

NERO
INDUSTRIES
Advanced Reliability



LIMEV

LASER DETECTION AND SMOKE GRENADE LAUNCHER SOLUTIONS





OUR FACTORIES

NERO Endüstri Savunma Sanayi A.Ş. which operates in United States of America, Bulgaria and Turkey at Ankara headquarters, is one of the largest subsystem manufacturers in Defence Industry in Turkey. Our company which is located on a plot of 12.000 m2 in Anatolia Organized Industrial Zone; has been performing hundred percent domestic design, manufacture and provide system solutions since its foundation in 2009. More than 100 engineers are assigned within its staff of 210 people. Besides, it imports 29 different countries in the world. While our group companies operate in Space Aviation field, Defence Industry, it also comprises one of the largest test centres of Turkey regarding Defence Industry



NERO INDUSTRIES

Advanced Reliability



By combining design, production, monitoring, control and improvement methods conforming to ISO9001 and AS9100 standards with quality engineering and test infrastructure, it successfully competes with its global competitors and accomplishes outstanding projects together with world leaders of the sector.

Nero Industry has started project designing phase of the factory for the project which is worth 1.6 billion TL together with project-based investment incentive support on Presidential decree published in official gazette on 20th April, 2020 in order to establish Turkey's first semiconductor production factory. Turkey's first semiconductor serial production facility which will be established on 300.000 m2 plot, will bring our country to the level where we will be able to compete with semiconductor companies at global level. Nero Industry, together with its high qualified employees will create first investment phase of Turkey in this field with this project.

Within the scope of designed and qualified systems,

ARES - Fire Suppression Systems,

MARS - CBRN Detection and Filtration Systems,

ARMA - Power Systems,

UMAY - Laser Detection/Warning and Smoke Grenade Launcher Systems are included.

29

NERO INDUSTRY SYSTEMS IMPORT TO 29 COUNTRIES

- Germany
- Israel
- Ukraine
- Brasil
- USA
- Azerbaijan
- Bahrain
- China
- Indonesia
- Koweit
- Malaysia
- Oman
- Pakistan
- Katar
- Singapore
- France
- Spain
- England
- Peru
- Suadi Arabia
- Turkmenistan
- United Arab Emirates
- Canada
- India
- Thailand
- Kazakistan
- Latvia
- Esthonia
- Lithuania

UMAY LASER WARNING AND SMOKE GRENADE SYSTEM

Laser warning systems are the systems used for detecting laser guided threats, classifying these threats and taking precautions against these threats on military vehicles or sea platforms. The systems consist of laser warning sensors, control units and smoke grenade launcher systems.

On these systems, when laser threats at NATO Stanag 3733 standard, mark the platform used with a laser or target it with laser, the systems analyse incidence angle, incidence direction of laser and the class laser belongs to within maximum 500 milliseconds, and after this analysis the system launches smoke grenade by smoke grenade launchers and creating a smoke fog gets away from the laser threat.

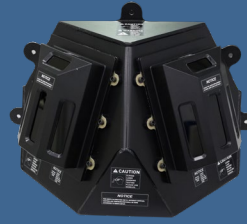
These systems can make detection on 4 different bands including band I, band II, band III and band IV.



LASER WARNING SYSTEMS SENSORS



Page-8
LW1000-Laser Sensor System

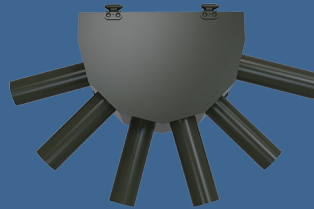


Page-9
LW2000-Laser Sensor System

SMOKE GRENADE SYSTEMS (76-40MM)



Page-15
GL76 Smoke Grenade System



Page-16
NU-40SGLS Smoke Grenade System

LASER SYSTEMS CONTROL UNITS



Page-16
SGS-3 Control Unit



Page-13
LWS-2 Control Unit

SMOKE GRENADE CONTROL UNITS



Page-19
DC-6 Control Unit



Page-20
DC-4 Control Unit



Page-21
DC-8 Control Unit

LASER WARNING SYSTEM GENERAL SPECIFICATIONS

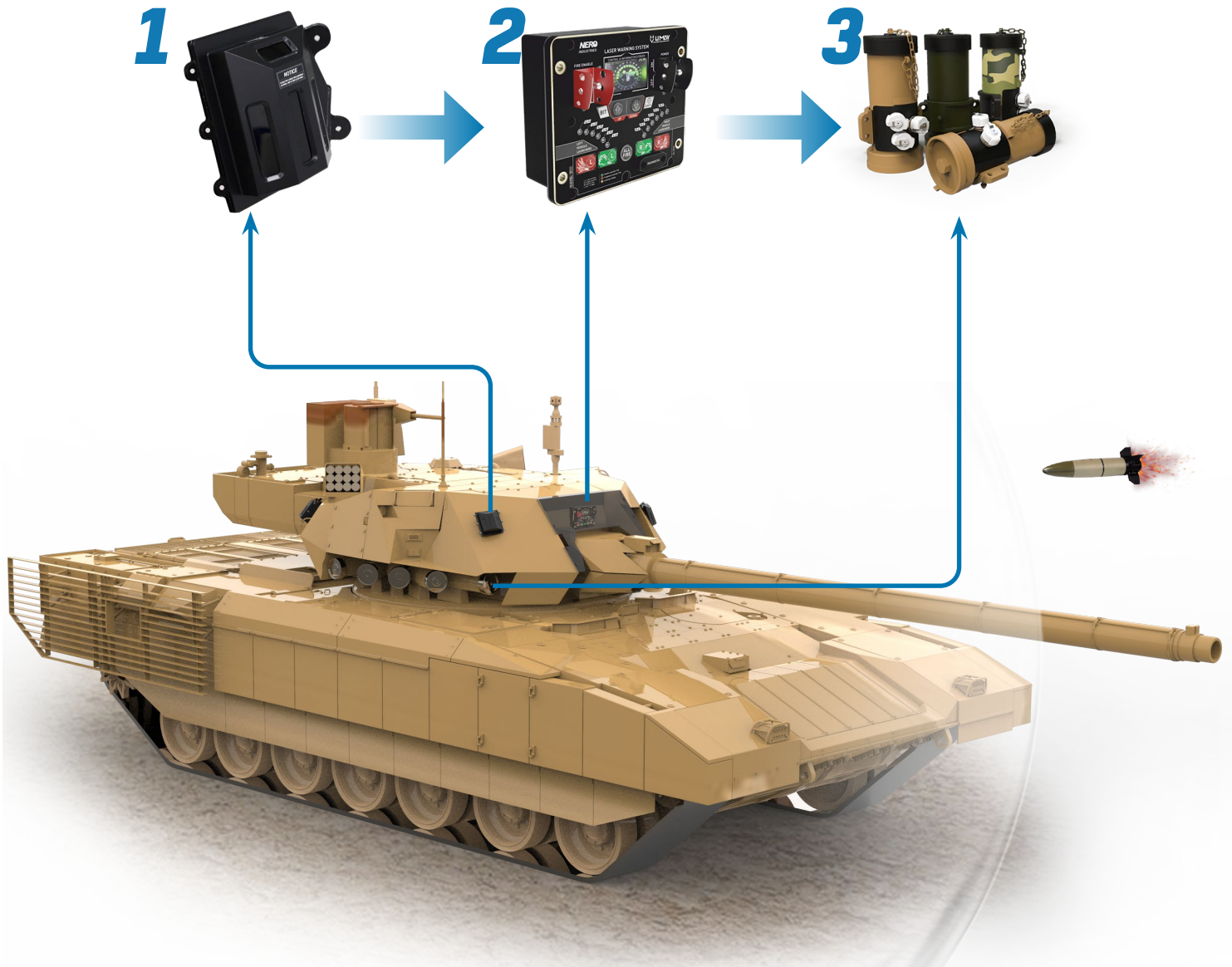
» Laser Warning System (LWS) is designed for detection of laser radiation from laser assisted weapons and it can be used on any kinds of military vehicles.	» The system is protected against false alarms triggered by reflections, thunderbolt, gunshots and false alarms triggered by itself due to RF and electro-optical operations.
» LWS, detects, classifies and determines laser sources such as beam rider, target plotter, range finder, infrared lighteners.	» It provides detection of laser signals using impact, continuous wave and combination of these.
» LWS is an important component of defence skills of the vehicle. It includes visual warning, high detection possibility and low false alarm rate.	» The system manual, semi-automatic and automatic activation of all kinds of grenades that the vehicle could be equipped with according to the tactical requirements in security zone.
» When the high-speed processing and communication features are combined with electro-optical operation, it ensures correct and reliable operation.	» LWS system can detect laser radiation at wavelength between 0,5 μm and 1,7 μm and optionally 8-12 μm .

LASER GUIDED WEAPONS THAT COULD BE DETECTED

- Kornet-EM Anti-Tank Missile
– Laser Homing Attack Missile
- UMTAS
- AGM-114R HELLFIRE II Romeo
- Spike-MR/LR/ER
- Javelin Missile
- HJ-12 (Red Arrow 12)
- BGM-71 TOW
- PARS 3 LR
- Missile Moyenne Porte (MMP)
- MILAN ER
- NLAW (Next Generation Light



LASER WARNING SYSTEM OPERATION SCHEMATIC



1 **Laser Warning Systems** with high detection capability developed by Nero Industry, detect, classify and determine laser sources such as beam rider, target plotter, range finder, infrared lighteners. They are applied according to structure of the vehicle, ensure 360o detection and transmit the threat to control unit.

2 **Control Unit** analyses the threat transmitted by Laser Warning Sensor. It activates smoke grenade launcher system according to distance and location of the detected threat.

3 **Smoke Grenade Launcher System** ensures to create an efficient smoke screen at a battlefield with a range up to 45+5 depending on environmental conditions.

LW 1000 LASER DETECTOR SENSOR

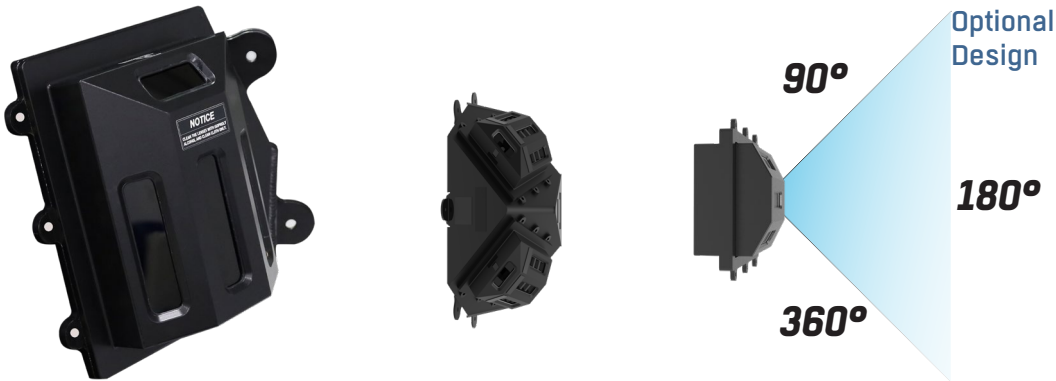


- Laser detectors detect, classify and determine 24 different Laser code and frequencies of laser-guided antitank threats within 50 milliseconds. Besides, LW1000 can detect more than one threats simultaneously.
- It is safeguarded against false alarms such as sunlight, remote controller, hand laser as per NATO AEP 3733 standards. It has successfully passed high temperature, low temperature, high humidity, shock-vibration and EMI/EMC tests as per MIL STD 810H, MIL STD 461F and MIL STD 1275E standards.

TECHNICAL SPECIFICATIONS

» Wave Length Range Band I	0.5 μm - 1.1 μm
» Wave Length Range Band II	1.1 μm - 1.65 μm
» Wave Length Range Band III	0.8 μm - 1.1 μm
» Wave Length Range Band IV	8-12 μm (optional)
» Response Time	Max. 500ms
» Threat Classification	Laser Distance Meter (LDM) Laser Target Designator (LTD) Laser Guidance Beam (LGB)
» Detection Possibility	LDM (Band I-II-III): %95 LTD (Band I-II-IV): %95 LGB (Band III-IV): %99
» Detection Sensitivity	10-20 (W/m ²)
» Vertical Section Sight Range	(-20 °) – (+ 70 °)
» Total Azimuth Visual Angle	100° / Unit
» Communication System	Canbus (J-1939)
» Water and dust ingress protection	IP67
» Operating Temperature	-40°C / +60°C
» Storage Temperature	-55°C / +85°C
» Salt Fog Resistance	800 hours
» Laser Detection Resolution	$\pm 1^\circ$
» Power Consumption	120 mA \pm 50 mA @24 VDC Nominal
» Weight	1.8 \pm 0.5 kg

LW 2000 LASER DETECTOR SENSOR



- Laser detectors detect, classify and determine 24 different Laser code and frequencies of laser-guided antitank threats within 50 milliseconds.
- It is safeguarded against false alarms such as sunlight, remote controller, artificial-fake light, hand laser as per NATO AEP 3733 standards. It has successfully passed high temperature, low temperature, high humidity, shock-vibration and EMI/EMC tests as per MIL STD 810H, MIL STD 461F and MIL STD 1275E standards.
- It determines threat identity and priority by comparing threat parameters with the threat data included in mission data folder which would be previously loaded to the system.
- This mission data folder can always be updated and the threat classes included can be increased.

TECHNICAL SPECIFICATIONS

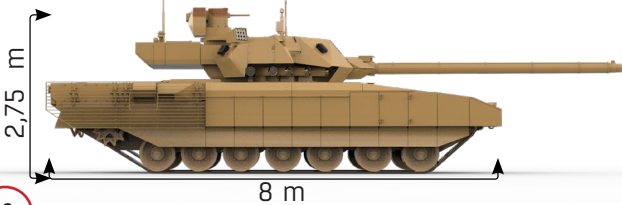
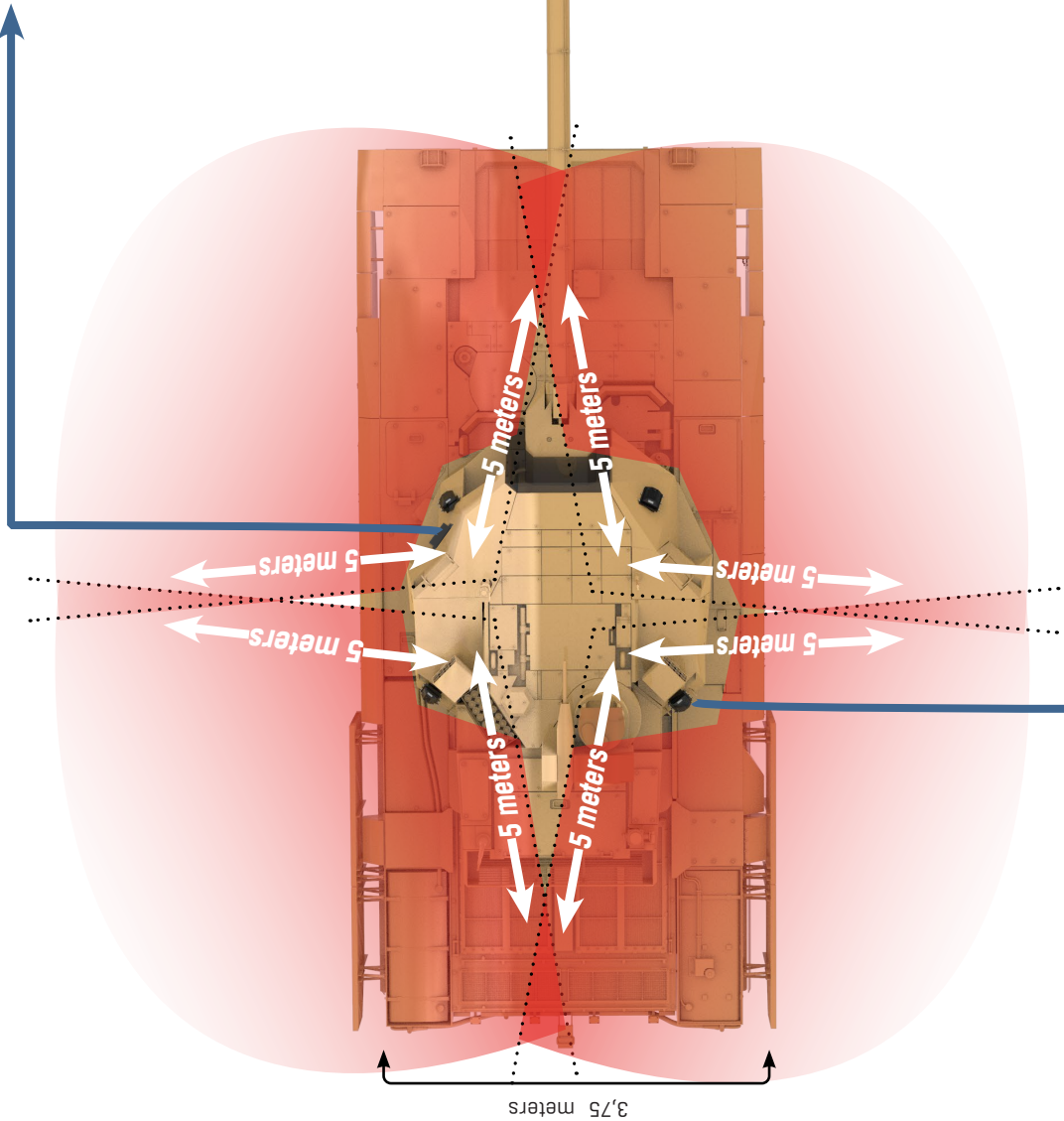
» Response Time	Max. 500ms
» Threat Classification	Laser Distance Meter (LDM) Laser Target Designator (LTD) Laser Guidance Beam (LGB)
» Detection Possibility	LDM (Band I-II-III): %95 LTD (Band I-II-IV): %95 LGB (Band III-IV): %99
» Detection Sensitivity	10-20 (W/m ²)
» Vertical Section Sight Range	(-20 °) – (+ 70 °)
» Total Azimuth Visual Angle	100° / Unit
» Communication System	Canbus (J-1939)
» Water and dust ingress protection	IP67
» Operating Temperature	-40°C / +60°C
» Storage Temperature	-55°C / +85°C
» Salt Fog Resistance	800 hours
» Laser Detection Resolution	± 15°
» Power Consumption	120 mA ±50 mA @24 VDC Nominal
» Weight	1.8 ±0.5 kg
» False Alarm	<0,2/hour

LASER BANDS		LDM	LTD	LGB
Band I	0.5 µm - 1.1 µm	+	+	
Band II	1.1 µm - 1.65 µm	+	+	
Band III	0.8 µm - 1.1 µm			+
Band IV	8-12 µm	+	+	+

INCIDENCE ANGLE MEASUREMENT SENSITIVITY		
Band I	Horizontal Axis	≤15° (rms)
	Vertical Axis	≤15° (rms)
Band III	Horizontal Axis	≤15° (rms)
	Vertical Axis	≤15° (rms)
Band III	Horizontal Axis	≤15° (rms)
	Vertical Axis	≤15° (rms)
Band IV	Horizontal Axis	≤25° (rms)
	Vertical Axis	≤25° (rms)

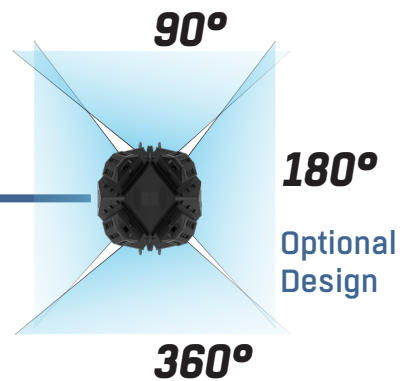
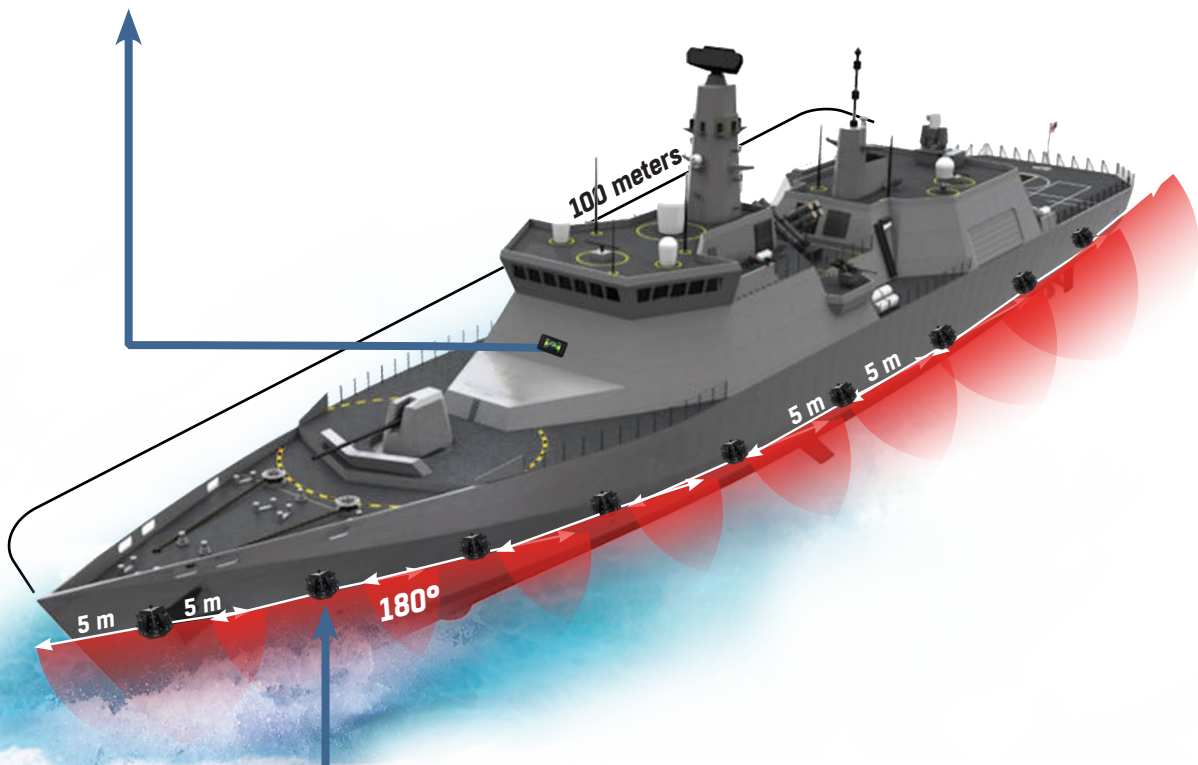
LW2000 ARMORED VEHICLE APPLICATION

FULL PROTECTION
360°



LW2000 WARSHIP APPLICATION

FULL PROTECTION
360°



UMAY SGS-3 CONTROL UNIT

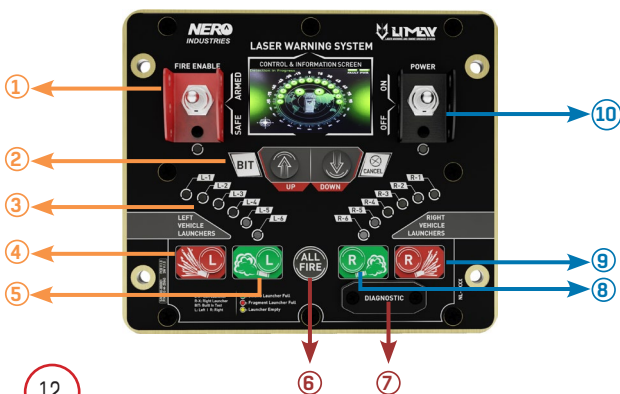


- **Umay SGS-3 Control Unit** is a control unit which can automatically control laser and smoke grenade systems.
- It has capability of:
 - Detection
 - Classification
 - Transmitting incidence angle to the user on digital system
 - Keeping log record for laser warning system against laser threats as per NATO Stanag 3733 standards.
- Umay SGS-3 Control Unit which can control Laser Warning system and laser grenade launcher system, has a structure that combines the leading edge and the most aesthetical specifications of its kind. It enables automatic and manual smoke grenade control.

GENERAL SPECIFICATIONS

» Laser warning system control capability	» Power Consumption: 24 VDC nominal (16-32 V)
» Opportunity to control laser warning system and smoke grenade automatically and switch between systems	» Dimensions: 180x155x116 ±5 mm
» Capability to control up to 16 smoke grenades	» Weight: Control Unit: 1.9 ±0.3 kg
» Built-In Test Function (BIT)	» IP67 Water and Dust Ingress Protection
» Capability to detect and control two different types of smoke grenades	» Production as per IPC-A-610G Class 3 Standards PC
» Communication Interface: CAN-BUS /RS422 / RS232 Fast Ethernet	» MIL-STD-810G, MIL-STD-461, MIL-STD-1275E STANAG-3733
» Operating Temperature: -32°C / +49°C » Storage Temperature: -55°C / +85°C	» Capability to Communicate with Other Systems

BUTTON SPECIFICATIONS



1.	SECURITY	6.	ALL FIRE
2.	BIT	7.	LOG
3.	LAUNCHERS STATUS	8.	RIGHT SMOKE GRENADE IGNITION
4.	LEFT FRAGMENT IGNITION	9.	RIGHT FRAGMENT IGNITION
5.	LEFT SMOKE GRENADE IGNITION	10.	ON/OFF BUTTON

UMAY LWS-2 CONTROL UNIT



- **UMAY LWS-2 Control Unit** which can control Laser Warning system and smoke grenade system, can switch between laser and smoke grenade system menus easily thanks to its touch screen.
- Laser warning system transmits:
 - Sensor status
 - Angle of detected laser
 - Class
 - Band options to the user.
- Control unit with digital screen, provides easy use for the user by displaying on-vehicle schematic on the screen.

GENERAL SPECIFICATIONS

» Laser warning system control capability	» Power Consumption: 24 VDC nominal (16-32 V)
» Opportunity to control laser warning system and smoke grenade automatically and switch between systems	» Dimensions: 180x155x116 ±5 mm
» Capability to control up to 16 smoke grenades	» Weight: Control Unit: 1.9 ±0.3 kg
» Built-In Test Function (BIT)	» IP67 Water and Dust Ingress Protection
» Capability to detect and control two different types of smoke grenades	» Production as per IPC-A-610G Class 3 Standards PC
» Communication Interface: CAN-BUS	» Storage Temperature: -55°C / +85°C
» Operating Temperature: -32°C / +49°C	» Capability to Communicate with Other Systems

BUTTON SPECIFICATIONS



1. MAIN SCREEN	5. The Test button is reserve right now.
2. The alarm could clear by using Fn + Alarm reset buttons.	6. BIT Button
3. You will change mode from Battle to Peace.	7. Activates function.
4. You will go into the Button Config.	8. Info button.

GRENADE LAUNCHER SYSTEMS (76-40 MM)

<p>» It protects combat vehicles against visible and infrared observation, sensor-guided weapons, laser illuminators, radiators and laser-meters.</p>	<p>» It provides protection with location options including all angles between 50o and 360o with smoke grenade options produced suitable for structure of the vehicle.</p>
<p>» It enables an efficient camouflage screen in case of threat with distance range between 30 m – 150 m according to type of ammunition.</p>	<p>» Pyrotechnical and solenoid activation opportunity. Voice and visual warning for high volt-age, high battery heat, low volta-ge, overcur-rent errors.</p>
<p>» It can create instant, wide range and spectral sightline blockage besides dynamic smoke screens different from known smoke protec-tion systems.</p>	<p>» It enables to control up to 16 smoke grena-des manually and automatically by the help of con-trol units to which system is integrated.</p>
<p>» It is tested for high temperature, low tempera-ture, high humidity, shock-vibration and EMI/EMC as per MIL STD 810H, MIL STD 461F and MIL STD 1275E standards.</p>	<p>» It enables to control different type and size smoke grenade systems manually and auto-matically with the option of 4 different control units.</p>



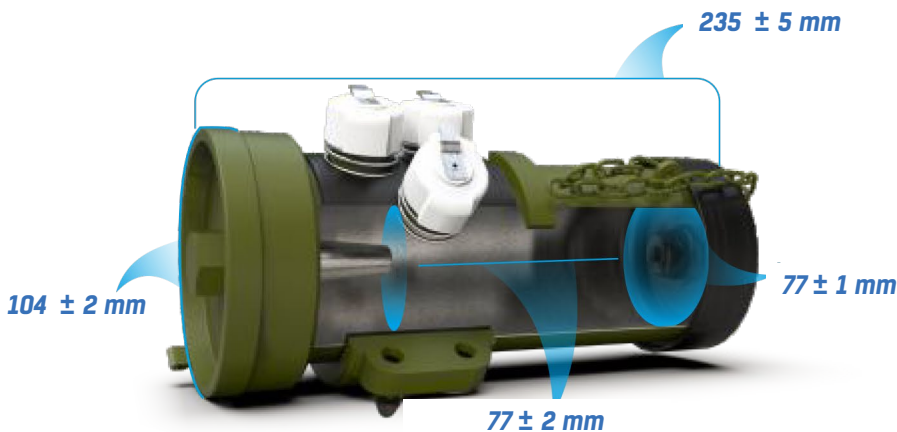
GL76 GRENADE LAUNCHER

- It is developed with 100% local resources by Nero Industry.
- **GL76 grenade launcher system** can be mounted to main vehicle externally.
- The ammunition type to be used on GL76 system are 76 mm smoke or fragmented grenade bullets.
- Smoke Grenade Launcher System ensures to create an efficient smoke screen camouflage action at a battlefield with a range up to 45+5 depending on environmental conditions.
- Dispersion time varies according to the ammunition used and optimum outturn is between 30-90 seconds.
- Capability of creating 90o, 180o and 360o smoke screen as per customer's choice.



GENERAL SPECIFICATIONS

» 10 Years Shelf Life » » Resistant against corrosion for 10 years	» Electrical Connection Connector: MS3476 W1 0-65 CANBUS (J1939) Connection Compliant
» Weight: 2.8 kg ± 0.5 kg	» MTBF Minimum 250,000 Hours
» Coating: Brass-Nickel coating	» Bracket options adjustable specially for vehicle
» Power Source: 28 VDC nominal (16-32)	» Moisture Resistance: %95
» Power Consumption: 120 mA ± 20 mA @28 VDC	» Vibration and Shock Resistance
» Nominal Power Consumption: 6 A ± 2 A @28 VDC	» 800 Hours Resistance at Salt Test
» Electrical Resistance at Firing Position: 1-3.5 ohm	» MIL-STD-461G, MIL-STD-810G, MIL-STD-1275E
» Electrical Connection: MS3470W10-6P	» Production as per IPC-A-610G Class 3 Standards



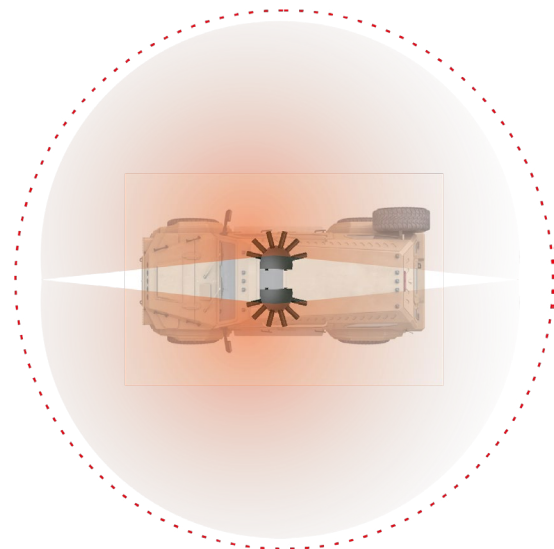
NU-40SGLS GRENADE LAUNCHER



Grenade launcher can be positioned on the vehicle with different options depending on the number of launchers and customer demand. Standard positioning options and effect angles are simulated in the following figures. Usually launchers are mounted on either side of the turret or multiple launchers are mounted on the remote weapon system.

For vehicles which are void of a gun turret, launchers are positioned on all sides of the vehicle's roof. Based on the free space, and allow a 360 degrees coverage. This configuration is most suitable for small caliber launchers (4 tubes) and usually consists of 4 up to 16 launchers.

COMPATIBLE AMMUNITION TYPES
- Rubber Pellet Cartridges
- Multi Impact Batons
- Single Impact Rounds
- Smoke Projectiles
- Multi Smoke Projectiles
- Barricade Penetrators
- Blast Dispersion Projectiles
- Muzzle Blast Cartridges
- Distraction Projectiles

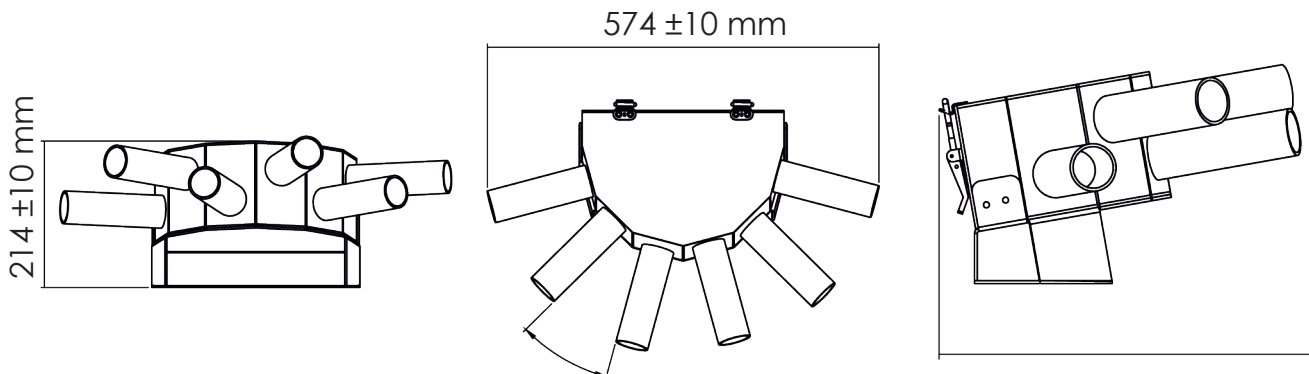


GENERAL PROPERTIES

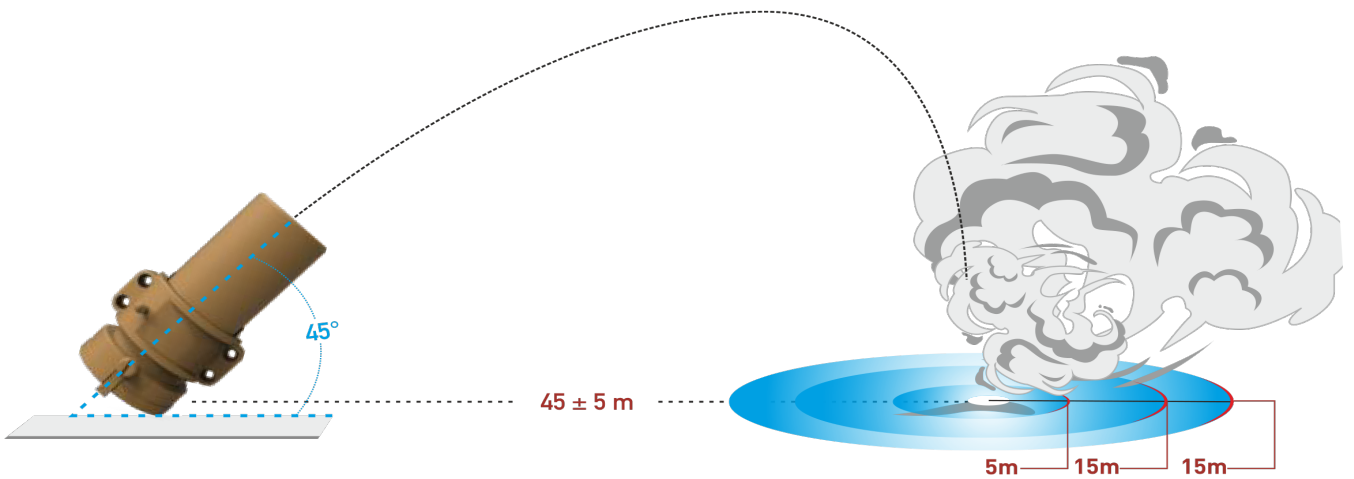
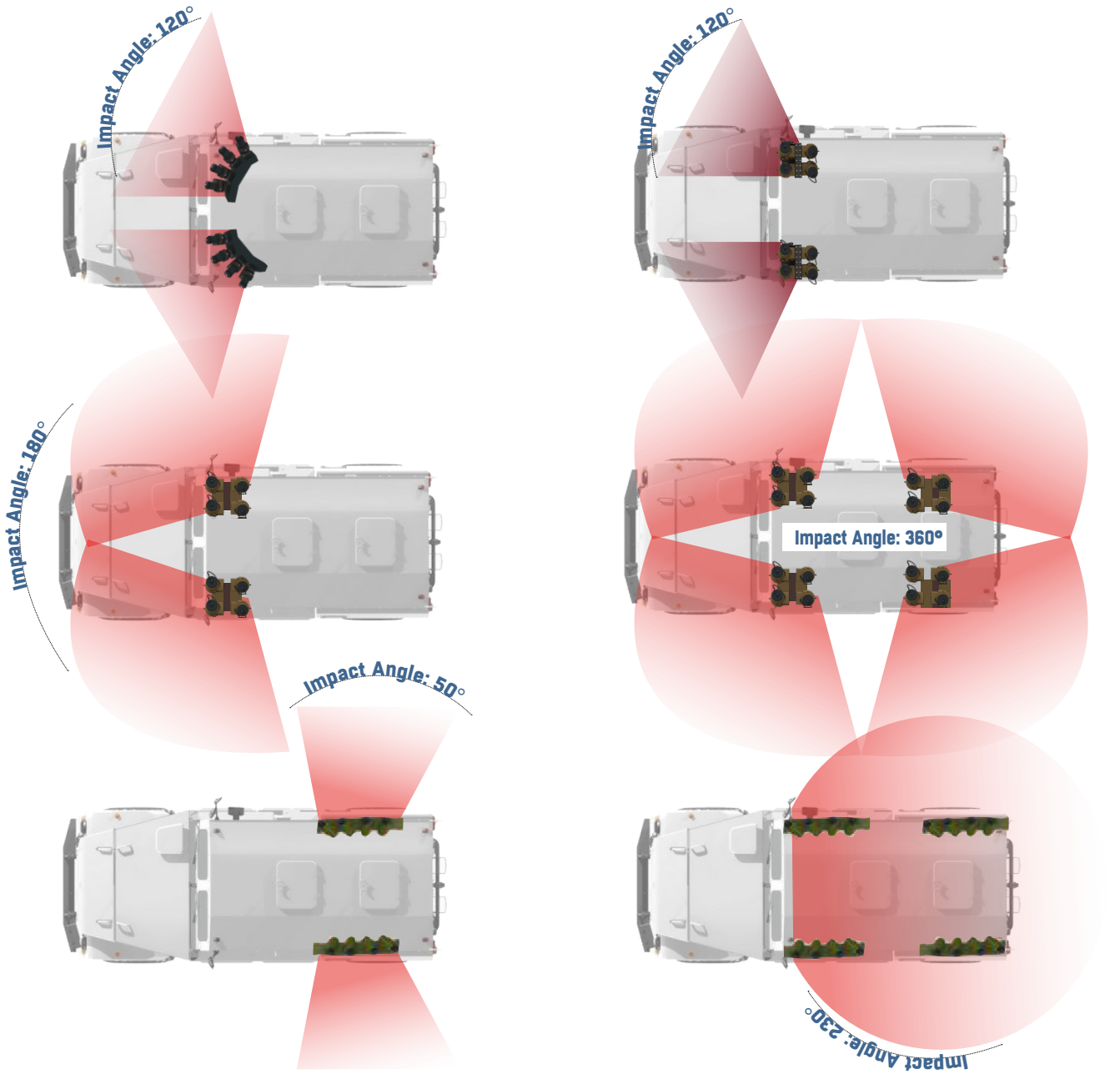
SHELF LIFE	10 years
WEIGHT	11kg ± 0.5kg
CALIBER	40mm
RANGE	From 30m to 150m it depends according to ammunition selected
LENGHT	380mm ± 10mm
WIDTH	574mm ± 10mm
HEIGHT	214mm ± 10mm
BARREL LENGHT	150mm
COATING	Zinc-Nickel
PROTECTION DEGREE	360° - 180° - 120° - 90°
POWER SUPPLY	28VDC Nominal(16-32)
POWER CONSUMPTION	120mA ± 20mA @ 28VDC Nominal
POWER CONSUMPTION	6A ± 2A @ 28VDC Firing Mode
ACTIVATION TYPE	24V 2A for 10 millisecond for each tube
ELECTRICAL RESISTANCE	1 - 3.5Ω

OPTIONS

OPTION I	Pyrotechnical Electrical Activated
OPTION II	Resettable Electric Solenoid Activated



SYSTEM OPERATION SCHEMATIC



UMAY DC-6 CONTROL UNIT

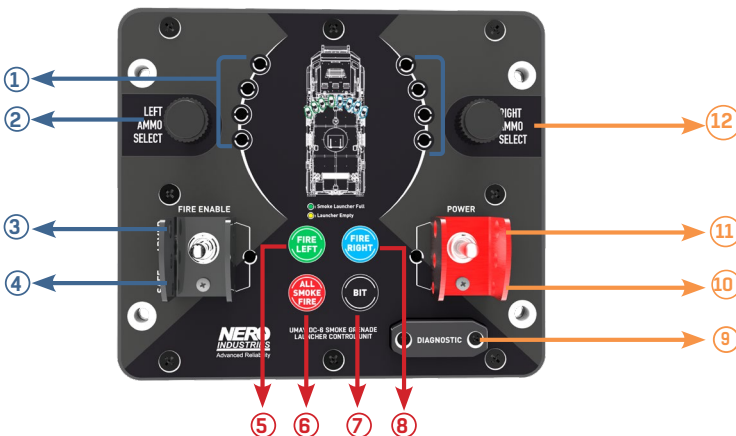
- **UMAY DC-6 Control Unit** which can control Laser Warning system and smoke grenade system has a structure that combines the leading edge and the most aesthetical specifications of its kind.
- Control unit with digital screen, provides easy use for the user by displaying on-vehicle schematic on the screen.
- It enables automatic and manual smoke grenade control. It can communicate with other systems.



GENERAL SPECIFICATIONS

» Built-In Test Function (BIT)	» Dimensions: 180x155x116 ±5 mm
» Capability to control two different types of smoke grenades	» Weight: Control Unit: 1.9 ±0.3 kg
» Communication Interface: CAN-BUS /RS422 / RS232 Fast Ethernet	» IP67 Water and Dust Ingress Protection
» Operating Temperature: -32°C / +49°C	» Maximum 12 smoke grenade control
» Storage Temperature: -55°C / +85°C	» Production as per IPC-A-610G Class 3 Standards PC
» Power Consumption: 24 VDC nominal (16-32 V)	» MIL-STD-810G, MIL-STD-461, MIL-STD-1275E STANAG-3733

BUTTON SPECIFICATIONS



1.	LEFT LAUNCHER EMPTY/FULL LED: Shows the full/empty status of the Launcher.	7.	BIT: Build-in-test
2.	LEFT AMMO SELECT: Selects left ammo.	8.	FIRE RIGHT: Fires right launcher.
3.	FIRE ENABLE ARMED	9.	DIAGNOSTIC: Software download socket.
4.	FIRE ENABLE SAFE	10.	POWER OFF
5.	FIRE LEFT: Fires left launcher.	11.	POWER ON
6.	ALL SMOKE FIRE: Fires all launcher.	12.	RIGHT AMMO SELECT: Selects right ammo.

UMAY DC-4 CONTROL UNIT

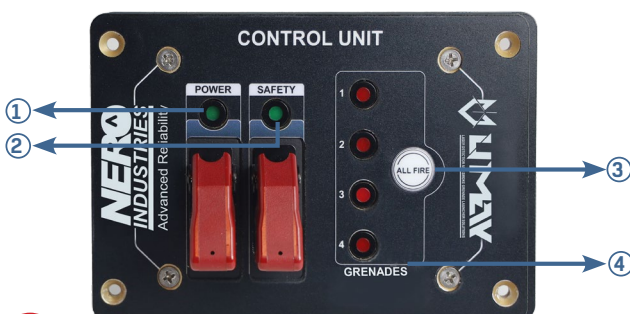
- **UMAY DC-4 Control Unit** has the capability to launch 4 smoke grenades at the same time.
- Number of ammunition it can control may change according to the vehicle on which system will be integrated and the smoke grenades placed at left-right and/or front/back sections of the vehicle as per customer's choice, can also be controlled separately.
- Umay DC-4 control unit with compact design and simple user interface, has successfully passed MIL-STD-810H Environmental Tests, MIL-STD-461 EMI/EMC tests.



GENERAL SPECIFICATIONS

» Built-In Test Function (BIT)	» Weight: Control Unit: 1.9 ±0.3 kg
» Capability to control two different types of smoke grenades	» IP67 Water and Dust Ingress Protection
» Operating Temperature: -32°C / +49°C	» MIL-STD-810G, MIL-STD-461, MIL-STD-1275E STANAG-3733
» Storage Temperature: -55°C / +85°C	» It has UL, CE GOST-R Certifications
» Power Consumption: 24 VDC nominal (16-32 V)	» Maximum 24 smoke grenade control capability
» Dimensions: 150x100x70 ±5 mm	» It is well-priced.

BUTTON SPECIFICATIONS



1.	POWER ON/OFF SWITCH	3.	FIRE ALL FOG PORTERS
2.	WAR/PEACE MODE TOGGLE SWITCH	4.	SMOKE GRENADE STATUS INDICATOR

UMAY DC-8 CONTROL UNIT

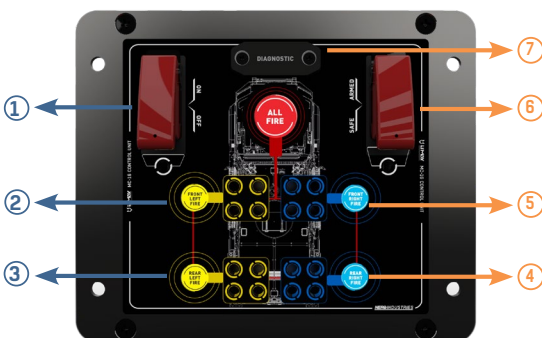
- **UMAY DC-8 Control Unit** can also launch sectionally total 16 smoke grenades placed at **left (4) – right (4) front and left (4) – right (4) back sections** of the vehicle in addition to the feature of launching 16 smoke grenades simultaneously.
- Umay DC-8 control unit with compact design and simple user interface, has successfully passed MIL-STD-810H Environmental Tests, MIL-STD-461 EMI/EMC tests.



GENERAL SPECIFICATIONS

» Built-In Test Function (BIT)	» Weight: Control Unit: 1.9 ±0.3 kg
» Capability to control two different types of smoke grenades	» IP67 Water and Dust Ingress Protection
» Communication Interface: CAN-BUS /RS422 / RS232 Fast Ethernet	» Maximum 16 smoke grenade control capability
» Operating Temperature: -32°C / +49°C	» Production as per IPC-A-610G Class 3 Standards PC
» Storage Temperature: -55°C / +85°C	» MIL-STD-810G, MIL-STD-461, MIL-STD-1275E STANAG-3733
» Power Consumption: 24 VDC nominal (16-32 V)	» It has UL, CE GOST-R Certifications
» Dimensions: 180x155x116 ±5 mm	» Capability to communicate with other systems

BUTTON SPECIFICATIONS



1.	System power On/Off switch.	5.	Fire grenades positioned on the right front of the vehicle
2.	Fires grenades positioned on the left front of the vehicle	6.	Allows switching between War/Peace modes.
3.	Fires grenades positioned on the left rear of the vehicle	7.	Provides access to log records.
4.	Fires grenades positioned on the right rear of the vehicle		



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