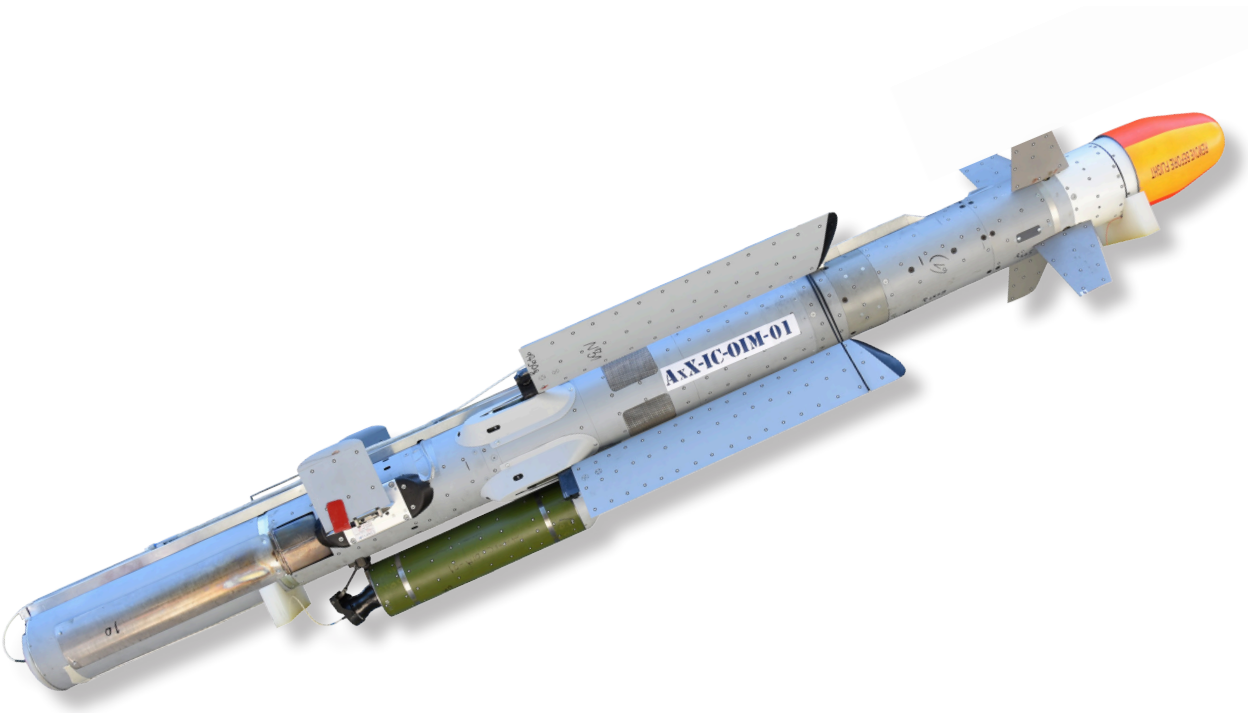
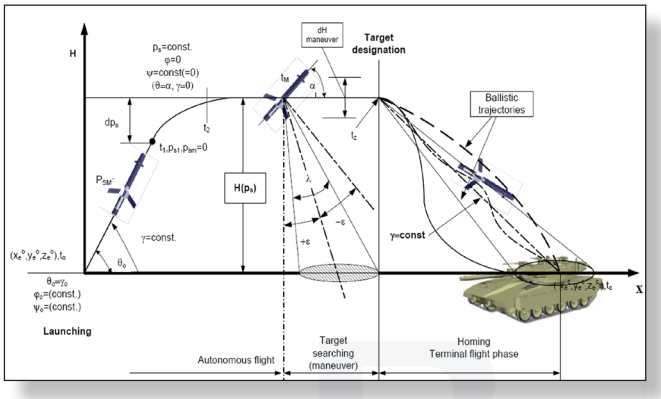
DEVELOPMENT



ALAS

Advanced light attack system - missile

Advanced Light Attack System is a middle-range multipurpose wire guided missile system. ALAS was developed primarily for missions against tanks, armored vehicles, fortifications, command posts, coastal ships, industrial facilities and bridges. It can be deployed by any suitable platform including, armored vehicles, small ships and helicopters. The guidance system is based on video/ infrared technology, with the missile connected to the launcher by a fiber-optic cable or radio link. ALAS missile flies at low altitude and, due to using turbojet motor, has small radar and infrared (heat) signatures.



Technical characteristics:

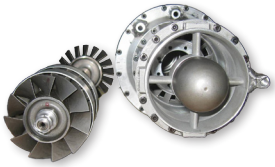
• Total body length [m]	2.723
• Body diameter (caliber) [m]	0.175
• Wingspan [m]	1.638
• Launching weight [kg]	73.10
• Weight in flight [kg]	59.3
• Sustainer Propulsion (type)	TMM-040/RC Turbojet engine
• Turbojet engine max. net thrust [N]	400
• Booster propulsion (type)	solid propellant booster engine
• Cruising speed [m/s]	120-150
• Max. flight altitude above sea level [m]	2000
• Max. effective range [km]	25
• Min. effective range [km]	4
• Max. axial load [g]	10
• Max. operational load limit [g]	4
• Mid-course guidance	INS/GNSS
• Terminal guidance	TV CCD/IIR
• Auto tracking	Contrast/Correlation tracking algorithm

Payload subsystem:

- Tandem-charge HEAT warhead with additional blast fragmentation
- Safety arming mechanism with proximity fuse

Propulsion section subsystem:

- Sustained turbojet engine
- Booster motor



Turbojet engine:

Main function of turbojet engine is to maintain constant velocity. TJE generate maximum thrust force of 400N and Mach number between 0 - 0.8. Specific fuel consumption is 1.40 kg/daNh with total engine life of 10h.

Booster motor:

Main function of the booster motor is to provide the requested thrust force for missile launching from container.

Solid propellant subsystem consist of:

- Solid propellant rocket motor with total impulse 10720Ns and maximum thrust 6000N, at standard temperature 15 ˚C.
- Release mechanism from missile main body

Communication subsystem:

Communication subsystem consists of single-mode optical fiber (SMF), which is an optical fiber designed to carry only a single ray of light (mode), transmitter unit one in missile and receiver in launcher. Signal loss on transmitting wave length and on receiving wave length is less than 15 dB.

Radio link

In addition to fiber-optic cable, ALAS can support two-direction radio link for communication between missile and ground control station. The link operates in C-band and it consists of seeker video signal downlink, data downlink for telemetry and missile status data, as well as data uplink for transferring commands from GCS to missile. Both data uplink and downlink support data rate up to 100 kbps.

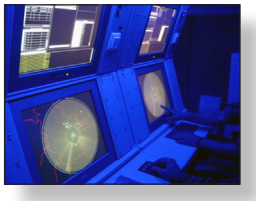
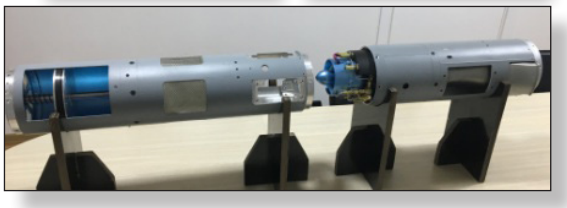
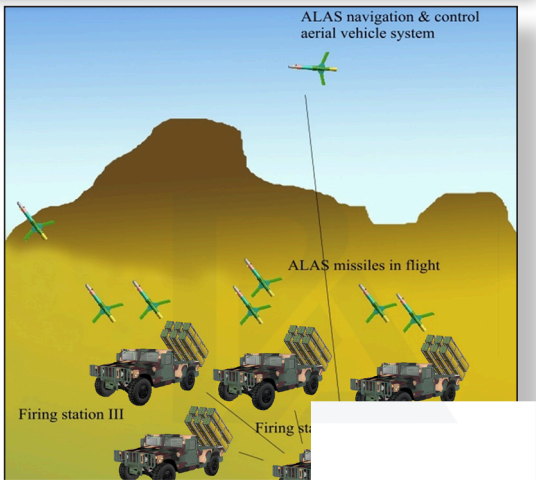
Homing head section:

Homing subsystem consists of TV CCD or IR sensor mounted on gyro stabilized gimbal, and electronic block. Electronic block is used to process signal and to control the movement of the line of sight, as well as to provide feedback info to GNC section.

GNC Section:

Main function of the GNC subsystem is to provide missile stabilization, guidance and control of the ALAS missile in all phases of flight through the integrated INS or INS/GNSS.

Control subsystem consists of:

- Digital onboard computer
- INS (onboard software and IMU unit) /GNSS
- Set of control fins with associated actuators and control unit

INS/GNSS accuracy at the maximum range of 25 km is ±20 m