dryness of the dust
Vibration	Vibrators for better settling of dust in the collecting funnel
Socket	230 V internal socket for the operation of live equipment
Dimensions of test specimens	max. 60×60×130 cm
Weight of test specimens	max. 50 kg

Tab. 61 | Nicolet™ iS20 FTIR Spectrometer
Spectral range 4,000 - 400 cm^{-1}
Mid-infrared KBr beamsplitter
OMNIC 9 spectroscopic software
Software Oil Analyzer for OMNIC
Multi-reflective smart ATR attachment with ZnSe crystal tray (with 12 reflections)

Tab. 62 | AES / RDE Spectrometer SPECTROIL M
Simultaneous determination of 24 elements (Al, Ba, B, Ca, Cd, Cr, Cu, Fe, Pb, Mg, Mn, Mo, Ni, P, Sb, Si, Ag, Na, K, Li, Sn, Ti, V and Zn)
CCD optics
Does not require sample preparation
Analysis time for one sample 30 s

Tab. 63 | METTLER-TOLEDO DL25 Automatic Titrator
Compact system for titration analyses
Automatic execution and evaluation of titrations
Possibility to save up to 50 titration methods

Tab. 64 | Diver's Tower
Depth 7 m
Ladder to the bottom of the diving tower
The bottom is equipped with a plastic grate and backlight
Ambient water temperature 20 (± 5) °C

Tab. 65 | HS-60 Hydraulic Simulator
Depth simulation from 2 meters to 60 meters
At the simulated depth, stay underwater or above the surface
Capacity 5 people per descent
Ambient water temperature 20 (± 5) °C

Tab. 66 | 3D Stand for Seismic Tests	
Frequency Range	0.1 – 200 Hz
Maximum Desk Load	10,000 kg
Desk Dimensions	2,000 × 2,000 mm
Degrees of Freedom of the Desk	3
Maximum Power of Cylinders in Axis X, Y, Z	640 kN, 400 kN, 640 kN
The 3D stand is programmable for tests by sinusoidal vibrations, random vibrations, shocks and RRS transformation.	


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INSTITUTE PROFILE

The Military Technical Institute is a state-owned enterprise established by the Ministry of Defense of the Czech Republic on 1 September, 2012. It occupies a significant position in the defence sector mainly due to its high-quality technological base in defence and security research and development, as well as in aviation and air defence, ground forces, and armaments and ammunition.

Its primary capabilities include the implementation of research and development, prototype production, testing and certification, repairs, service and the modernization of armaments and technology, foreign military sales, systems integration, project management, and analysis processing for the Czech Army and other armed security forces and the integrated rescue system.

As part of its industrial and commercial activities, the Military Technical Institute contributes to ensuring the defence and security of the Czech Republic and fulfilling the obligations arising from the state's membership in NATO and the EU.

The Military Technical Institute consists of three branches that specialise in air force and air defence, ground forces, and armament and ammunition:

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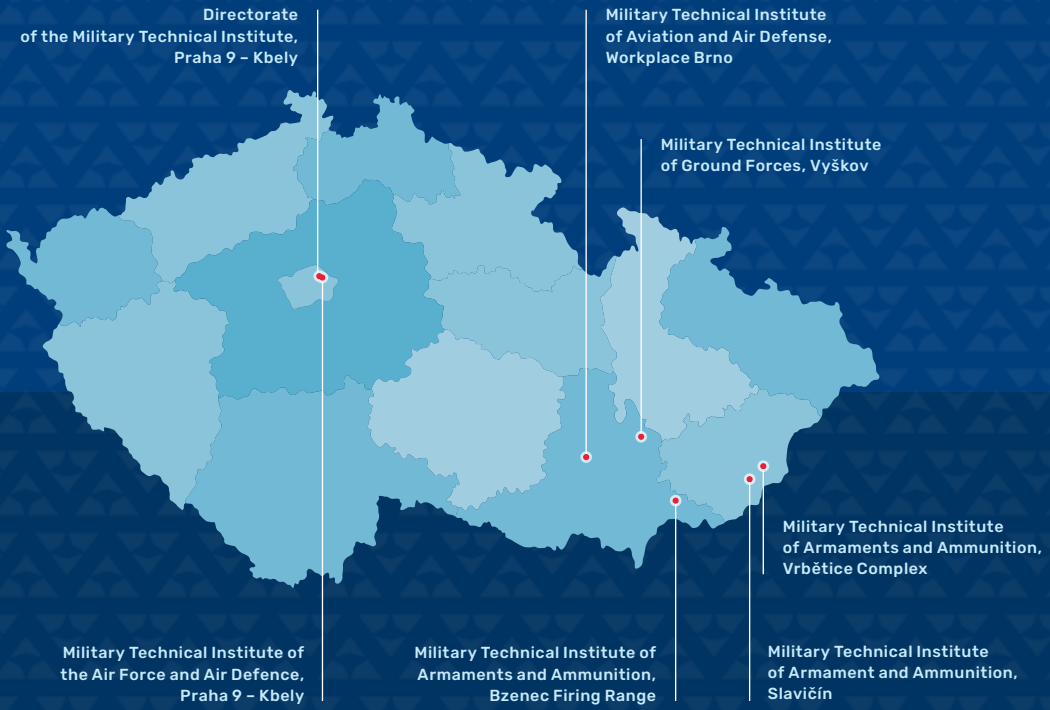

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