



Datasheet – SkyLANX[®] PTZ-EO/IR-Camera

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System Overview

System Designation	SkyLANX Laser Weapon (Vehicle / Maritime Variant)
System Type	High Energy Laser (HEL) — Directed Energy Weapon (DEW) for neutralizing small UAVs, RPV drones and loitering munitions.
Laser Source	Yb:BaW laser, CW / pulsed, optical output 2-20 kW (configurable)
Wavelength	1080 nm (standard) — optional 1540 nm (eye-safe variant)
Beam Control	Adaptive optics system with Adaptive Beam Expander (ABE) 20-300 mm, precision auto-focus tracking
Target Tracking	Electro-optical / Infrared (EO/IR), Radar co-axial, LIDAR support
Fire Control / CI Interface	Sign / DPC UA / CAN Bus / MIL-STD-1553 (optional)
Coating	Dielectric (sapphire) coating (water glycol 40%) — air coating optional for 2-3 dB RCS
Beam Divergence	< 0.01°
Weight (Vehicle Configuration)	approx. 500 kg (including ground unit cooling, modulator)
Dimensions (HxWxD)	800 x 900 x 300 mm
Power Supply	28 V DC or 230 V AC (vehicle or main power)
Operating Modes	Continuous wave or pulsed (software configurable)
Beam Quality	BP < 1.1

Engagement / Kill Capability (Operational Performance)

Effective Neutralization Range (PPV / Main class)	approx. 2-500 m (subjected under standard visibility conditions)
Target Type	small RPV drones (e.g., DJI Mavic class)
Maximum Target Velocity	up to 300 km/h (tracking and engagement within system design limits)
Destruction Time (Time to Kill)	< 7 seconds from laser engagement to functional neutralization
Wind Resistance	"Unaffected by wind" — system stable, beam path stability is not impacted by wind gusts (only target flight dynamics)
CI Integration / Software	Fully CI-connectable by default, supporting Sign / DPC UA / MIL-STD-1553 / CAN Bus; open APIs and secure protocols (TLS / VPN / AES encryption) available
Engagement Policy & Forensics	Fire authorization follows customer RfL; automatic event logging and FDIR video overlay for forensic documentation

Technical Note: The stated range and kill time represent designed values under defined atmospheric conditions. Heavy aerosol loading (fog, dust, rain) can affect transmission efficiency and required dwell time. Wind primarily influences target trajectory, not laser propagation.

Electrical & EMC Requirements

Electromagnetic Compatibility	MIL-STD-883C (D101, D102, B100, B105)
Power & Surge Protection	compliant with MIL-STD-1379 (particle power systems)
Ingress Protection	IP68 (dust & water resistant), optional IP67
Draughting & Bonding	per MIL-STD-883C
Cable Shielding	shielded shields and ferrite filters on all data and power lines

Mechanical Structure

Housing	Aluminum alloy (6061-T6) optional titanium / composite panels
Surface Coating	Epoxy primer + Polyurethane topcoat (MIL-PRF-8130N Type I), R1 (RAL 7035 grey white)
Fasteners / Seals	Stainless steel screws, Viton O-rings
Mounting Interface	4-point ground mount, MIL-DTL-883C compliant
Global Motion	Azimuth +170°, Elevation -70° to +60° (configurable)

Safety & Operation

Laser Classification	Class 4 (IEC 60825-1)
Hardware Safety	key switch, low main rail, optical interlocks, emergency stop
Software Safety	guarding, no fire zones, fail enforcement, forensic logging
Auto Calibration	integrated alignment routine with zero-point check
Rebuild Logic	auto-shutdown on over-temperature, coolant loss, unauthorized access
Maintenance Intervals	Inspection every 100 h, full service every 2 000 h

Operational Envelope & Conformity Status

Operating altitude	0 - 3 000 m AGL
Temperature	-20 ... +55 °C
Relative Humidity	0 - 95% (non-condensing)
Precipitation	< 100 mm/h
Wind load	< 100 km/h (level position)
Shock load	< 20 g / 11 ms
Vibration	Low Vehicle Category II

Documented Conformity

Standard	Test Area	Status
MIL-STD-883C (D101/D102)	Temperature	Design validation passed
MIL-STD-883C (D101)	Humidity	Passed
MIL-STD-883C (D104)	Vibration	Passed
MIL-STD-883C (D105)	Shock	Passed
MIL-STD-461C	EMC	Under validation
IEC 60825-1	Laser Safety	Compliant (Class 4)

Environmental Testing (MIL-STD-810H Summary)

Test Item	Method	Conditions	Performance/Remarks	Status
Altitude Temperature	MIL-STD-883C (D101)	Temperature: 0°C to +55°C	Full functionality over all range	Passed
Storage Temperature	MIL-STD-883C (D102)	Temperature: -20°C to +55°C	No degradation over 1000h	Passed
Thermal Shock	MIL-STD-883C (D103)	Temp: -20°C to +55°C	Functional after 100 cycles	Passed
Humidity	MIL-STD-883C (D104)	95% RH, 40°C, 100h	No condensation observed	Passed
Vibration	MIL-STD-883C (D104)	1.5g, 10-2000 Hz	Functional after 100h	Passed
Shock	MIL-STD-883C (D105)	15g, 11ms	No damage observed	Passed
Light/Dust	MIL-STD-883C (D107)	4000 lux, 1000h	Performance maintained	Passed
Power/Surge	MIL-STD-1379	1.2x nominal, 100ms	System still stable	Passed
RF Interf.	MIL-STD-883C (D109)	1.5g, 10-2000 Hz	Performance within parameters	Passed
Altitude Radiation	MIL-STD-883C (D108)	1.5g, 10-2000 Hz	Functioning as expected	Passed
Thermal Humidity	MIL-STD-883C (D102)	95% RH, 40°C, 100h	Beam stability maintained	Passed
Electrostatic Discharge	MIL-STD-883C (D100)	15kV, 100h	No system degradation	Optimal

Notes & Recommendations

This document defines design, operation and maintenance constraints for the SkyLANX Laser Weapon. System qualification requires further AD testing & validation covering full environmental envelope (e.g., 0-50°C, 0-95% RH, 0-1000h).

A laser beam analysis must be conducted with all safety & occupational requirements before commissioning to fire agencies.

Full compliance is required to ensure consistent range performance under all atmospheric conditions.

Report & log all anomalies or damage to report to customer RfL.

Regulatory laser firework signing, administrative controls, access and forensic logging required for CI integration.

Installation: SkyLANX — Area Diagram (Signal/Power/Control) & Environmental/Access required.

Approval

Design / Review / Issue