ELMA
Your Solution Partner

Mission-Ready Solutions for Ground Mobile Defense

Rugged, Modular, Open Standards Systems to Accelerate Mission Success

Partnering with the World's Defense Leaders

For decades, Elma has been at the forefront of defense embedded technologies, delivering ruggedized, mission-critical electronic systems. Our expertise in open standards architectures such as SOSA® and OpenVPX comply with MOSA principles, and strategic partnerships with top defense contractors have made us a trusted provider for ground mobile defense applications.

Elma's solutions are designed to enable seamless integration, interoperability, and long-term performance in extreme operational environments.

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WHY ELMA?

No One Knows MOSA/ SOSA Better Than Elma

Industry Leadership – A key contributor to the SOSA Technical Standard.

> **Proven Track Record –** Supporting mission-critical ground deployments worldwide.

> **Trusted by U.S. & International Defense Contractors –** Providing rugged, high performance solutions.

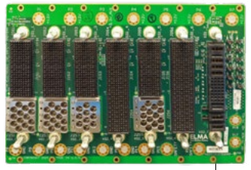
> **Full Hardware & Software Integration –** Ensuring seamless operation for next-gen defense systems.

> **Built to MIL-STDs –** Shock, vibration, EMI, thermal & environmental resilience.

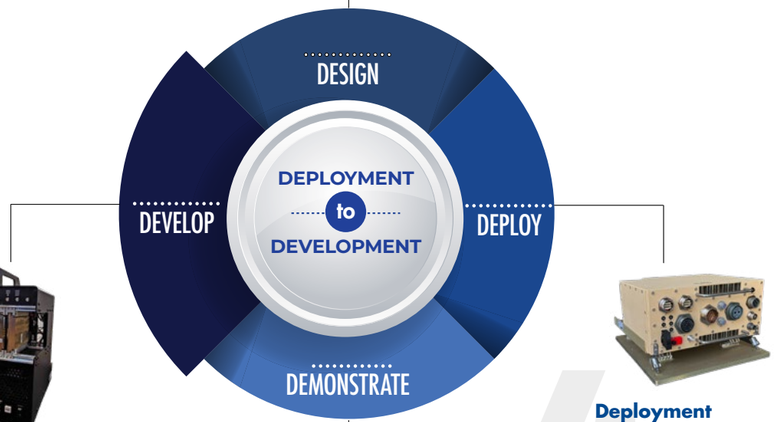
> **Designed for Ground Vehicles -** Meeting C5ISR, EW, and SIGINT demands.

Elma Electronic supports the full lifecycle of mission-ready electronic systems with the D4 product flow

From initial design to field deployment, we deliver rugged, modular solutions that reduce risk and accelerate readiness.



Design System Architecture, requirements definition, and modular planning.



Development Prototype Engineering and system validation in lab environments.

Elma: Feature rich Test and Development platforms compliant to SOSA. MORA based software and hardware solutions

Demonstration Live testing in operational environments.

Elma: MIL-STD validation, EMI/EMC compliance, rapid iteration. Hardware / Software validation

Deployment Production and Integration into mission systems.

Elma: Scalable manufacturing, lifecycle support, field integration. Deployment ready chassis, plug-in card and software integration

From concept to combat readiness, Elma is your trusted partner in defense innovation.

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GROUND DEFENSE APPLICATIONS

PURPOSE-BUILT SOLUTIONS FOR MISSION SUCCESS

At Elma, customization is core to our mission. From rugged backplanes and chassis to full system integration, we specialize in tailoring embedded platforms to meet the specific requirements of ground defense applications.

Whether it's SWaP-optimized enclosures, application-specific backplane configurations, or custom thermal and mechanical designs, our engineering team delivers solutions that are ready for the realities of the field.

Aligned with our D4 model: Design, Develop, Demonstrate, Deploy – we support the full lifecycle of your defense program. We offer hardware and software integration, custom firmware, and validation services to accelerate readiness and performance.

Our capabilities also extend to internal and external cable harnessing, providing custom I/O cabling and rugged connectivity solutions designed to meet military standards and environmental demands.

See examples below:

Rugged RF/SDR Manpack System

Designed for dismounted tactical communication and signal intelligence, this ultra-portable system integrates a ruggedized power and processing core with software-defined radio hardware. Built to withstand harsh field conditions, it supports real-time RF signal capture, processing, and transmission in contested environments.

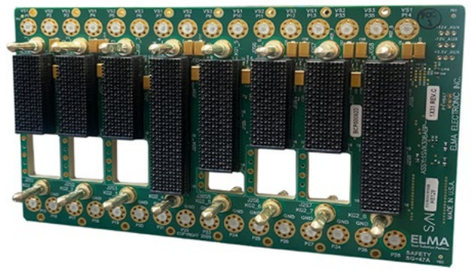
Ground-Based Missile System Control Unit

This rackmount, rugged computing platform serves as the command interface for advanced ground-launched weapons systems, providing real-time control, targeting coordination, and system diagnostics. It is engineered to meet strict MIL-STD requirements for shock, vibration, and EMI in mobile defense operations.

BUILT FOR THE MISSION: BACKPLANES FOR EVERY DEFENSE APPLICATION

THE INDUSTRY'S MOST COMPLETE LINE OF SOSA ALIGNED BACKPLANES

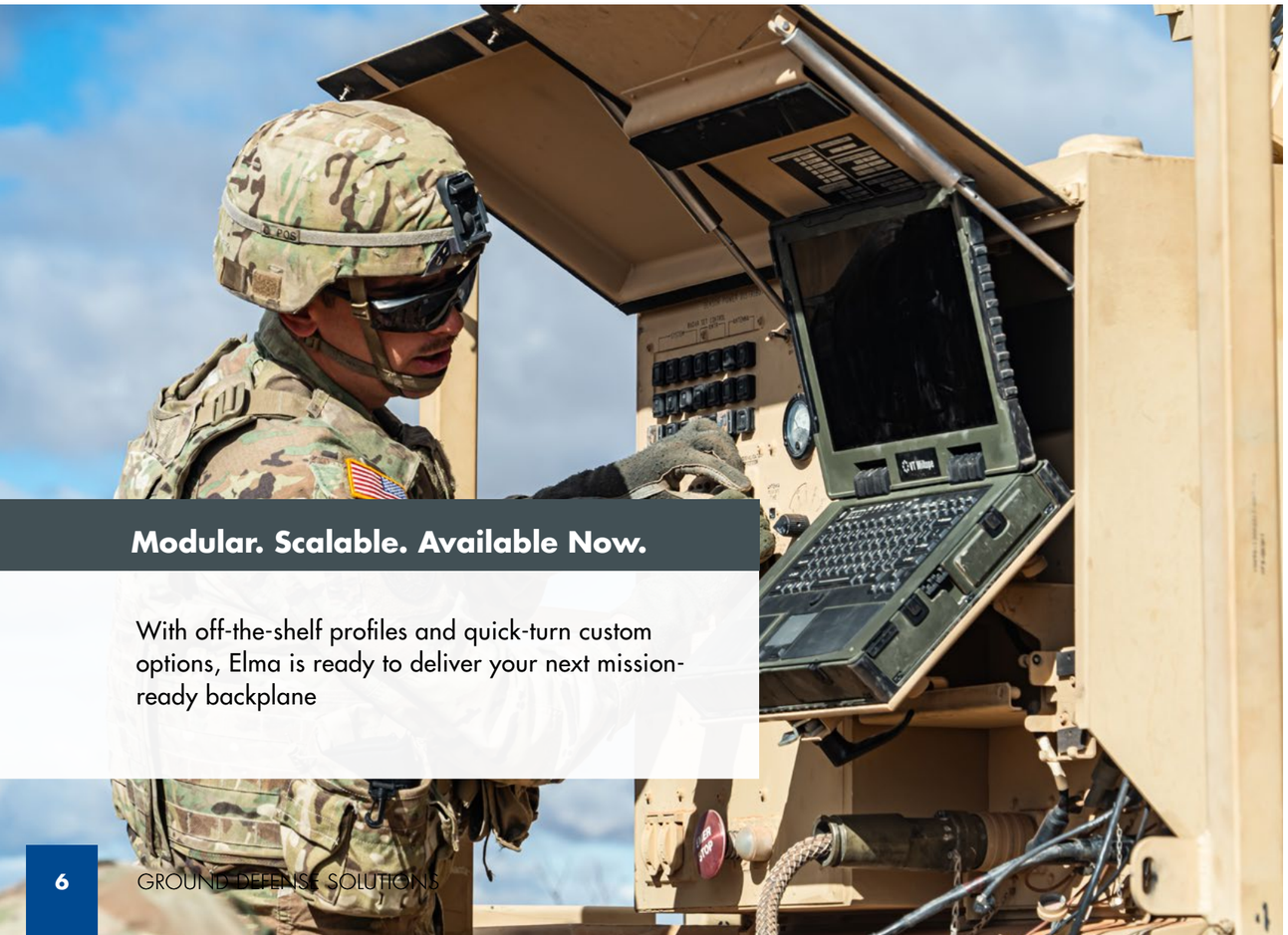
From 1-slot test units to 12-slot high-density payload carriers, Elma delivers the backplane you need—ready for CMOSS, MORA, AI, and PNT mission profiles.



Portfolio at a Glance

- Slot Configurations: 1 to 12 slots
- Form Factors: 3U & 6U OpenVPX
- Signal Support: 100GbE, PCIe Gen4, VITA 66/67
- Connector Types: VITA 46, 60, 67
- Cooling Options: Air, Conduction, Liquid

CMOSS: Modular architecture for networked vehicle electronics
MORA: RF system backplanes with MSRP support
PNT: Precision timing slots for assured position & navigation
AI/ML: High-speed data plane support for sensor fusion & inference



Modular. Scalable. Available Now.

With off-the-shelf profiles and quick-turn custom options, Elma is ready to deliver your next mission-ready backplane

APPLICATION-FOCUSED BACKPLANES

THE INDUSTRY'S MOST COMPLETE LINE OF SOSA ALIGNED BACKPLANES

TEST & DEVELOPMENT

1–4 slot, SOSA aligned lab backplanes for rapid prototyping

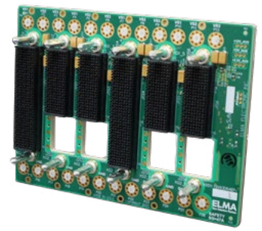
3U 1-slot OpenVPX power and only and VITA 66 aperture

Type 39 CompacFrame Development Platform, 1 - 4 Slot 3U VPX Power and Ground Only Backplane

GROUND DEFENSE CHASSIS

SOSA aligned COTS chassis for rapid and rugged deployment

ATR-3600S is an off-the-shelf half-ATR specifically designed for deployable applications requiring alignment with the SOSA Technical Standard



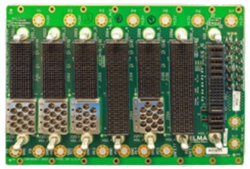
6-slot backplane enables high speed signal processing and PNT

MORA / RF PLATFORMS

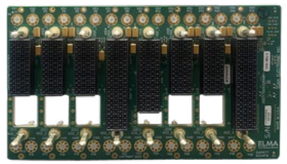
VITA 67.3 and Three payload slots and PNT supporting all slots

Designed to support CMOSS and RF applications with three payload slots and PNT supporting all slots

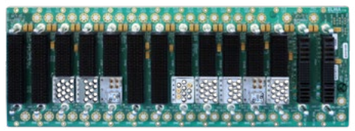
MRDP (MORA Ready Development Platform) for turnkey MORA Development in the laboratory and for Deployment



AI Compute / Sensor Fusion:
PCIe Gen4, 100Gb Ethernet, high-speed data plane routing



Timing / PNT Nodes:
Dedicated VITA 67.3E/67.3C slots for GPS/clock modules



ISR & SIGINT:
Hybrid control/data planes with signal integrity tuning

COMPACFRAME

ACCELERATING THE PATH FROM DESIGN TO DEPLOYMENT

Elma's SOSA aligned test and development platforms provide engineers with modular, lab-optimized systems to validate plug-in cards, test backplane configurations, and develop complete defense computing architectures. Whether working on GPU-driven AI inference or RF-based MORA systems, our platforms support rapid iteration, validation, and transition to deployment.

Key Features

- Chassis that support from 1-12 slot backplanes
- Support for Convection, Conduction, Air-Flow- Through, and Liquid cooling
- Maintenance port aggregator from all slots via rear USB port
- Front panel voltage LEDs, test points and reset functionality
- Rear power entry module for clean installation
- 3U rear slots for I/O transition modules

Applications

- Mounted vehicle command centers
- Field-deployable operations
- Tactical surveillance systems

Type 39 CompacFrame Development Platform, 1 - 8 Slot 3U VPX with a variety of backplane options

The next-generation platform designed to accelerate development and test of Plug-In Cards (PICs). The 3U card cage in the platform is tilted upward by 5° for easier card access and accommodates backplanes up to 4 slots.

CompacFrame Type 39 A, up to 5 slots, VITA 48.8 AFT

CompacFrame platform accelerates the development and test of 3U plug-in-cards (PICs) designed according to VITA 48.8, Air Flow Through Cooling standard. The 3U card cage in the platform is tilted upwards by 5° for easier card access.

COMPACFRAME

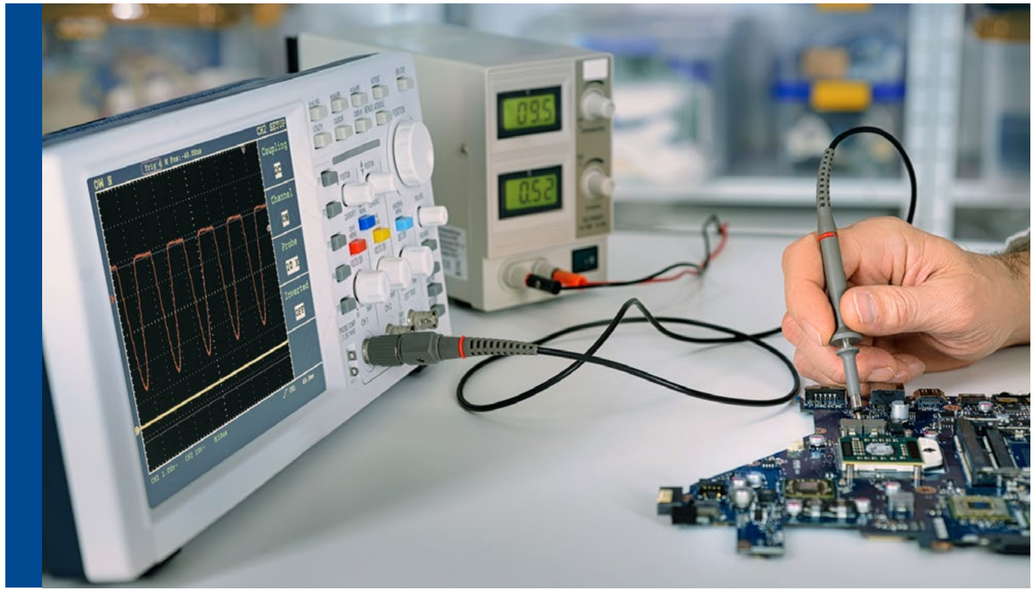
ACCELERATING THE PATH FROM DESIGN TO DEPLOYMENT

3U 12-Slot Development Platform Aligned to SOSA and CMOSS

3U OpenVPX development platform aligned with SOSA. It supports both SOSA and CMOSS profiles, including: It includes: 2 I/O-intensive payloads, SBC payload, 7 primary payload, 1 radial clock, 2 switch and 2 power. Includes VITA 67.3 RF and optical I/O modules.

VITA 48.4 Liquid Flow Through Development Chassis

Power-hungry OpenVPX modules require a cooling solution guaranteed to keep the mission on course. The VITA 48.4 Liquid Flow-Through (LFT) test and development chassis provides cooling for the most extreme testing.



CMFF (CMOSS MOUNTED FORM FACTOR)

RUGGED, MODULAR, CMOSS COMPLIANT CHASSIS

The CMFF chassis is engineered for ground mobile applications that require a highly modular, rugged, and SWaP-optimized solution for mission-critical defense operations

Built to align with the SOSA standard and CMOSS, CMFF provides seamless integration with modern vehicle systems while ensuring flexibility for future technology insertion.

Key Features

- Meets MOSA Principles: Fully aligned with SOSA and CMOSS, ensuring long-term interoperability with next-gen defense electronics.
- Integrated Chassis Manager: Real-time system health monitoring, fault detection, and predictive maintenance for reduced downtime.
- SAVE-compliant for direct ground vehicle integration with existing power and cooling infrastructure.

Applications

- Mounted vehicle command centers
- Field-deployable operations
- Tactical surveillance systems

SOSA ALIGNED HALF-ATR

FOR RUGGED DEPLOYMENTS

The ATR-3600S is a mission-ready, ruggedized half-ATR chassis designed for rapid deployment in SOSA-aligned defense applications.

Engineered to support six 3U OpenVPX payload slots, this lightweight yet durable platform delivers high-performance computing in space-constrained environments while ensuring compliance with MIL-STD-810F, MIL-STD-461E, and MIL-STD-704F.

Key Features

- SOSA-Aligned and Modular: Ready to integrate with SOSA-aligned plug-in cards (PICs) for seamless interoperability and future-proof scalability.
- Advanced Cooling and Ruggedized Design: Combines conduction and convection cooling with an all-aluminum ATR chassis, ensuring high-altitude performance and resilience in extreme conditions.
- Integrated System Management: Includes a USB-based maintenance port aggregator, Ethernet switch, and chassis manager, providing comprehensive monitoring and diagnostics.
- Optimized for Mobile and Airborne Missions: Designed to operate in high-vibration, high-altitude, and temperature-extreme environments, making it ideal for ground vehicles, airborne ISR, and mobile command stations.

Applications

- Mission-critical embedded computing
- Secure defense communications & networking
- ISR and tactical battlefield operations
- AI-enhanced autonomous defense systems

NETSYS

RUGGED BATTLEFIELD NETWORKING

Elma's NetSys and NetKit products deliver high-performance, military-grade network solutions designed for battlefield connectivity, tactical networking, and secure communications.

Key Features

- Rugged, MIL-STD Qualified: Built for extreme environments, including vehicle-mounted and dismounted operations.
- COTS-based Network Switches & Routers: Integrates with Cisco Embedded Series Router (ESR) and Embedded Series Switch (ESS) for trusted military network security.
- High-Speed Tactical Networking: Supports Gigabit and 10Gb Ethernet, ensuring secure, real-time data exchange in the field.
- SWaP-Optimized for Mobile Deployment: Lightweight yet robust—perfect for ground vehicles, command posts, and forward operating bases.
- Secure Communications: Advanced encryption and high reliability connectivity for C5ISR and battlefield command applications

Applications

- Military convoy networking
- Mobile command centers
- Battlefield communications
- Secure mission data transfer

NETKIT-3110

RUGGED GIGABIT ETHERNET ROUTER FOR TACTICAL OPERATIONS

Designed for mission-critical defense networks, the NetKit-3110 is a rugged 3U conduction-cooled VPX router built on the Cisco ESR6300 Embedded Series Router. It delivers high-speed, secure, and resilient networking for mobile and fixed defense deployments, ensuring seamless data transmission across battlefield, command, and surveillance operations.

Key Features

- High-Performance Gigabit Networking: Supports six Gigabit Ethernet interfaces (two routed, four switched) for seamless connectivity in dynamic defense environments.
- Ruggedized for Harsh Conditions: Fully MIL-STD-810H qualified, ensuring resilience to shock, vibration, and extreme temperatures for ground, air, and maritime applications.
- Secure Communication & Encryption: Cisco IOS XE software provides IPSec, VPN, and Cisco firewall security, with an onboard hardware encryption module for real-time encrypted data transfer.
- Scalable Performance Tiers: Configurable throughput licensing options allow scaling from 50 Mbps to 350 Mbps of encrypted traffic, optimizing network performance for various mission needs.
- SD-WAN Capable – Supports software-defined wide area networking (SD-WAN) to enhance tactical mobility and dynamic connectivity across operational environments.

Applications

- Mission control systems
- Embedded AI/ML applications
- Intelligence gathering
- Electronic warfare platforms

JETSYS

RUGGED EDGE AI COMPUTING

JetSys is a high-performance AI/ML processing platform, optimized for battlefield intelligence, surveillance, and autonomous systems

Key Features

- NVIDIA® Jetson™ powered: AI Processing: Industry-leading GPGPU computing for real-time object detection, scene understanding, and threat analysis.
- Multi-Camera Support: Optimized for computer vision applications, including automated target tracking and battlefield analytics.
- Ruggedized for Military Use: MIL-STD tested, ensuring durability inmobile deployments.
- SWaP-C Optimized: Lightweight, low-power architecture designed for autonomous military vehicles and unmanned surveillance systems.
- Supports Tactical AI Applications:
  - Object Detection and Tracking
  - Autonomous Navigation
  - ElectronicWarfare AI Processing

Applications

- UAV/UGV systems
- Battlefield AI decision support
- ISR intelligence processing
- Surveillance platforms.

COMSYS

RUGGED EDGE COMPUTING AND MISSION COMPUTERS

The ComSys series delivers high-performance computing in a small form factor, providing real-time processing power for mobile defense applications

Key Features

- Intel Processing: Low-power, high-performance Intel processors optimized for mission-critical AI, ISR, and analytics.
- Fanless, Thermally Efficient Design: Operates in harsh environmental conditions, ensuring silent and reliable performance.
- MIL-STD-Qualified:With stands shock, vibration, EMI, and extreme temperatures.
- Extensive I/O:Multiple high-speed interfaces, including PCIe, Ethernet, and USB, ensuring seamless integration with military platforms.
- Configurable and Customizable: Designed for shipboard, ground vehicle, and airborne deployment.

Applications

- Mission control systems
- Embedded AI/ML applications
- Intelligence gathering
- Electronic warfare platforms

RP24 /RA RUGGED POWER SUPPLY

RUGGED POWER SUPPLY AND BATTERY MODULE

The RP24 Rugged Power Supply and RA24 Battery Module are designed to deliver uninterrupted, mission-critical power in the harshest environments.

Whether deployed in military, industrial, or emergency response applications, this power system ensures reliable AC/DC conversion, battery backup, and UPS functionality for extended operations in the field.

Key Features

- Extreme Ruggedness: Milled aluminum construction, MIL-STD-810G compliant, and IP67-rated for total environmental protection.
- Versatile Power Input and Output: Accepts 115/230VAC input and 24VDC output, making it ideal for vehicle, field, and stationary installations.
- Uninterrupted Power Supply (UPS) Capability: Ensures continued operation even during power loss with seamless battery switchover.
- Scalable for Larger Power Demands:
  - Up to 5 RP24 power supplies can be combined to deliver 4.5kW of power.
  - Up to 10 RA24 battery modules can be used in parallel for increased energy storage.
  - Triple Redundant AC/DC Conversion: High-reliability architecture ensures continuous power availability even in critical mission scenarios.
- Advanced Monitoring and Control:
  - Built-in display for real-time power status and system diagnostics.
  - Remote monitoring via SNMPv3 for networked power management.
- Extended Operational Range:
  - Functions at altitudes up to 3,500m, with transport capability up to 5,500m.
- Operates reliably from -35°C to +60°C in extreme environments.
- Military-Grade EMC Compliance: Meets MIL-STD-461G for electromagnetic compatibility and interference protection.

Applications

- Field-deployed military radios and communication system
- Mobile command and control centers
- Power for ground and air vehicles
- Backup power for critical defense infrastructure
- Powering unmanned vehicles and sensor systems

M-SERIES CABINET – RUGGED, MODULAR ENCLOSURES FOR GROUND SYSTEMS

RUGGED, MODULAR ENCLOSURES FOR GROUND SYSTEMS

The M-Series Cabinet are engineered for high-reliability ground defense deployments, offering unmatched strength and flexibility.

It's modular design makes it ideal for rapid integration into tactical vehicles, mobile shelters, and field-deployed systems requiring shock, vibration, and EMI protection.

Key Features

- Modular and Scalable Design: Bolt-together frame allows easy access and reconfiguration in space-constrained mobile environments.
- MIL-STD Compliant Ruggedness: Certified to MIL-STD-901E, 810F, 167, and 461 for environmental, shock, and EMC performance.
- EMI Shielded and Field-Ready: EMI gaskets and alodine plating ensure secure operation in hostile RF and environmental conditions.

Applications

- Tactical vehicle electronics bays
- Mobile command post and ground shelter integration
- Ruggedized power and comms hubs
- Deployed test and diagnostic systems

ROTARY SWITCHES, ENCODERS, AND CODED SWITCHES

FIELD-PROVEN

Rotary Switches and Encoders with a history of success

Elma's 50+ years of experience in rotary switches, coded switches and encoders is written in the pages of our customer's success stories. From critical communications equipment that keep worldwide defense operations safe, to mission critical weapons control systems, engine controls, cockpits and intelligence gathering equipment, Elma has the standard or custom solution that gets the job done.

Features

- Swiss Click Indexing System™ for positive tactile feedback and secure activation
- Coded switches with "Push-to-Turn"
- Dual concentric encoders
- Up to 32 detents for increased functions resolution
- Gold plated contacts
- Robust metal housings with metal shaft
- IP68 front panel sealing
- Push button force and rotational torque options

Applications

- Vehicle turret and weapon system control
- Ruggedized operator panels for command and control
- Radio and communication system interface selectors
- Power mode and function selectors for mobile platforms
- Manual mode selection for ECUs and onboard diagnostics panelss

MRDP (MORA READY DEVELOPMENT PLATFORM)

RAPID MORA-BASED DEVELOPMENT

The MORA Ready Development Platform (MRDP) accelerates the development of Modular Open Radio Frequency Architecture (MORA)-compliant systems. Designed for plug-and-play deployment, this platform provides a complete test environment for radio frequency (RF) and networking applications.

Key Features

- Turnkey Solution: Unbox, plug in, power on—immediate access to MORA resources without additional integration effort.
- MORA Signal Resource Profile (MSRP) Management: Allows users to create, modify, and evaluate RF profiles, optimizing radio systems before deployment.
- Seamless Integration with Ground Vehicles: Aligns with C5ISR standards for SWaP-optimized, scalable RF system deployment.
- High-Speed Connectivity: Supportsmulti-gigabit network interfaces, ensuring real-time communication for tactical operations.

Applications

- Advanced military radio and RF systems
- Vehicle mounted communication relays
- SIGINT/EW testing environments

SOSA ALIGNED AI/ML DEVELOPMENT PLATFORM

RAPID AL DEVELOPMENT

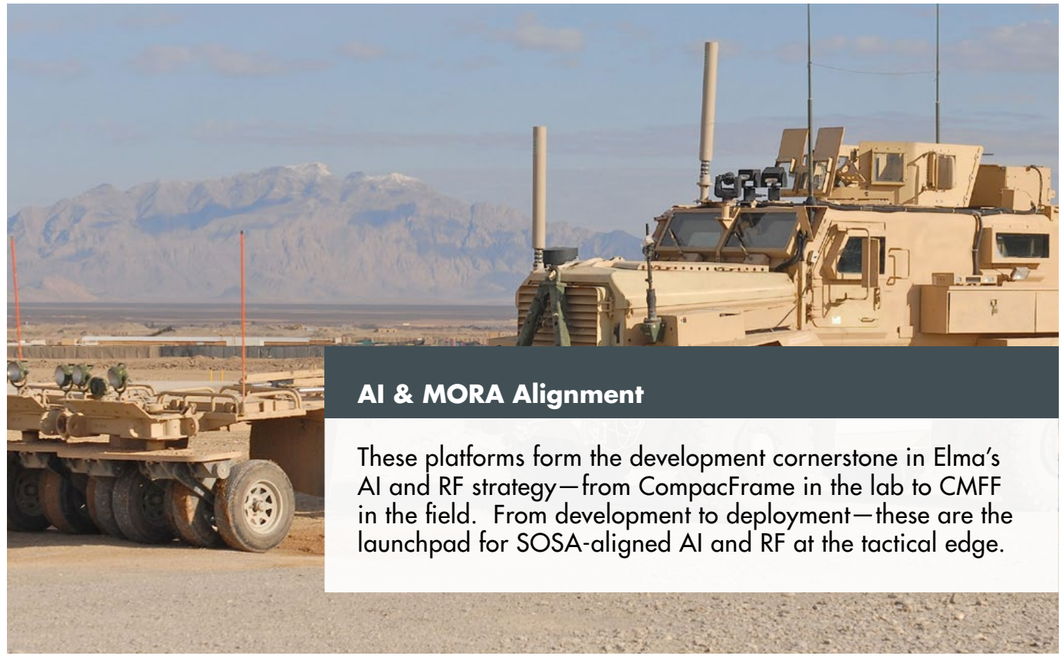
As defense systems increasingly rely on edge-deployed AI and GPU-powered processing, the CompacFrame provides a lab-validated, SOSA-aligned development platform tailored for AI/ML, signal processing, and sensor fusion applications. It supports full-cycle development—from architecture definition to system validation—bridging seamlessly to deployable configurations like CMFF and the SOSA Half ATR.

Key Features

- 7-slot 3U OpenVPX Backplane: SOSA aligned configuration supports SBC and GPGPU pairing with x16 PCIe Gen4 links, tuned for high-throughput AI workloads.
- Integrated Management and Test Access: Includes VITA 46.11 chassis manager, maintenance port aggregator, and front-panel voltage monitoring/test points.
- GPU-Ready Expansion Plane: Optimized backplane topologies for dual GPGPU configurations, supporting slot profiles like 14.6.13-n and 14.6.11 for AI scalability.
- Bench-Optimized Design: Tilted card cage, ruggedized enclosure, and support for air and conduction-cooled PICs make it ideal for engineering environments.

Applications

- AI model training and inference testing
- Sensor fusion algorithm development (EO/IR, radar, SIGINT)
- Autonomous navigation and battlefield situational awarenes
- Rapid integration of GPU accelerators with SOSA aligned SBCs



AI & MORA Alignment

These platforms form the development cornerstone in Elma's AI and RF strategy—from CompacFrame in the lab to CMFF in the field. From development to deployment—these are the launchpad for SOSA-aligned AI and RF at the tactical edge.

VNX+ CHASSIS

THE NEXT EVOLUTION IN RUGGED DEFENSE COMPUTING

As modern defense operations demand smaller, lighter, and more powerful computing solutions, the VNX+ chassis emerges as the next-generation standard for high-performance embedded computing in space-constrained defense applications.

Fully aligned to SOSA™ and VITA 90, the VNX+ platform delivers an ultra-compact, rugged, and modular computing architecture optimized for battlefield intelligence, surveillance, and autonomous defense systems.

Key Features

- Compact and Scalable Architecture: 70% size reduction compared to traditional 3U VPX, making it ideal for UAVs, ground vehicles, and maritime applications.
- High-Speed Data Processing: Supports 10GBASE-KX/40GBASE-KX4 Ethernet and PCIe Gen4 for ultra-fast data transfer and seamless integration with advanced AI and ISR applications.
- Rugged and Modular: Built to withstand extreme conditions with MIL-STD ruggedization, modular payload slots, and blind-mate optical & RF connectivity.
- Advanced I/O and System Management: Equipped with a VITA 46.11 chassis manager, maintenance port aggregator, and multiple I/O configurations to support real-time mission adaptability.
- Optimized for AI and Sensor Integration: Designed for high-speed intelligence gathering, targeting systems, and real-time data processing in the field

Applications

- Autonomous vehicle computing (UAVs, UGVs)
- ISR & battlefield AI processing
- Secure mission computing for SIGINT & EW
- Next-generation defense electronics

Why Defense Leaders Choose Elma

Rugged & Reliable
Built for the toughest environments.

Future-Ready
MOSA-compliant and scalable for nextgen needs.

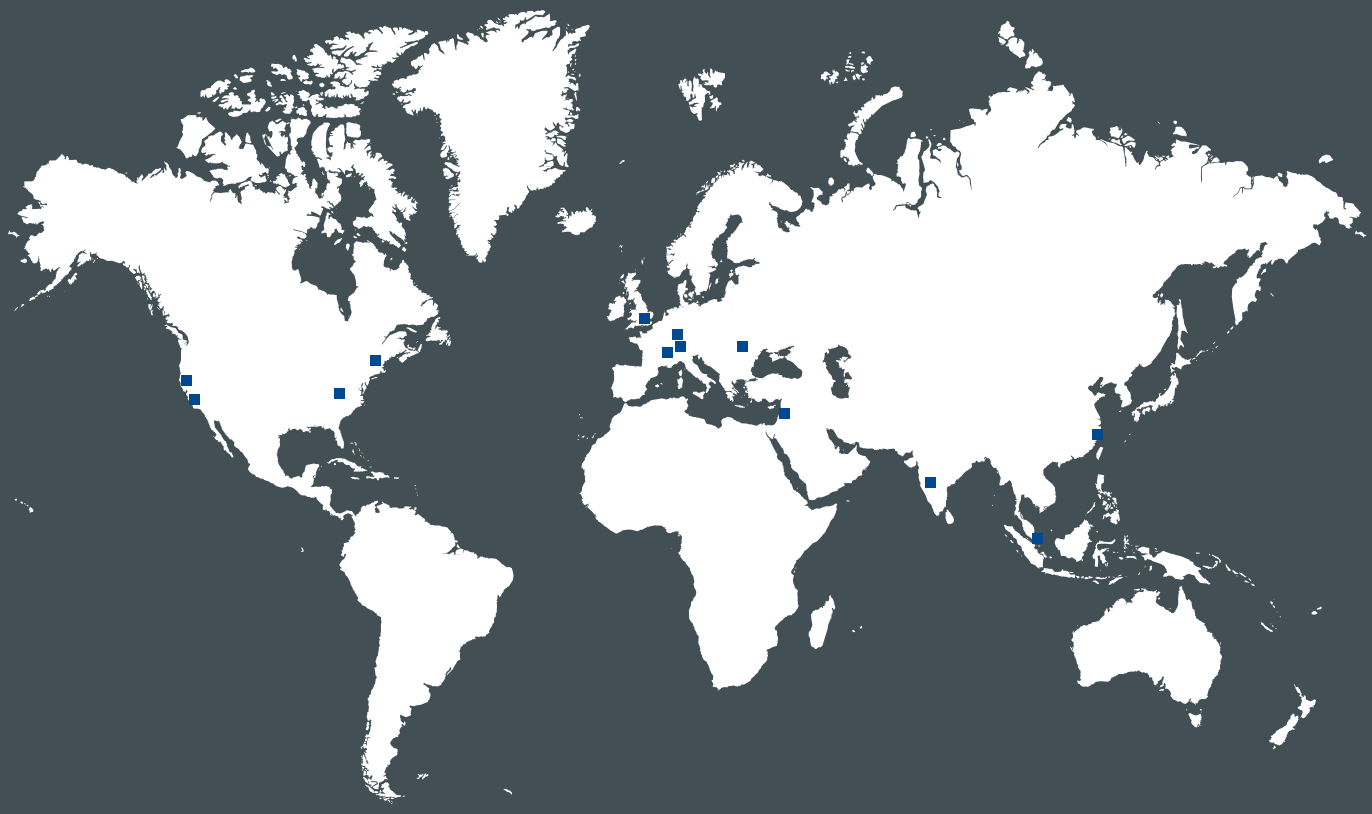
Rapid Deployment
Short lead times for urgent operational requirements.

Global Reach
Supporting defense operations worldwide.

Let's Build the Future of Ground Defense Together

Scan to access Learn more about Elma's Ground Defense Capabilities

For more information, **CONTACT US** For inquiries, demos, and technical discussions



Elma Electronic AG, Switzerland
Hofstrasse 93
CH-8620 Wetzikon
T: +41 44 933 41 11
F: +41 44 933 42 15
sales@elma.ch

Elma Electronic GmbH, Germany
Stuttgarter Strasse 11
D-75179 Pforzheim
T: +49 7231 97 34 0
F: +49 7231 97 34 97
info@elma.de

Elma Electronic France SA
16 rue de Hannah Arendt
Parc des Forges
F-67200 Strasbourg
T: +33 38 85 67 25 0
sales@elma-electronic.fr

Elma Electronic UK Ltd.
Solutions House
Priory Business Park
Fraser Road
Bedford MK44 3BF
Great Britain
T: +44 1234 838822
F: +44 1234 836650
sales@elma.co.uk

Elma Electronic Romania SRL
Chisoda, DN 59 km8 + 550m
RO-307221 Judetul Timis
T: +40 374 480 400
F: +40 256 249 820
sales@elma.ch

Elma Electronic Israel Ltd.
34, Modi'in St., I.Z.Sgula
IL-49271 Petach-Tikva
T: +972 3 930 50 25
F: +972 3 931 31 34
sales@elma.co.il

Elma Electronic Inc., USA
44350 S. Grimmer Blvd
Fremont, CA 94538, USA
T: +1 510 656 3400
F: +1 510 656 3783
sales@elma.com

Optima Stantron, USA
2305 Newpoint Parkway
Lawrenceville, GA 30043, USA
T: +1 770 496 4000
F: +1 770 496 4026
sales@elma.com

Elma Electronic Private Ltd., India
Green Arch
3rd Phase 1st Main
J.P. Nagar
Bangalore 560078
sales@elma.com

Elma Electronic Technology (Shanghai) CO., LTD., China
No. 11 Building, No198
Chang Jian Road,
Bao Shan District
CN-200949 Shanghai
T: +86 21 5866 5908
F: +86 21 5866 5918
sales@elmachina.com

Elma Asia Pacific Pte. Ltd., Singapore
8 Ubi Road 2
07-14 Zervex Building
SG-408538 Singapore
T: +65 6479 8552
F: +65 6479 8662
sales.elmaap@elma.com

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